Engineering the Future

DETAILED SITE INVESTIGATION (DSI)

Liberty Service Station – Inverell, NSW

24-26 Glen Innes Road, Inverell, NSW

For:

Inverell Shire Council

By:

ENV Solutions

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Overview

ENV Solutions Pty Ltd (ENV) was engaged by Inverell Shire Council (ISC) to undertake a Detailed Site Investigation (DSI) at the Liberty branded Service Station, situated on the corner of Glen Innes Road and Chester Street (24-26 Glen Innes Road) in Inverell, NSW (the 'site').

ENV understands that ISC intends to purchase a portion of the site from its current owner for construction of a new roundabout at the intersection of Glen Innes Road and Chester Street. ISC requires an understanding of contamination at the site such that it can be appropriately managed during the construction project. An evaluation of the eastern site portion, which is to be retained by the current site owner, was also required to support future development proposals for that land.

The investigation was undertaken in general accordance with the *Managing Land Contamination Planning Guidelines* (DUAP and EPA, 1998), *Consultants Reporting on Contaminated Land (Contaminated Land Guidelines)* (NSW EPA, 2020) and *Technical Note: Investigation of Service Station Sites* (NSW EPA, 2014).

The scope of the DSI conducted recently by ENV can be summarised as follows:

- Desktop review of relevant information.
- Site inspection and discussions with the current site operator.
- Borehole investigations with soil sampling. Ten (10) boreholes were completed to a maximum depth of 3.8 metres below ground level (mBGL; depth of auger refusal on bedrock) in areas across the site.
- A total of twenty-one (21) soil samples were laboratory analysed for the chemicals of potential concern (COPC), relating to the site's uses for service station and workshop activities (petroleum hydrocarbons, including total recoverable hydrocarbons (TRH); benzene, toluene, ethylbenzene and xylenes (BTEX) and polycyclic aromatic hydrocarbons (PAH)); metals and volatile halogenated compounds (VHCs, including chlorinated degreasing agents).
- Sampling groundwater from three existing on-site monitoring wells (MW1, MW2 and MW3).
- Compiling this report.

Based on the desk-top review of site history, the following potentially contaminating activities and associated chemicals of potential concern (COPC) were identified as being the most relevant for contamination purposes:

- The site has been used for service station purposes dating back to approximately the 1950s, including dispensing bowsers and associated underground storage tanks (USTs) and fuel lines – aliphatic hydrocarbons; benzene, toluene, ethylbenzene and xylenes (BTEX); polycyclic aromatic hydrocarbons (PAH) and metals.
- Service station activities have included a mechanical workshop, which operated on the site until approximately 2016.

A hazardous chemicals search was undertaken for the site as part of a 2018 due diligence assessment for purchase of the property. The search indicated that various petroleum products have been stored in USTs and above ground gas cylinders at the site, dating from 1954 until the most recent information available in 2006. The information also indicated there may be an abandoned UST present in the eastern site portion.

Soil Quality

Overall Site Conditions

COPC concentrations in the majority of the twenty one (21) primary soil samples analysed were less than the assessment criteria adopted for the investigation, or less than laboratory detection limits. Petroleum hydrocarbon concentrations in two samples from two boreholes (BH4 and BH6) exceeded ecologically-based criteria adopted for the assessment. Human health-based (vapour) criteria were exceeded by hydrocarbon concentrations in one borehole (BH4) only.

Preliminary Waste Classification (Western Site Portion: Soils to be Excavated)

A preliminary waste classification was prepared for soils which are likely to require excavation and management as part of future works to remove the existing UPSS and construct the new road and roundabout in the western site portion. The preliminary waste classification indicates soils in the western site portion are likely to be classifiable as General Solid Waste (GSW) and could be disposed to the Inverell Shire landfill as such. Some soils may also be re-used on site as fill. Further classification testing may be required once the soils are excavated and stockpiled on site.

Eastern Site Portion

An evaluation of soil quality was also undertaken for the eastern site portion, which will be retained by the current site owner and developed as a new service station in the near future. The results for boreholes drilled in this part of the site were reviewed together with soil data from ENV's previous due diligence investigation (2018) for this area. All COPC concentrations were less than the adopted assessment criteria except for several hydrocarbon concentrations reported in one location (BH6_0.5-0.7 m). However, the concentrations reported at BH6 exceeded only the criteria adopted for terrestrial ecological receptors (fauna and flora) (NEPM ESLs), and not any of the human health-based criteria. The ESLs are applicable to soil in the top 2.0 m of the profile, and where terrestrial fauna and flora (plant root zones) may have access to the soils. Although the layout and detail of any future service station development has not yet been developed, it is highly likely that the site surfaces at the facility will be almost entirely sealed with concrete (or bitumen), and that landscaped areas will be around the edges, most likely within raised garden beds. If this is the case, the current soil conditions within the eastern site portion would be considered suitable for ongoing commercial land use (service station).

It should be noted that there is anecdotal information to suggest the presence of an abandoned UST in the eastern site portion, thought to be present in front of (south of) the current produce sales area (east portion of main building) (Garry Campbell, pers. comm., 2021). The possible presence of an abandoned UST in this location should be considered in any future development proposal. Soil results to date suggest that if a tank is present in this area, there are unlikely to be gross soil impacts associated with its presence.

Additionally, a reasonable proportion (approximately one third) of the eastern site area is covered by structures (buildings). No drilling has occurred within these buildings to date. It is known that the eastern part of the main building was formerly used for mechanical repairs, and a mechanical hoist is also known to have been present in this area. Consideration should be given to assessment of soils beneath the existing buildings once they are demolished.

Groundwater Quality

Concentrations of the COPC reported in samples collected from MW1 and MW2 were either less than the laboratory LORs, or less than the adopted assessment criteria. Although a copper concentration exceeding the assessment criterion for freshwater ecosystems was reported in MW1, copper is not a COPC for the site; and the reported concentration is likely to be representative of ambient conditions in the shallow perched water system.

Hydrocarbon concentrations exceeding one or more assessment criteria were reported in MW3. These COPC included benzene, ethylbenzene and naphthalene, with COPC concentrations exceeding only the criteria adopted for drinking water use of extracted groundwater, and recreational use and freshwater ecosystems associated with freshwater bodies (e.g. Macintyre River). None of the COPC were reported to exceed human health-based criteria for current (or future) site workers. As such, the current groundwater conditions pose no impediment to future development of the site for commercial/industrial purposes (e.g. road construction and service station development).

Available information from WaterNSW (updated in the last 12 months) indicates there are four licensed bores situated within approximately 250 m of MW3. However, all of these bores are constructed to a greater depth than the shallow perched water system beneath the site and screen deeper water bearing zones. On the basis of available licensed bore information, any risks posed by COPC concentrations reported in MW3 to users of licensed bores in the site vicinity are expected to be negligible.

While the Macintyre River is located down slope from the site, approximately 150 m away at is closest point, it is considered unlikely that the COPC concentrations reported in MW3 would reach the River without prior attenuation to levels which are less than the adopted assessment criteria or less than laboratory detection limits.

If dewatering is required for future construction works at the site, the hydrocarbon concentrations in groundwater would need to be considered with respect to treatment and discharge activities.

Recommendations

Based on the above conclusions regarding the current site condition, the following recommendations are made:

- With respect to site owner obligations under Section 60 of the *Contaminated Land Management Act 1997* (the 'CLM Act'), the site owner (understood to be North Coast Petroleum (NCPT)) is considered to have an obligation to notify the NSW EPA of current groundwater conditions, for the following reasons:
    - Contaminants have entered or will foreseeably enter groundwater or surface water; AND
    - Concentrations of the contaminants in the groundwater or surface water are, or will foreseeably be, above the groundwater investigation level(s) for that contaminant; AND
    - Concentrations of the contaminants in the groundwater or surface water will foreseeably continue to remain above the specified concentration.

Notification of the NSW EPA should occur as soon as is reasonably practicable, in accordance with the document entitled "Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997" (NSW EPA, 2015) and the provisions of the CLM Act.

- A minimum of one well should be installed to the south of MW3, across Glen Innes Road, on Council-owned land. The purpose of this well would be to delineate the impacts reported at MW3, and confirm that concentrations of hydrocarbons in off-site areas, between the contamination source and potential surface water and aquatic receptors associated with the Macintyre River, are less than relevant assessment criteria.
- A Remediation Action Plan (RAP) should be prepared which describes in detail the proposed remedial measures for removal of the existing UPSS and any associated contaminated soils. The RAP should be prepared by a suitably qualified environmental professional, in accordance with the requirements of the NSW EPA (2020) document entitled "Consultants Reporting on Contaminated Land (Contaminated Land Guidelines)". At the time of preparing this report, ENV was in the process of preparing the RAP on the advice of ISC.
- Until such time as the existing service station is demolished and a new facility is constructed, groundwater monitoring should continue at the site in accordance with the requirements of the *Protection of the Environment Operations Act 1997* ('POEO Act') and *POEO (Underground Petroleum Storage System (UPSS) Regulation) 2019*.

1 Introduction

ENV Solutions Pty Ltd (ENV) was engaged by Inverell Shire Council (ISC) to complete a Detailed Site Investigation (DSI) at the Liberty branded service station situated at 24-26 Glen Innes Road (corner of Chester Street) in Inverell, NSW (hereafter referred to as the 'site'). The regional site location is illustrated on Figure 1, Appendix A.

ENV understands that ISC intends to purchase the western portion of the site from its current owner for construction of a new roundabout at the intersection of Glen Innes Road and Chester Street. ISC requires an understanding of contamination at the site such that it can be appropriately managed during the construction project.

This report presents the results of the DSI conducted by ENV; and includes recommendations relating to the preparation of a Remediation Action Plan (RAP) for removal and environmental validation of the fuel-related infrastructure located on the portion of the site to be purchased by ISC. It also presents conclusions relating to the environmental condition of the eastern site portion, which will be retained by the current site owner for future redevelopment (construction of a new service station).

2 Scope of Works

The DSI included the following components:

- Review of one previous investigation report prepared by ENV in 2018 for due diligence purposes (prior purchase of the property by a third party).
- Pre-mobilisation tasks:
  - Liaison with ISC and the current site operator to arrange property access.
  - Preparing Occupational Health and Safety (OH&S) documentation for the fieldwork program (e.g. Safe Work Method Statements).
- Completing appropriate Workplace Clearance Group (WPCG) Work Permits upon arrival at site (for each day of work).
- Conducting service clearance protocols prior to ground penetration.
- Coring through concrete at seven (7) drilling locations.
- Using a truck-mounted drill rig and solid flight augers to drill ten (10) boreholes at the locations illustrated in Figure 6, Appendix A (BH01 to BH10).
- Collecting soil samples at regular depth intervals for potential laboratory analysis and field screening of volatile organic compounds (VOCs) during the drilling activities.
- Measuring depth to groundwater, purging and sampling of three (3) existing groundwater moniroing wells (MW1, MW2 and MW3).
- Surveying the relative levels of the top of the PVC casing in each of the wells, such that groundwater flow direction could be estimated.

The groundwater investigation was conducted with consideration of applicable guidelines and standards, including but not limited to the following:

- Technical Note: Investigation *of Service Station Sites* (NSW Environment Protection Authority (EPA, 2014)).
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (the 'NEPM'; as amended 2013) (National Environment Protection Council (NEPC, 2013)) – Schedules B(1) and B(2).
- AS4482.1 (2005) and AS4482.2 (1999) Guide to the investigation and sampling of sites with potentially contaminated soil (volatile and non-volatile compounds).

3 Site and Surrounding Area Details

Table 1 provides a summary of identification details for the site and surrounding areas which is relevant to this investigation.

The details were collected from information provided in previous reports prepared for the site (ENV, 2018); and were supplemented by site observations made during ENV's fieldwork program.

Photographs taken during the ENV field program are presented in Appendix B.

Table 1: Site and Surrounding Area Details

Site Address	24-26 Glen Innes Road (corner of Chester Street), Inverell, NSW
Site Area	Total site – approximately 1,540 m^2 (Sixmaps, 2009)
Real Property Description	Lot 1 DP322074 and Lot 1 DP666824
Local Government Area	Inverell Shire Council (ISC)
Zoning	B2 – Local Centre: Inverell Shire Council Local Environmental Plan (LEP) (2012). The objectives of this zone are: - To provide a range of retail, business, entertainment and community uses that serve the needs of people who live in, work in and visit the local area; - To encourage employment opportunities in accessible locations; and - To maximise public transport patronage and encourage walking and cycling.
Site Features and Observations	- Refer to Figure 2 (Appendix A). - Service station shopfront with attached farming supply store and U-Haul trailer hire facility. - The underground and above ground fuel related infrastructure includes (refer Figure 2): - 1 x UST storing diesel – 20 kL; - 1 x UST storing diesel – 4 kL; - 1 x UST storing premium unleaded petrol (PULP 95) – 26 kL; - 1 x UST storing premium unleaded petrol (PULP 98) – 9.6 kL; - 1 x UST storing unleaded petrol (ULP) – 58 kL; - 1 x UST formerly storing unknown product and abandoned – 5 kL (inside sales building; east portion); - 6 x fuel dispensing bowsers; and - 7 x vent pipes, situated around the site. - The shopfront (sales) and farming supply store are situated in the central site portion. ENV understands the farming supply store was formerly used as a mechanical workshop. - There is an attached storage shed in the north western portion of the site in which goods for the shop were stored. This shed was also formerly used as a mechanical workshop, and contained several 200 L waste oil drums at the time of the DSI program.

	- Directly behind the shopfront (between the shop and storage shed) was a small office and storage area. - The north-eastern portion of the site consists of a gravel covered area where the U-Haul trailer hire facility was located. This area has been filled and is approximately 0.4 m higher than the adjacent building levels. - The southern and western site portions were used as the forecourt area, housing the USTs, dispensing bowsers and fuel lines. This area was entirely covered with concrete in fair to good condition (some cracking in places). - Minor surface staining was noted around the fuel dispensing pumps, particularly the diesel bowsers in the western site portion. - A LPG bottle exchange facility and 2 x LPG decanting storages were situated along the eastern site boundary. - No stressed vegetation was observed in the landscaped areas.
Surrounding Environment	- North: Residential housing. -South: Inverell East Bowling Club Ltd. Further south (approximately 150 m) is the McIntyre River. - East: Residential housing followed by the Sapphire City Motor Inn past Chester Lane. - West: Commercial buildings followed by the Inverell Caravan Park across Glen Innes Road.
Existing Land Use	Commercial (service station, fodder sales)
Proposed Land Use	Western portion: Commercial (road construction; roundabout) Eastern portion: Commercial (service station)
Topography	The site elevation is 594 m Australian Height Datum (AHD). The site has a steady gradient towards the south (Glen Innes Road).
Drainage	Stormwater run-off from the site most likely flows south from the operational (concrete covered) forecourt area, following the topography of the site. Concrete kerbing was located along the southern side of the forecourt, with openings for the entry and exit driveways.
Soils	ENV (2018) reports soils comprising of gravelly clay fill, overlying dense natural clays and gravelly clay. A thin layer of gravelly bedding sand is present beneath most concreted areas.
Flooding	Reference to flooding risk can be found in the Fact Sheet – Flood Emergency Plan, developed by ISC. This management plan presents areas of Inverell that are within the floodplain area of the Macintyre River. The Plan indicates that the site is unlikely to be affected by flood events, although it is noted that the site is close to the fringe of flood affected areas (refer Figure 3, Appendix A).
Groundwater Resources	A search of the WaterNSW (formerly NSW Office of Water) Groundwater Bores online mapping (ENV, 2018) indicated there were 13 licensed bores within a 500 m radius of the site at that time (refer Figure 4, Appendix A). An updated search conducted on 15 April 2021 indicated there were no new bores in close proximity to the site.
Surface Water	The Macintyre River (freshwater) is located approximately 150 m to the south of the site at its closest point; and flows east towards Lake Inverell.

Acid Sulfate Soils	Due to the site's elevation (594 m AHD) and significant distance from any intertidal/low lying floodplain area, acid sulfate soil (ASS) does not pose a risk to disturbance of soils at the site.

4 Site History, Regulatory Information and Environmental Condition

4.1 Previous Report (ENV, 2018)

Information presented in one previous report prepared by ENV (2018) was reviewed, with specific reference to the known environmental condition of the site soils and groundwater at that time.

The scope and results of the investigation are summarised as follows:

- The investigation was completed for due diligence purposes, to facilitate sale of the property.
- A desktop review of available site history information indicated the site had been used for service station purposes since the 1950s.
- A hazardous chemicals search indicated that various petroleum products have been stored in USTs and above ground gas cylinders at the site, dating from 1954 until the most recent information available in 2006.
- Seven (7) boreholes were drilled using a trailer mounted rig with solid flight augers to a maximum depth of 3.0 m bgl (auger refusal on bedrock). Boreholes were located across the various site areas. Groundwater was not encountered during drilling.
- Seven (7) soil samples were selected for laboratory analysis of petroleum hydrocarbons (TRH, BTEX and PAH) and metals – one per borehole.
- Three existing on-site monitoring wells (MW1, MW2 and MW3) were dry at the time of the investigation and could not be sampled.
- The soil results were either less than laboratory detection limits or less than the human health and ecologically-based screening and investigation levels adopted for a commercial (service station) land use.
- On the basis of the results, ENV concluded that the site was suitable for continued commercial land use (ongoing operation as a service station).

4.2 Historical Petroleum Storage

As noted above, information regarding historical chemical (petroleum) storage at the site was obtained by ENV (2018) in the form of a Schedule 11, Hazardous Chemicals Notification search through SafeWork NSW.

The information indicated that hazardous chemicals (petroleum and liquefied petroleum gas (LPG)) have been stored within USTs and above ground cylinders, registered at the premises from 1954 until 2006 (last notification to SafeWork NSW). The information returned by the search is summarised in Table 2 below.

Table 2: Schedule 11 (Hazardous Goods) Information

1954						
Occupier	NA					
Supplier	Caltex					
Construction of depots	Underground tank	Underground tank	Underground tank			
Inflammable liquid (L)	11,356	27,570	27,570			
Construction of depots	-	-				
Gas	-	-				
1978						
Occupier	Keith and Margaret Rumble					
Supplier	Caltex					
Construction of depots	Underground tank	Underground tank	Underground tank			
Inflammable liquid (L)	55,000	27,276	9,092			
Construction of depots	LPG Cylinder	LPG Cylinder	LPG Cylinder			
Gas (L)	100	100	100			
May 1994						
Occupier	G J & D F Wilkins					
Supplier	Caltex					
Construction of depots	Underground tank	Underground tank	Underground tank	Underground tank		
Inflammable liquid (L)	59,400 (C 3)	26,600 (C 3)	10,000 (C 3)	4,500 (C 1)		
2002						
Occupier	Gregory John Wilkins					
Supplier	Caltex					
Construction of depots	Underground tank	Underground tank	Underground tank	Underground tank		
Inflammable liquid (L)	59,400 (C 3)	26,600 (C 3)	10,000 (C 3)	4500 (C 1)		
Construction of depots	LPG Cylinder					
Gas (L)	190 (C 2.1)					
2006						
Occupier	G J & D F Wilkins					
Supplier	-					
Construction of depots	Underground tank	Underground tank	Underground tank	Underground tank	Underground tank	
Inflammable liquid (L)	59,400 (C 3)	26,600 (C 3)	10,000 (C 3)	4500 (C 1)	20,600 (C 1)	

The information presented in Table 2 indicates the following about historical and current fuel storage at the site:

- The storages listed in the 2006 documentation are the same as those currently on the site, suggesting that no changes to fuel storage on the site have occurred since this time.

- Two of the storage tanks listed in the 1954 documentation have different capacities than those listed in the subsequent (1978) documentation. This suggests that either two of the three USTs were replaced with new tanks in this period (and the old tanks abandoned in situ or removed); or that the UST capacities listed in 1954 and/or 1978 are incorrect. Anecdotal information provided by Mr. Garry Campbell, the current site operator, during the DSI field program indicated there may be an abandoned UST to the south of the entrance for the farm supply store (eastern portion of the main building).

4.3 POEO Act Public Register Information

The NSW EPA *Protection of the Environment Operations Act 1997* ('POEO Act') Public Register contains information about environment protection licences, licence applications, notices issued under the POEO Act and pollution studies and reduction programs.

The EPA's POEO Act Public Register was searched for the Inverell area on 16 July 2018 (ENV, 2018). Several licences were located, including those for the Inverell waste facility (landfill), as well as others listed for the Inverell sewage treatment plant, Copeton water treatment plant, manufacturing businesses and mining exploration. None of these activities occurred in close proximity to the subject site and were therefore considered unlikely to affect the environmental condition of the site.

The Register for delicensed premises which are still regulated by the NSW EPA was also reviewed at the time (ENV, 2018) and indicated that there had previously been a licence for Australian Gemstone Resources Pty Ltd located at the property known as "Kew" on Waterloo Road, Inverell. The licence for the company was revoked on 18 May 2018 due to failure to pay the annual licence fee. It was also noted through the EPA's POEO Act Public Register website that the company hadn't operated since 2010.

These searches were updated on 15 April 2021. No new information was available for licensed premises; however a new entry for a delicensed premises was found, relating to the production or storage of hazardous, industrial or Group A waste at the Inverell District Hospital. The Hospital is located approximately 1.2 km north-east of the site.

4.4 Contaminated Land Record

A site may be notified to the NSW EPA if the notifier considers the site to be contaminated (as defined by the CLM Act). The EPA then assesses the contamination status of the site and makes a decision as to whether the contamination should be formally regulated by the EPA in accordance with the provisions of the CLM Act.

A review of information presented on the Contaminated Land Record was completed for the Inverell area on 15 April 2021. Seven (7) sites were identified in the Inverell area and were all related to petroleum and service station contamination activity - however, none of the 7 sites were "under assessment" by the EPA. This means that contamination identified at the sites was deemed by EPA to not be significant enough and warrant regulation under the CLM Act. The closest location to the site is the

former Mobil Inverell Depot on the corner of Henderson and Otho Street, Inverell; approximately 600 m to the north-west.

4.5 Contaminated Land – Record of Notices Search

The EPA triggers assessment and remediation of significantly contaminated land by sending written notices to those responsible for cleaning up the contamination. The EPA makes these notices, which include preliminary investigation orders, available to the public through the Record of Notices.

The Record of Notices was searched on 20 July 2018 (ENV, 2018) for the Inverell area. No records were found.

The Record of Notices search was updated on 15 April 2021. Again, no records were found.

4.6 Cattle Dip Site Locator

The NSW DPI cattle dip site locator was accessed on 20 July 2018 (ENV, 2018), to assess the potential for historic cattle dip sites in the Inverell region. The register did not identify any cattle dips within the Inverell region.

4.7 Historical Land Ownership

The online NSW Land and Property Information (LPI) Historical Land Records Viewer (HLRV) tool was used to search for hisotrical parish maps for the Inverell region (ENV, 2018). Parish maps from 1893, 1905, 1910, 1916, 1926, 1930 and 1942 were available for the township of Inverell.

Each of these maps showed that the area of the subject site had not been developed for service station purposes at the time the maps were published; rather, it appeared that the subject land and surrounding property were developed for residential purposes.

4.8 Anecdotal Information

As part of the recent DSI, ENV conducted an interview with the site operator, Mr. Garry Campbell, at the time of the field-based activities (March 2021). Garry provided the following relevant information:

- Garry has been operating the site since approximately 2010.
- In approximately 2013, a steel fuel line from the unleaded UST to dispensing bowsers in the southern forecourt area (beneath the canopy) was noted to be leaking. The leak was repaired and at that time, all unleaded and premium unleaded petrol fuel lines (but not diesel lines) were replaced with polyethylene.
- The former mechanical workshop ceased operation on the site in approximately 2016.
- The three existing monitoring wells generally contain groundwater for brief periods only after significant rainfall, but are dry during periods without rainfall.
- The well located adjacent to the dispensing bowsers under the canopy (MW3) has

been noted previously to contain hydrocarbon odours.

4.9 Product Loss and Spill History

According to information provided by Mr. Campbell during the DSI, one of the steel unleaded fuel lines is known to have leaked and been replaced in about 2013. ENV was not provided with any reports regarding these repairs, or environmental validation associated with the works. In ENV's experience, it is unlikely that any environmental validation works would have occurred at the time of the repairs.

4.10 Summary of Known Site Condition

Based on the information presented in this section, the site has operated as a service station since sometime in the 1950s. One known leak occurred in approximately 2013 from an underground steel pipe delivering unleaded petrol to the dispensing bowsers under the canopy. This information was provided anecdotally by the site operator, Mr. Garry Campbell, and is consistent with observations of hydrocarbon odours reported by the site operator in a monitoring well close to this area (MW3).
The due diligence assessment conducted by ENV (2018) did not identify any gross hydrocarbon contamination in soils at the site. However, the objectives of that assessment were different to those of the subject DSI, and the investigation was not conducted as a comprehensive assessment of all potential contamination sources at the site. Additionally, the three existing groundwater wells were dry at the time of the investigation and could not be sampled.

It is therefore possible that soil contamination is present in some areas of the site which were not investigated by ENV in 2018; or there is contamination from COPC other than those investigated in some parts of the site; particularly associated with operation of the former workshop in the site's northern and eastern portions. Groundwater quality has not been quantified or documented to date.

5 Preliminary Conceptual Site Model (CSM)

From the information provided in ENV (2018), anecdotal information provided by the site operator and desktop-based site history information, a preliminary Conceptual Site Model (CSM) was developed to identify all potential contamination sources, plausible exposure pathways and receptors of contamination associated with the service station operations. This information is summarised in the following sub-sections.

5.1 Potential Contamination Sources

Based on historical and current use of the site for service station and mechanical workshop purposes, the contamination sources are considered to include the following:

- Leaks from the five (5) existing USTs and associated fill pipes.
- Leaks from an abandoned UST situated just to the south of the main building (eastern portion).
- Leaks from the existing fuel dispensing bowsers and associated suction pipework, including a former steel pipe from the unleaded UST to dispensing bowsers under the canopy, which is known to have leaked and has been repaired.
- Leaks from the filling points and spills during refuelling operations.
- Spills on the forecourt area. Although the forecourt was covered with concrete in fair to good condition, staining was observed to be present in the vicinity of selected dispensing bowsers – particularly around the diesel refuelling area.
- Operation of the (former) mechanical workshop, including the storage of waste oil, small quanities of lubricants and other chemicals and potential degreasing activities.

5.2 Chemicals of Potential Concern

Based on the potential contamination sources described above, the chemicals of potential concern (COPC) associated with thse activities have been summarised in Table 3.

Table 3: Summary of Chemicals of Potential Concern (COPC)

Chemical	Comments
Total recoverable hydrocarbons (TRH): - F1: C_6-C_{10} minus BTEX - F2: >C_{10}-C_{16} minus naphthalene - F3: >C_{16}-C_{34} - F4: >C_{34}-C_{40}	Health risk-based fractions presented in the NEPM (2013)*. Associated with all forms of petroleum products.
Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN)	Associated primarily with unleaded petrol.
Polycyclic aromatic hydrocarbons (PAH)	Associated primarily with diesel.
Lead	Associated with formerly used leaded (super) petrol.
Volatile halogenated compounds (VHCs)	Associated with degreasing agents (chlorinated hydrocarbons) used for vehicle servicing and repairs (former workshop).

*National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).

5.3 Potentially Affected Environmental Media

Petroleum hydrocarbons from fuel related infrastructure may affect the quality of soil, groundwater and soil vapour beneath the subject site and adjacent areas. Soil and groundwater quality were assessed directly by the subject DSI. Soil vapour quality was assessed through the use of a photo-ionisation detector (PID) to measure vapour concentrations in soil samples.

5.4 Potential Exposure Pathways and Receptors of Contamination

Potential exposure pathways and receptors of contamination at the site and in adjacent off-site areas are summarised in Table 4.

Table 4: Summary of Potential Exposure Pathways and Receptors of Contamination

Potential Exposure Pathway	Potential Receptor(s)	Potentially Complete Pathway?
On-Site	**On-Site**	
Direct contact with contaminated soil	- Current above-ground workers (service station)	- Unlikely. There is no need for above-ground workers to access sub-surface soils. The entire operational area is covered with concrete in fair to good condition.
	- Future above-ground workers	- **Possible**. Construction workers involved in road and roundabout construction may be exposed to contamination in the top 1 m of soil. Construction workers involved in redevelopment of a new service station in the site's eastern portion may also be exposed to contamination in the top 4 m of soil (e.g. tank installation).
	- Future sub-surface workers	**- Yes**
	- Terrestrial ecosystems and vegetation root zones	**- Yes,** but only in unsealed areas (garden beds).
Direct contact with contaminated groundwater	- Current above-ground workers (service station)	- No. Natural depth to groundwater is >3.8 m bgl.
	- Future above-ground workers	- No, as above.
	- Future sub-surface workers	**- Possible**. Although natural depth to groundwater is >3.8 m bgl, excavations for future UST installation (eastern site portion) may extend to a depth of approximately 4 to 5 m bgl.

Potential Exposure Pathway	Potential Receptor(s)	Potentially Complete Pathway?
Off-Site	**Off-Site**	
Inhalation of vapours from soil and/or groundwater	- Current above-ground workers (service station)	- **Yes.** Vapours may migrate from contaminated soil and groundwater (if present) into indoor air spaces (buildings) where workers are exposed.
	- Future above-ground workers	- **Yes.** Vapours may migrate from contaminated soil and groundwater (if present) into future indoor spaces inside buildings (e.g. future service station development).
	- Future sub-surface workers, including utility pit workers (where vapours may accumulate)	- **Yes.** Vapours may migrate into trenches or excavations made for construction of underground services or USTs.
Direct contact with contaminated soil and/or groundwater	- Current and future residents (north and east)	- No. Hydrocarbon impacted soil has not been reported near the site boundaries to date (ENV, 2018). Natural depth to groundwater (>3.8 m bgl) precludes direct contact with it, unless it is extracted via a bore. Although there are four licensed bores situated within approximately 250 m of the site, none of these are constructed to screen the residual clay soils which the on-site wells monitor.
	- Current and future above-ground workers	- No, for the same reasons stated above.
	- Future sub-surface workers	- No, for the same reasons stated above.
	- Recreational users of nearby surface water bodies (e.g. Macintyre River)	- No. The distance of the nearest surface water body from the site (Macintyre River, approximately 150 m south) would likely preclude the discharge of contaminants from groundwater into the water body.
	- Aquatic ecosystems associated with nearby surface water bodies (e.g. Macintyre River)	- No, for the same reasons stated above.

Potential Exposure Pathway	Potential Receptor(s)	Potentially Complete Pathway?
Off-Site	**Off-Site**	
Inhalation of vapours from soil and/or groundwater	- Current and future residents	- No (soil). Hydrocarbon impacts to soil have not been reported near the site boundaries to date (ENV, 2018). - Unlikely (groundwater). Hydrocarbon impacts to groundwater have not yet been quantified. Although hydrocarbon odours have been noted in one well close to the site's southern boundary (MW3), there are no residential properties close to this site boundary.
	- Current and future above-ground workers	- No (soil). Hydrocarbon impacts to soil have not been reported near the site boundaries to date (ENV, 2018). - Unlikely (groundwater). Hydrocarbon impacts to groundwater have not yet been quantified. Although hydrocarbon odours have been noted in one well close to the site's southern boundary (MW3), there are no commercial properties close to this site boundary.
	- Future sub-surface workers	- No (soil). Hydrocarbon impacts to soil have not been reported near the site boundaries to date (ENV, 2018). **- Possible (groundwater).** Hydrocarbon impacts to groundwater have not yet been quantified. Hydrocarbon odours have been noted in one well close to the site's southern boundary (MW3), therefore sub-surface workers undertaking excavation works near this boundary may be exposed to vapours emanating from groundwater into an excavation or trench.

6 Data Quality Objectives (DQOs)

6.1 Step 1: State the Problem

This investigation was conducted to assess the contamination status of soil and groundwater beneath the site, such that:

- ISC can understand and appropriately manage any contamination which is present during future road construction works in the western site portion, including managing contaminated soils during removal of the site's existing UPSS.
- A sufficient level of information is available regarding the environmental condition of the site's eastern portion, which ENV understands wil be retained by the current site owner and developed into a new service station facility.

6.2 Step 2: Identify the Decision(s)

The principal decisions (questions) are:

- What is the current extent of contamination on-site; in the soil, groundwater and soil vapour?
- What are the sensitive receptors of this contamination (if present); and are the contamination pathways to those sensitive receptors potentially complete? If so, what risks are potentially posed by the soil, groundwater and soil vapour conditions to these receptors?
- If contamination is present in soil and/or groundwater, how can it be managed during future remdiation and construction works?

6.3 Step 3: Inputs into the Decision(s)

To address the decisions in Step 2, the following activities were completed:

- A desktop review of relevant available information, to characterise the site setting and identify potential data gaps from the previous due diligence assessment (ENV, 2018).
- A preliminary inspection of the site and surrounding areas, to gain a better understanding of the context of the problem.
- Drilling to investigate the extent of soil, groundwater and soil vapour contamination, with a focus on areas close to the existing UPSS and the former workshop area.
- Collecting soil and groundwater samples from the boreholes and three existing wells to characterise the current soil, groundwater and soil vapour conditions.
- Evaluate the potential groundwater flow direction, to assess which off-site receptors may potentially be exposed to contaminated groundwater migrating from the site (if any).

6.4 Step 4: Define the Study Boundaries

The spatial study boundaries for the subject investigation were the lot boundaries for the subject site, as shown on Figure 2, Appendix A. No works were undertaken beyond the site boundaries.

With respect to temporal boundaries, the investigation was undertaken over the course of approximately three days, and therefore provides a snapshot only of the current soil, groundwater and soil vapour conditions. Historical groundwater information was not available for comparison with the DSI results.

6.5 Step 5: Develop the Analytical Approach (or decision rule)

Data from the soil, groundwater and soil vapour investigation were compared with the generic (Tier 1) investigation and screening levels presented in Section 6.6.

The soil and soil vapour (PID) data set was used to assist with definition of the lateral extent of soil (and potentially) groundwater impacts, where present.

For the groundwater data set, only spatial patterns could be evaluated. Trend analysis could not be undertaken because no historical groundwater information was available.

The precision (reproducibility), accuracy, representativeness and overall reliability of the data sets were assessed using the information presented in Table 5. This included the collection of appropriate quality assurance (QA) samples during sampling, and internal QA testing conducted by the analytical laboratories. The QA sampling regime was adopted from the NEPM and from *AS4482.1 Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Part 1: Non-volatile and semi-volatile compounds (2005)*; and *Part 2: Volatile compounds* (1999).

Table 5: Summary of QA Sample Parameters for Assessing Data Reliability

QA Sample Type	Media	Frequency	Acceptable Range of Results
Precision (Reproducibility)			
Field Sampling			
Intra-lab duplicate	Soil and groundwater	1 per 20 primary samples, or part thereof	Soil/groundwater: Relative percent difference (RPD) ≤50%
Inter-lab duplicate	Soil	1 per 20 primary samples, or part thereof	RPD ≤50%
Laboratory Analysis			
Internal duplicate	Soil and groundwater	1 per 10 primary samples	Laboratory specified, concentration dependent; Envirolab: (RPD of any % for concentrations < 5 x LOR; RPD of 0-50% for concentrations > 5 x LOR)
Accuracy			
Laboratory Analysis			
Matrix Spikes	Soil and groundwater	1 per sampling batch (20 samples per batch)	Laboratory specified; Envirolab: 70-130% (inorganics); 60-140% (organics)
Surrogate Spikes	Soil and groundwater	1 per sampling batch (20 samples per batch)	Laboratory specified; Envirolab: 70-130% (inorganics); 60-140% (organics)
Laboratory Control Samples	Soil and groundwater	1 per sampling batch (20 samples per batch)	Laboratory specified; Envirolab: 70-130% (inorganics); 60-140% (organics)
Representativeness			
Laboratory Analysis			
Method Blank	Soil and groundwater	1 per sampling batch (20 samples per batch)	Results <LOR

6.6 Step 6: Specify the Performance or Acceptance Criteria (Investigation and Screening Levels)

6.6.1 Selection of Criteria

For the purpose of assessing site contamination, the NEPM – which includes a range of 'Tier 1', generic investigation and screening levels for various land uses that are designed to be used for guidance purposes to determine if further investigation and/or remediation is required – was referenced.

For the subject investigation, the following investigation and screening levels from *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater* (NEPC, 2013) were adopted:

Soil:

- NEPM Health Investigation Levels (HILs) and Health Screening Levels (HSLs): exposure setting D (HIL D; HSL D) for commercial land use. Fine grained soil (clay) was adopted for the purposes of using the HSLs to asses vapour intrusion potential, consistent with previous observations relating to predominant soil types beneath the site area.
- NEPM Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for commercial land use; assuming fine grained soils (clay). Site-specific EILs were not calculated for this investigation, as metals (other than lead) were not a focus of the assessment. For lead, the generic added contaminant limit (ACL) for commercial land use was adopted. This method assumes a negligible background contribution of lead in the immediate environment.

The NEPM also presents Management Limits for petroleum hydrocarbon impacts to soil, which have been derived in consideration of the potential for hydrocarbons to form LNAPL; to present fire and explosive hazards and to have adverse effects on buried infrastructure. These potential effects have been addressed by other elements of the investigation, such as the assessment of LNAPL distribution (where present); and potential soil vapour impacts (indirectly, through PID measurement of soil samples and well casing voids). On this basis, the Management Limits have not been adopted as an independent means of evaluating these potentially adverse effects.

Groundwater:

- NEPM HSLs: exposure setting D (HSL D) for commercial land use. For the purposes of comparison with the HSLs, fine grained soils were adopted the vadose zone. The adopted groundwater depth was 2 to 4 m bgl (based on groundwater level measurements in the existing wells (refer to Table 7).
- NEPM Groundwater Investigation levels (GILs) for Fresh Water (nearby Macintyre River) and Drinking Water (licensed bore use); noting that the GILs have been derived from several sources, including the ANZECC/ARMCANZ (2000; updated in 2018) – refer below – and the Australian Drinking Water Guidelines (ADWG, 2011 – updated 2018).

- ANZECC/ARMCANZ (2000). Trigger values (TVs) for Fresh Water. A revision to these Guidelines in 2018 (Australian and New Zealand Guidelines for fresh and marine water quality (ANZG, 2018)) presents default guideline values (DGVs) for selected toxicants in freshwater and marine aquatic ecosystems. Where available, these have been referenced. A protection level of 95% (slightly to moderately disturbed) has been adopted for screening purposes, in recognition of the fact that the Macintyre River runs through the township of Inverell (and other townships), and would be 'slightly to moderately disturbed' from its pristine, natural condition. Additionally, the adopted COPC are not generally recognised as being bioaccumulative, which would necessitate adoption of a 99% protection level.

The function of the NEPM investigation and screening levels is to be an indicator for contamination. They are not used as maximum permissible levels that would preclude intended land uses. The NEPM recommends that further investigation and health risk assessments are undertaken where chemical concentrations in soil and/or groundwater exceed the screening levels presented in Schedule B(1).

6.6.2 Assumptions and Limitations of Criteria

The threshold and background levels contained in these documents have been established through toxicity tests and field and laboratory experiments. In some cases, insufficient data currently exist to provide thresholds. In these cases, the data are simply used as an indicator of the presence and extent of contamination.

HILs establish the concentration of a contaminant above which further appropriate health investigation and evaluation will be required. The HILs are derived from generic assumptions that are not necessarily applicable to a particular site. Concentrations slightly in excess of the HILs do not imply that a significant health risk is likely to be present; rather that further investigation is required to establish the degree of risk posed to potential receptors at the subject site.

The HSLs for soil and groundwater have been derived from predictive vapour modelling of subsurface volatile compounds. The derivation process makes many assumptions regarding the behaviour of these compounds, which may not be consistent with the sub-surface conditions and consequent behaviour of these compounds at a particular site. Although the HSL methodology enables some parameter inputs to be adjusted to more accurately reflect local soil, site or building conditions, others cannot be adjusted and may affect the accuracy of the HSL adopted for the Tier 1 (screening level) assessment.

GILs are the concentrations of a contaminant in groundwater above which further investigation (point of contamination) or a response (point of use/exposure) is required. GILs are based on Australian water quality guidelines and are applicable for assessing human health risk and ecological risk from direct contact with groundwater.

6.7 Step 7: Optimise the Design for Obtaining Data

The proposed sampling regime was designed principally to investigate the quality of soil and groundwater beneath the site. The regime was designed in consideration of guidance provided by the NSW EPA (Samping Design Guidelines (1995)), as well as applicable Australian Standards and legislative requirements. It was also designed in recognition of the fact that the site will be subdivided for future construction purposes and sufficient information was required to characterise the environmental condition of both the eastern and western site portions.

The sampling design was adjusted, as necessary; both prior to mobilising to site, and while on-site; largely to take account of the presence and location of underground services and the location of UPSS infrastrucuture (tanks and pipework). The location of the UPSS infrastructure was confirmed through the use of Ground Penetrating Radar (GPR).

7 Site Investigation

7.1 Overview of Field Program

The field program was conducted between 29 and 31 March 2021. Activities conducted during the field program are summarised as follows:

- Subsurface clearance protocols for underground services and UPSS infrastructure, including the engagement of an accredited service locator and use of a hand auger for non-destructive digging (NDD) purposes to 'clear' each of the proposed drilling locations.
- Concrete coring at each of the proposed drilling locations.
- Drilling ten (10) boreholes (BH01 to BH10) across the site areas, to a maximum depth of 3.8 m bgl (auger refusal on bedrock).
- Collecting soil samples and logging the soils encountered.
- Sampling groundwater from three (3) existing, on-site monitoring wells (MW1 to MW3).
- Surveying the relative level of the top of each PVC well casing.

Details of each of the field program are provided in the following sub-sections.

7.2 Preliminaries

Workplace Clearance Group (WPCG) protocols were followed prior to commencing work on each day of the field program. This included completion of WPCG forms on each day of work, a toolbox meeting with all subcontractors on site to discuss the daily program and notification of the site operator(s) of the work program components and timing. A copy of the WPCG documentation is provided in Appendix C.

An accredited cable location contractor was used to identify relevant utility locations and clear the proposed investigation locations prior to drilling, using radio detection methods and GPR. Once each borehole location had been determined and cleared, a concrete coring subcontractor was engaged to core through the concrete hardstand (where present) at each location. The locations were then further confirmed by ENV to be clear of underground structures by hand auguring (NDD) to a depth of between 1.0 and 1.5 m; with samples collected from the soils encountered and the soils logged.

7.3 Borehole Drilling, Soil Sampling and Laboratory Analysis

Ten (10) boreholes (BH01 to BH10) were drilled on 29, 30 and 31 March 2021 by Numac Drilling (Brisbane) using a truck mounted drill rig and 125 mm diameter solid flight augers. Boreholes were extended to a maximum depth of 3.8 m bgl (auger refusal on bedrock). In areas away from the USTs, the boreholes were generally shallow, extending to a depth of approximately 2.0 m bgl. In the UST area, boreholes were extended to auger refusal at between 3.0 and 3.8 m bgl, such that samples could be collected from near and below the base level of the tanks (approximately 3.0 m bgl). The borehole locations are presented on Figure 6, Appendix A.

During drilling, the soils at each location were logged in general accordance with the Unified Soil Classification System (USCS), with particular reference to any odours or other field indicators of potential contamination such as staining or hydrocarbon sheens. A sub-sample was also collected from each sampling location and screened for the potential presence of VOCs using a calibrated PID.

Soil samples were collected at regular intervals down the borehole for potential laboratory analysis. Between one (1) and four (4) samples from each borehole were laboratory analysed for a suite of 8 heavy metals; total recoverable hydrocarbons (TRH); benzene, toluene, ethylbenzene and xylene compounds (BTEX); and polycyclic aromatic hydrocarbons (PAH), consistent with previous sampling and analysis programs and the identified COPC for the site. Two (2) additional samples were analysed for VHCs, to evaluate the potential for soil impacts from potential use of degreasing agents in the former workshop.

Drilling spoil was placed back into each borehole once completed. A small amount of surplus spoil was retained on site, in the north-east portion of the property. This was considered appropriate as there were no or few field indicators of hydrocarbon or other contamination noted in the spoil. The volume of surplus spoil retained on site was less than 0.1 m^3.

Drilling logs describing the soil profiles encountered are provided in Appendix D.

7.4 Groundwater Sampling and Laboratory Analysis

On 31 March 2021, the following activities were completed at each of the 3 existing on-site groundwater monitoring wells (MW1 to MW3):

- The well cap was removed and a PID used immediately afterwards to measure VOC concentrations within the PVC well casing.
- Depth to groundwater and total well depth was then measured using an interface probe (IP), relative to the top of the PVC casing.

- The wells were purged of stagnant water using clear disposable bailers, until each well was purged dry. Groundwater in each well was then allowed to recover before using the same bailer to collect a sample from each well. Field sheets containing purging and sampling details are provided in Appendix E. It is noted that groundwater field quality parameters could not be measured during purging. However, because the wells were purged dry and allowed to recover, there can be certainty that groundwater sampled from the wells was 'fresh' and representative of groundwater within the shallow, perched system.
- The relative levels of the top of the PVC casing in each of the existing monitoring wells were surveyed by ISC staff.

Each of the selected groundwater samples were dispatched to a NATA accredited laboratory for analysis of a suite of 8 heavy metals, TRH, BTEX, PAH and VHC; consistent with the identified COPC for the site.

Groundwater from development and purging of each well was placed onto unsealed ground surfaces at the site, as close to the source well as possible. Field indicators of hydrocarbon contamination were only noted in groundwater from MW3; and only a very small volume of water was removed from this well prior to it being purged dry (0.5 L). On this basis, any hydrocarbons present in the purged water would likely have volatilised quickly from the unsealed ground surface. The laboratory results reported for MW1 and MW2 confirm that there were no contaminants in these wells.

7.5 Sampling Methodology and Field Quality Assurance/Quality Control (QA/QC)

The following methods were used during the field program to ensure that the investigation results were as representative as possible of the site conditions:

- The reusable drilling equipment (hand auger and solid flight augers) was cleaned by scraping to remove gross cuttings, and then washing with high pressure potable water and a hydrocarbon-free detergent (Decon-90).
- Soil and groundwater samples were collected in the field by an appropriately qualified Senior Environmental Scientist from ENV (Craig Helbig).
- Soil samples were collected using disposable nitrile gloves and clean glass jars supplied by the laboratory. All jars were filled to eliminate headspace.
- Groundwater samples were collected from the wells using disposable nitrile gloves and dedicated disposable bailers. Samples were placed into clean bottles supplied by the laboratory, which were also filled to eliminate headspace (with the exception of the metals sample).
- Between groundwater sampling locations, the field equipment used for recording depth to LNAPL/water (interface probe) was cleaned in Decon-90 and potable water to minimise the potential for cross-contamination of the wells.

- All samples were chilled prior to dispatch to the laboratory using ice inside eskies, and kept to temperatures as close to 4˚C as possible.
- All samples were sent with chain of custody (COC) documentation to laboratories which are accredited by the National Association of Testing Authorities (NATA) for the specified testing (refer Appendix F).
- Duplicate samples were collected by simultaneously filling the glass jars (soil) and same analytical bottles for the duplicate pair from the same purged volume of water (i.e. from the same bailer) to minimise heterogeneity (groundwater). For groundwater samples, VOC sample vials were filled before bottles for semi- and non-volatile analysis to minimise loss of these compounds.

The QA/QC samples collected during the field programs are summarised in Table 6.

Table 6: Summary of Field Quality Assurance (QA) Sampling Program

QA Sample Type	Sample ID	Sampling Frequency	Laboratory Analysis	Comment
SOIL				
Duplicates	QA1/QA1A QA2A	3 duplicates: 21 primary samples (equalling > 2 duplicates per 20 primary samples, or part thereof)	Combo 3[1]	QA1/QA1A: Collected with primary sample 'BH4_0.2-0.4' QA2A: Collected with primary sample 'BH9_2.8-3.0'
GROUNDWATER				
Duplicates	QA1/QA1A	2 duplicates: 3 primary samples (equalling > 2 duplicates per 20 primary samples analysed, or part thereof)	Combo 3[1]	Collected with primary sample 'MW1'

Notes:

[1]Combo 3 = total recoverable hydrocarbons (TRH); benzene, toluene, ethylbenzene and xylenes (BTEX); polycyclic aromatic hydrocarbons (PAH); 17 metals.

8 Results and Discussion

Soil and groundwater laboratory analysis results are tabulated and presented in Appendix G. Laboratory documentation is provided in Appendix F.

8.1 Subsurface Profile and Field Indicators of Contamination (Soil)

The geological profiles encountered during drilling were consistent with observations reported by the previous investigation (ENV, 2018); being comprised predominantly of residual sandy clay and gravelly clay soils, situated on top of bedrock. Groundwater was not encountered during drilling, to a maximum depth of 3.8 m bgl.

Field indicators of potential soil contamination, such as odours and/or staining, were recorded only at BH4, BH6, BH8 and BH9. PID readings recorded in samples collected from these boreholes ranged between 0 and 413 ppm (BH4_1.4-1.6 m). PID readings recorded in all other boreholes were 0 ppm.

Borelogs are provided as Appendix D.

8.2 Well Head PID Measurements and Purging Details (Groundwater)

Selected well details recorded during well purging and sampling are summarised in Table 7. Groundwater field monitoring and sampling sheets are presented in Appendix E.

Table 7: Summary of Selected Well Details

Well ID	PID Reading (Well Head) (ppm)	Relative Level (top of PVC casing) (m RL)[1]	Total Depth (m bgl)	Standing Water Level (m btoc)	Relative Ground-water Elevation (m)	LNAPL Thickness (m)	Volume Purged (L)	Turbidity and Field Obs
MW1	0	9.900	4.20	3.417	6.483	-	3 (dry)	Clear at first, becoming turbid and brown, no HC odour or LNAPL sheen
MW2	0	10.400	2.90	1.801	8.599	-	4 (dry)	Clear at first, bcoming turbid and brown, no HC odour or LNAPL sheen
MW3	108	10.000	4.98	4.923	5.077	-	0.5 (dry)	Grey, turbid, moderate HC odour, no LNAPL sheen

Notes and Abbreviations:

m bgl = metres below ground level; m btoc = metres below the top of the PVC well casing; m RL = metres relative level

LNAPL = light non-aqueous phase liquid

HC = hydrocarbon

[1]Level presented is relative to an absolute level of 10.000 m RL.

8.3 Inferred Groundwater Flow Direction

The relative levels of the top of the PVC casing in each well were surveyed by ISC to allow calculation of local groundwater flow direction. However, from the significant variation in measured depth to standing water level (SWL) within each well (variation of up to 3 m between the wells), it is apparent that shallow groundwater beneath the site is unlikely to be continuous with a constant gradient and flow direction. Rather, it is more likely that the shallow water is perched on top of the underlying bedrock, and that groundwater beneath the site has no appreciable flow direction. The perched water is considered likely to be discontinuous at times, both beneath the site and in adjacent, off-site areas.

On the basis of the above comments, a groundwater flow direction was not calculated. Given the topography of the site and immediate surrounds, which grade south towards the Macintyre River, it is possible that during and after periods of high rainfall and infiltration to the subsurface up-topographic gradient from the site, shallow perched water flows in a southerly direction. Anecdotal information provided by the site operator indicates that the on-site wells only contain water after periods of high rainfall, and that during drought times, they are dry. These observations support the above presumption that the shallow water is perched and at times, discontinuous beneath the area of the site.

8.4 Quality Assurance/Quality Control and Data Usability Assessment

8.4.1 Field Sampling

Reproducibility: Duplicate Analyses

During the drilling and soil sampling program, one intra-laboratory (QA1) and one inter-laboratory duplicate sample (QA1A) were collected with primary soil sample BH4 (0.2-0.4 m bgl). Both duplicate samples were analysed for the same COPC as the corresponding primary sample (TRH/TPH, BTEX, PAHs and metals) at NATA certified laboratories Envirolab (QA1 and QA2A) and Eurofins (QA1A). A second intra-laboratory duplicate sample (QA2A) was collected with primary soil sample BH9 (2.8-3.0 m).

The precision (reproducibility) of the results was assessed by determining the relative percentage difference (RPD) between the duplicate samples. RPDs were only calculated where results for both the primary and duplicate samples were above laboratory reporting limits. There is an acceptable variance limit of 50% for soils. The duplicate results and calculated RPDs are presented in Appendix G.

For the majority of COPC analysed in the soil samples, RPDs were less than 50%, or could not be calculated as one or both of the duplicate pair concentrations were less than the laboratory reporting limits. RPDs greater than 50% were calculated for the following COPC:

- Ethylbenzene: BH4_0.2-0.4/QA1A (59%)
- Lead: BH4_0.2-0.4/QA1A (73%)

- TPH (C10-C14): BH9_2.8-3.0/QA2A (102%).

However, none of these COPC were reported at concentrations close to the adopted assessment criteria. On this basis, the elevated RPDs do not affect any interpretations made within the report with respect to soil quality.

During the groundwater sampling program, one intra-laboratory (QA1) was also collected, with primary sample MW1. Again, the duplicate sample was analysed for the same COPC as the corresponding primary sample (TRH/TPH, BTEX, PAHs and metals) at a NATA certified laboratory, Envirolab.

For all COPC analysed in the groundwater samples during the investigation, RPDs could either not be calculated (one or both concentrations in the duplicate pair were less than the laboratory LOR), or the calculated RPD was less than the acceptable threshold of 50%.

8.4.1 Internal Laboratory QA Testing

The results of the internal laboratory QA testing conducted by the analytical laboratories were also reviewed to assess the integrity of the laboratory results. A review of the internal QA data reported by the laboratory for internal duplicates, method blanks and surrogate recoveries indicates that the results were within acceptable thresholds for the soil and water analyses.

8.4.2 Summary of Data Usability

Overall; the reproducibility, accuracy and representativeness of the analytical results are considered suitable to meet the objectives of the assessment, and to provide sufficient confidence in the primary datasets (soil and groundwater) for interpretative purposes. No data were excluded from the primary datasets on the basis of the QA analyses and interpretation.

8.5 Laboratory Analytical Results

8.5.1 Soil

Analytical Results – All Locations

COPC concentrations in the majority of the twenty one (21) primary soil samples analysed were less than the assessment criteria adopted for the investigation, or less than laboratory detection limits.

The following exceptions were noted in two of the ten boreholes (BH4 and BH6):

- BH4_0.2-0.4 m: F1 concentration greater than the NEPM HSL-D criterion (0-1 m).
- BH6_0.5-0.7 m: F1, F2 and TRH (C10-C16) concentrations greater than the NEPM ESL criteria (commercial/industrial) (0-2 m).

BH4 is located immediately adjacent to where a former steel product line delivering unleaded petrol is known to have leaked. It is therefore reasonable to assume that the hydrocarbon impacted soils are present in this location as a result of the leaking pipe. The pipe has since been replaced by a polyethylene line, therefore the source of hydrocarbon impacts at this location has been removed. In deeper samples collected and laboratory analysed from BH4 (1.4-1.6 and 2.8-3.0 m), hydrocarbon concentrations were less than the adopted assessment criteria.

BH6 is located immediately north of a gate which divides the north-east portion of the site used to store U-Haul hire trailers, from the forecourt area. No UPSS infrastructure is present in this part of the site. This area has been filled to a height of approximately 0.4 m above surrounding areas, and was covered with gravel at the time of the field program. Information provided on historic aerial photographs indicates this portion of the site formerly contained a residential dwelling. Anecdotal information provided by the site operator at the time of the field program indicated that a former (abandoned) UST may be located to the south of the current farm supply storage area; approximately 5 to 10 m south-west from the location of BH6. However, no indicators of hydrocarbon impact were noted in BH7, drilled closer than BH6 to the potential abandoned UST location; or in BH4, drilled in 2018 (ENV, 2018) closer still to the potential UST location. These observations suggest an alternative source of hydrocarbons at BH6 than former (or current) UPSS infrastructure. The impacts in BH6 were at termination depth, with auger refusal on an unknown object at 0.7 m. A small amount of perched water was also observed to be sitting on top of the unknown object, likely a result of rainfall infiltration through the fill material placed in this part of the site. Hydrocarbon concentrations in BH10, drilled approximately 1 m further north of BH06 to assess deeper soils and delineate the hydrocarbon concentrations, were less than the adopted assessment criteria or less than laboratory detection limits.

Minor hydrocarbon concentrations (less than assessment criteria) were detected in soils collected from BH8 and BH9 – both located near the USTs and diesel dispensing bowsers. In BH9, the hydrocarbons were reported in shallow soils (top 1 m); while in BH8, hydrocarbons were reported in a sample collected from 3.6-3.8 m (soils directly on top of underlying bedrock, with auger refusal at 3.8 m bgl). The hydrocarbon fractional ranges reported in both locations are typical of diesel (predominance of hydrocarbons in the TRH (C10-C16) range). The concentrations suggest a minor influence from surface leaks and spills or diesel lines (BH9), and/or potential influence from an adjacent diesel UST (BH8). These soils will require excavation during removal of the USTs for future road construction.

VHC concentrations in two samples collected from BH1, drilled close to the former workshop area (northern portion), were less than detection limits. While samples from other boreholes were not tested for VHCs, all three groundwater samples were analysed for a VHC suite; with all VHC concentrations less than laboratory detection limits (refer to Section 8.5.2 below). These results suggest a low potential for VHC contamination associated with the former use of degreasing agents in the workshop.

A broad analytical suite was applied to two samples collected from fill materials in BH1 (northern site portion) and BH5 (north-east site portion, which has been raised above surrounding ground level by approximately 0.4 m). Concentrations of all COPC in these samples were less than the adopted assessment criteria, or less than laboratory detection limits. The results from BH5 suggest that the fill used to raise this area was sourced from a location which is unlikely to be affected by contamination. Fill material at BH1 was relatively consistent with that observed in other boreholes, and is inferred to be reworked natural clay soils deriving from the site.

Preliminary Waste Classification: Excavated Soil

To facilitate management of soils anticipated to require excavation during removal of the UPSS, ENV has conducted a preliminary waste classification of soils from boreholes drilled in the western site portion (area to be acquired by Council for future road construction).

For this exercise, soil results from boreholes BH1, BH2, BH3, BH4, BH8 and BH9 were collated. Deeper soils in the vicinity of BH3, BH8 and BH9 will require excavation to a depth of approximately 3.0 m (base of tank level), therefore samples collected from the full depth of these boreholes were considered. Near BH1, BH2 and BH4; it is likely that soil excavation will be shallower – associated with removal of dispensing bowsers and lines.

A summary of results reported for the samples described above is tabulated separately in Appendix G. The results indicate that all sample concentrations meet the criteria for General Solid Waste (without leaching), except for nickel in several samples. On this basis, the two samples with the highest reported nickel concentrations were subjected to toxicity characteristic leaching procedure (TCLP) testing for nickel by the analytical laboratory. The TCLP results are included in Appendix F. The TCLP results indicate that with leach testing, all soils represented by boreholes BH1, BH2, BH3, BH4, BH8 and BH9 – drilled within the western site portion – meet the GSW criteria for landfill disposal. As such, soils to be excavated from the western site portion are expected to be classifiable as GSW and could be disposed to the Inverell Shire landfill facility if they are surplus to the road construction project. Further testing may be required to confirm this preliminary waste classification, once soils are excavated and stockpiled on site. Alternatively, some soils may be re-used as fill once the UPSS infrastructure is removed, prior to road construction.

Analytical Results – Eastern Portion

ENV understands the eastern portion of the site will be retained by the current site owner and redeveloped as a new service station facility in the near future. In order to facilitate this redevelopment, the results for boreholes drilled in this part of the site were reviewed separately such that the environmental condition of the site portion could be assessed.

Soil data from the ENV (2018) investigation was included in this review. Although three years old, this approach was considered appropriate on the basis that the majority of the UPSS infrastructure is located on the site's western portion, and that

no potentially contaminating activities have generally been undertaken within the eastern site portion since 2018.

The data from ENV (2018) was tabulated separately with data collected from BH5, BH6, BH7 and BH10 – drilled within the eastern site portion as part of the recent DSI. A copy of the tabulated results is provided in Appendix G. The data set is described as follows:

- ENV (2018): All COPC concentrations were less than the adopted assessment criteria (same criteria as those adopted for the subject DSI).
- ENV (2021): All COPC concentrations were less than the adopted assessment criteria except for the F1, F2 and TRH (C10-C16) concentrations reported in BH6_0.5-0.7 m.

The exceedences reported at BH6 exceed only the criteria adopted for terrestrial ecological receptors (fauna and flora) (NEPM ESLs), and not any of the human health-based criteria. The ESLs are applicable to soil in the top 2.0 m of the profile, and where terrestrial fauna and flora (plant root zones) may have access to the soils. Although the layout and detail of any future service station development has not yet been developed, it is highly likely that the site surfaces at the facility will be almost entirely sealed with concrete (or bitumen), and that landscaped areas will be around the edges, most likely within raised garden beds. If this is the case, the current soil conditions within the eastern site portion would be considered suitable for ongoing commercial land use (service station).

It should be noted that there is anecdotal information to suggest the presence of an abandoned UST in the eastern site portion, thought to be present in front of (south of) the current produce sales area (east portion of main building) (Garry Campbell, pers. comm., 2021). The possible presence of an abandoned UST in this location should be considered in any future development proposal. Soil results to date suggest that if a tank is present in this area, there are unlikely to be gross soil impacts associated with its presence.

Additionally, a reasonable proportion (approximately one third) of the eastern site area is covered by structures (buildings). No drilling has occurred within these buildings to date. It is known that the eastern part of the main building was formerly used for mechanical repairs, and a mechanical hoist is also known to have been present in this area. Consideration should be given to assessment of soils beneath the existing buildings once they are demolished.

8.5.2 Groundwater

Concentrations of the COPC reported in samples collected from MW1 and MW2 were either less than the laboratory LORs, or less than the adopted assessment criteria. These results indicate there are no hydrocarbon impacts to groundwater in the near vicinity of these wells. Although a copper concentration exceeding the assessment criterion for freshwater ecosystems was reported in MW1, copper is not a COPC for the site; and the reported concentration is likely to be representative of ambient conditions in the shallow perched water system.

Hydrocarbon concentrations exceeding one or more assessment criteria were reported in MW3. These COPC included:

- Benzene: concentration greater than the criteria adopted for:
  - Drinking water (potable use of extracted groundwater)
  - Recreational use of surface water bodies (e.g. Macintyre River)
  - Freshwater ecosystems associated with surface water bodies.
- Ethylbenzene: concentration greater than the criteria adopted for:
  - Drinking water
  - Freshwater ecosystems.
- Naphthalene: concentration greater than the criteria adopted for freshwater ecosystems.

None of the COPC were reported to exceed human health-based criteria for current (or future) site workers. These criteria include the vapour-based HSLs. As such, the current groundwater conditions pose no impediment to future development of the site for commercial/industrial purposes (e.g. road construction and service station development).

Rather, each of the exceedences reported in MW3 were of criteria adopted to protect off-site receptors of potential contamination. Those receptors are users of extracted groundwater (as a drinking water supply); and freshwater ecosystems and recreational users of surface water in the Macintyre River.

Available information from WaterNSW (updated in the last 12 months) indicates there are four licensed bores situated within approximately 250 m of MW3. Of these, one (GW053370) was installed for industrial purposes; one for recreational (assumed irrigation) purposes (GW053228); one for stock watering and domestic purposes (GW0065939) and the fourth for domestic purposes (GW058229), which may include potable use. However, all of these bores are constructed to a greater depth than the shallow perched water system and screen deeper water bearing zones. Additionally, GW058229 is located up-topographic gradient and approximately 200 m north of MW3. On the basis of the above information, any risks posed by COPC concentrations reported in MW3 to users of licensed bores in the site vicinity are expected to be negligible.

While the Macintyre River is located down slope from the site, approximately 150 m away at is closest point, it is considered unlikely that the COPC concentrations reported in MW3 would reach the River without prior attenuation to levels which are less than the adopted assessment criteria or less than laboratory detection limits.

9 Conclusions and Recommendations

9.1 Summary of Site Condition

9.1.1 Soil

Based on the results of the recent DSI conducted by ENV in March 2021, as well as previous environmental assessments conducted by ENV (2018), there appears to be only localised hydrocarbon impacts from service station activities to soil in selected site areas.

The impacts are localised to an area where a former steel pipe transferring unleaded petrol from the UST to dispensing bowsers beneath the canopy was located. The pipe was identified as leaking and was removed and replaced with a polyethylene pipe in approximately 2013. Hydrocarbon concentrations were also reported at the base of fill material in the eastern site portion. The source of these hydrocarbons is unknown. The COPC concentrations which exceeded assessment criteria were greater than the criteria adopted for terrestrial ecosystems only (terrestrial fauna and plant root zones). No human health-based criteria were exceeded by the reported COPC concentrations.

Minor hydrocarbon concentrations (less than assessment criteria) were also reported in shallow soils within BH9 and deeper soils within BH8. These boreholes are located adjacent to the diesel dispensing bowsers and USTs. The chemical composition of the hydrocarbon concentrations in this area are indicative of diesel fuel and are likely a result of leaks and spills from the bowsers during refuelling and potentially, leakage from the bowsers, lines and diesel UST(s).

Overall, the reported COPC concentrations in soil will not impede future site development for commercial land use (western portion: road construction with roundabout; and eastern portion: service station).

Soils in the western site portion, which will require excavation and management as part of the UPSS removal and road construction works, have been assigned a preliminary waste classification for landfill disposal of GSW. As such, the soils could be disposed to Inverell's landfill facility. Further classification testing may be required once the soils are excavated and stockpiled on site.

With respect to the environmental condition of the eastern site portion, the only exceedences reported were those of ecologically-based criteria (one location). It is expected that any future service station development on this portion of the site would involve covering with concrete or bitumen hardstand and as such, there would be no opportunity for terrestrial fauna or plant root zones to come into contact with the soils. If this is the case, the current soil conditions within the eastern site portion would be considered suitable for ongoing commercial land use (service station).

The presence of a potentially abandoned UST in the eastern site portion should be considered in any future development proposal. Consideration should also be given to assessment of soils beneath the existing buildings, once they are demolished.

9.1.2 Groundwater

Laboratory results show that groundwater in the vicinity of MW1 and MW2, situated on the south-west and north-east sides of the main UST pit, respectively, is not impacted by hydrocarbons from former or current use of the site's UPSS.

However at MW3, located to the south-south-east of the main tank pit and close to the site's southern boundary, hydrocarbon concentrations were reported in the groundwater. Concentrations of benzene, ethylbenzene and naphthalene in this well exceeded the assessment criteria adopted for the protection of freshwater ecosystems and recreational use of surface water (e.g. the nearby Macintyre River). While the Macintyre River is located down slope from the site, approximately 150 m away at is closest point, it is considered unlikely that the COPC concentrations reported in MW3 would reach the River without prior attenuation to levels which are less than the adopted assessment criteria or less than laboratory detection limits.

The current groundwater conditions at MW3 do not pose a risk to any on-site receptors, and thereby do not represent an impediment to future development of the site for road construction (western portion) or service station uses (eastern portion). If dewatering is required for future construction works at the site, the hydrocarbon concentrations in groundwater would need to be considered with respect to treatment and discharge activities.

9.2 Recommendations

Based on the above conclusions regarding the current site condition, the following recommendations are made:

- With respect to site owner obligations under Section 60 of the *Contaminated Land Management Act 1997* (the 'CLM Act'), the site owner (understood to be North Coast Petroleum (NCPT)) is considered to have an obligation to notify the NSW EPA of current groundwater conditions, for the following reasons:
  - Contaminants have entered or will foreseeably enter groundwater or surface water; AND
  - Concentrations of the contaminants in the groundwater or surface water are, or will foreseeably be, above the groundwater investigation level(s) for that contaminant; AND
  - Concentrations of the contaminants in the groundwater or surface water will foreseeably continue to remain above the specified concentration.

Notification of the NSW EPA should occur in accordance with the document entitled "Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997" (NSW EPA, 2015) and the provisions of the CLM Act.

- A minimum of one well should be installed to the south of MW3, across Glen Innes Road, on Council-owned land. The purpose of this well would be to delineate the impacts reported at MW3, and confirm that concentrations of hydrocarbons in off-site areas, between the contamination source and potential surface water and

aquatic receptors associated with the Macintyre River, are less than relevant assessment criteria.

- A Remediation Action Plan (RAP) should be prepared which describes in detail the proposed remedial measures for removal of the existing UPSS. The RAP should:
  - be prepared by a suitably qualified environmental professional, in accordance with the requirements of the NSW EPA (2020) document entitled "Consultants Reporting on Contaminated Land (Contaminated Land Guidelines)".
  - consider removal and validation of all components of the existing UPSS.
  - consider removal of any additional soils (beyond the UPSS) with COPC concentrations exceeding the assessment criteria. The recent DSI indicates that only ecologically-based criteria are exceeded by soils in one location. Soils in this area would not require management (remediation) unless the area is unsealed.
- Until such time as the existing service station is demolished and a new facility is constructed, groundwater monitoring should continue at the site in accordance with the requirements of the *Protection of the Environment Operations Act 1997* ('POEO Act') and *POEO (Underground Petroleum Storage System (UPSS) Regulation) 2019*.

10 References

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11 Glossary

Below is a list of commonly used abbreviations in the report:

COC – Chain of Custody

EILs – Ecological Investigation Levels

ENV – ENV Solutions PTY LTD

ESLs – Ecological Screening Levels

GILs – Groundwater Investigation Levels (for groundwater)

HILs – Health Investigation Levels (for soil)

HSLs – Health Screening Levels (for soil and groundwater)

NEPC – National Environment Protection Council

NEPM – National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)

NSW EPA – New South Wales Environment Protection Authority

PID – Photo Ionisation Detector

ppm_v – Parts Per Million (by volume)

QA/QC – Quality Assurance and Quality Control

UPSS – Underground Petroleum Storage System

UST – Underground Storage Tank

12 Document Control:

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Client:	Inverell Shire Council
File/Pathname:	C:\Users\CraigHelbig\Dropbox (ENV Solutions)\ENV Solutions Team Folder\01. jobs\21144 Inverell Liberty DSI\Reports

Scope of Engagement and Limitations:

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13 Appendices

Appendix A	Figures
Appendix B	Photolog
Appendix C	Completed Workplace Clearance Group (WPCG) Forms
Appendix D	Borehole Logs
Appendix E	Groundwater Purging and Sampling Sheets
Appendix F	Laboratory Documentation
Appendix G	Tabulated Analytical Results

APPENDIX A

Figures

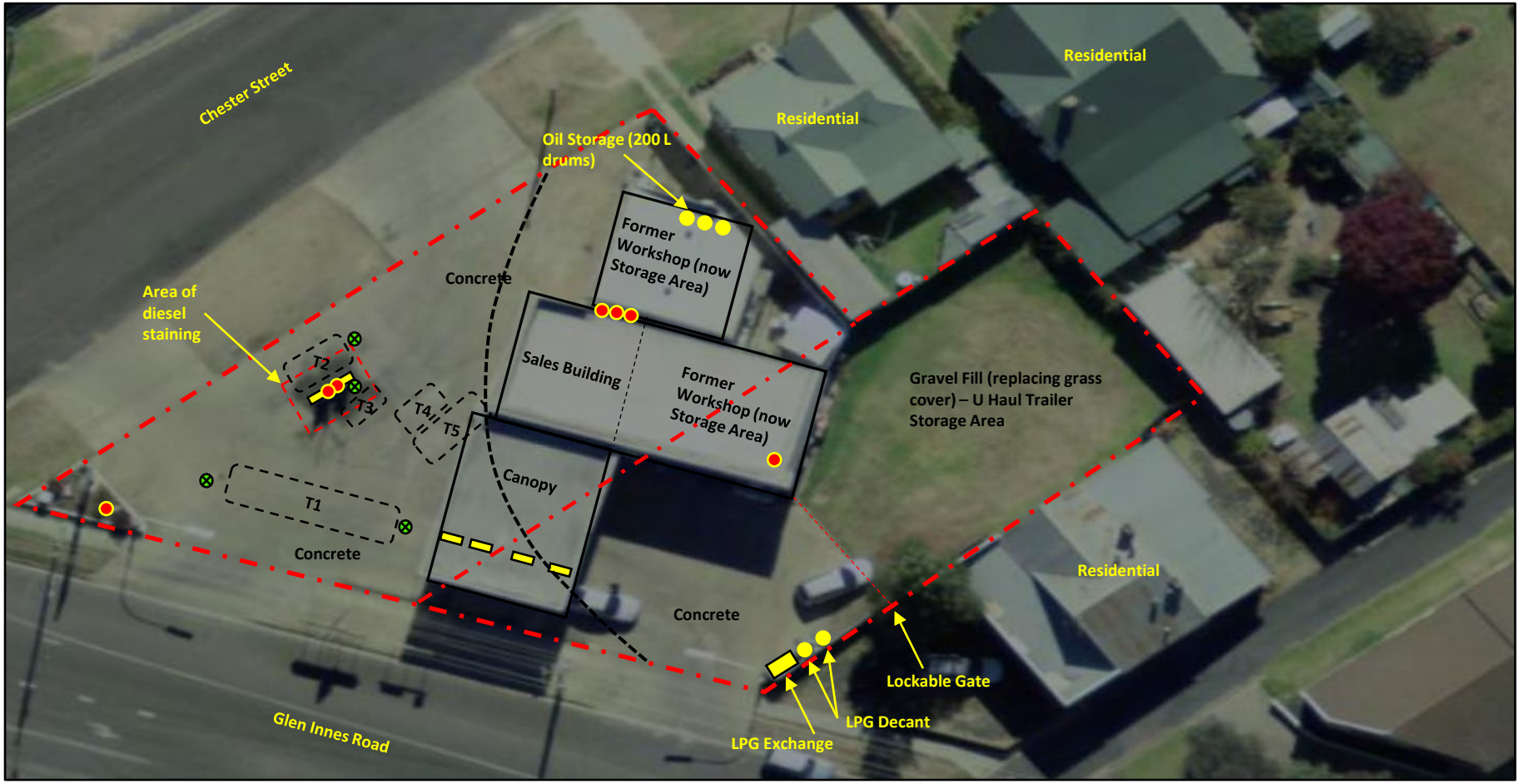
Site Area (approximate)

0 50 100 m

Figure 1 - Site Location
24-26 Glen Innes Road, Inverell, NSW 2360

Client: Inverell Shire Council
Project: Detailed Site Investigation (DSI)
Job No: 21144

Image source: Six Maps (2009)



Site Boundary (approximate)

Dispensing Bowser

T3 Underground Storage Tank (UST):

T1 = unleaded (58 kL); T2 = diesel (20 kL); T3 = diesel (4kL); T4 = premium 98 (9.6 kL); T5 = premium 95 (26 kL)

Vent Pipe

Assumed Tank Pit Observation Well

Approximate Extent of Subdivision

0 5 10 m

Image source: Six Maps (2009)

ENV Solutions

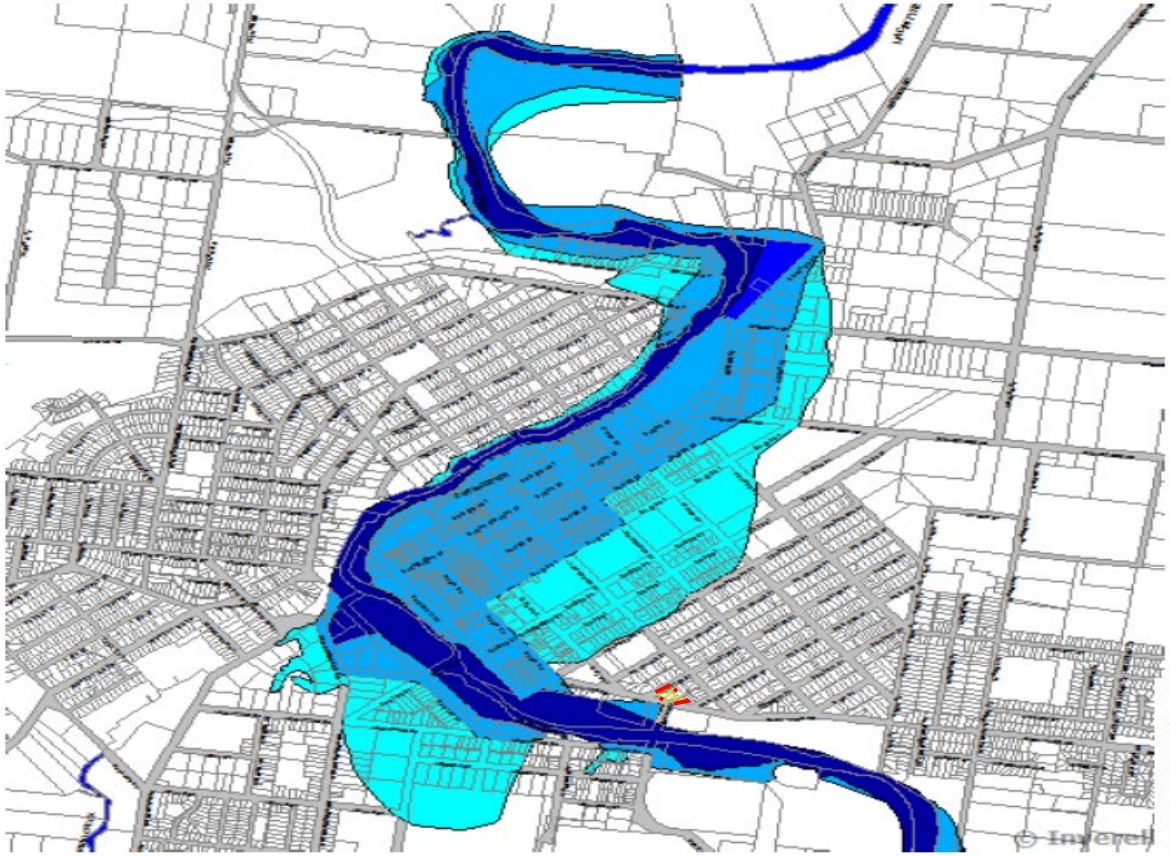
Figure 2 - Site Layout

24-26 Glen Innes Road, Inverell, NSW 2360

Client: Inverell Shire Council

Project: Detailed Site Investigation (DSI)

Job No: 21144



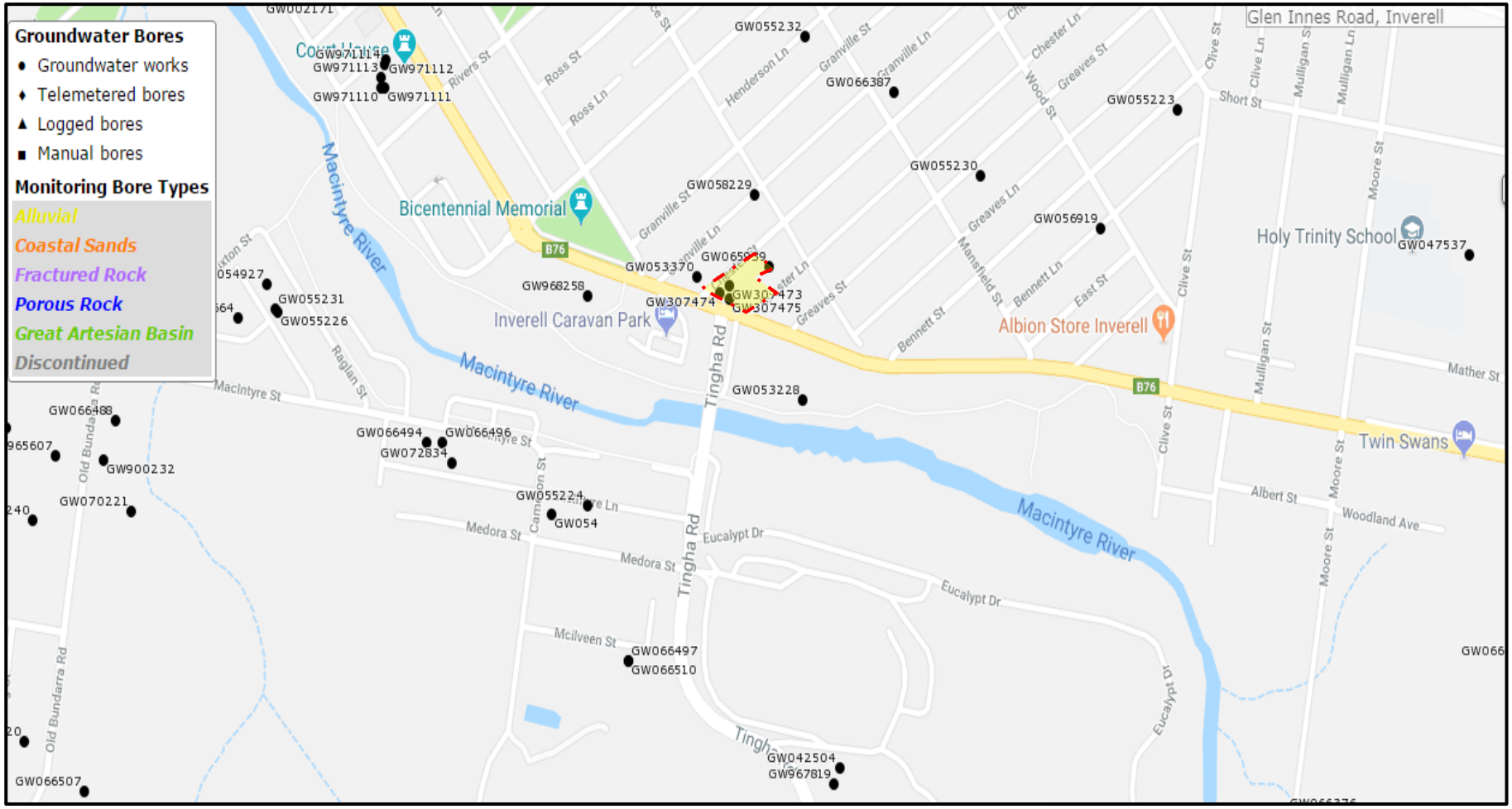
Site Area (approximate)

0 300 600 m

Figure 3 – Flood Risk Map – Inverell Shire Council
24-26 Glen Innes Road Inverell, NSW 2360

Client: Inverell Shire Council
Project: Detailed Site Investigation (DSI)
Job No: 21144

Image source: Fact Sheet – Flood Emergency Plan (nd)



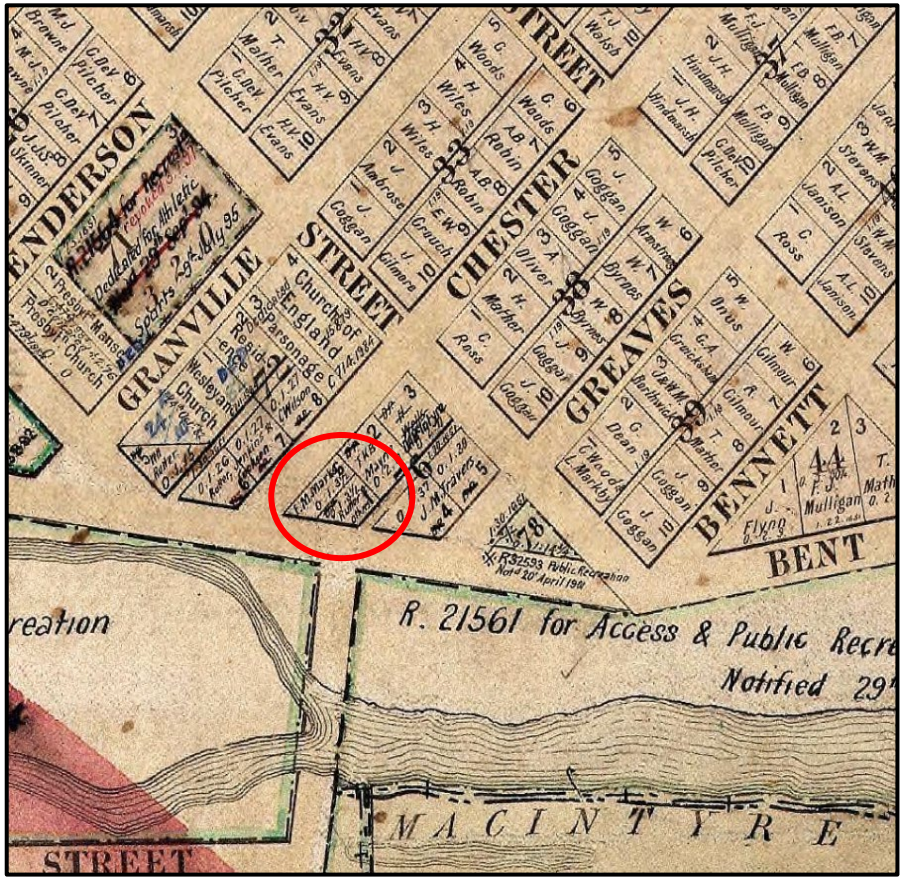
Site Area (approximate)

0 80 160 m

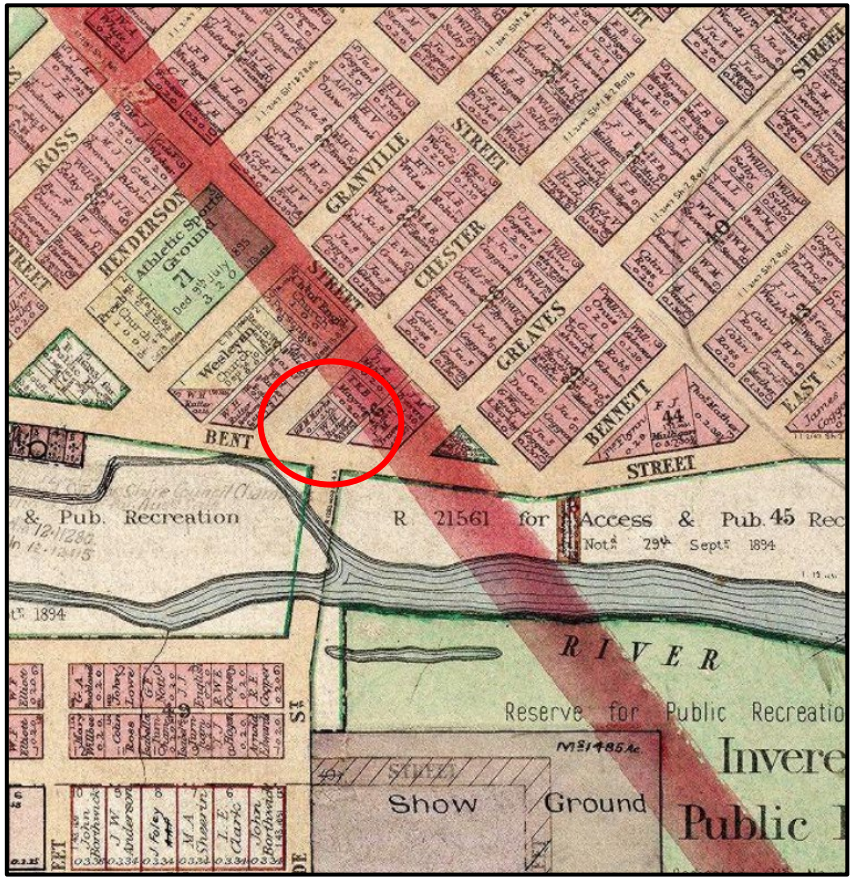
Figure 4 – Registered Groundwater Bores
24-26 Glen Innes Road Inverell, NSW 2360

Client: Inverell Shire Council
Project: Detailed Site Investigation (DSI)
Job No: 21144

Image source: Water NSW (2018)



1905



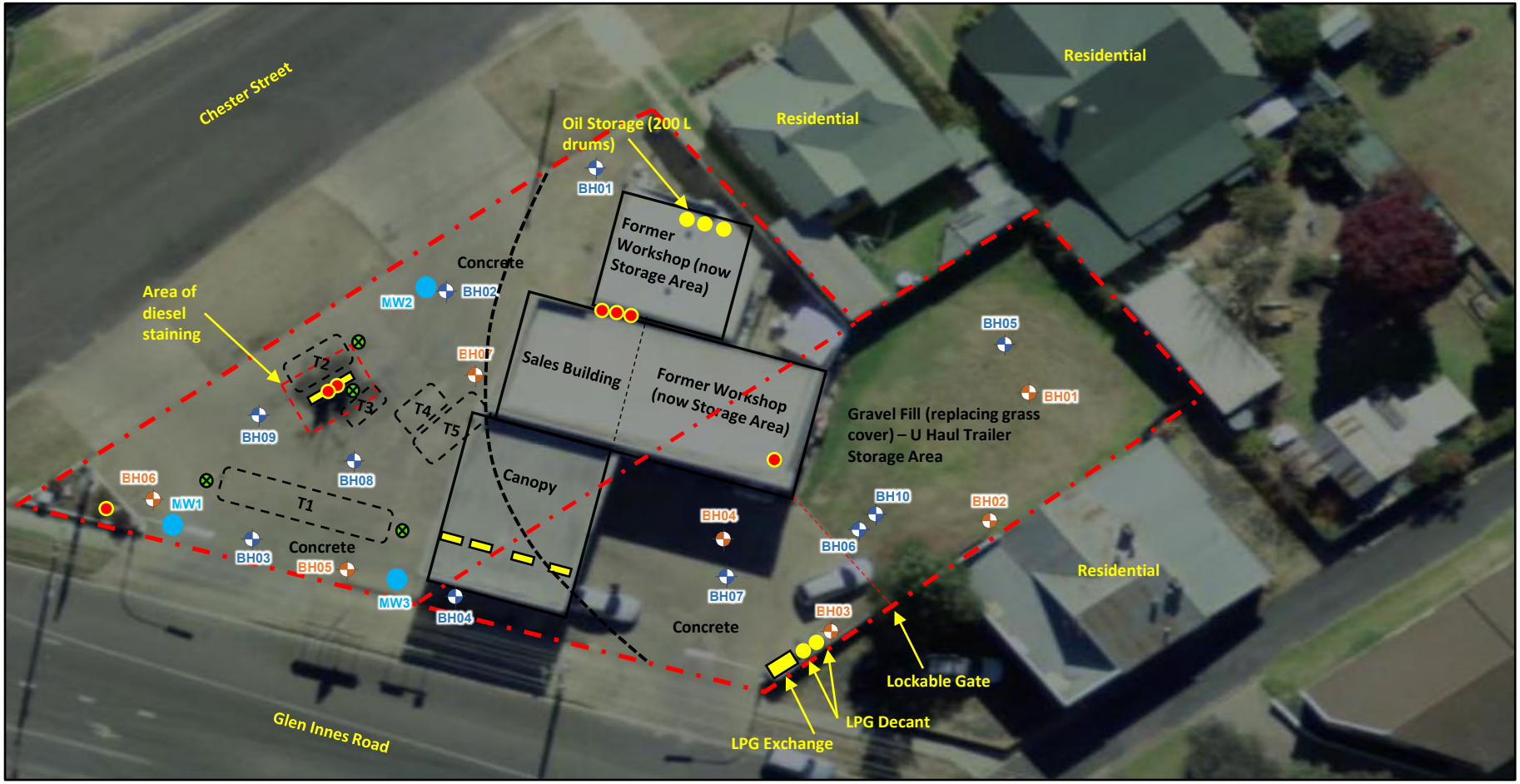
1910

Site Area (approximate)

Image Source: Reproduced from HLRV (2018)

Figure 5 – Historical Parish Maps
24-26 Glen Innes Road Inverell, NSW 2360

Client: Inverell Shire Council
Project: Detailed Site Investigation (DSI)
Job No: 21144



Site Boundary (approximate)

Dispensing Bowser

T3 Underground Storage Tank (UST):

T1 = unleaded (58 kL); T2 = diesel (20 kL); T3 = diesel (4kL); T4 = premium 98 (9.6 kL); T5 = premium 95 (26 kL)

0 5 10 m

Vent Pipe

Borehole Location (ENV, 2018)

Borehole Location (ENV, 2021)

Assumed Tank Pit Observation Well

Groundwater Monitoring Well

Approximate Extent of Subdivision

Image source: Six Maps (2009)

Figure 6 - Site Layout with All Sampling Locations
24-26 Glen Innes Road, Inverell, NSW 2360

Client: Inverell Shire Council
Project: Detailed Site Investigation (DSI)
Job No: 21144

APPENDIX B

Photolog

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PHOTOGRAPHIC LOG

Client Name	Site Location	Project
Inverell Shire Council (ISC)	24-26 Glen Innes Road, Inverell, NSW	Detailed Site Investigation (DSI)

Photo No.	Date
1	29/03/2021

Description

Looking north from Glen Innes Road toward the sales building and canopy. Underground service location is occurring in the foreground, using Ground Penetrating Radar (GPR).

Photo No.	Date
2	29/03/2021

Description

Looking south-west under the canopy, towards Glen Innes Road. Four bowsers dispensing unleaded petrol and premium unleaded petrol are visible under the canopy.

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PHOTOGRAPHIC LOG

Client Name	Site Location	Project
Inverell Shire Council (ISC)	24-26 Glen Innes Road, Inverell, NSW	Detailed Site Investigation (DSI)

Photo No.	Date
3	29/03/2021

Description

Looking north towards the main sales building (eastern portion), where animal produce (fodder) is sold. The area in the foreground is where anecdotal information provided by the site operator suggests an old, abandoned UST may be present.

Photo No.	Date
4	29/03/2021

Description

Looking into the fodder storage area. Anecdotal information provided by the operator indicates the circle in the centre is associated with an old hydraulic hoist used as part of the former mechanical workshop operations.

ENV Solutions
ENVIRONMENTAL | ASBESTOS | REMEDIATION | RESOURCE RECOVERY

PHOTOGRAPHIC LOG

Client Name	Site Location	Project
Inverell Shire Council (ISC)	24-26 Glen Innes Road, Inverell, NSW	Detailed Site Investigation (DSI)

Photo No.	Date
5	29/03/2021

Description

Looking into the attached shed at the northern end of the main building. This area was formerly used as a mechanical workshop, and several 200 L drums used to store waste oil were still present in one area.

Photo No.	Date
6	29/03/2021

Description

Looking north into the area to the east of the main building. This area is raised approximately 0.4 m above the surrounding ground level to the south and is used to store hire trailers. The adjacent residential property is visible in the background.

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ENVIRONMENTAL | ASBESTOS | REMEDIATION | RESOURCE RECOVERY

PHOTOGRAPHIC LOG

Client Name	Site Location	Project
Inverell Shire Council (ISC)	24-26 Glen Innes Road, Inverell, NSW	Detailed Site Investigation (DSI)

Photo No.	Date
7	29/03/2021

Description

Image showing the typical soil profile in the upper 1.3 m. These soils generally comprised of a shallow gravelly layer beneath the concrete, followed by sandy clay soils with a medium to high plasticity. A hand auger was used at all borehole locations to 'clear' the location of underground services, prior to mechanical drilling.

Photo No.	Date
8	30/03/2021

Description

Drilling at BH2, with the truck mounted rig and support truck in place; and the work area barricaded to prevent public access.

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PHOTOGRAPHIC LOG

Client Name	Site Location	Project
Inverell Shire Council (ISC)	24-26 Glen Innes Road, Inverell, NSW	Detailed Site Investigation (DSI)

Photo No.	Date
9	30/03/2021

Description

Looking south-west towards the 2 x diesel bowsers. Staining from filling activities is visible on the concrete.

Photo No.	Date
10	29/03/2021

Description

Looking north-west at the roof of the main building's eastern portion. An old vent pipe was located on top of the roof, and may be associated with a former UST in this area (refer also to Photo 3).

APPENDIX C

Completed Workplace Clearance Group (WPCG) Forms

WPCG WORK CLEARANCE FORM

This form must be completed before work commences. It is valid only for work described below, for a specific site and a maximum of one day or shift (whichever is lesser).
ALL SECTIONS MUST BE COMPLETED

WORK DETAIL *Must be completed for all work*

Contractor Company Name:	Full Name of WPCG Accredited Contractor:	Contractor WPCG ID No:	WPCG Expiry Date:
ENV Solutions	CRAIG HEALEY	CH0098	

Client Company:	Client Order/Job No:	No. of Workers:
Liberty	21144	5+

Location Name:	Location Address:
Inverell	Cnr Glen Innes & Chester Rds, Inverell, NSW

Work Description:
Service location on concrete coring, drilling 8+ boreholes to max of 10 m. Soil sampling.

Tools/Equipment to be used:
Drill rig, concrete corer, hand tools

Where are the works going to be conducted? *(tick the correct box, and refer to either site hazardous zone drawings or the standard WPCG hazardous maps)*
☐ Inside a Hazardous Area.
☑ Inside site shop, site office, or outside a Hazardous Area

GENERAL CONDITIONS *The following general conditions are mandatory (tick the box as acknowledgement). Works cannot start if the general conditions cannot be met.*

☑ All statutory regulations applying to the job are to be complied with
☐ All onsite work (outside of the sales building or office) will stop in the event of fuel tanker delivery (eg. diesel, petrol or LPG) or petroleum product spill. Any hot work can only recommence thirty (30) minutes post last delivery
☑ A JSA(s)/SWMS(s) must be completed and reviewed for the works and must be made site and task specific

TASKS THAT REQUIRE A WORK PERMIT *Will any of the following form part of the work? (write **Yes** or **No**)*

No	**Hot work** that involves the use of matches or lighters, or creation of open flames and uncontrolled sparks **in hazardous areas.** This includes use of blow torches, oxy acetylene, grinding, soldering, naked flames, welding or any similar activity that creates an uncontrolled ignition source.	No	Use of petrol or LPG powered/driven equipment or mobile plant **in hazardous areas.** Includes but not limited to generators, chainsaws, gardening equipment, forklifts, elevating work platforms (EWP).
No	Inter-tank transfers of fuel and bulk petroleum product transfers to or from road vehicles that are not covered by procedures including transfer of contaminated or cross over (shandy) products.	No	High pressure water blasting on live equipment containing fuel or LPG, or on structural steel.
No	Erecting, modifying, or dismantling scaffolding greater than 4m above the ground	No	Use of Elevating Work Platform (EWP) 11m or more above the ground
No	Excavations 1.2m deep or more (other than drilling or coring)	No	Major Working at Height within 2m of an exposed edge
No	Abrasive blasting	No	Working from a work box (man basket) attached to a crane
No	Confined space entry including any work within a confined space	No	Disturbance or removal of asbestos containing material
No	Live electrical work (apart from fault finding)		

*If **YES** to any of the above, a **Work Permit** is required. Enter Permit number:*

TASKS THAT REQUIRE A WPCG MINIMUM CONTROL CHECKLIST *Will any of the following form part of the work? (write **Yes** or **No**)*

Yes	**Minor Hot Work in a Hazardous Area.** This includes any of the following with the controls in place specified in the Minor Hot Work Checklist: • Any electrical equipment to be used in a hazardous area that is not rated for use in a hazardous area (certified to IEC 60079-11); e.g. mains, generator, or battery powered items such as cordless drills, power tools, service locators, electric gardening equipment • Diesel or electrically driven portable equipment or mobile plant in hazardous areas, e.g excavators, elevating work platforms (EWP), generators, etc		
Yes	**Minor Ground Disturbance.** This includes any of the following with the controls in place specified in the Minor Ground Disturbance Checklist: • Concrete cutting drilling or coring • Soil boring, drilling or coring • Excavations to a depth less than 1.2m	No	**Minor Work at Height.** This includes any of the following with the controls in place specified in the Minor Work at Height Checklist: • Use of an Elevating Work Platform (EWP) less than 11m above the ground • Any work from within a scaffold of any height • Erecting, modifying, or dismantling scaffolding 4m or less above ground • Use of ladders

*If **YES** to any of the above, a **WPCG Minimum Control Checklist** is required. Minimum Control Checklist Completed* **Yes** ☐ **No** ☐ *If **No**, a **Work Permit** is required. Permit number:*

CONTROLS REQUIRED *(tick the box "Yes" or "n/a")*

YES	N/A		YES	N/A	
☐	☑	Electrical/mechanical/product/utilities isolated and tagged/locked out where required, and tested/verified before work commencing	☑	☐	Fire extinguishers in work area for all hot work outside of the shop/office. (min 2x 9kg dry chemical)
☐	☐	Traffic management in place (for vehicles and pedestrians), Effective Barricades erected around work area	☐	☑	*Other specify:*

PPE REQUIREMENTS *The minimum PPE requirements are: 1) Safety Boots, 2) Hi-vis clothing or vest, 3) Full neck to toe to wrist clothing (cotton or flame retardant/anti-static)*
Tick the additional PPE required for the task (over and above the minimum PPE requirements):

☑ Safety helmet (hard hat) ☑ Hearing protection ☐ Dust mask ☐ Fall arrest harness
☑ Safety glasses ☑ Gloves ☐ Breathing apparatus ☐ Other specify:..... N/A .....

JSA / SWMS CHECK *(to be used as a final check for site based JSA/SWMS requirements)*
Make the following checks on your JSA / SWMS prior to commencing the works:

	YES	NO
- Are there any site specific risks or conditions that could impact the proposed works?	☐	☑
- If yes, have you amended your JSA / SWMS?	☐	☐

Enter JSA / SWMS Number/s: ENVOO1 North West

AUTHORISATION TO START WORK

The contractor shall sign, issue and be solely responsible for all the obligations and workers applicable to the work (including discussing the content of this form to the work crew). The site operator may require work to stop if it appears that the contractor or any of its workers are failing to comply with the requirements in the applicable items of this form or other applicable safety requirements. The contractor must discuss the scope of the task and associated impact to site with the site operator

Contractor Signature:	Site Operator/Manager Name (PRINT):	Site Operator/Manager Signature:	Date:	Time:
	Melissa Campbell	*By signing this I agree the contractor and I have discussed the works to be undertaken and the associated hazards*	29/3/21	10:15 am

END OF DAY SIGN OFF *Prior to sign out, contractor to check the following (and tick the boxes):*

☑ Has the work area been left tidy and safe?
☑ Are site personnel aware of status of work including remaining isolations?
☑ Any changes to equipment documented and communicated
☑ Any incidents, near incidents, unsafe situations reported

Contractor Signature:	Site Operator/Manager Name (PRINT):	Site Operator/Manager Signature:	Date:	Time:
	Bailey Stewart	*By signing this I agree the contractor and I have discussed the works completed and any potential impact to the site.*	29/3/21	5:30 pm

Comments

White copy to be sent to the client, blue copy to be retained by the contractor.

WPCG WORK CLEARANCE FORM

This form must be completed before work commences. It is valid only for work described below, for a specific site and a maximum of one day or shift (whichever is lesser).
ALL SECTIONS MUST BE COMPLETED

WORK DETAIL *Must be completed for all work*

Contractor Company Name: ENV Solutions	Full Name of WPCG Accredited Contractor: CRAIG ITELBLG	Contractor WPCG ID No: CHO098	WPCG Expiry Date:
Client Company: Liberty S/S	Client Order/Job No: 2144		No. of Workers: 3x
Location Name: Inverell Liberty	Location Address: Cnr Cunter & Glen Innes Rd, Inverell		
Work Description: Drilling 6 x 8ths to max 6m using truck mounted drill rig.			
Tools/Equipment to be used: Truck mounted drill rig, hand tools			

Where are the works going to be conducted? *(tick the correct box, and refer to either site hazardous zone drawings or the standard WPCG hazardous maps)*
☑ Inside a Hazardous Area.
☑ Inside site shop, site office, or outside a Hazardous Area

GENERAL CONDITIONS *The following general conditions are mandatory (tick the box as acknowledgement). Works cannot start if the general conditions cannot be met.*

- ☑ All statutory regulations applying to the job are to be complied with
- ☑ All onsite work (outside of the sales building or office) will stop in the event of fuel tanker delivery (eg. diesel, petrol or LPG) or petroleum product spill. Any hot work can only recommence thirty (30) minutes post last delivery
- ☑ A JSA(s)/SWMS(s) must be completed and reviewed for the works and must be made site and task specific

TASKS THAT REQUIRE A WORK PERMIT *Will any of the following form part of the work? (write **Yes** or **No**)*

NO	**Hot work** that involves the use of matches or lighters, or creation of open flames and uncontrolled sparks **in hazardous areas.** This includes use of blow torches, oxy acetylene, grinding, soldering, naked flames, welding or any similar activity that creates an uncontrolled ignition source.	NO	Use of petrol or LPG powered/driven equipment or mobile plant **in hazardous areas.** Includes but not limited to generators, chainsaws, gardening equipment, forklifts, elevating work platforms (EWP).
NO	Inter-tank transfers of fuel and bulk petroleum product transfers to or from road vehicles that are not covered by procedures including transfer of contaminated or cross over (shandy) products.	NO	High pressure water blasting on live equipment containing fuel or LPG, or on structural steel.
NO	Erecting, modifying, or dismantling scaffolding greater than 4m above the ground	NO	Use of Elevating Work Platform (EWP) 11m or more above the ground
NO	Excavations 1.2m deep or more (other than drilling or coring)	NO	Major Working at Height within 2m of an exposed edge
NO	Abrasive blasting	NO	Working from a work box (man basket) attached to a crane
NO	Confined space entry including any work within a confined space	NO	Disturbance or removal of asbestos containing material
NO	Live electrical work (apart from fault finding)		

*If **YES** to any of the above, a **Work Permit** is required. Enter Permit number:*

TASKS THAT REQUIRE A WPCG MINIMUM CONTROL CHECKLIST *Will any of the following form part of the work? (write **Yes** or **No**)*

YES	**Minor Hot Work in a Hazardous Area.** This includes any of the following with the controls in place specified in the Minor Hot Work Checklist: • Any electrical equipment to be used in a hazardous area that is not rated for use in a hazardous area (certified to IEC 60079-11); e.g. mains, generator, or battery powered items such as cordless drills, power tools, service locators, electric gardening equipment • Diesel or electrically driven portable equipment or mobile plant in hazardous areas, e.g excavators, elevating work platforms (EWP), generators, etc		
YES	**Minor Ground Disturbance.** This includes any of the following with the controls in place specified in the Minor Ground Disturbance Checklist: • Concrete cutting drilling or coring • Soil boring, drilling or coring • Excavations to a depth less than 1.2m	NO	**Minor Work at Height.** This includes any of the following with the controls in place specified in the Minor Work at Height Checklist: • Use of an Elevating Work Platform (EWP) less than 11m above the ground • Any work from within a scaffold of any height • Erecting, modifying, or dismantling scaffolding 4m or less above ground • Use of ladders

*If **YES** to any of the above, a **WPCG Minimum Control Checklist** is required. Minimum Control Checklist Completed* **Yes** ☐ **No** ☐ *If **No**, a **Work Permit** is required. Permit number:*

CONTROLS REQUIRED *(tick the box "Yes" or "n/a")*

YES	N/A		YES	N/A	
☐	☑	Electrical/mechanical/product/utilities isolated and tagged/locked out where required, and tested/verified before work commencing	☑	☐	Fire extinguishers in work area for all hot work outside of the shop/office. (min 2x 9kg dry chemical)
☐	☐	Traffic management in place (for vehicles and pedestrians), Effective Barricades erected around work area	☐	☑	*Other specify:*

PPE REQUIREMENTS *The minimum PPE requirements are: 1) Safety Boots, 2) Hi-vis clothing or vest, 3) Full neck to toe to wrist clothing (cotton or flame retardant/anti-static)*
Tick the additional PPE required for the task (over and above the minimum PPE requirements):

- ☑ Safety helmet (hard hat)
- ☑ Hearing protection
- ☐ Dust mask
- ☐ Fall arrest harness
- ☑ Safety glasses
- ☑ Gloves
- ☐ Breathing apparatus
- ☐ Other specify:.....

JSA / SWMS CHECK *(to be used as a final check for site based JSA/SWMS requirements)*
Make the following checks on your JSA / SWMS prior to commencing the works:

	YES	NO
- Are there any site specific risks or conditions that could impact the proposed works?	☐	☑
- If yes, have you amended your JSA / SWMS?	☐	☑

Enter JSA / SWMS Number/s: ENV001 Numac SWMS

AUTHORISATION TO START WORK

The contractor shall sign, issue and be solely responsible for all the obligations and workers applicable to the work (including discussing the content of this form to the work crew). The site operator may require work to stop if it appears that the contractor or any of its workers are failing to comply with the requirements in the applicable items of this form or other applicable safety requirements. The contractor must discuss the scope of the task and associated impact to site with the site operator

Contractor Signature:	Site Operator/Manager Name (PRINT):	Site Operator/Manager Signature:	Date:	Time:
	Ethan Dyer	*By signing this I agree the contractor and I have discussed the works to be undertaken and the associated hazards*	30/3	7.11am

END OF DAY SIGN OFF *Prior to sign out, contractor to check the following (and tick the boxes):*

- ☑ Has the work area been left tidy and safe?
- ☑ Are site personnel aware of status of work including remaining isolations?
- ☑ Any changes to equipment documented and communicated
- ☑ Any incidents, near incidents, unsafe situations reported

Contractor Signature:	Site Operator/Manager Name (PRINT):	Site Operator/Manager Signature:	Date:	Time:
	Bailey Stewart	*By signing this I agree the contractor and I have discussed the works completed and any potential impact to the site.*	30/3	16:00 pm

Comments

White copy to be sent to the client, blue copy to be retained by the contractor.

WPCG WORK CLEARANCE FORM

This form must be completed before work commences. It is valid only for work described below, for a specific site and a maximum of one day or shift (whichever is lesser).
ALL SECTIONS MUST BE COMPLETED

WORK DETAIL *Must be completed for all work*

Contractor Company Name: ENV Solutions	Full Name of WPCG Accredited Contractor: CRAIG HEWLETT	Contractor WPCG ID No: CH0098	WPCG Expiry Date:
Client Company: Liberty	Client Order/Job No: 21144		No. of Workers: 1x
Location Name: Inverell Liberty S/S	Location Address: Cnr Chester + Glen Innes Rds Inverell		

Work Description: Sampling 3x groundwater wells + concreting boreholes Completed yesterday.

Tools/Equipment to be used: Hand tools only.

Where are the works going to be conducted? *(tick the correct box, and refer to either site hazardous zone drawings or the standard WPCG hazardous maps)*
- ☑ Inside a Hazardous Area.
- ☑ Inside site shop, site office, or outside a Hazardous Area

GENERAL CONDITIONS *The following general conditions are mandatory (tick the box as acknowledgement). Works cannot start if the general conditions cannot be met.*
- ☑ All statutory regulations applying to the job are to be complied with
- ☑ All onsite work (outside of the sales building or office) will stop in the event of fuel tanker delivery (eg. diesel, petrol or LPG) or petroleum product spill. Any hot work can only recommence thirty (30) minutes post last delivery
- ☑ A JSA(s)/SWMS(s) must be completed and reviewed for the works and must be made site and task specific

TASKS THAT REQUIRE A WORK PERMIT *Will any of the following form part of the work? (write **Yes** or **No**)*

No	**Hot work** that involves the use of matches or lighters, or creation of open flames and uncontrolled sparks **in hazardous areas.** This includes use of blow torches, oxy acetylene, grinding, soldering, naked flames, welding or any similar activity that creates an uncontrolled ignition source.	No	Use of petrol or LPG powered/driven equipment or mobile plant **in hazardous areas.** Includes but not limited to generators, chainsaws, gardening equipment, forklifts, elevating work platforms (EWP).
No	Inter-tank transfers of fuel and bulk petroleum product transfers to or from road vehicles that are not covered by procedures including transfer of contaminated or cross over (shandy) products.	No	High pressure water blasting on live equipment containing fuel or LPG, or on structural steel.
No	Erecting, modifying, or dismantling scaffolding greater than 4m above the ground	No	Use of Elevating Work Platform (EWP) 11m or more above the ground
No	Excavations 1.2m deep or more (other than drilling or coring)	No	Major Working at Height within 2m of an exposed edge
No	Abrasive blasting	No	Working from a work box (man basket) attached to a crane
No	Confined space entry including any work within a confined space	No	Disturbance or removal of asbestos containing material
No	Live electrical work (apart from fault finding)		

*If **YES** to any of the above, a **Work Permit** is required. Enter Permit number:*

TASKS THAT REQUIRE A WPCG MINIMUM CONTROL CHECKLIST *Will any of the following form part of the work? (write **Yes** or **No**)*

No	**Minor Hot Work in a Hazardous Area.** This includes any of the following with the controls in place specified in the Minor Hot Work Checklist: • Any electrical equipment to be used in a hazardous area that is not rated for use in a hazardous area (certified to IEC 60079-11); e.g. mains, generator, or battery powered items such as cordless drills, power tools, service locators, electric gardening equipment • Diesel or electrically driven portable equipment or mobile plant in hazardous areas, e.g excavators, elevating work platforms (EWP), generators, etc		
No	**Minor Ground Disturbance.** This includes any of the following with the controls in place specified in the Minor Ground Disturbance Checklist: • Concrete cutting drilling or coring • Soil boring, drilling or coring • Excavations to a depth less than 1.2m	No	**Minor Work at Height.** This includes any of the following with the controls in place specified in the Minor Work at Height Checklist: • Use of an Elevating Work Platform (EWP) less than 11m above the ground • Any work from within a scaffold of any height • Erecting, modifying, or dismantling scaffolding 4m or less above ground • Use of ladders

*If **YES** to any of the above, a **WPCG Minimum Control Checklist** is required. Minimum Control Checklist Completed* **Yes** ☐ **No** ☐ *If **No**, a **Work Permit** is required. Permit number:*

CONTROLS REQUIRED *(tick the box "Yes" or "n/a")*

YES	N/A		YES	N/A	
☐	☑	Electrical/mechanical/product/utilities isolated and tagged/locked out where required, and tested/verified before work commencing	☐	☑	Fire extinguishers in work area for all hot work outside of the shop/office. (min 2x 9kg dry chemical)
☑	☐	Traffic management in place (for vehicles and pedestrians), Effective Barricades erected around work area	☐	☑	*Other specify:*

PPE REQUIREMENTS *The minimum PPE requirements are: 1) Safety Boots, 2) Hi-vis clothing or vest, 3) Full neck to toe to wrist clothing (cotton or flame retardant/anti-static)*
Tick the additional PPE required for the task (over and above the minimum PPE requirements):

- ☑ Safety helmet (hard hat)
- ☐ Hearing protection
- ☐ Dust mask
- ☐ Fall arrest harness
- ☑ Safety glasses
- ☑ Gloves
- ☐ Breathing apparatus
- ☐ Other specify:.....

JSA / SWMS CHECK *(to be used as a final check for site based JSA/SWMS requirements)*
Make the following checks on your JSA / SWMS prior to commencing the works:

	YES	NO
- Are there any site specific risks or conditions that could impact the proposed works?	☐	☑
- If yes, have you amended your JSA / SWMS?	☐	☑

Enter JSA / SWMS Number/s: ENV001

AUTHORISATION TO START WORK

The contractor shall sign, issue and be solely responsible for all the obligations and workers applicable to the work (including discussing the content of this form to the work crew). The site operator may require work to stop if it appears that the contractor or any of its workers are failing to comply with the requirements in the applicable items of this form or other applicable safety requirements. The contractor must discuss the scope of the task and associated impact to site with the site operator

Contractor Signature:	Site Operator/Manager Name (PRINT):	Site Operator/Manager Signature:	Date:	Time:
	Bailey Stewart		31/3/2	08:45

By signing this I agree the contractor and I have discussed the works to be undertaken and the associated hazards

END OF DAY SIGN OFF *Prior to sign out, contractor to check the following (and tick the boxes):*
- ☑ Has the work area been left tidy and safe?
- ☑ Are site personnel aware of status of work including remaining isolations?
- ☑ Any changes to equipment documented and communicated
- ☐ Any incidents, near incidents, unsafe situations reported

Contractor Signature:	Site Operator/Manager Name (PRINT):	Site Operator/Manager Signature:	Date:	Time:
	Bailey Stewart		31/3/2	12:30 pm

By signing this I agree the contractor and I have discussed the works completed and any potential impact to the site.

Comments

White copy to be sent to the client, blue copy to be retained by the contractor.

APPENDIX D

Borehole Logs

ENVIRONMENTAL BOREHOLE BH01

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 29/3/2021
DRILLING COMPANY ENV Solutions
DRILLER Craig Helbig
DRILLING METHOD Hand Auger
TOTAL DEPTH 1.5 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS Adjacent (W) to former workshop (now storage area)

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
							CONCRETE	
	0		BH01_0.1-0.3	Y		CH	FILL: Sandy CLAY: grey brown, high plasticity, fine to medium sand, moist. Plasticity increasing with depth. Possible reworked natural soil.	
0.5								
	0		BH01_0.6-0.8	Y				Minor dark streaking.
							Sandy CLAY: grey brown, high plasticity, fine to medium sand, moist.	
1								
	0		BH01_1.3-1.5	Y				
1.5							Termination Depth at: 1.5 m	
2								
2.5								
3								
3.5								

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ENVIRONMENTAL BOREHOLE BH02

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 29-30/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD H Auger/Solid Flight Auger
TOTAL DEPTH 3.0 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS W of sales building

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
							CONCRETE	
						SP	FILL: Gravelly SAND: orange brown, bedding sand under concrete.	
	0		BH02_0.25-0.4	Y		CI-CH	FILL: Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist. Plasticity increasing with depth. Possible reworked natural soil.	
0.5								
			BH02_0.8-1.0					
	0							
1							Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist.	
			PID only					
1.5	0							
			BH02_1.8-2.0					
	0							
2								
			PID only					
2.5	0							
			BH02_2.8-3.0	Y				
	0							
3							Termination Depth at: 3.0 m (refusal on bedrock).	
3.5								

ENVIRONMENTAL BOREHOLE BH03

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 29-30/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD H Auger/Solid Flight Auger
TOTAL DEPTH 3.8 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS Near SW driveway entrance from Glen Innes Road

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
							CONCRETE	
						SP	FILL: Gravelly SAND: orange brown, bedding sand under concrete.	
	0		BH03_0.25-0.4	Y		CI-CH	FILL: Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist. Plasticity increasing with depth. Possible reworked natural soil.	
0.5								
			BH03_0.8-1.0					
	0							
1							Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist.	
						CI-CH	Sandy Gravelly CLAY: grey brown, fine to medium sand, sub-ang to sub-rounded gravels to 10 mm diam, increasing in diam with depth to 30 mm. Moist.	
			PID only					
1.5	0							
			BH03_1.8-2.0					
	0							
2								
			PID only					
2.5	0							
			BH03_2.8-3.0					
	0							
3								
			PID only					
3.5	0							
			BH03_3.6-3.8	Y				
	0							
							Termination Depth at: 3.8 m (refusal on bedrock).	

ENVIRONMENTAL BOREHOLE BH04

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 29-30/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD H Auger/Solid Flight Auger
TOTAL DEPTH 3.2 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS Immediately south of dispensing bowsers

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
							CONCRETE	
							FILL: Gravelly SAND: orange brown, bedding sand under concrete.	
						SP		
	102		BH04_0.25-0.4	Y		CI-CH	FILL: Sandy CLAY: grey, medium to high plasticity, fine to medium sand, moist. Soft to 0.4 m, plasticity and stiffness increasing with depth towards 1.0 m. Possible reworked natural soil.	Moderate hydrocarbon odour
0.5	20		BH04_0.5-0.7					Minor hydrocarbon odour
	36		BH04_0.8-1.0					
1							Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist.	
1.5	413		BH04_1.4-1.6	Y		CI-CH	Sandy Gravelly CLAY: grey brown, fine to medium sand, sub-ang to sub-rounded gravels to 10 mm diam, increasing in diam with depth to 30 mm. Moist.	
	140		BH04_1.8-2.0					
2								
2.5	109		PID only					
3	90		BH04_3.0-3.2	Y				
3.5							Termination Depth at: 3.2 m (refusal on bedrock).	

ENVIRONMENTAL BOREHOLE BH05

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 29/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD Solid Flight Auger
TOTAL DEPTH 2.0 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS Adjacent (E) to sales building (within raised fill pad)

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	0		BH05_0.0-0.2	Y		GP	FILL: Sandy GRAVEL: yellow brown, fine to medium sub-ang to ang gravel to 40 mm diam, fine to medium to coarse sand, dry to moist.	
0.5						CL	FILL: Sandy Gravelly CLAY: dark brown, fine to medium sand, fine gravels to 5 mm, low plasticity clay, moist.	
1	0		BH05_0.8-1.0			CI-CH	Sandy CLAY: grey brown, fine to medium sand, medium to high plasticity, moist.	
1.5								
2						CI-CH	Sandy Gravelly CLAY: as above, but includes fine gavels to 10 mm diam, clay has orange mottling, moist.	
2.5							Termination Depth at: 2.0 m	
3								
3.5								

ENVIRONMENTAL BOREHOLE BH06

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 29/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD Solid Flight Auger
TOTAL DEPTH 0.7 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS Adjacent (E) to sales building (within raised fill pad)

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	0		BH06_0.0-0.2			GP	FILL: Sandy GRAVEL: yellow brown, fine to medium sub-ang to ang gravel to 40 mm diam, fine to medium to coarse sand, dry to moist.	
0.5	35		BH06_0.5-0.7	Y		CL	FILL: Sandy Gravelly CLAY: dark brown, fine to medium sand, fine gravels to 5 mm, low plasticity clay, moist to wet (wet at base depth, possible water perched on top of concrete).	Slight hydrocarbon odour in water perched on top of (possible) concrete.
							Termination Depth at: 0.7 m (refusal on unknown object, possible concrete from adjacent vehicle ramp up to fill pad from forecourt area)	
1								
1.5								
2								
2.5								
3								
3.5								

produced by ESlog.ESdat.net on 13 Apr 2021

ENVIRONMENTAL BOREHOLE BH07

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 30/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD H Auger/Solid Flight Auger
TOTAL DEPTH 2.0 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS East of dispensing bowsers

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
							CONCRETE	
						SP		
	0		BH07_0.2-0.4	Y		CI-CH	FILL: Gravelly SAND: orange brown, bedding sand under concrete.	
0.5							FILL: Sandy CLAY: grey brown, medium plasticity, fine to medium sand, moist.	
	0		BH07_0.8-1.0				Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist.	
1								
1.5						CI-CH	Sandy Gravelly CLAY: grey brown, fine to medium sand, sub-ang to sub-rounded gravels to 10 mm diam, increasing in diam with depth to 30 mm. Moist.	
	0		BH07_1.8-2.0	Y				
2							Termination Depth at: 2.0 m	
2.5								
3								
3.5								

ENVIRONMENTAL BOREHOLE BH08

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 30/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD H Auger/Solid Flight Auger
TOTAL DEPTH 3.8 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS Immediately SE of diesel dispensing bowsers, adjacent to small diesel UST

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
							CONCRETE	
						SP	FILL: Gravelly SAND: orange brown, bedding sand under concrete.	
	0		BH08_0.25-0.4	Y		CI-CH	FILL: Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist. Plasticity increasing with depth. Possible reworked natural soil.	
0.5								
			BH08_0.8-1.0					
	0							
1							Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist.	
						CI-CH	Sandy Gravelly CLAY: grey brown, fine to medium sand, sub-ang to sub-rounded gravels to 10 mm diam, increasing in diam with depth to 30 mm. Moist.	
1.5								
			BH08_1.8-2.0					
	0							
2								
2.5								
			BH08_2.8-3.0					
	0							
3								
3.5								
	0		BH08_3.6-3.8	Y				
							Termination Depth at: 3.8 m (refusal on bedrock).	

ENVIRONMENTAL BOREHOLE BH09

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 30/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD H Auger/Solid Flight Auger
TOTAL DEPTH 3.8 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS Immediately SW of diesel dispensing bowsers, adjacent to north of unleaded UST

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
							CONCRETE	Slight hydrocarbon odour
						SP	FILL: Gravelly SAND: orange brown, bedding sand under concrete.	
	17		BH09_0.2-0.4	Y		CI-CH	FILL: Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist. Plasticity increasing with depth. Possible reworked natural soil.	
0.5	27		BH09_0.4-0.6	Y				
	9		BH09_0.8-1.0					
1							Sandy CLAY: grey brown, medium to high plasticity, fine to medium sand, moist.	
						CI-CH	Sandy Gravelly CLAY: grey brown, fine to medium sand, sub-ang to sub-rounded gravels to 10 mm diam, increasing in diam with depth to 30 mm. Moist.	
1.5	6		PID only					
	5		BH09_1.8-2.0					
2								
2.5	6		PID only					
	4		BH09_2.8-3.0					
3								
3.5								
	10		BH09_3.6-3.8	Y				
							Termination Depth at: 3.8 m (refusal on bedrock).	

ENVIRONMENTAL BOREHOLE BH10

PROJECT NUMBER 21144
PROJECT NAME Inverell Liberty S/S - DSI
CLIENT Inverell Shire Council
ADDRESS 24-26 Glen Innes Road, Inverell

DRILLING DATE 30/3/2021
DRILLING COMPANY Numac
DRILLER Dan
DRILLING METHOD Solid Flight Auger
TOTAL DEPTH 2.0 m

COORDINATES NA
COORD SYS NA
SURFACE ELEVATION NA
LOGGED BY Craig Helbig
CHECKED BY -

COMMENTS Adjacent (E) to sales building (within raised fill pad). Drilled approximately 1 m north of BH06 to investigate deeper soils.

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	0		BH10_0.0-0.2			GP	FILL: Sandy GRAVEL: yellow brown, fine to medium sub-ang to ang gravel to 40 mm diam, fine to medium to coarse sand, dry to moist.	
0.5						CL	FILL: Sandy Gravelly CLAY: dark brown, fine to medium sand, fine gravels to 5 mm, low plasticity clay, moist.	
1	0		BH10_0.8-1.0	Y		CI-CH	Sandy CLAY: grey brown, fine to medium sand, medium to high plasticity, moist.	
1.5								
2	0		BH10_1.8-2.0	Y		CI-CH	Sandy Gravelly CLAY: as above, but includes fine gavels to 10 mm diam, clay has orange mottling, moist.	
2.5							Termination Depth at: 2.0 m	
3								
3.5								

APPENDIX E

Groundwater Purging and Sampling Sheets

ENV SOLUTIONS – Groundwater Monitoring Log

Client: Inverell Shire Council		**Job N°:**	21144
Project: Liberty Inverell S/S - DSI		**Well N°:**	MW1
Location: 24-26 Glen Innes Road, Inverell, NSW		**Depth (m):**	4.20

WELL DEVELOPMENT	**WELL FINISH:** x Gatic Cover ☐ Monument ☐ PVC Pipe				
	Stage 1	**Stage 2**		**Stage 1**	**Stage 2**
Method:			**SWL - Before: (m)**		
Date:			**Time - Before: (hrs)**		
Undertaken By:			**SWL - After: (m)**		
Water Volume Removed: (L)			**Time - After: (hrs)**		
Comments:					

WELL PURGING DETAILS			
Method:	Clear bailer	**SWL - Before: (mBGL)**	3.417
Date:	31/3/2021	**Time - Before: (hrs)**	11:05
Undertaken By:	CAH	**SWL - After: (m)**	Dry
Well Atmos. (PID): (ppm)	0	**Time - After: (hrs)**	11:10
Total Volume Removed: (L)	3 (dry)		

PURGING MEASUREMENTS

Time (hrs)	**Volume Removed (L)**	**DTW (m)**	**Temp. (°C)**	**pH**	**EC (mS/cm)**	**ORP (mV)**	**DO (mg/L)**
11:10	3 (dry)	Dry	Not measured				
Stabilisation Range:		**- 0.1 m**	**+/- 3 °C**	**+/- 0.05**	**+/- 10mV**	**+/- 10%**	**+/- 0.2**

Comments:

WELL SAMPLING DETAILS			
Method:	Bailer	**SWL - Before: (m)**	3.92
Date:	31/3/2021	**Time - Before: (hrs)**	11:45
Undertaken By:	CAH	**Water Temperature (°C)**	NM
pH: (pH Units)	NM	**EC: (mS/cm)**	NM
Eh: (mV)	NM	**DO: (ppm)**	NM

Colour / Odour / Comments: Clear at first, becoming pale brown and turbid with purging, no hydrocarbon odour or sheen.

Casing Diameter (mm)	50	**Analysis Required:**	
Depth to LNAPL (m)	-	**TRH / BTEXN / PAH / 8 Metals**	**Y**
LNAPL Thickness (mm)	-	**MNA**	
Primary Sample ID	MW1	**Nutrients**	
QC Sample ID	QA1 (intra-lab only)	**PFAS**	
Hydrocarbon Sheen Observed?	No	**Other:**	
Were Samples Filtered?	No (lab filter)		

ENV SOLUTIONS – Groundwater Monitoring Log

Client: Inverell Shire Council		**Job N°:**	21144
Project: Liberty Inverell S/S - DSI		**Well N°:**	MW2
Location: 24-26 Glen Innes Road, Inverell, NSW		**Depth (m):**	2.901

WELL DEVELOPMENT	**WELL FINISH:** x Gatic Cover ☐ Monument ☐ PVC Pipe				
	Stage 1	**Stage 2**		**Stage 1**	**Stage 2**
Method:			**SWL - Before: (m)**		
Date:			**Time - Before: (hrs)**		
Undertaken By:			**SWL - After: (m)**		
Water Volume Removed: (L)			**Time - After: (hrs)**		
Comments:					

WELL PURGING DETAILS			
Method:	Clear bailer	**SWL - Before: (mBGL)**	1.801
Date:	31/3/2021	**Time - Before: (hrs)**	11:15
Undertaken By:	CAH	**SWL - After: (m)**	Dry
Well Atmos. (PID): (ppm)	0	**Time - After: (hrs)**	11:20
Total Volume Removed: (L)	4 (dry)		

PURGING MEASUREMENTS

Time (hrs)	**Volume Removed (L)**	**DTW (m)**	**Temp. (°C)**	**pH**	**EC (mS/cm)**	**ORP (mV)**	**DO (mg/L)**
11:20	4 (dry)	Dry	Not measured				
Stabilisation Range:		**- 0.1 m**	**+/- 3 °C**	**+/- 0.05**	**+/- 10mV**	**+/- 10%**	**+/- 0.2**

Comments:

WELL SAMPLING DETAILS			
Method:	Bailer	**SWL - Before: (m)**	2.65
Date:	31/3/2021	**Time - Before: (hrs)**	11:55
Undertaken By:	CAH	**Water Temperature (°C)**	NM
pH: (pH Units)	NM	**EC: (mS/cm)**	NM
Eh: (mV)	NM	**DO: (ppm)**	NM

Colour / Odour / Comments: Clear at first, becoming pale brown and turbid with purging, no hydrocarbon odour or sheen.

Casing Diameter (mm)	50	**Analysis Required:**	
Depth to LNAPL (m)	-	**TRH / BTEXN / PAH / 8 Metals**	**Y**
LNAPL Thickness (mm)	-	**MNA**	
Primary Sample ID	MW2	**Nutrients**	
QC Sample ID	-	**PFAS**	
Hydrocarbon Sheen Observed?	No	**Other:**	
Were Samples Filtered?	No (lab filter)		

ENV SOLUTIONS – Groundwater Monitoring Log

Client: Inverell Shire Council		**Job N°:**	21144
Project: Liberty Inverell S/S - DSI		**Well N°:**	MW3
Location: 24-26 Glen Innes Road, Inverell, NSW		**Depth (m):**	4.98

WELL DEVELOPMENT	**WELL FINISH:** x Gatic Cover ☐ Monument ☐ PVC Pipe				
	Stage 1	**Stage 2**		**Stage 1**	**Stage 2**
Method:			**SWL - Before: (m)**		
Date:			**Time - Before: (hrs)**		
Undertaken By:			**SWL - After: (m)**		
Water Volume Removed: (L)			**Time - After: (hrs)**		
Comments:					

WELL PURGING DETAILS			
Method:	Clear bailer	**SWL - Before: (mBGL)**	4.923
Date:	31/3/2021	**Time - Before: (hrs)**	11:25
Undertaken By:	CAH	**SWL - After: (m)**	Dry
Well Atmos. (PID): (ppm)	108	**Time - After: (hrs)**	11:26
Total Volume Removed: (L)	0.5 (dry)		

PURGING MEASUREMENTS

Time (hrs)	**Volume Removed (L)**	**DTW (m)**	**Temp. (°C)**	**pH**	**EC (mS/cm)**	**ORP (mV)**	**DO (mg/L)**
11:26	0.5 (dry)	Dry	Not measured				
Stabilisation Range:		**- 0.1 m**	**+/- 3 °C**	**+/- 0.05**	**+/- 10mV**	**+/- 10%**	**+/- 0.2**

Comments:

WELL SAMPLING DETAILS			
Method:	Bailer	**SWL - Before: (m)**	4.95
Date:	31/3/2021	**Time - Before: (hrs)**	12:00
Undertaken By:	CAH	**Water Temperature (°C)**	NM
pH: (pH Units)	NM	**EC: (mS/cm)**	NM
Eh: (mV)	NM	**DO: (ppm)**	NM
Colour / Odour / Comments: Grey, turbid, moderate HC odour, no LNAPL sheen			
Casing Diameter (mm)	50	**Analysis Required:**	
Depth to LNAPL (m)	-	**TRH / BTEXN / PAH / 8 Metals**	**Y (1 x vial only)**
LNAPL Thickness (mm)	-	**MNA**	
Primary Sample ID	MW3	**Nutrients**	
QC Sample ID	-	**PFAS**	
Hydrocarbon Sheen Observed?	No	**Other:**	
Were Samples Filtered?	No (lab filter)		

APPENDIX F

Laboratory Documentation

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: ENV Solutions	**Client Project Name / Number / Site etc (ie report title):** Liberty Inverell S/S - 21144
Contact Person: Craig Helbig (CAH)	
Project Mgr: CAH	**PO No.:**
Sampler: CAH	**Envirolab Quote No. :**
Address: 313 River Street, Ballina, NSW, 2478	**Date results required:** Or choose: standard. *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: **Mob:** 0455151426	**Report format: esdat**
Email: craig@envsolutions.com.au	**Lab Comments:**

Sample information					Tests Required														Comments
Envirolab Sample ID	**Client Sample ID or information**	**Depth (m)**	**Date sampled**	**Type of sample**	**Combo 3**	**VHC suite**	**Combo 10**												**Provide as much information about the sample as you can**
1	BH1	0.1-0.3	29/03/2021	Soil		x	x												
2	BH1	0.6-0.8	29/03/2021	Soil		x													
3	BH1	1.3-1.5	29/03/2021	Soil	x														
4	BH2	0.2-0.4	29/03/2021	Soil	x														
5	BH2	0.8-1.0	29/03/2021	Soil															
6	BH2	1.8-2.0	30/03/2021	Soil															
7	BH2	2.8-3.0	30/03/2021	Soil	x														
8	BH3	0.2-0.4	29/03/2021	Soil	x														
9	BH3	0.8-1.0	29/03/2021	Soil															
10	BH3	1.8-2.0	30/03/2021	Soil															
11	BH3	2.8-3.0	30/03/2021	Soil															
12	BH3	3.6-3.8	30/03/2021	Soil	x														
13	BH4	0.2-0.4	29/03/2021	Soil	x														

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

Job No: 206908
Date Received: 7/4/21
Time Received: 1030
Received By: VV
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

Job No:
Date Received:
Time Received:
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

Job No:
Date Received:
Time Received:
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (Company): ENV Solutions	**Received by (Company):** ELS-SYD
Print Name: Craig Helbig	**Print Name:** VINA VEGA
Date & Time: 6/4/2021 - 4 pm	**Date & Time:** 7/4/21 @ 1030
Signature:	**Signature:**

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: 13 °C **(if applicable)**
Transported by: Hand delivered / courier

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: ENV Solutions	**Client Project Name / Number / Site etc (ie report title):** Liberty Inverell S/S - 21144
Contact Person: Craig Helbig (CAH)	
Project Mgr: CAH	**PO No.:**
Sampler: CAH	**Envirolab Quote No. :**
Address: 313 River Street, Ballina, NSW, 2478	**Date results required:** Or choose: standard *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: **Mob:** 0455151426	**Report format: esdat**
Email: craig@envsolutions.com.au	**Lab Comments:**

Sample information					Tests Required															Comments
Envirolab Sample ID	Client Sample ID or information	Depth (m)	Date sampled	Type of sample	Combo 3	VHC suite	Combo 10													Provide as much information about the sample as you can
14	BH4	0.8-1.0	29/03/2021	Soil																
15	BH4	1.8-2.0	30/03/2021	Soil																
16	BH4	3.0-3.2	30/03/2021	Soil	x															
17	BH5	0-0.2	29/03/2021	Soil			x													
18	BH5	0.8-1.0	29/03/2021	Soil																
19	BH6	0-0.2	29/03/2021	Soil																
20	BH6	0.5-0.7	29/03/2021	Soil	x															
21	BH7	0.2-0.4	30/03/2021	Soil	x															
22	BH7	0.8-1.0	30/03/2021	Soil																
23	BH7	1.8-2.0	30/03/2021	Soil	x															
NR	BH8	0.2-0.4	30/03/2021	Soil	x															
NR	BH8	0.8-1.0	30/03/2021	Soil																
24	BH8	1.8-2.0	30/03/2021	Soil																

Relinquished by (Company): ENV Solutions	**Received by (Company):** ELS-SYD	***Lab use only:*** 265908
Print Name: Craig Helbig	**Print Name:** VINA VEGA	**Samples Received: Cool or Ambient (circle one)**
Date & Time: 6/4/2021 - 4 pm	**Date & Time:** 7/4/21 @ 1030	**Temperature Received at:** 13 C (if applicable)
Signature:	**Signature:**	**Transported by: Hand delivered / courier**

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

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Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
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Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: ENV Solutions	**Client Project Name / Number / Site etc (ie report title):** Liberty Inverell S/S - 21144
Contact Person: Craig Helbig (CAH)	
Project Mgr: CAH	**PO No.:**
Sampler: CAH	**Envirolab Quote No. :**
Address: 313 River Street, Ballina, NSW, 2478	**Date results required:** Or choose: standard. *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: **Mob:** 0455151426	**Report format: esdat**
Email: craig@envsolutions.com.au	**Lab Comments:**

Sample information					Tests Required															Comments
Envirolab Sample ID	Client Sample ID or information	Depth (m)	Date sampled	Type of sample	Combo 3	VHC suite														Provide as much information about the sample as you can
25	BH8	2.8-3.0	30/03/2021	Soil																
26	BH8	3.6-3.8	30/03/2021	Soil	x															
27	QA1	-	29/03/2021	Soil	x															
-	QA1A	-	29/03/2021	Soil	~~x~~	PLS forward to Eurofins SYD for TRH/BTEX/PAH/Pb analysis														
28	QA2A	-	30/03/2021	Soil	—															
29	MW1	-	31/03/2021	Water	x	x														
30	MW2	-	31/03/2021	Water	x	x														
31	MW3	-	31/03/2021	Water	x	x														
32	QA1	-	31/03/2021	Water	x	x														
33	BH4	1.4-1.6	30/03/2021	Soil	x															
34	BH9	0.2-0.4	30/03/2021	Soil	x															
35	BH9	0.4-0.6	30/03/2021	Soil	x															
36	BH9	0.8-1.0	30/03/2021	Soil																

Relinquished by (Company): ENV Solutions	**Received by (Company):** ELS - SYD	***Lab use only:*** 265908
Print Name: Craig Helbig	**Print Name:** VINA VEGA	**Samples Received: Cool or Ambient (circle one)**
Date & Time: 6/4/21 - 4 pm	**Date & Time:** 7/4/21 @ 1030	**Temperature Received at:** 13°C **(if applicable)**
Signature:	**Signature:**	**Transported by: Hand delivered / courier**

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

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Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: ENV Solutions	**Client Project Name / Number / Site etc (ie report title):** Liberty Inverell S/S - 21144
Contact Person: Craig Helbig (CAH)	
Project Mgr: CAH	**PO No.:**
Sampler: CAH	**Envirolab Quote No. :**
Address: 313 River Street, Ballina, NSW, 2478	**Date results required:** Or choose: standard *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: **Mob:** 0455151426	**Report format: esdat**
Email: craig@envsolutions.com.au	**Lab Comments:**

Sample information					Tests Required															Comments
Envirolab Sample ID	Client Sample ID or information	Depth (m)	Date sampled	Type of sample	Combo 3	VHC suite														Provide as much information about the sample as you can
37	BH9	1.8-2.0	30/03/2021	Soil																
38	BH9	2.8-3.0	30/03/2021	Soil																
39	BH9	3.6-3.8	30/03/2021	Soil	x															
40	BH10	0.8-1.0	30/03/2021	Soil	x															
41	BH10	1.8-2.0	30/03/2021	Soil	x															
~~42~~	~~BH4~~ VV	~~1.8-2.0~~	~~2/3/21~~																	
42	BH4 (EXTRA)	0.25-0.4	30/3	Soil																
43	BH4	0.5-0.7	30/3/21	Soil																
44	BH5 (21076 Project No)	1.0-2.0	2/3/21	Soil																

Relinquished by (Company): ENV Solutions	**Received by (Company):** ELS-SYD	***Lab use only:*** 265908
Print Name: Craig Helbig	**Print Name:** VINA VEGA	**Samples Received: Cool or Ambient (circle one)**
Date & Time: 6/4/21 - 4 pm	**Date & Time:** 7/4/21 @ 1030	**Temperature Received at:** 13°C **(if applicable)**
Signature:	**Signature:**	**Transported by: Hand delivered / courier**

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

Client Details

Client	ENV Solutions Pty Ltd
Attention	Craig helbig

Sample Login Details

Your reference	Liberty Inverell
Envirolab Reference	265908
Date Sample Received	07/04/2021
Date Instructions Received	08/04/2021
Date Results Expected to be Reported	15/04/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	40 soil, 4 water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	13
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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Sample ID	VHC's in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Misc Soil - Inorg	VHC's in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	HM in water - dissolved	On Hold
BH1-0.1-0.3	✓	✓	✓	✓	✓	✓	✓	✓	✓						
BH1-0.6-0.8	✓														
BH1-1.3-1.5		✓	✓	✓				✓							
BH2-0.2-0.4		✓	✓	✓				✓							
BH2-0.8-1.0															✓
BH2-1.8-2.0															✓
BH2-2.8-3.0		✓	✓	✓				✓							
BH3-0.2-0.4		✓	✓	✓				✓							
BH3-0.8-1.0															✓
BH3-1.8-2.0															✓
BH3-2.8-3.0															✓
BH3-3.6-3.8		✓	✓	✓				✓							
BH4-0.2-0.4		✓	✓	✓				✓							
BH4-0.8-1.0															✓
BH4-1.8-2.0															✓
BH4-3.0-3..2		✓	✓	✓				✓							
BH5-0-0.2		✓	✓	✓	✓	✓	✓	✓	✓						
BH5-0.8-1.0															✓
BH6-0-0.2															✓
BH6-0.5-0.7		✓	✓	✓				✓							
BH7-0.2-0.4		✓	✓	✓				✓							
BH7-0.8-1.0															✓
BH7-1.8-2.0		✓	✓	✓				✓							
BH8-1.8-2.0															✓
BH8-2.8-3.0															✓
BH8-3.6-3.8		✓	✓	✓				✓							
QA1		✓	✓	✓				✓							
QA2A		✓	✓	✓				✓							
MW1										✓	✓	✓	✓	✓	
MW2										✓	✓	✓	✓	✓	
MW3										✓	✓	✓	✓	✓	
QA1										✓	✓	✓	✓	✓	

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Sample ID	VHC's in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Misc Soil - Inorg	VHC's in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	HM in water - dissolved	On Hold
BH4-1.4-1.6		✓	✓	✓				✓							
BH9-0.2-0.4		✓	✓	✓				✓							
BH9-0.4-0.8		✓	✓	✓				✓							
BH9-0.8-1.0															✓
BH9-1.8-2.0															✓
BH9-2.8-3.0															✓
BH9-3.6-3.8		✓	✓	✓				✓							
BH10-0.8-1.0		✓	✓	✓				✓							
BH10-1.8-2.0		✓	✓	✓				✓							
BH8-0.2-0.4		✓	✓	✓				✓							
BH8-0.8-1.0															✓
BH5 (21076)-1.8-2.0															✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 265908

Client Details

Client	ENV Solutions Pty Ltd
Attention	Craig helbig
Address	313 River St, Ballina, NSW, 2478

Sample Details

Your Reference	**Liberty Inverell S/S - 21144**
Number of Samples	40 soil, 4 water
Date samples received	07/04/2021
Date completed instructions received	08/04/2021

Analysis Details

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

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

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

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	15/04/2021
Date of Issue	15/04/2021

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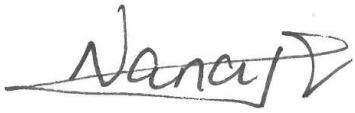
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Hannah Nguyen, Senior Chemist
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

VHC's in soil			
Our Reference		265908-1	265908-2
Your Reference	UNITS	BH1	BH1
Depth		0.1-0.3	0.6-0.8
Date Sampled		29/03/2021	29/03/2021
Type of sample		soil	soil
Date extracted	-	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021
Dichlorodifluoromethane	mg/kg	<1	<1
Chloromethane	mg/kg	<1	<1
Vinyl Chloride	mg/kg	<1	<1
Bromomethane	mg/kg	<1	<1
Chloroethane	mg/kg	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1
1,1-dichloroethane	mg/kg	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1
bromochloromethane	mg/kg	<1	<1
chloroform	mg/kg	<1	<1
2,2-dichloropropane	mg/kg	<1	<1
1,2-dichloroethane	mg/kg	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1
1,1-dichloropropene	mg/kg	<1	<1
carbon tetrachloride	mg/kg	<1	<1
dibromomethane	mg/kg	<1	<1
1,2-dichloropropane	mg/kg	<1	<1
trichloroethene	mg/kg	<1	<1
bromodichloromethane	mg/kg	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1
1,3-dichloropropane	mg/kg	<1	<1
dibromochloromethane	mg/kg	<1	<1
1,2-dibromoethane	mg/kg	<1	<1
tetrachloroethene	mg/kg	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1
chlorobenzene	mg/kg	<1	<1
bromoform	mg/kg	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1
1,2,3-trichloropropane	mg/kg	<1	<1

VHC's in soil			
Our Reference		265908-1	265908-2
Your Reference	UNITS	BH1	BH1
Depth		0.1-0.3	0.6-0.8
Date Sampled		29/03/2021	29/03/2021
Type of sample		soil	soil
bromobenzene	mg/kg	<1	<1
2-chlorotoluene	mg/kg	<1	<1
4-chlorotoluene	mg/kg	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1
hexachlorobutadiene	mg/kg	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1
Surrogate Dibromofluorometha	%	102	107
Surrogate aaa-Trifluorotoluene	%	101	104
Surrogate Toluene-d_8	%	102	106
Surrogate 4-Bromofluorobenzene	%	71	105

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		265908-1	265908-3	265908-4	265908-7	265908-8
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.1-0.3	1.3-1.5	0.2-0.4	2.8-3.0	0.2-0.4
Date Sampled		29/03/2021	29/03/2021	29/03/2021	30/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	101	106	103	98	101

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		265908-12	265908-13	265908-16	265908-17	265908-20
Your Reference	UNITS	BH3	BH4	BH4	BH5	BH6
Depth		3.6-3.8	0.2-0.4	3.0-3..2	0-0.2	0.5-0.7
Date Sampled		30/03/2021	29/03/2021	30/03/2021	29/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
TRH C_6 - C_9	mg/kg	<25	270	25	<25	59
TRH C_6 - C_{10}	mg/kg	<25	330	39	<25	280
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	320	39	<25	280
Benzene	mg/kg	<0.2	0.3	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	11	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	4	<1	<1	4
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	94	106	102	99	100

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		265908-21	265908-23	265908-26	265908-27	265908-28
Your Reference	UNITS	BH7	BH7	BH8	QA1	QA2A
Depth		0.2-0.4	1.8-2.0	3.6-3.8	-	-
Date Sampled		30/03/2021	30/03/2021	30/03/2021	29/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	180	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	220	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	210	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	9	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	4	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	98	109	111	100	99

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		265908-33	265908-34	265908-35	265908-39	265908-40
Your Reference	UNITS	BH4	BH9	BH9	BH9	BH10
Depth		1.4-1.6	0.2-0.4	0.4-0.8	3.6-3.8	0.8-1.0
Date Sampled		30/03/2021	30/03/2021	30/03/2021	30/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
TRH C_6 - C_9	mg/kg	100	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	140	<25	87	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	140	<25	87	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	2	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	2	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	92	96	100	94	98

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		265908-41	265908-42
Your Reference	UNITS	BH10	BH8
Depth		1.8-2.0	0.2-0.4
Date Sampled		30/03/2021	30/03/2021
Type of sample		soil	soil
Date extracted	-	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<3	<3
Surrogate aaa-Trifluorotoluene	%	92	103

svTRH (C10-C40) in Soil						
Our Reference		265908-1	265908-3	265908-4	265908-7	265908-8
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.1-0.3	1.3-1.5	0.2-0.4	2.8-3.0	0.2-0.4
Date Sampled		29/03/2021	29/03/2021	29/03/2021	30/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021	10/04/2021	10/04/2021	10/04/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	75	77	76	77

svTRH (C10-C40) in Soil						
Our Reference		265908-12	265908-13	265908-16	265908-17	265908-20
Your Reference	UNITS	BH3	BH4	BH4	BH5	BH6
Depth		3.6-3.8	0.2-0.4	3.0-3..2	0-0.2	0.5-0.7
Date Sampled		30/03/2021	29/03/2021	30/03/2021	29/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021	10/04/2021	10/04/2021	10/04/2021
TRH C_{10} - C_{14}	mg/kg	<50	110	<50	<50	1,100
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	72	<50	<50	950
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	68	<50	<50	950
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	70	<50	<50	950
Surrogate o-Terphenyl	%	76	77	76	79	81

svTRH (C10-C40) in Soil						
Our Reference		265908-21	265908-23	265908-26	265908-27	265908-28
Your Reference	UNITS	BH7	BH7	BH8	QA1	QA2A
Depth		0.2-0.4	1.8-2.0	3.6-3.8	-	-
Date Sampled		30/03/2021	30/03/2021	30/03/2021	29/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021	10/04/2021	10/04/2021	10/04/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	90	68	52
TRH C_{15} - C_{28}	mg/kg	<100	<100	180	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	150	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	150	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	110	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	260	<50	<50
Surrogate o-Terphenyl	%	74	73	122	74	76

svTRH (C10-C40) in Soil						
Our Reference		265908-33	265908-34	265908-35	265908-39	265908-40
Your Reference	UNITS	BH4	BH9	BH9	BH9	BH10
Depth		1.4-1.6	0.2-0.4	0.4-0.8	3.6-3.8	0.8-1.0
Date Sampled		30/03/2021	30/03/2021	30/03/2021	30/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021	10/04/2021	10/04/2021	10/04/2021
TRH C_{10} - C_{14}	mg/kg	77	130	160	55	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	140	170	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	140	170	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	140	170	<50	<50
Surrogate o-Terphenyl	%	76	75	81	77	80

svTRH (C10-C40) in Soil			
Our Reference		265908-41	265908-42
Your Reference	UNITS	BH10	BH8
Depth		1.8-2.0	0.2-0.4
Date Sampled		30/03/2021	30/03/2021
Type of sample		soil	soil
Date extracted	-	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	77	78

PAHs in Soil						
Our Reference		265908-1	265908-3	265908-4	265908-7	265908-8
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.1-0.3	1.3-1.5	0.2-0.4	2.8-3.0	0.2-0.4
Date Sampled		29/03/2021	29/03/2021	29/03/2021	30/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	09/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	110	103	101	103	103

PAHs in Soil						
Our Reference		265908-12	265908-13	265908-16	265908-17	265908-20
Your Reference	UNITS	BH3	BH4	BH4	BH5	BH6
Depth		3.6-3.8	0.2-0.4	3.0-3..2	0-0.2	0.5-0.7
Date Sampled		30/03/2021	29/03/2021	30/03/2021	29/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	09/04/2021	12/04/2021
Naphthalene	mg/kg	<0.1	1.6	<0.1	<0.1	4.9
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	1.6	<0.05	<0.05	4.9
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	104	100	106	98	102

PAHs in Soil						
Our Reference		265908-21	265908-23	265908-26	265908-27	265908-28
Your Reference	UNITS	BH7	BH7	BH8	QA1	QA2A
Depth		0.2-0.4	1.8-2.0	3.6-3.8	-	-
Date Sampled		30/03/2021	30/03/2021	30/03/2021	29/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	1.2	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	1.2	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	105	101	103	100

PAHs in Soil						
Our Reference		265908-33	265908-34	265908-35	265908-39	265908-40
Your Reference	UNITS	BH4	BH9	BH9	BH9	BH10
Depth		1.4-1.6	0.2-0.4	0.4-0.8	3.6-3.8	0.8-1.0
Date Sampled		30/03/2021	30/03/2021	30/03/2021	30/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Naphthalene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.4	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	104	101	104	104	104

PAHs in Soil			
Our Reference		265908-41	265908-42
Your Reference	UNITS	BH10	BH8
Depth		1.8-2.0	0.2-0.4
Date Sampled		30/03/2021	30/03/2021
Type of sample		soil	soil
Date extracted	-	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	104	105

Organochlorine Pesticides in soil			
Our Reference		265908-1	265908-17
Your Reference	UNITS	BH1	BH5
Depth		0.1-0.3	0-0.2
Date Sampled		29/03/2021	29/03/2021
Type of sample		soil	soil
Date extracted	-	09/04/2021	09/04/2021
Date analysed	-	09/04/2021	09/04/2021
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	90	91

Organophosphorus Pesticides in Soil			
Our Reference		265908-1	265908-17
Your Reference	UNITS	BH1	BH5
Depth		0.1-0.3	0-0.2
Date Sampled		29/03/2021	29/03/2021
Type of sample		soil	soil
Date extracted	-	09/04/2021	09/04/2021
Date analysed	-	09/04/2021	09/04/2021
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	90	91

PCBs in Soil			
Our Reference		265908-1	265908-17
Your Reference	UNITS	BH1	BH5
Depth		0.1-0.3	0-0.2
Date Sampled		29/03/2021	29/03/2021
Type of sample		soil	soil
Date extracted	-	09/04/2021	09/04/2021
Date analysed	-	09/04/2021	09/04/2021
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	90	91

Acid Extractable metals in soil						
Our Reference		265908-1	265908-3	265908-4	265908-7	265908-8
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.1-0.3	1.3-1.5	0.2-0.4	2.8-3.0	0.2-0.4
Date Sampled		29/03/2021	29/03/2021	29/03/2021	30/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021	10/04/2021	10/04/2021	10/04/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	34	47	37	42	53
Copper	mg/kg	11	18	14	15	18
Lead	mg/kg	6	8	16	6	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	44	18	41	15
Zinc	mg/kg	9	15	19	17	20

Acid Extractable metals in soil						
Our Reference		265908-12	265908-13	265908-16	265908-17	265908-20
Your Reference	UNITS	BH3	BH4	BH4	BH5	BH6
Depth		3.6-3.8	0.2-0.4	3.0-3..2	0-0.2	0.5-0.7
Date Sampled		30/03/2021	29/03/2021	30/03/2021	29/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021	10/04/2021	10/04/2021	10/04/2021
Arsenic	mg/kg	<4	<4	<4	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	70	57	83	34	32
Copper	mg/kg	93	21	16	15	160
Lead	mg/kg	5	79	6	16	48
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	43	52	42	26	36
Zinc	mg/kg	75	32	18	58	650

Acid Extractable metals in soil						
Our Reference		265908-21	265908-23	265908-26	265908-27	265908-28
Your Reference	UNITS	BH7	BH7	BH8	QA1	QA2A
Depth		0.2-0.4	1.8-2.0	3.6-3.8	-	-
Date Sampled		30/03/2021	30/03/2021	30/03/2021	29/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021	10/04/2021	10/04/2021	10/04/2021
Arsenic	mg/kg	<4	<4	4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	59	34	120	50	48
Copper	mg/kg	22	14	360	19	18
Lead	mg/kg	19	5	6	66	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	65	38	120	41	39
Zinc	mg/kg	28	12	240	35	20

Acid Extractable metals in soil						
Our Reference		265908-33	265908-34	265908-35	265908-39	265908-40
Your Reference	UNITS	BH4	BH9	BH9	BH9	BH10
Depth		1.4-1.6	0.2-0.4	0.4-0.8	3.6-3.8	0.8-1.0
Date Sampled		30/03/2021	30/03/2021	30/03/2021	30/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021	10/04/2021	10/04/2021	10/04/2021
Arsenic	mg/kg	<4	<4	<4	4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	43	48	54	61	41
Copper	mg/kg	16	16	22	20	18
Lead	mg/kg	5	10	9	6	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	44	11	39	45	45
Zinc	mg/kg	18	14	16	23	12

Acid Extractable metals in soil			
Our Reference		265908-41	265908-42
Your Reference	UNITS	BH10	BH8
Depth		1.8-2.0	0.2-0.4
Date Sampled		30/03/2021	30/03/2021
Type of sample		soil	soil
Date prepared	-	09/04/2021	09/04/2021
Date analysed	-	10/04/2021	10/04/2021
Arsenic	mg/kg	5	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	30	49
Copper	mg/kg	15	18
Lead	mg/kg	79	13
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	28	30
Zinc	mg/kg	84	19

Misc Soil - Inorg			
Our Reference		265908-1	265908-17
Your Reference	UNITS	BH1	BH5
Depth		0.1-0.3	0-0.2
Date Sampled		29/03/2021	29/03/2021
Type of sample		soil	soil
Date prepared	-	09/04/2021	09/04/2021
Date analysed	-	09/04/2021	09/04/2021
Total Cyanide	mg/kg	<0.5	<0.5
Total Phenolics (as Phenol)	mg/kg	<5	<5

Moisture						
Our Reference		265908-1	265908-2	265908-3	265908-4	265908-7
Your Reference	UNITS	BH1	BH1	BH1	BH2	BH2
Depth		0.1-0.3	0.6-0.8	1.3-1.5	0.2-0.4	2.8-3.0
Date Sampled		29/03/2021	29/03/2021	29/03/2021	29/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Moisture	%	20	24	24	21	13

Moisture						
Our Reference		265908-8	265908-12	265908-13	265908-16	265908-17
Your Reference	UNITS	BH3	BH3	BH4	BH4	BH5
Depth		0.2-0.4	3.6-3.8	0.2-0.4	3.0-3..2	0-0.2
Date Sampled		29/03/2021	30/03/2021	29/03/2021	30/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Moisture	%	23	14	26	16	7.6

Moisture						
Our Reference		265908-20	265908-21	265908-23	265908-26	265908-27
Your Reference	UNITS	BH6	BH7	BH7	BH8	QA1
Depth		0.5-0.7	0.2-0.4	1.8-2.0	3.6-3.8	-
Date Sampled		29/03/2021	30/03/2021	30/03/2021	30/03/2021	29/03/2021
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Moisture	%	19	25	25	15	23

Moisture						
Our Reference		265908-28	265908-33	265908-34	265908-35	265908-39
Your Reference	UNITS	QA2A	BH4	BH9	BH9	BH9
Depth		-	1.4-1.6	0.2-0.4	0.4-0.8	3.6-3.8
Date Sampled		30/03/2021	30/03/2021	30/03/2021	30/03/2021	30/03/2021
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Moisture	%	15	17	23	23	13

Moisture				
Our Reference		265908-40	265908-41	265908-42
Your Reference	UNITS	BH10	BH10	BH8
Depth		0.8-1.0	1.8-2.0	0.2-0.4
Date Sampled		30/03/2021	30/03/2021	30/03/2021
Type of sample		soil	soil	soil
Date prepared	-	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021
Moisture	%	24	21	22

VHC's in water					
Our Reference		265908-29	265908-30	265908-31	265908-32
Your Reference	UNITS	MW1	MW2	MW3	QA1
Depth		-	-	-	-
Date Sampled		31/03/2021	31/03/2021	31/03/2021	31/03/2021
Type of sample		water	water	water	water
Date extracted	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Date analysed	-	13/04/2021	13/04/2021	13/04/2021	13/04/2021
Dichlorodifluoromethane	µg/L	<10	<10	<100	<10
Chloromethane	µg/L	<10	<10	<100	<10
Vinyl Chloride	µg/L	<10	<10	<100	<10
Bromomethane	µg/L	<10	<10	<100	<10
Chloroethane	µg/L	<10	<10	<100	<10
Trichlorofluoromethane	µg/L	<10	<10	<100	<10
1,1-Dichloroethene	µg/L	<1	<1	<10	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<10	<1
1,1-dichloroethane	µg/L	<1	<1	<10	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<10	<1
Bromochloromethane	µg/L	<1	<1	<10	<1
Chloroform	µg/L	<1	<1	<10	<1
2,2-dichloropropane	µg/L	<1	<1	<10	<1
1,2-dichloroethane	µg/L	<1	<1	<10	<1
1,1,1-trichloroethane	µg/L	<1	<1	<10	<1
1,1-dichloropropene	µg/L	<1	<1	<10	<1
Carbon tetrachloride	µg/L	<1	<1	<10	<1
Dibromomethane	µg/L	<1	<1	<10	<1
1,2-dichloropropane	µg/L	<1	<1	<10	<1
Trichloroethene	µg/L	<1	<1	<10	<1
Bromodichloromethane	µg/L	<1	<1	<10	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<10	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<10	<1
1,1,2-trichloroethane	µg/L	<1	<1	<10	<1
1,3-dichloropropane	µg/L	<1	<1	<10	<1
Dibromochloromethane	µg/L	<1	<1	<10	<1
1,2-dibromoethane	µg/L	<1	<1	<10	<1
Tetrachloroethene	µg/L	<1	<1	<10	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<10	<1
Chlorobenzene	µg/L	<1	<1	<10	<1
Bromoform	µg/L	<1	<1	<10	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<10	<1
1,2,3-trichloropropane	µg/L	<1	<1	<10	<1

VHC's in water					
Our Reference		265908-29	265908-30	265908-31	265908-32
Your Reference	UNITS	MW1	MW2	MW3	QA1
Depth		-	-	-	-
Date Sampled		31/03/2021	31/03/2021	31/03/2021	31/03/2021
Type of sample		water	water	water	water
Bromobenzene	µg/L	<1	<1	<10	<1
2-chlorotoluene	µg/L	<1	<1	<10	<1
4-chlorotoluene	µg/L	<1	<1	<10	<1
1,3-dichlorobenzene	µg/L	<1	<1	<10	<1
1,4-dichlorobenzene	µg/L	<1	<1	<10	<1
1,2-dichlorobenzene	µg/L	<1	<1	<10	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<10	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<10	<1
Hexachlorobutadiene	µg/L	<1	<1	<10	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<10	<1
Surrogate Dibromofluoromethane	%	100	92	100	98
Surrogate toluene-d8	%	101	98	99	99
Surrogate 4-BFB	%	119	119	121	119

vTRH(C6-C10)/BTEXN in Water					
Our Reference		265908-29	265908-30	265908-31	265908-32
Your Reference	UNITS	MW1	MW2	MW3	QA1
Depth		-	-	-	-
Date Sampled		31/03/2021	31/03/2021	31/03/2021	31/03/2021
Type of sample		water	water	water	water
Date extracted	-	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Date analysed	-	13/04/2021	13/04/2021	13/04/2021	13/04/2021
TRH C_6 - C_9	µg/L	<10	<10	15,000	<10
TRH C_6 - C_{10}	µg/L	<10	<10	15,000	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	8,100	<10
Benzene	µg/L	<1	<1	4,500	<1
Toluene	µg/L	<1	<1	12	<1
Ethylbenzene	µg/L	<1	<1	1,500	<1
m+p-xylene	µg/L	<2	<2	830	<2
o-xylene	µg/L	<1	<1	77	<1
Naphthalene	µg/L	<1	<1	570	<1
Surrogate Dibromofluoromethane	%	100	92	100	98
Surrogate toluene-d8	%	101	98	99	99
Surrogate 4-BFB	%	119	119	121	119

svTRH (C10-C40) in Water				
Our Reference		265908-29	265908-30	265908-32
Your Reference	UNITS	MW1	MW2	QA1
Depth		-	-	-
Date Sampled		31/03/2021	31/03/2021	31/03/2021
Type of sample		water	water	water
Date extracted	-	12/04/2021	12/04/2021	12/04/2021
Date analysed	-	12/04/2021	12/04/2021	13/04/2021
TRH C_{10} - C_{14}	µg/L	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100
Surrogate o-Terphenyl	%	73	86	84

PAHs in Water				
Our Reference		265908-29	265908-30	265908-32
Your Reference	UNITS	MW1	MW2	QA1
Depth		-	-	-
Date Sampled		31/03/2021	31/03/2021	31/03/2021
Type of sample		water	water	water
Date extracted	-	12/04/2021	12/04/2021	12/04/2021
Date analysed	-	12/04/2021	12/04/2021	12/04/2021
Naphthalene	µg/L	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1
Fluorene	µg/L	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1
Anthracene	µg/L	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1
Pyrene	µg/L	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1
Chrysene	µg/L	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	107	116	125

HM in water - dissolved				
Our Reference		265908-29	265908-30	265908-32
Your Reference	UNITS	MW1	MW2	QA1
Depth		-	-	-
Date Sampled		31/03/2021	31/03/2021	31/03/2021
Type of sample		water	water	water
Date prepared	-	09/04/2021	09/04/2021	09/04/2021
Date analysed	-	09/04/2021	09/04/2021	09/04/2021
Arsenic-Dissolved	µg/L	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	3	1	3
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	5	<1	6
Zinc-Dissolved	µg/L	7	3	8

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-014	Cyanide - free, total, weak acid dissociable by segmented flow analyser (in line dialysis with colourimetric finish). Solids/Filters and sorbents are extracted in a caustic media prior to analysis. Impingers are pH adjusted as required prior to analysis. Cyanides amenable to Chlorination - samples are analysed untreated and treated with hyperchlorite to assess the potential for chlorination of cyanide forms. Based on APHA latest edition, 4500-CN_G,H.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.

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

QUALITY CONTROL: VHC's in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-2
Date extracted	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			12/04/2021	1	12/04/2021	12/04/2021		12/04/2021	12/04/2021
Dichlorodifluoromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	124	135
cis-1,2-dichloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
chloroform	mg/kg	1	Org-023	<1	1	<1	<1	0	120	123
2,2-dichloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	107	109
1,1,1-trichloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	109	113
1,1-dichloropropene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
dibromomethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
trichloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	107	111
bromodichloromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	106	111
trans-1,3-dichloropropene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-023	<1	1	<1	<1	0	93	94
1,2-dibromoethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-023	<1	1	<1	<1	0	99	106
1,1,1,2-tetrachloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
bromoform	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
bromobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VHC's in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-2
1,2-dichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluorometha	%		Org-023	102	1	102	104	2	98	101
Surrogate aaa-Trifluorotoluene	%		Org-023	99	1	101	102	1	105	106
Surrogate Toluene-d_8	%		Org-023	101	1	102	101	1	104	103
Surrogate 4-Bromofluorobenzene	%		Org-023	72	1	71	99	33	75	83

QUALITY CONTROL: VHC's in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			[NT]	[NT]	[NT]	[NT]	[NT]	09/04/2021	[NT]
Date analysed	-			[NT]	[NT]	[NT]	[NT]	[NT]	12/04/2021	[NT]
1,1-dichloroethane	mg/kg	1	Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	135	[NT]
chloroform	mg/kg	1	Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	124	[NT]
1,2-dichloroethane	mg/kg	1	Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	107	[NT]
1,1,1-trichloroethane	mg/kg	1	Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	108	[NT]
trichloroethene	mg/kg	1	Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	106	[NT]
bromodichloromethane	mg/kg	1	Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	106	[NT]
dibromochloromethane	mg/kg	1	Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	90	[NT]
tetrachloroethene	mg/kg	1	Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate Dibromofluorometha	%		Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate Toluene-d_8	%		Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	105	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	[NT]	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-17
Date extracted	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			12/04/2021	1	12/04/2021	12/04/2021		12/04/2021	12/04/2021
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	95	96
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	95	96
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	119	122
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	105	106
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	95	96
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	77	78
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	82	78
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	99	1	101	102	1	105	97

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	265908-40
Date extracted	-			[NT]	28	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			[NT]	28	12/04/2021	12/04/2021		12/04/2021	12/04/2021
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	28	<25	<25	0	98	98
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	28	<25	<25	0	98	98
Benzene	mg/kg	0.2	Org-023	[NT]	28	<0.2	<0.2	0	121	125
Toluene	mg/kg	0.5	Org-023	[NT]	28	<0.5	<0.5	0	105	110
Ethylbenzene	mg/kg	1	Org-023	[NT]	28	<1	<1	0	99	98
m+p-xylene	mg/kg	2	Org-023	[NT]	28	<2	<2	0	82	79
o-Xylene	mg/kg	1	Org-023	[NT]	28	<1	<1	0	87	82
naphthalene	mg/kg	1	Org-023	[NT]	28	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	28	99	97	2	99	103

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	09/04/2021	09/04/2021		[NT]	[NT]
Date analysed	-			[NT]	39	12/04/2021	12/04/2021		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	39	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	39	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	39	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	39	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	39	94	88	7	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-17
Date extracted	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			10/04/2021	1	10/04/2021	10/04/2021		09/04/2021	10/04/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	86	90
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	67	70
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	90	84
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	86	90
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	67	70
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	90	84
Surrogate o-Terphenyl	%		Org-020	77	1	83	76	9	98	79

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	265908-40
Date extracted	-			[NT]	28	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			[NT]	28	10/04/2021	10/04/2021		10/04/2021	10/04/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	28	52	50	4	94	95
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	28	<100	<100	0	72	75
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	28	<100	<100	0	92	71
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	28	<50	<50	0	94	95
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	28	<100	<100	0	72	75
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	28	<100	<100	0	92	71
Surrogate o-Terphenyl	%		Org-020	[NT]	28	76	77	1	99	80

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	09/04/2021	09/04/2021		[NT]	[NT]
Date analysed	-			[NT]	39	10/04/2021	10/04/2021		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	39	55	57	4	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	39	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	39	77	78	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-17
Date extracted	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			12/04/2021	1	09/04/2021	09/04/2021		12/04/2021	09/04/2021
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	92
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	79	79
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	81
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	105
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	91
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	88
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	108
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	92	71
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	101	1	110	115	4	103	105

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	265908-40
Date extracted	-			[NT]	28	09/04/2021	09/04/2021		[NT]	09/04/2021
Date analysed	-			[NT]	28	12/04/2021	12/04/2021		[NT]	12/04/2021
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	92
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	79
Fluorene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	89
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	101
Anthracene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	86
Pyrene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	89
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	84
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	28	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	28	<0.05	<0.05	0	[NT]	81
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	28	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	28	100	102	2	[NT]	103

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	39	09/04/2021	09/04/2021		[NT]	[NT]
Date analysed	-			[NT]	39	12/04/2021	12/04/2021		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	39	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	39	104	104	0	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-17
Date extracted	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	83
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	79
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	70
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	95
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	93
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	101
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	95
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	70	74
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	79
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	78
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	92	1	90	90	0	91	92

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-17
Date extracted	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	71	74
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	104
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	77	79
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	98
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	108
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	71	84
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	75	88
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	99	1	90	90	0	91	92

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-17
Date extracted	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	70	80
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	92	1	90	90	0	91	92

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	265908-17
Date prepared	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			10/04/2021	1	10/04/2021	10/04/2021		10/04/2021	10/04/2021
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	107	93
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	105	94
Chromium	mg/kg	1	Metals-020	<1	1	34	34	0	103	73
Copper	mg/kg	1	Metals-020	<1	1	11	10	10	101	90
Lead	mg/kg	1	Metals-020	<1	1	6	6	0	105	89
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	105	117
Nickel	mg/kg	1	Metals-020	<1	1	11	12	9	106	78
Zinc	mg/kg	1	Metals-020	<1	1	9	10	11	109	#

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	265908-40
Date prepared	-			[NT]	28	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			[NT]	28	10/04/2021	10/04/2021		10/04/2021	10/04/2021
Arsenic	mg/kg	4	Metals-020	[NT]	28	<4	<4	0	103	74
Cadmium	mg/kg	0.4	Metals-020	[NT]	28	<0.4	<0.4	0	102	86
Chromium	mg/kg	1	Metals-020	[NT]	28	48	45	6	101	94
Copper	mg/kg	1	Metals-020	[NT]	28	18	15	18	99	100
Lead	mg/kg	1	Metals-020	[NT]	28	6	7	15	102	101
Mercury	mg/kg	0.1	Metals-021	[NT]	28	<0.1	<0.1	0	98	115
Nickel	mg/kg	1	Metals-020	[NT]	28	39	40	3	102	82
Zinc	mg/kg	1	Metals-020	[NT]	28	20	16	22	106	95

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	39	09/04/2021	09/04/2021		[NT]	[NT]
Date analysed	-			[NT]	39	10/04/2021	10/04/2021		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	39	4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	39	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	39	61	43	35	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	39	20	14	35	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	39	6	6	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	39	45	37	20	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	39	23	16	36	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	[NT]
Date analysed	-			09/04/2021	1	09/04/2021	09/04/2021		09/04/2021	[NT]
Total Cyanide	mg/kg	0.5	Inorg-014	<0.5	1	<0.5	<0.5	0	104	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	102	[NT]

QUALITY CONTROL: VHC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			12/04/2021	[NT]	[NT]	[NT]	[NT]	12/04/2021	[NT]
Date analysed	-			13/04/2021	[NT]	[NT]	[NT]	[NT]	13/04/2021	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	71	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	68	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	74	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	72	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VHC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate toluene-d8	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-023	120	[NT]	[NT]	[NT]	[NT]	122	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			12/04/2021	[NT]	[NT]	[NT]	[NT]	12/04/2021	[NT]
Date analysed	-			13/04/2021	[NT]	[NT]	[NT]	[NT]	13/04/2021	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	93	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	105	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate toluene-d8	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-023	120	[NT]	[NT]	[NT]	[NT]	122	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			12/04/2021	[NT]	[NT]	[NT]	[NT]	12/04/2021	[NT]
Date analysed	-			12/04/2021	[NT]	[NT]	[NT]	[NT]	12/04/2021	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	81	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	81	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate o-Terphenyl	%		Org-020	82	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			12/04/2021	[NT]	[NT]	[NT]	[NT]	12/04/2021	[NT]
Date analysed	-			12/04/2021	[NT]	[NT]	[NT]	[NT]	12/04/2021	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	117	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	265908-30
Date prepared	-			09/04/2021	29	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Date analysed	-			09/04/2021	29	09/04/2021	09/04/2021		09/04/2021	09/04/2021
Arsenic-Dissolved	µg/L	1	Metals-022	<1	29	<1	<1	0	96	97
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	29	<0.1	<0.1	0	96	98
Chromium-Dissolved	µg/L	1	Metals-022	<1	29	<1	<1	0	93	92
Copper-Dissolved	µg/L	1	Metals-022	<1	29	3	3	0	89	88
Lead-Dissolved	µg/L	1	Metals-022	<1	29	<1	<1	0	103	98
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	29	<0.05	<0.05	0	104	108
Nickel-Dissolved	µg/L	1	Metals-022	<1	29	5	5	0	94	95
Zinc-Dissolved	µg/L	1	Metals-022	<1	29	7	8	13	96	96

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

Acid Extractable Metals in Soil: # Percent recovery is not possible to report due to the high concentration of the element in the sample. However an acceptable recovery was obtained for the LCS.

Ming To

From: Craig Helbig <craig@envsolutions.com.au>
Sent: Friday, 16 April 2021 3:03 PM
To: Nancy Zhang
Cc: Samplereceipt
Subject: TCLP Leach testing: Batch 265908 Liberty Inverell S/S - 21144

Follow Up Flag: Follow up
Flag Status: Flagged

Ref: 265908A
TAT: Standard
Due: 23/04/2021
MT

Hi Nancy,

Could I please arrange for the TCLP leach analysis of the following 2 x samples from this batch:

(26) BH8_3.6-3.8 m – TCLP nickel ONLY
(13) BH4_0.2-0.4 m – TCLP nickel ONLY.

If there are any questions, please feel free to call or email.

Regards,

Craig Helbig
Senior Environmental Scientist | **ENV Solutions**
313 River St Ballina | T: 1300 861 325
PO Box 248 Ballina NSW 2478 | M: 0455 151 426
craig@envsolutions.com.au | www.envsolutions.com.au

ENV Solutions
ENVIRONMENTAL | ASBESTOS | REMEDIATION | RESOURCE RECOVERY

LinkedIn | Facebook | Instagram

The Bundjalung are the traditional owners of the land on which I live and work. I respectfully acknowledge their unique cultural and spiritual relationship to the land, waters and seas and their significant contribution to our society

From: Nancy Zhang <NZhang@envirolab.com.au>
Sent: Thursday, 15 April 2021 4:41 PM
To: Lab Results <labresults@envsolutions.com.au>; Craig Helbig <craig@envsolutions.com.au>
Subject: Results for Registration 265908 Liberty Inverell S/S - 21144

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC/paperwork received from you
ESDAT Extracts
an Excel or .csv file containing the results

Please note that a hard copy will not be posted.

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

SAMPLE RECEIPT ADVICE

Client Details

Client	ENV Solutions Pty Ltd
Attention	Craig helbig

Sample Login Details

Your reference	Liberty Inverell S/S - 21144
Envirolab Reference	265908-A
Date Sample Received	07/04/2021
Date Instructions Received	16/04/2021
Date Results Expected to be Reported	23/04/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	40 soil, 4 water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	13
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Nickel in TCLP	On Hold
BH1-0.1-0.3						✓
BH1-0.6-0.8						✓
BH1-1.3-1.5						✓
BH2-0.2-0.4						✓
BH2-0.8-1.0						✓
BH2-1.8-2.0						✓
BH2-2.8-3.0						✓
BH3-0.2-0.4						✓
BH3-0.8-1.0						✓
BH3-1.8-2.0						✓
BH3-2.8-3.0						✓
BH3-3.6-3.8						✓
BH4-0.2-0.4	✓	✓	✓	✓	✓	
BH4-0.8-1.0						✓
BH4-1.8-2.0						✓
BH4-3.0-3..2						✓
BH5-0-0.2						✓
BH5-0.8-1.0						✓
BH6-0-0.2						✓
BH6-0.5-0.7						✓
BH7-0.2-0.4						✓
BH7-0.8-1.0						✓
BH7-1.8-2.0						✓
BH8-1.8-2.0						✓
BH8-2.8-3.0						✓
BH8-3.6-3.8	✓	✓	✓	✓	✓	
QA1						✓
QA2A						✓
MW1						✓
MW2						✓
MW3						✓
QA1						✓

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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Nickel in TCLP	On Hold
BH4-1.4-1.6						✓
BH9-0.2-0.4						✓
BH9-0.4-0.8						✓
BH9-0.8-1.0						✓
BH9-1.8-2.0						✓
BH9-2.8-3.0						✓
BH9-3.6-3.8						✓
BH10-0.8-1.0						✓
BH10-1.8-2.0						✓
BH8-0.2-0.4						✓
BH8-0.8-1.0						✓
BH5 (21076)-1.8-2.0						✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 265908-A

Client Details

Client	ENV Solutions Pty Ltd
Attention	Craig helbig
Address	313 River St, Ballina, NSW, 2478

Sample Details

Your Reference	**Liberty Inverell S/S - 21144**
Number of Samples	40 soil, 4 water
Date samples received	07/04/2021
Date completed instructions received	16/04/2021

Analysis Details

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

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

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

Report Details

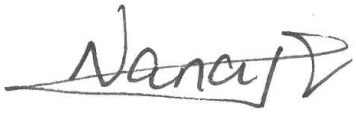
Date results requested by	23/04/2021
Date of Issue	22/04/2021

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Results Approved By
Hannah Nguyen, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Metals in TCLP USEPA1311			
Our Reference		265908-A-13	265908-A-26
Your Reference	UNITS	BH4	BH8
Depth		0.2-0.4	3.6-3.8
Date Sampled		29/03/2021	30/03/2021
Type of sample		soil	soil
Date extracted	-	22/04/2021	22/04/2021
Date analysed	-	22/04/2021	22/04/2021
pH of soil for fluid# determ.	pH units	8.7	9.0
pH of soil TCLP (after HCl)	pH units	1.7	1.7
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.1	5.0
Nickel in TCLP	mg/L	0.2	0.1

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL: Metals in TCLP USEPA1311					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			22/04/2021	[NT]	[NT]	[NT]	[NT]	22/04/2021	[NT]
Date analysed	-			22/04/2021	[NT]	[NT]	[NT]	[NT]	22/04/2021	[NT]
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

#785866

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: ENV Solutions
Contact Person: Craig Helbig (CAH)
Project Mgr: CAH
Sampler: CAH
Address: 313 River Street, Ballina, NSW, 2478
Phone: **Mob:** 0455151426
Email: craig@envsolutions.com.au

Client Project Name / Number / Site etc (ie report title): Liberty Inverell S/S - 21144
PO No.:
Envirolab Quote No. :
Date results required:
Or choose: standard
Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Report format: esdat
Lab Comments:

Sample Information | **Tests Required** | **Comments**

Envirolab Sample ID	Client Sample ID or information	Depth (m)	Date sampled	Type of sample	Combo 3	VHC suite	Comments
25	BH8	2.8-3.0	30/03/2021	Soil			
26	BH8	3.6-3.8	30/03/2021	Soil	x		
27	QA1	-	29/03/2021	Soil	x		
-	QA1A	-	29/03/2021	Soil	HOLD	PLs forward to Eurofins S40 for TRH/BTEX/PAH/Pb analysis	
28	QA2A	-	30/03/2021	Soil	—		
29	MW1	-	31/03/2021	Water	x	x	
30	MW2	-	31/03/2021	Water	x	x	
31	MW3	-	31/03/2021	Water	x	x	
32	QA1	-	31/03/2021	Water	x	x	
33	BH4	1.4-1.6	30/03/2021	Soil	x		
34	BH9	0.2-0.4	30/03/2021	Soil	x		
35	BH9	0.4-0.6	30/03/2021	Soil	x		
36	BH9	0.8-1.0	30/03/2021	Soil			

Provide as much information about the sample as you can

Relinquished by (Company): ENV Solutions / ELS - S40
Print Name: Craig Helbig / VINA VEGA
Date & Time: 6/4/21 - 4 pm / 8/4/21 @ 1256
Signature:

Received by (Company): ELS - S40
Print Name: VINA VEGA
Date & Time: 7/4/21 @ 1030
Signature:

Lab use only: 265908
Samples Received: Cool or Ambient (circle one)
Temperature Received at: 13°C (if applicable)
Transported by: Hand delivered / courier

eurofins | Environment Testing

ABN: 50 005 085 521 www.eurofins.com.au EnviroSales@eurofins.com

Australia

Melbourne
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Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
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Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

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Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

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

Sample Receipt Advice

Company name:	ENV Solutions Pty Ltd
Contact name:	Craig Helbig
Project name:	LIBERTY INVERELL S/S
Project ID:	21144
Turnaround time:	5 Day
Date/Time received	Apr 8, 2021 4:00 PM
Eurofins reference	785866

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Elvis Dsouza on phone : or by email: ElvisDsouza@eurofins.com

Results will be delivered electronically via email to Craig Helbig - craig@envsolutions.com.au.

Note: A copy of these results will also be delivered to the general ENV Solutions Pty Ltd email address.

ENV Solutions Pty Ltd
1/35 North Creek Road
Ballina
NSW 2478

Attention: **Craig Helbig**

Report **785866-S**
Project name LIBERTY INVERELL S/S
Project ID 21144
Received Date Apr 08, 2021

Client Sample ID			**QA1A**
Sample Matrix			**Soil**
Eurofins Sample No.			**S21-Ap11447**
Date Sampled			**Mar 29, 2021**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	220
TRH C10-C14	20	mg/kg	150
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	150
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	6.0
m&p-Xylenes	0.2	mg/kg	0.3
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	0.3
4-Bromofluorobenzene (surr.)	1	%	144
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	2.9
TRH C6-C10	20	mg/kg	270
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	260
TRH >C10-C16	50	mg/kg	90
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	87.1
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5

Client Sample ID			QA1A
Sample Matrix			**Soil**
Eurofins Sample No.			**S21-Ap11447**
Date Sampled			**Mar 29, 2021**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 10
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 10
2-Fluorobiphenyl (surr.)	1	%	91
p-Terphenyl-d14 (surr.)	1	%	106
Heavy Metals			
Lead	5	mg/kg	170
% Moisture	1	%	25

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B4			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Apr 14, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Apr 14, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 14, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 14, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Apr 14, 2021	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Heavy Metals	Sydney	Apr 14, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Apr 08, 2021	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins | Environment Testing

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

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IANZ # 1327

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

Company Name: ENV Solutions Pty Ltd
Address: 1/35 North Creek Road
Ballina
NSW 2478

Project Name: LIBERTY INVERELL S/S
Project ID: 21144

Order No.:
Report #: 785866
Phone: 0421 519 354
Fax:

Received: Apr 8, 2021 4:00 PM
Due: Apr 15, 2021
Priority: 5 Day
Contact Name: Craig Helbig

Eurofins Analytical Services Manager : Elvis Dsouza

Sample Detail						Lead	Moisture Set	Eurofins Suite B4
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
Mayfield Laboratory								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	QA1A	Mar 29, 2021		Soil	S21-Ap11447	X	X	X
Test Counts						1	1	1

eurofins | Environment Testing

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

org/100mL: Organisms per 100 millilitres | **NTU:** Nephelometric Turbidity Units | **MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Lead	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	104			70-130	Pass	
TRH C10-C14	%	115			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	103			70-130	Pass	
Toluene	%	110			70-130	Pass	
Ethylbenzene	%	112			70-130	Pass	
m&p-Xylenes	%	116			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
o-Xylene	%	119			70-130	Pass	
Xylenes - Total*	%	117			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	126			70-130	Pass	
TRH C6-C10	%	108			70-130	Pass	
TRH >C10-C16	%	118			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	118			70-130	Pass	
Benz(a)anthracene	%	96			70-130	Pass	
Benzo(a)pyrene	%	99			70-130	Pass	
Benzo(b&j)fluoranthene	%	89			70-130	Pass	
Benzo(g.h.i)perylene	%	98			70-130	Pass	
Benzo(k)fluoranthene	%	113			70-130	Pass	
Chrysene	%	104			70-130	Pass	
Dibenz(a.h)anthracene	%	95			70-130	Pass	
Fluoranthene	%	119			70-130	Pass	
Fluorene	%	129			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	99			70-130	Pass	
Phenanthrene	%	116			70-130	Pass	
Pyrene	%	118			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Lead	%	119			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S21-Ap13607	NCP	%	81			70-130	Pass	
TRH C10-C14	S21-Ap11600	NCP	%	107			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S21-Ap13607	NCP	%	72			70-130	Pass	
Toluene	S21-Ap13607	NCP	%	87			70-130	Pass	
Ethylbenzene	S21-Ap13607	NCP	%	88			70-130	Pass	
m&p-Xylenes	S21-Ap13607	NCP	%	92			70-130	Pass	
o-Xylene	S21-Ap13607	NCP	%	95			70-130	Pass	
Xylenes - Total*	S21-Ap13607	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S21-Ap13607	NCP	%	95			70-130	Pass	
TRH C6-C10	S21-Ap13607	NCP	%	86			70-130	Pass	
TRH >C10-C16	S21-Ap11600	NCP	%	102			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Lead	S21-Ap11458	NCP	%	107			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S21-Ap13607	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S21-Ap11599	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Ap11599	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Ap11599	NCP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-Ap13607	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-Ap13607	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-Ap13607	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S21-Ap13607	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S21-Ap13607	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S21-Ap13607	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S21-Ap13607	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-Ap13607	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S21-Ap11599	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Ap11599	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Ap11599	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	N21-Ap15599	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	S21-Ap21443	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Ap11439	NCP	%	4.0	3.8	5.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

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

Authorised by:

Elvis Dsouza	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

APPENDIX G

Tabulated Analytical Results

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Metals														
				Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Zinc	Zinc (filtered)
				mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L
EQL				4	0.001	0.4	0.0001	1	0.001	1	0.001	1	0.001	0.1	0.00005	1	0.001	1	0.001
ADWG 2018 Health					0.01		0.002				2		0.01		0.001		0.02		
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs							0.0002				0.0014		0.0034		0.0006		0.011		0.008
ANZECC 2000 FW 95%							0.0002				0.0014		0.0034		0.0006		0.011		0.008
ANZECC 2000 Recreational water quality and aesthetics					0.05		0.005		0.05		1		0.05		0.001		0.1		5
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																			
0-1m																			
1-2m																			
2-4m																			
>=4m																			
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind				160								1,500#							
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																			
0-2m																			
NEPM 2013 Table 1C GILs, Drinking Water					0.01		0.002				2		0.01		0.001		0.02		
NEPM 2013 Table 1C GILs, Fresh Waters							0.0002				0.0014		0.0034		0.00006		0.011		0.008
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil				3,000		900				240,000		1,500		730		6,000		400,000	
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																			
2-4m																			
4-8m																			
>=8m																			
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<4		<0.4		**34**		**11**		**6**		<0.1		**11**		**9**	
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**																
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**	<4		<0.4		**47**		**18**		**8**		<0.1		**44**		**15**	
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**	<4		<0.4		**37**		**14**		**16**		<0.1		**18**		**19**	
265908	**BH2**	**30/03/2021**	**2.8 - 3**	<4		<0.4		**42**		**15**		**6**		<0.1		**41**		**17**	
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**	<4		<0.4		**53**		**18**		**16**		<0.1		**15**		**20**	
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**	<4		<0.4		**70**		**93**		**5**		<0.1		**43**		**75**	
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**	<4		<0.4		**57**		**21**		**79**		<0.1		**52**		**32**	
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**	<4		<0.4		**43**		**16**		**5**		<0.1		**44**		**18**	
265908	**BH4**	**30/03/2021**	**2.8-3.0**	<4		<0.4		**83**		**16**		**6**		<0.1		**42**		**18**	
265908	**BH5**	**29/03/2021**	**0 - 0.2**	<4		<0.4		**34**		**15**		**16**		<0.1		**26**		**58**	
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**	**5**		<0.4		**32**		**160**		**48**		<0.1		**36**		**650**	
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**	<4		<0.4		**59**		**22**		**19**		<0.1		**65**		**28**	
265908	**BH7**	**30/03/2021**	**1.8 - 2**	<4		<0.4		**34**		**14**		**5**		<0.1		**38**		**12**	
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**	<4		<0.4		**49**		**18**		**13**		<0.1		**30**		**19**	
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**	**4**		<0.4		**120**		**360**		**6**		<0.1		**120**		**240**	
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**	<4		<0.4		**48**		**16**		**10**		<0.1		**11**		**14**	
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**	<4		<0.4		**54**		**22**		**9**		<0.1		**39**		**16**	
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**	**4**		<0.4		**61**		**20**		**6**		<0.1		**45**		**23**	
265908	**BH10**	**30/03/2021**	**0.8 - 1**	<4		<0.4		**41**		**18**		**11**		<0.1		**45**		**12**	
265908	**BH10**	**30/03/2021**	**1.8 - 2**	**5**		<0.4		**30**		**15**		**79**		<0.1		**28**		**84**	
265908	**MW1**	**31/03/2021**	-		<0.001		<0.0001		<0.001		**0.003**		<0.001		<0.00005		**0.005**		**0.007**
265908	**MW2**	**31/03/2021**	-		<0.001		<0.0001		<0.001		**0.001**		<0.001		<0.00005		<0.001		**0.003**
265908	**MW3**	**31/03/2021**	-																
265908	**QA1**	**29/03/2021**	-	<4		<0.4		**50**		**19**		**66**		<0.1		**41**		**35**	
265908	**QA1**	**31/03/2021**	-		<0.001		<0.0001		<0.001		**0.003**		<0.001		<0.00005		**0.006**		**0.008**
265908	**QA2A**	**30/03/2021**	-	<4		<0.4		**48**		**18**		**6**		<0.1		**39**		**20**	

Notes and Abbreviations:

ADWG - Australian Drinking Water Guidelines (2018).
ANZECC - Australian and New Zealand Environment Conservation Council (2000): Guidelines for Fresh and Marine Water Quality.
ANZG - Australian and New Zealand Governments (2018): Guidelines for Fresh and Marine Water Quality
NEPM - National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).
HSL - Health Screening Level; HIL - Health Investigation Level; GIL - Groundwater Investigation Level; EIL - Ecological Investigation Level; ESL - Ecological Screening Level
mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)										Total Petroleum Hydrocarbons (TPH)			
				Benzene		Toluene		Ethylbenzene		Xylene (m & p)		Xylene (o)		Xylene Total		C6-C9		C10-C14	
				mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg		mg/kg	µg/L	mg/kg	µg/L
EQL				0.2	1	0.5	1	1	1	2	2	1	1	3		25	10	50	50
ADWG 2018 Health					1		800		300										
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs					950		180		80				350						
ANZECC 2000 FW 95%					950								350						
ANZECC 2000 Recreational water quality and aesthetics					10														
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay				4 | 6 | 9 | 20															
0-1m				4															
1-2m				6															
2-4m				9															
>=4m				20															
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil				95		135		185						95					
0-2m				95		135		185						95					
NEPM 2013 Table 1C GILs, Drinking Water					1		800		300										
NEPM 2013 Table 1C GILs, Fresh Waters					950								350						
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																			
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay					30,000 | 30,000 | 35,000														
2-4m					30,000														
4-8m					30,000														
>=8m					35,000														
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**																
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH2**	**30/03/2021**	**2.8 - 3**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**	**0.3**		<0.5		**11**		<2		<1		<3		**270**		**110**	
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**	<0.2		<0.5		**2**		<2		<1		<3		**100**		**77**	
265908	**BH4**	**30/03/2021**	**2.8-3.0**	<0.2		<0.5		<1		<2		<1		<3		**25**		<50	
265908	**BH5**	**29/03/2021**	**0 - 0.2**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**	<0.2		<0.5		<1		<2		<1		<3		**59**		**1,100**	
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH7**	**30/03/2021**	**1.8 - 2**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**	<0.2		<0.5		<1		<2		<1		<3		<25		**90**	
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**	<0.2		<0.5		<1		<2		<1		<3		<25		**130**	
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**	<0.2		<0.5		<1		<2		<1		<3		<25		**160**	
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**	<0.2		<0.5		<1		<2		<1		<3		<25		**55**	
265908	**BH10**	**30/03/2021**	**0.8 - 1**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**BH10**	**30/03/2021**	**1.8 - 2**	<0.2		<0.5		<1		<2		<1		<3		<25		<50	
265908	**MW1**	**31/03/2021**	**-**		<1		<1		<1		<2		<1				<10		<50
265908	**MW2**	**31/03/2021**	**-**		<1		<1		<1		<2		<1				<10		<50
265908	**MW3**	**31/03/2021**	**-**		**4,500**		**12**		**1,500**		**830**		**77**				**15,000**		
265908	**QA1**	**29/03/2021**	**-**	**0.2**		<0.5		**9**		<2		<1		<3		**180**		**68**	
265908	**QA1**	**31/03/2021**	**-**		<1		<1		<1		<2		<1				<10		<50
265908	**QA2A**	**30/03/2021**	**-**	<0.2		<0.5		<1		<2		<1		<3		<25		**52**	

Notes and Abbreviations:

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Total Petroleum Hydrocarbons (TPH) / Total Recoverable Hydrocarbons (TRH)																Polycyclic Aromatic Hydrocarbons (PAH)					
				C15-C28		C29-C36		C6-C10		C10-C16		C16-C34		C10-C40 (Sum of total)	C34-C40		F1 (C6-C9 minus BTEX)		F2 (>C10-C16 minus Naphthalene)		Benzo(b+j+k)-fluoranthene		Acenaphthene		Acenaphthylene	
				mg/kg	µg/L	mg/kg	µg/L	mg/kg	mg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	mg/L	mg/kg	µg/L	mg/kg	µg/L
EQL				100	100	100	100	25	0.01	50	0.05	100	0.1	50	100	0.1	25	0.01	50	0.05	0.2	0.002	0.1	1	0.1	1
ADWG 2018 Health																										
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs																										
ANZECC 2000 FW 95%																										
ANZECC 2000 Recreational water quality and aesthetics																										
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																	310 | 480									
0-1m																	310									
1-2m																	480									
2-4m																										
>=4m																										
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																										
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil										170		2,500			6,600		215		170							
0-2m										170		2,500			6,600		215		170							
NEPM 2013 Table 1C GILs, Drinking Water																										
NEPM 2013 Table 1C GILs, Fresh Waters																										
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																										
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																										
2-4m																										
4-8m																										
>=8m																										
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																							
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**																							
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH2**	**30/03/2021**	**2.8 - 3**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**	<100		<100		**330**		**72**		<100		**70**	<100		**320**		**68**		<0.2		<0.1		<0.1	
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**	<100		<100		**140**		<50		<100		<50	<100		**140**		<50		<0.2		<0.1		<0.1	
265908	**BH4**	**30/03/2021**	**2.8-3.0**	<100		<100		**39**		<50		<100		<50	<100		**39**		<50		<0.2		<0.1		<0.1	
265908	**BH5**	**29/03/2021**	**0 - 0.2**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**	<100		<100		**280**		**950**		<100		**950**	<100		**280**		**950**		<0.2		<0.1		<0.1	
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH7**	**30/03/2021**	**1.8 - 2**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**	**180**		<100		<25		**150**		**110**		**260**	<100		<25		**150**		<0.2		<0.1		<0.1	
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**	<100		<100		<25		**140**		<100		**140**	<100		<25		**140**		<0.2		<0.1		<0.1	
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**	<100		<100		**87**		**170**		<100		**170**	<100		**87**		**170**		<0.2		<0.1		<0.1	
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH10**	**30/03/2021**	**0.8 - 1**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**BH10**	**30/03/2021**	**1.8 - 2**	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	
265908	**MW1**	**31/03/2021**	-		<100		<100		<0.01		<0.05		<0.1			<0.1		<0.01		<0.05		<0.002		<1		<1
265908	**MW2**	**31/03/2021**	-		<100		<100		<0.01		<0.05		<0.1			<0.1		<0.01		<0.05		<0.002		<1		<1
265908	**MW3**	**31/03/2021**	-						**15**									**8.1**								
265908	**QA1**	**29/03/2021**	-	<100		<100		**220**		<50		<100		<50	<100		**210**		<50		<0.2		<0.1		<0.1	
265908	**QA1**	**31/03/2021**	-		<100		<100		<0.01		<0.05		<0.1			<0.1		<0.01		<0.05		<0.002		<1		<1
265908	**QA2A**	**30/03/2021**	-	<100		<100		<25		<50		<100		<50	<100		<25		<50		<0.2		<0.1		<0.1	

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ANZG - Australian and New Zealand Governments (2018): Guidelines for Fresh and Marine Water Quality
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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Polycyclic Aromatic Hydrocarbons (PAH)									
				Anthracene		Benz(a)anthracene		Benzo(a) pyrene		Benzo(g,h,i)perylene		Chrysene	
				mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L
EQL				0.1	1	0.1	1	0.05	1	0.1	1	0.1	1
ADWG 2018 Health									0.01				
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs					0.4				0.2				
ANZECC 2000 FW 95%													
ANZECC 2000 Recreational water quality and aesthetics									0.01				
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay													
0-1m													
1-2m													
2-4m													
>=4m													
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind													
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil								1.4					
0-2m								1.4					
NEPM 2013 Table 1C GILs, Drinking Water									0.01				
NEPM 2013 Table 1C GILs, Fresh Waters													
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil													
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay													
2-4m													
4-8m													
>=8m													
Lab Report Number	**Field ID**	**Date**	**Depth (m)**										
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**										
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH2**	**30/03/2021**	**2.8 - 3**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH4**	**30/03/2021**	**2.8-3.0**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH5**	**29/03/2021**	**0 - 0.2**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH7**	**30/03/2021**	**1.8 - 2**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH10**	**30/03/2021**	**0.8 - 1**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**BH10**	**30/03/2021**	**1.8 - 2**	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**MW1**	**31/03/2021**	-		<1		<1		<1		<1		<1
265908	**MW2**	**31/03/2021**	-		<1		<1		<1		<1		<1
265908	**MW3**	**31/03/2021**	-										
265908	**QA1**	**29/03/2021**	-	<0.1		<0.1		<0.05		<0.1		<0.1	
265908	**QA1**	**31/03/2021**	-		<1		<1		<1		<1		<1
265908	**QA2A**	**30/03/2021**	-	<0.1		<0.1		<0.05		<0.1		<0.1	

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
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TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Polycyclic Aromatic Hydrocarbons (PAH)																NA	Phenols
				Dibenz(a,h)anthracene		Fluoranthene		Fluorene		Indeno(1,2,3-c,d)pyrene		Naphthalene		Phenanthrene		Pyrene		Benzo(a)pyrene TEQ	PAHs (Sum of positives)	PAHs (Sum of positives)	Moisture Content	Phenolics Total
				mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/L	mg/kg	mg/L	%	mg/kg
EQL				0.1	1	0.1	1	0.1	1	0.1	1	0.1	1	0.1	1	0.1	1	0.005	0.05	0.001	0.1	5
ADWG 2018 Health																						
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs							1.4						16		2							
ANZECC 2000 FW 95%													16									
ANZECC 2000 Recreational water quality and aesthetics																						
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																						
0-1m																						
1-2m																						
2-4m																						
>=4m																						
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind												370										
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																						
0-2m																						
NEPM 2013 Table 1C GILs, Drinking Water																						
NEPM 2013 Table 1C GILs, Fresh Waters													16									
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																						
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																						
2-4m																						
4-8m																						
>=8m																						
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																			
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**20**	<5
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**																		**24**	
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**24**	
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**21**	
265908	**BH2**	**30/03/2021**	**2.8 - 3**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**13**	
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**23**	
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**14**	
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.1		<0.1		**1.6**		<0.1		<0.1			**1.6**		**26**	
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**	<0.1		<0.1		<0.1		<0.1		**0.4**		<0.1		<0.1			**0.4**		**17**	
265908	**BH4**	**30/03/2021**	**2.8-3.0**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**16**	
265908	**BH5**	**29/03/2021**	**0 - 0.2**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**7.6**	<5
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**	<0.1		<0.1		<0.1		<0.1		**4**		<0.1		<0.1			**4.9**		**19**	
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**25**	
265908	**BH7**	**30/03/2021**	**1.8 - 2**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**25**	
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**22**	
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**15**	
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**23**	
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**23**	
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**13**	
265908	**BH10**	**30/03/2021**	**0.8 - 1**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**24**	
265908	**BH10**	**30/03/2021**	**1.8 - 2**	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**21**	
265908	**MW1**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1	<0.005		**0**		
265908	**MW2**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1	<0.005		**0**		
265908	**MW3**	**31/03/2021**	-										**570**									
265908	**QA1**	**29/03/2021**	-	<0.1		<0.1		<0.1		<0.1		**1.2**		<0.1		<0.1			**1.2**		**23**	
265908	**QA1**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1	<0.005		**0**		
265908	**QA2A**	**30/03/2021**	-	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1			<0.05		**15**	

Notes and Abbreviations:

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Volatile Halogenated Compounds (VHCs)													
				1,1,1,2-tetrachloroethane		1,1,1-trichloroethane		1,1,2,2-tetrachloroethane		1,1,2-trichloroethane		1,1-dichloroethane		1,1-dichloroethene		1,1-dichloropropene	
				mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L
EQL				1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADWG 2018 Health															30		
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs							270		400		6,500				700		
ANZECC 2000 FW 95%											6,500						
ANZECC 2000 Recreational water quality and aesthetics															0.3		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																	
0-1m																	
1-2m																	
2-4m																	
>=4m																	
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																	
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																	
0-2m																	
NEPM 2013 Table 1C GILs, Drinking Water															30		
NEPM 2013 Table 1C GILs, Fresh Waters											6,500						
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																	
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																	
2-4m																	
4-8m																	
>=8m																	
Lab Report Number	**Field ID**	**Date**	**Depth (m)**														
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<1		<1		<1		<1		<1		<1		<1	
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**	<1		<1		<1		<1		<1		<1		<1	
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**														
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**														
265908	**BH2**	**30/03/2021**	**2.8 - 3**														
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**														
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**														
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**														
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**														
265908	**BH4**	**30/03/2021**	**2.8-3.0**														
265908	**BH5**	**29/03/2021**	**0 - 0.2**														
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**														
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**														
265908	**BH7**	**30/03/2021**	**1.8 - 2**														
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**														
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**														
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**														
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**														
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**														
265908	**BH10**	**30/03/2021**	**0.8 - 1**														
265908	**BH10**	**30/03/2021**	**1.8 - 2**														
265908	**MW1**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1
265908	**MW2**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1
265908	**MW3**	**31/03/2021**	-		<10		<10		<10		<10		<10		<10		<10
265908	**QA1**	**29/03/2021**	-														
265908	**QA1**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1
265908	**QA2A**	**30/03/2021**	-														

Notes and Abbreviations:

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Volatile Halogenated Compounds (VHCs)																			
				1,2,3-trichloropropane		1,2-dibromo-3-chloropropane		1,2-dichloroethane		1,2-dichloropropane		1,3-dichloropropane		2,2-dichloropropane		Bromochloromethane		Bromo-dichloromethane		Bromoform		Carbon tetrachloride		Chloro-dibromomethane	
				mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L
EQL				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADWG 2018 Health									3														3		
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs									1,900		900		1,100										240		
ANZECC 2000 FW 95%																									
ANZECC 2000 Recreational water quality and aesthetics									10														3		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																									
0-1m																									
1-2m																									
2-4m																									
>=4m																									
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																									
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																									
0-2m																									
NEPM 2013 Table 1C GILs, Drinking Water									3														3		
NEPM 2013 Table 1C GILs, Fresh Waters																									
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																									
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																									
2-4m																									
4-8m																									
>=8m																									
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																						
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**	<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**																						
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**																						
265908	**BH2**	**30/03/2021**	**2.8 - 3**																						
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**																						
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**																						
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**																						
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**																						
265908	**BH4**	**30/03/2021**	**2.8-3.0**																						
265908	**BH5**	**29/03/2021**	**0 - 0.2**																						
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**																						
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**																						
265908	**BH7**	**30/03/2021**	**1.8 - 2**																						
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**																						
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**																						
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**																						
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**																						
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**																						
265908	**BH10**	**30/03/2021**	**0.8 - 1**																						
265908	**BH10**	**30/03/2021**	**1.8 - 2**																						
265908	**MW1**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1
265908	**MW2**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1
265908	**MW3**	**31/03/2021**	-		<10		<10		<10		<10		<10		<10		<10		<10		<10		<10		<10
265908	**QA1**	**29/03/2021**	-																						
265908	**QA1**	**31/03/2021**	-		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1
265908	**QA2A**	**30/03/2021**	-																						

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HSL - Health Screening Level; HIL - Health Investigation Level; GIL - Groundwater Investigation Level; EIL - Ecological Investigation Level; ESL - Ecological Screening Level
mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Volatile Halogenated Compounds (VHCs)																					
				Chloroethane		Chloroform		Chloromethane		cis-1,2-dichloroethene		cis-1,3-dichloropropene		Dibromomethane		Hexachlorobutadiene		Trichloroethene		Tetrachloroethene		trans-1,2-dichloroethene		trans-1,3-dichloropropene	
				mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L
EQL				1	10	1	1	1	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADWG 2018 Health																	0.7				50				
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs							770												330		70				
ANZECC 2000 FW 95%																									
ANZECC 2000 Recreational water quality and aesthetics																			30		10				
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																									
0-1m																									
1-2m																									
2-4m																									
>=4m																									
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																									
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																									
0-2m																									
NEPM 2013 Table 1C GILs, Drinking Water																	0.7				50				
NEPM 2013 Table 1C GILs, Fresh Waters																									
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																									
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																									
2-4m																									
4-8m																									
>=8m																									
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																						
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**	<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1	
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**																						
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**																						
265908	**BH2**	**30/03/2021**	**2.8 - 3**																						
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**																						
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**																						
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**																						
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**																						
265908	**BH4**	**30/03/2021**	**2.8-3.0**																						
265908	**BH5**	**29/03/2021**	**0 - 0.2**																						
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**																						
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**																						
265908	**BH7**	**30/03/2021**	**1.8 - 2**																						
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**																						
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**																						
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**																						
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**																						
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**																						
265908	**BH10**	**30/03/2021**	**0.8 - 1**																						
265908	**BH10**	**30/03/2021**	**1.8 - 2**																						
265908	**MW1**	**31/03/2021**	-		<10		<1		<10		<1		<1		<1		<1		<1		<1		<1		<1
265908	**MW2**	**31/03/2021**	-		<10		<1		<10		<1		<1		<1		<1		<1		<1		<1		<1
265908	**MW3**	**31/03/2021**	-		<100		<10		<100		<10		<10		<10		<10		<10		<10		<10		<10
265908	**QA1**	**29/03/2021**	-																						
265908	**QA1**	**31/03/2021**	-		<10		<1		<10		<1		<1		<1		<1		<1		<1		<1		<1
265908	**QA2A**	**30/03/2021**	-																						

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Volatile Halogenated Compounds (VHCs)																					
				Vinyl chloride		Vinyl chloride		1,2,3-trichlorobenzene		1,2,4-trichlorobenzene		1,2-dichlorobenzene		1,3-dichlorobenzene		1,4-dichlorobenzene		2-chlorotoluene		4-chlorotoluene		Bromobenzene		Chlorobenzene		Hexachlorobenzene	1,2-dibromoethane	
				mg/kg		µg/L		mg/kg		µg/L		mg/kg		µg/L		mg/kg		µg/L		mg/kg		µg/L		mg/kg		µg/L		mg/kg	mg/kg	µg/L
EQL				1		10		1		1		1		1		1		1		1		1		1		1		0.1	1	1
ADWG 2018 Health						0.3								1,500				40								300				1
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs						100				10				170				160				260				55				
ANZECC 2000 FW 95%										10				170				160				260								
ANZECC 2000 Recreational water quality and aesthetics																														
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																														
0-1m																														
1-2m																														
2-4m																														
>=4m																														
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																														
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																														
0-2m																														
NEPM 2013 Table 1C GILs, Drinking Water						0.3				30				30				1,500				40				300				
NEPM 2013 Table 1C GILs, Fresh Waters										3				85				160				60								
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																												80		
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																														
2-4m																														
4-8m																														
>=8m																														
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																											
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<1				<1				<1				<1				<1				<1				<0.1	<1	
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**	<1				<1				<1				<1				<1				<1					<1	
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**																											
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**																											
265908	**BH2**	**30/03/2021**	**2.8 - 3**																											
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**																											
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**																											
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**																											
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**																											
265908	**BH4**	**30/03/2021**	**2.8-3.0**																											
265908	**BH5**	**29/03/2021**	**0 - 0.2**																									<0.1		
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**																											
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**																											
265908	**BH7**	**30/03/2021**	**1.8 - 2**																											
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**																											
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**																											
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**																											
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**																											
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**																											
265908	**BH10**	**30/03/2021**	**0.8 - 1**																											
265908	**BH10**	**30/03/2021**	**1.8 - 2**																											
265908	**MW1**	**31/03/2021**	-		<10		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1			<1
265908	**MW2**	**31/03/2021**	-		<10		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1			<1
265908	**MW3**	**31/03/2021**	-		<100		<10		<10		<10		<10		<10		<10		<10		<10		<10		<10		<10			<10
265908	**QA1**	**29/03/2021**	-																											
265908	**QA1**	**31/03/2021**	-		<10		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1		<1			<1
265908	**QA2A**	**30/03/2021**	-																											

Notes and Abbreviations:

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Volatile Halogenated Compounds (VHCs)						Cyanide	Organochlorine Pesticides (OCPs)															
				Bromomethane		Dichloro-difluoromethane		Trichloro-fluoromethane	Trichloro-fluoromethane	Cyanide Total	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde
				mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	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				1	10	1	10	1	10	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ADWG 2018 Health					1																					
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs																										
ANZECC 2000 FW 95%																										
ANZECC 2000 Recreational water quality and aesthetics																										
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																										
0-1m																										
1-2m																										
2-4m																										
>=4m																										
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																			640							
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																										
0-2m																										
NEPM 2013 Table 1C GILs, Drinking Water					1																					
NEPM 2013 Table 1C GILs, Fresh Waters																										
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																				3,600					100	
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																										
2-4m																										
4-8m																										
>=8m																										
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																							
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<1		<1		<1		<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**	<1		<1		<1																		
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**																							
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**																							
265908	**BH2**	**30/03/2021**	**2.8 - 3**																							
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**																							
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**																							
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**																							
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**																							
265908	**BH4**	**30/03/2021**	**2.8-3.0**																							
265908	**BH5**	**29/03/2021**	**0 - 0.2**							<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**																							
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**																							
265908	**BH7**	**30/03/2021**	**1.8 - 2**																							
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**																							
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**																							
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**																							
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**																							
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**																							
265908	**BH10**	**30/03/2021**	**0.8 - 1**																							
265908	**BH10**	**30/03/2021**	**1.8 - 2**																							
265908	**MW1**	**31/03/2021**	-		<10		<10		<10																	
265908	**MW2**	**31/03/2021**	-		<10		<10		<10																	
265908	**MW3**	**31/03/2021**	-		<100		<100		<100																	
265908	**QA1**	**29/03/2021**	-																							
265908	**QA1**	**31/03/2021**	-		<10		<10		<10																	
265908	**QA2A**	**30/03/2021**	-																							

Notes and Abbreviations:

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Organophosphorous Pesticides (OPPs)												Polychlorinated Biphenyls (PCBs)							
				g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (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	mg/kg	mg/kg
EQL				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ADWG 2018 Health																										
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs																										
ANZECC 2000 FW 95%																										
ANZECC 2000 Recreational water quality and aesthetics																										
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																										
0-1m																										
1-2m																										
2-4m																										
>=4m																										
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																										
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																										
0-2m																										
NEPM 2013 Table 1C GILs, Drinking Water																										
NEPM 2013 Table 1C GILs, Fresh Waters																										
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil					50		2,500			2,000																7
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																										
2-4m																										
4-8m																										
>=8m																										
Lab Report Number	**Field ID**	**Date**	**Depth (m)**																							
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**																							
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**																							
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**																							
265908	**BH2**	**30/03/2021**	**2.8 - 3**																							
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**																							
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**																							
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**																							
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**																							
265908	**BH4**	**30/03/2021**	**2.8-3.0**																							
265908	**BH5**	**29/03/2021**	**0 - 0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**																							
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**																							
265908	**BH7**	**30/03/2021**	**1.8 - 2**																							
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**																							
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**																							
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**																							
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**																							
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**																							
265908	**BH10**	**30/03/2021**	**0.8 - 1**																							
265908	**BH10**	**30/03/2021**	**1.8 - 2**																							
265908	**MW1**	**31/03/2021**	**-**																							
265908	**MW2**	**31/03/2021**	**-**																							
265908	**MW3**	**31/03/2021**	**-**																							
265908	**QA1**	**29/03/2021**	**-**																							
265908	**QA1**	**31/03/2021**	**-**																							
265908	**QA2A**	**30/03/2021**	**-**																							

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

TABULATED SOIL AND GROUNDWATER ANALYTICAL RESULTS

				Pesticides
				Parathion
				mg/kg
EQL				0.1
ADWG 2018 Health				
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs				
ANZECC 2000 FW 95%				
ANZECC 2000 Recreational water quality and aesthetics				
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay				
0-1m				
1-2m				
2-4m				
>=4m				
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind				
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil				
0-2m				
NEPM 2013 Table 1C GILs, Drinking Water				
NEPM 2013 Table 1C GILs, Fresh Waters				
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil				
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay				
2-4m				
4-8m				
>=8m				
Lab Report Number	**Field ID**	**Date**	**Depth (m)**	
265908	**BH1**	**29/03/2021**	**0.1 - 0.3**	<0.1
265908	**BH1**	**29/03/2021**	**0.6 - 0.8**	
265908	**BH1**	**29/03/2021**	**1.3 - 1.5**	
265908	**BH2**	**29/03/2021**	**0.2 - 0.4**	
265908	**BH2**	**30/03/2021**	**2.8 - 3**	
265908	**BH3**	**29/03/2021**	**0.2 - 0.4**	
265908	**BH3**	**30/03/2021**	**3.6 - 3.8**	
265908	**BH4**	**29/03/2021**	**0.2 - 0.4**	
265908	**BH4**	**30/03/2021**	**1.4 - 1.6**	
265908	**BH4**	**30/03/2021**	**2.8-3.0**	
265908	**BH5**	**29/03/2021**	**0 - 0.2**	<0.1
265908	**BH6**	**29/03/2021**	**0.5 - 0.7**	
265908	**BH7**	**30/03/2021**	**0.2 - 0.4**	
265908	**BH7**	**30/03/2021**	**1.8 - 2**	
265908	**BH8**	**30/03/2021**	**0.2 - 0.4**	
265908	**BH8**	**30/03/2021**	**3.6 - 3.8**	
265908	**BH9**	**30/03/2021**	**0.2 - 0.4**	
265908	**BH9**	**30/03/2021**	**0.4 - 0.8**	
265908	**BH9**	**30/03/2021**	**3.6 - 3.8**	
265908	**BH10**	**30/03/2021**	**0.8 - 1**	
265908	**BH10**	**30/03/2021**	**1.8 - 2**	
265908	**MW1**	**31/03/2021**	**-**	
265908	**MW2**	**31/03/2021**	**-**	
265908	**MW3**	**31/03/2021**	**-**	
265908	**QA1**	**29/03/2021**	**-**	
265908	**QA1**	**31/03/2021**	**-**	
265908	**QA2A**	**30/03/2021**	**-**	

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mg/kg- milligrams per kilogram; mg/L - milligrams per litre; µg/L - micrograms per litre
#EIL presented is the added contaminant limit (ACL) for lead.

21144

TABULATED RELATIVE PERCENT DIFFERENCE (RPD) RESULTS - SOIL

				Total Recoverable Hydrocarbons (TRH)							Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)						Metals			
				C6-C10 Fraction	F1 (C6-C10 minus BTEX)	>C10-C16 Fraction	F2 (>C10-C16 Fraction minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Arsenic	Cadmium	Chromium (III+VI)	Copper
				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				25	25	50	50	100	100	50	0.2	0.5	1	2	1	3	4	0.4	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																	
265908	**BH4_0.2-0.4**	**29/03/2021**	**soil**	**330**	**320**	**72**	**68**	<100	<100	**70**	**0.3**	<0.5	**11**	<2	<1	<3	<4	<0.4	**57**	**21**
265908	**QA1**	**29/03/2021**	**soil**	**220**	**210**	<50	<50	<100	<100	<50	**0.2**	<0.5	**9**	<2	<1	<3	<4	<0.4	**50**	**19**
RPD				40	42	NA	NA	NA	NA	NA	40	NA	20	NA	NA	NA	NA	NA	13	10
265908	**BH4_0.2-0.4**	**29/03/2021**	**soil**	**330**	**320**	**72**	**68**	<100	<100	**70**	**0.3**	<0.5	**11**	<2	<1	<3	<4	<0.4	**57**	**21**
Inter-lab	**QA1A**	**29/03/2021**	**soil**	270	260	90	87.1	<100	<100	<100	<0.1	<0.1	6	0.3	<0.1	0.3	-	-	-	-
RPD				20	21	22	25	NA	NA	NA	NA	NA	**59**	NA	NA	NA	NA	NA	NA	NA
265908	**BH9_2.8-3.0**	**30/03/2021**	**soil**	**87**	**87**	**170**	**170**	<100	<100	**170**	<0.2	<0.5	<1	<2	<1	<3	<4	<0.4	**54**	**22**
265908	**QA2A**	**30/03/2021**	**soil**	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<3	<4	<0.4	**48**	**18**
RPD				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12	20

Notes/Abbreviations:

RPD - Relative Percent Difference

NA - RPD not calculated (one or both concentrations <LOR)

RPDs > acceptable threshold of 50% are shaded in grey and bolded

mg/kg - milligrams per kilogram

<LOR - less than limit of reporting (LOR)

21144

TABULATED RELATIVE PERCENT DIFFERENCE (RPD) RESULTS - SOIL

				Metals				Polycyclic Aromatic Hydrocarbons (PAH)												
				Lead	Mercury	Nickel	Zinc	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene
				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				1	0.1	1	1	0.2	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																	
265908	**BH4_0.2-0.4**	**29/03/2021**	**soil**	**79**	<0.1	**52**	**32**	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**1.6**
265908	**QA1**	**29/03/2021**	**soil**	**66**	<0.1	**41**	**35**	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**1.2**
RPD				18	NA	24	9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29
265908	**BH4_0.2-0.4**	**29/03/2021**	**soil**	**79**	<0.1	**52**	**32**	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**1.6**
Inter-lab	**QA1A**	**29/03/2021**	**soil**	170	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<10**
RPD				**73**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
265908	**BH9_2.8-3.0**	**30/03/2021**	**soil**	**9**	<0.1	**39**	**16**	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
265908	**QA2A**	**30/03/2021**	**soil**	**6**	<0.1	**39**	**20**	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
RPD				40	NA	0	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes/Abbreviations:

RPD - Relative Percent Difference

NA - RPD not calculated (one or both concentrations <LOR)

RPDs > acceptable threshold of 50% are shaded in grey and bolded

mg/kg - milligrams per kilogram

<LOR - less than limit of reporting (LOR)

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TABULATED RELATIVE PERCENT DIFFERENCE (RPD) RESULTS - SOIL

				Polycyclic Aromatic Hydrocarbons			Total Petroleum Hydrocarbons (TPH)			
				Phenanthrene	Pyrene	PAHs (Sum of positives)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.1	0.1	0.05	25	50	100	100
Lab Report Number	**Field ID**	**Date**	**Matrix Type**							
265908	**BH4_0.2-0.4**	**29/03/2021**	**soil**	<0.1	<0.1	**1.6**	**270**	**110**	<100	<100
265908	**QA1**	**29/03/2021**	**soil**	<0.1	<0.1	**1.2**	**180**	**68**	<100	<100
RPD				NA	NA	29	40	47	NA	NA
265908	**BH4_0.2-0.4**	**29/03/2021**	**soil**	<0.1	<0.1	**1.6**	**270**	**110**	<100	<100
Inter-lab	**QA1A**	**29/03/2021**	**soil**	<0.5	<0.5	<0.5	220	150	<50	<50
RPD				NA	NA	NA	20	31	NA	NA
265908	**BH9_2.8-3.0**	**30/03/2021**	**soil**	<0.1	<0.1	<0.05	<25	**160**	<100	<100
265908	**QA2A**	**30/03/2021**	**soil**	<0.1	<0.1	<0.05	<25	**52**	<100	<100
RPD				NA	NA	NA	NA	**102**	NA	NA

Notes/Abbreviations:

RPD - Relative Percent Difference

NA - RPD not calculated (one or both concentrations <LOR)

RPDs > acceptable threshold of 50% are shaded in grey and bolded

mg/kg - milligrams per kilogram

<LOR - less than limit of reporting (LOR)