Contamination Assessment to Support Remediation and Licence Surrender

Irish Industrial Explosives, Clonagh, Enfield, Co. Kildare

July 2022

P0055-01

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EXECUTIVE SUMMARY

Verde completed a further phase of investigation works on the IIE site in 2022. The purpose of which was to further delineate the residual hotspots of nitrotoluene and ammonia contamination identified in the vicinity of the Garage and Store buildings during the initial August 2021 site investigation.

Site investigation works in February 2022 encountered up to 1.0m of made ground overlying firm sandy gravelly clays and silts up to 4.0 metres below ground level (mBGL). Shallow groundwater entry was observed in the majority of the boreholes installed in the shallow subsoils, and additional monitoring wells were installed to facilitate shallow groundwater sampling.

Results from the site investigation identified distinct hotspots of contamination with contaminants of concern (COCs) within and close proximity to the Garage and Store buildings which are summarised as follows:

Shallow Soils;

- Three distinct hotspots of 2,4 DNT and 2,6 DNT contamination were identified in shallow soils in close proximity to BH508, BH519 and BH612 within the Garage building, and BH511 and BH607 within the Store building;
- Three distinct hotspots of o-NT contamination were identified in shallow soils in close proximity to BH508, BH530, BH519, BH612 and BH616 within the Garage building, and in BH511 and BH608 within the Store building;
- Two distinct hotspot of ammonia (NH_4) contamination was identified in shallow soils in close proximity to boreholes BH522, BH526 and BH611 within the Garage building, and in close proximity to BH602 to the east of the Store building;

Shallow Groundwater;

- Two distinct hotspots of 2,4-DNT and 2,6-DNT contamination were identified in shallow groundwater in close proximity to monitoring wells BH511 and BH608 within the Store building, and BH519 and BH612 within the Garage building;
- Three distinct hotspots of o-NT contamination were identified in shallow groundwater in close proximity to monitoring wells BH511 and BH609 within the Store building, and BH508, BH613 and BH616 within the Garage building;

- Two distinct hotspots of NH_4 contamination were identified in shallow groundwater in close proximity to monitoring wells BH519 and BH612 within the Garage building, and BH521 and BH604 to the east of the Store building.

Recent quarterly monitoring, and additional sampling undertaken at the Western drain (SW4, WD1 & WD2) indicates that the Western drain has been largely free of nitrotoluene contamination since December 2020. This improvement in surface water quality is likely associated with shallow groundwater pump & treat sump that are operating in the area between the garage/store buildings and the western drain.

The contamination appears to be confined within the low permeability shallow subsoils on-site, with no observed impact to the underlying bedrock aquifer as seen from previous quarterly monitoring.

In conclusion, Verde have completed steps 1, 2 and part of step 3 (a Preliminary Site Assessment, a Detailed Site Assessment and a Generic Quantitative Risk Assessment (GQRA)) of Stage 1 (Site Characterisation & Assessment) of the methodology set out in the EPA Guidance document On The Management Of Contaminated Land And Groundwater At EPA Licensed Sites. The final step in this stage of the methodology will be to do the following:

- Update the existing Detailed Quantitative Risk Assessment (DQRA) focusing on the Garage/Store areas with data from these recent phases of site investigation works, with respect to human health and environmental receptors; and existing soil and groundwater Remedial Target Concentrations (RTCs).
- Once the DQRA has been updated, then a Remediation Options Appraisal (ROA) should be developed as per Stage 2 (Corrective Action Feasibility & Design) of the methodology.

LIMITATIONS

This report describes the outcome of site investigation works conducted at the above referenced site in the period of February to April 2022 and is further reliant of previous site-specific information and reports (where available) for the site. Best practice was followed at all times in drafting this report and work was completed within the limitations stated. This report is the property of Verdé Environmental Consultants Limited (Verde) and cannot be used, copied or given to any third party without the explicit prior approval or agreement of Verde.

This report represents an in-depth assessment of conditions at the site through investigation methods performed in accordance with generally accepted standards regarding environmental assessments. Verde makes no other representations whatsoever, including those concerning the legal significance of its findings or as to other legal matters touched on in this report, including, but not limited to ownership of any property or the application of any law to the facts set forth herein.

Except as otherwise may be requested by the client, Verde disclaims any obligation to update the report for events taking place after the time during which we conducted our assessment.

1 INTRODUCTION

1.1 Project Contractual Basis & Parties Involved

Verdé Environmental Consultants Limited (Verdé) was commissioned by Irish Industrial Explosives (IIE) to carry out a site assessment at the IIE manufacturing site in Enfield site. The investigation was to further delineate the hotspots of nitrotoluene and ammonia contamination identified during the August 2021 Site Investigation in the vicinity of the Garage and Store buildings.

1.2 Project Background and Objectives

The site holds an Integrated Pollution Prevention Control (IPPC) Licence No. P0055-01 for activities no longer occurring on site and therefore the current scope of works is intended to support the surrender of the IPPC Licence. Residual contamination associated with historical activities remains on site which requires management to facilitate the surrender process.

A meeting was held with the EPA on 29th January 2021 (Remote Compliance Assessment SV21775) to discuss the proposed License surrender and it was agreed that an updated contamination assessment and revised risk assessment would be required. This report presents the findings from the second phase of site investigation works in the vicinity of the Garage and Store buildings which was conducted in February to April 2022.

1.3 Scope of Works

To complete the assessment and meet the objective of the brief, the following scope of works was completed:

- Borehole drilling;
- Monitoring well installations;
- Soil sampling;
- Groundwater sampling;
- Surface water sampling;
- Groundwater level measurements;
- GPS topographic survey of borehole locations & western drain;
- Interpretative reporting on the site investigation findings and assessment of next steps for remediation options.

2 ENVIRONMENTAL DESK STUDY

2.1 Site Location

The IIE site is located in the townland of Clonagh, near Enfield in rural County Kildare as shown in Figure 1. The wider site covers a total area of approximately 50 hectares with the "working" site taking up approximately 40 hectares (as shown in Figure 2).

The site is located in a broadly flat area in the upper reaches of the River Blackwater valley where the ground level varies between 70 and 80 m above sea level. The region is characterised by vast areas given over to the commercial redevelopment of former peat bogs that are typical of this part of the Irish midlands.

The site is bounded on all sides by agricultural land which is used for light grazing. The wider locality comprises a mixture of agricultural, one-off and low-density residential housing and cutaway bog.

2.2 Site Operations and History

The manufacturing site consists of a number of segregated storage and production units. The majority of these areas are surrounded by constructed embankments. Additional activities on the site include administration, vehicle maintenance and wash-down, and controlled burning of explosives packaging wastes. Normal working hours at the facility are between 08:00 – 16:30 Monday to Thursday, 08:00 – 16:00 Friday. Twenty-four hour security is maintained at the site by the Gardaí and Irish Army.

The facility has been manufacturing explosive products since 1967 and was granted an IPC Licence by the EPA in 1996. Although the site remains operational, licensable activities have not occurred at the site since 2003. Contamination has been identified on site associated with historical activities as discussed in the next section.

2.3 Site Contamination History

The contaminants of potential concern (COPC) associated with historical activities at the site include Nitro – aromatic compounds 2,4 and 2,6 Dinitrotoluene and 2 nitrotoluene (Ortho-nitrotoluene, o-NT) are the primary COPCs. Ammoniacal Nitrogen is also included as a COPC, originating from ammonium nitrate and activities associated with explosives manufacture. Details of COPCs are presented in Table 2.1 below.

Table 2.1- Contaminants of Potential Concern

Contaminant of Concern	Details
Dinitrotoluene (2,4-DNT and 2,6-DNT)	Used in the historical manufacture of explosives on-site (25/75% o-NT/DNT mix) and known to be present in the source areas. Neither DNT nor o-NT are listed as 'hazardous substances' by the EPA.
2-Nitrotoluene (o-NT)	
Ammoniacal Nitrogen	Originating from ammonium nitrate and potentially in smaller amounts from the decomposition of organic materials within the made ground. On-going monitoring also indicates surface water influences from forestry and agricultural activities nearby. Not listed as a hazardous substance.

Contaminated Land Remediation

Historical contamination in soils was delineated during detailed investigations completed between 2014 and 2015.

Remediation works were completed between August and October 2015 during which a total of 6,691 tonnes of soils from two areas beside soils were removed in order to achieve the soil remedial target concentrations. Validation sampling completed as part of remediation works indicated that soil RTCs were achieved for all main areas with only minor localised residues of contaminants remaining. Full details of remediation works and validation sampling are recorded in Verdé Report Ref 50559: Corrective Action Implementation and Verification Report (27th November 2015).

Additional remediation works were completed at the site in 2018 involving the installation of an interception trench and recovery sumps close to the western boundary of the site to assist in the pump & treat recovery of shallow groundwater in the shallow subsoils.

2.4 Current site status

Ongoing monitoring confirms the bedrock groundwater aquifer beneath the site and off- site surface water downstream of the site is not impacted. The following summary applies regarding residual contamination on site:

- Soil: Source soils (upper approx. 1.2m) were excavated in 2015 and validation soil samples confirmed

acceptable soil concentrations. Residual contamination has been identified as remaining in permeable soils at ca. 2-3m depth near GW8a and GW9a.

- Sediment: Western drain sediments have not been impacted (apart from isolated historical samples 2013-2018).
- Groundwater: 12 of 15 groundwater wells show acceptable groundwater quality.
- Three shallow perched groundwater wells near the western drain exhibit residual contamination:
    - GW9a (mainly 2,4 DNT and 2,6 DNT)
    - GW8a (mainly o-NT)
    - GW7 (ammoniacal nitrogen)
- Low level traces of nitrotoluenes were being detected in the western drain which runs along the site boundary up to December 2020 with no detection in the 2021 quarterly monitoring round to date in 2022. Low level traces of nitrotoluenes were being detected in at surface water location SW4 and occasionally at SW5; nitrotoluene contamination has never been detected at location SW6 off site.
- Ammoniacal nitrogen is also being detected in surface water locations but concentrations are much higher upstream of the site indicating that the primary sources are upstream agricultural activities.

Landfill gas monitoring was completed in 2014 on site and results indicated that there are trace amounts of Methane (1.4%) in GW7. All other locations reported gas within normal ranges. Landfill gas has not been measured since Q3 2014 due to the low levels detected.

Monitored natural attenuation (MNA) has been ongoing for groundwater wells; significant improvements in concentrations were noted following remediation works in 2015 with slight improvements noted in the past two years. Stable conditions are evident, and a decreasing / downward trend generally observed as demonstrated by trend graphs and Mann Kendall assessments as presented in quarterly reports.

2.5 Review of historical reports

There are several site investigation reports on EPA files dating back 10 years and more. Verde were engaged as consultants on the site in 2011 and therefore have access to all recent reports. The EPA have provided a copy of a previous report “Environmental Review V1.2 dated December 2010” which provides a complete

status update at that time and identified areas requiring further assessment. Verde considered all available reports in preparation of this phase of works.

2.6 Site Physical Setting

Details of the site physical setting are outlined below. Information regarding geology and hydrogeology underlying the area has been obtained from the desk study review and are enhanced by recent and historic site investigation at the site.

2.6.1 Regional Geology

The Geological Survey of Ireland (GSI) database describes the soils beneath the site as comprising limestone till with peat deposits to the east of the site. There are also sand and gravel deposits recorded immediately to the east of the site.

This part of the Irish midlands is underlain at depth by Carboniferous age limestone, which is generally covered by a layer of glacial deposits of variable thickness. In places, these glacial till and outwash deposits are in turn covered by layers of alluvial sand and silt and, in the Enfield area, by extensive deposits of more recent peat. The Geology of Kildare and Wicklow (GSI Sheet 16) shows this part of County Kildare to be underlain by the Calp Limestone. Specifically, the IIE site is shown to be underlain by rocks belonging to the Toberculleen and Lucan Formations, both of which can be considered as facies within the very extensive Calp unit that is characterised by basinal limestone. Both the Toberculleen and Lucan Formations consist of dark grey argillaceous limestone and shale.

2.6.2 Regional Hydrogeology

The local groundwater body (GWB) is the Trim GWB and the limestone bedrock is classified as a Locally Important (Lm) aquifer that is moderately productive. The Trim GWB covers a large area (c.640km^2) of limestone that is extremely heterogeneous. Consequently, groundwater flow and yields vary greatly within the GWB; confined conditions have been reported from a number of third-party investigations. Karstification throughout the area is recorded to be highly variable, as are the degree of structural deformation, the occurrence of open fractures that allow uninterrupted groundwater flow, and the amount of storage provided by the gravel deposits in the overlying aquifer. The sand and gravel layer described previously is sufficiently extensive to also be classified as a Locally Important Aquifer (Lg) by the GSI.

Groundwater flow in the region, in both the bedrock and the overburden, is largely towards the River Blackwater (i.e. north/north-eastwards from the IIE site) with groundwater contributing significantly to the river's base flow. The region can be considered as a groundwater discharge area, with an upward groundwater flow component in addition to normal horizontal flow.

2.6.3 Vulnerability

GSI Vulnerability Guidelines indicate that the aquifer vulnerability rating for the site is classified as 'High'. Site investigations have shown that a vulnerability rating of 'Moderate to Low' may be more appropriate for the site, however.

2.6.4 Hydrology

The site lies in the River Boyne catchment (HA07) and within the sub-catchment of the Upper Blackwater River, which is the main hydrological feature in the wider area. The Upper Blackwater River flows in a roughly north-westerly direction approximately 2km from the eastern boundary of the site.

A number of surface water ditches and small streams are present in the vicinity of the site. Surface water flow in these is northwards towards the Upper Blackwater River.

The Western Drain runs adjacent to the contaminant source areas identified on the IIE site and converges with other drains from adjacent agricultural land as it flows north and discharges to the Upper Blackwater River within the townland of Dysart circa 2km to the northeast of the site.

2.6.5 Ecologically Protected Areas

Information from the National Parks & Wildlife Service (NPWS) indicates that there are no Natural Heritage Area (pNHA), Special Protection Area of Conservation (SAC) or Special Protection Areas (SPA) located in the immediate vicinity of the site.

2.6.6 Groundwater Abstraction Wells

Kildare County Council have a series of supply wells installed within the Limestone bedrock aquifer which are located to the north of the site as shown on Figure 1 together with the outline of the source protection zones

around each of the abstractions. The well field is not in production at present and Kildare County Council has indicated they plan to start production in the coming years.

It can be seen from Figure 1 that the IIE site lies partly within the Inner Source Protection Zone (ISPZ) for the Dysart abstraction and partly within the wider Outer Source Protection Zone (OSPZ) for the well field generally. The ISPZ is defined by the GSI as the 100-day travel time from any point below the water table to the source. The OSPZ essentially defines the overall catchment of the pumping well(s).

Figure 1 also shows the location of domestic wells that are recorded on the GSI online data base. The number of domestic wells reflects the rural and agricultural character of the area.

3 SITE INVESTIGATION

Fieldwork for the purpose of this phase of site investigation works included the following:

- Borehole Drilling;
- Monitoring Well Installations;
- Soil Sampling;
- Groundwater Sampling;
- Surface Water Sampling;
- Groundwater level measurements;
- Topographic surveying of all borehole locations.

Locations for additional site investigation were based on the findings of the first phase of site investigation works conducted in August 2021 and was undertaken on a 5m grid basis in the Garage and Store areas. The following was the rationale for the proposed further 2022 site investigation works, with the borehole locations illustrated in in Figure 2:

- Drill and install 16No. shallow monitoring wells (BH601-BH609, BH611-BH617) to 3-4mBGL (metres below ground level) in the areas surrounding the 4No. hotspots of contamination identified during the August 2021 site investigation, to further delineate these shallow contamination sources.
- Additional shallow borehole (BH610) was drilled in the Workshop building as no site investigation works had been conducted in this area historically.
- Collect approximately 2-3 soil samples from each shallow borehole.

Site investigation work commenced on the 22nd February 2022 and concluded on the 22nd April 2022. Prior to the commencement of the site investigation, all proposed borehole locations were cleared for the presence of underground services. All borehole locations were marked on the ground using spray paint. All borehole locations with concrete/tarmac hardstanding were cored by a specialist coring contractor before drilling commenced. Over the course of the 2022 site investigation, the following works were completed (with the borehole locations shown on Figure 2):

- 17No. shallow boreholes drilled with a Dando Terrier percussion drilling rig with 17No. shallow groundwater monitoring wells installed and 56No. soil samples were recovered from the drilling cores.

Soil from the boreholes locations were sampled based on physical observations with respect to potential contamination. Samples representing the made ground and natural soil deposits were obtained from each location by mixing the soils on clean plastic before placing in laboratory supplied containers. In general, 2-3 representative samples per location were scheduled for the chemical analysis to provide a robust understanding of the nature and extent of contamination within the made ground and natural soil deposits.

All borehole sampling locations are shown on Figure 2 and a series of photographs from the site investigation are provided in Appendix A. A sample observations summary sheet is included in Appendix B, borehole logs (with well installation details where applicable) are provided in Appendix C.

Further details on the methodology used and observations during site works are provided below. Results from analysis of collected samples are discussed in Section 4 of this report.

3.1 Borehole Drilling

Percussion drilling methods were used over the course of the 2022 investigation to drill a total of 17No. shallow boreholes (BH601-BH617), with all boreholes being installed as perched groundwater monitoring wells (BH601-BH617). Each drilling location was initially cleared for the presence of underground services using a CAT scan. A Verde environmental scientist was present to supervise the drilling.

All shallow boreholes were drilled using a Dando terrier percussion rig over a 4-day period commencing on the 22nd February 2022. The target depth for these boreholes was approximately 3-4mBGL. General ground conditions encountered consisted of a concrete and tarmacadam hardstanding in some areas in and around the buildings to an average depth of 0.2mBGL, the depth of concrete in some areas of the Garage building was thicker with a maximum depth of 0.4mBGL. This hardstanding was underlain by made ground consisting grey/brown gravel fill with cobbles present to an average depth of 0.7mBGL. These man-made deposits were underlain by natural ground consisting grey/brown sandy clayey SILT, and grey/brown sandy silty CLAY with subangular-subrounded cobbles present to a maximum depth of 4.0mBGL.

The locations of the groundwater monitoring wells and boreholes were distributed in the areas surrounding the hotspots of contamination identified during the 2021 site investigation. Groundwater well screens with geosock liner were installed in the target geological horizon with bentonite seal placed above to ensure

monitoring wells were representative of the intended perched groundwater installation, as presented in the borehole logs in Appendix C.

Shallow groundwater seepage was encountered in all of the boreholes which were installed as groundwater monitoring wells (BH601-BH617) at depths of between 2.95 and 4.0 mBGL. Bentonite seals were used to install wells in targeted geological horizons.

With the exception of 4No.boreholes (BH601, BH602, BH603, BH604, BH606 & BH615), physical evidence of nitrotoluene contamination was encountered in all other boreholes during drilling, which was most pronounced in boreholes BH607, BH608, BH611, BH612, BH613 and BH616. Observed nitrotoluene contamination consisted of almond odours associated o-NT, ranging from moderate-strong and no PID readings (0.0ppm). Some hydrocarbon contamination was observed in three of the boreholes (BH601, BH602 & BH609) which consisted of mild-moderate hydrocarbon odours and low-moderate PID readings (maximum value: 50.4ppm).

A summary of geological conditions are presented in Table 3.1 below. A summary of all sample observations is presented in Appendix B and borehole logs are presented in Appendix C.

Table 3.1 – General Geological Profile under the IIE Site

Lithology	Description	Range of Total Depths (mBGL)
Made Ground	Made Ground - Concrete and tarmacadam hardstanding present. Thickest depth of concrete was encountered in Garage building (BH614-BH617).	(0.12 – 0.4)
	Made Ground – grey/brown gravel fill with concrete fragments present.	(0.5 –1.0)
Natural Ground	Grey/brown sandy clayey SILT, and grey/brown sandy silty CLAY with subangular-subrounded cobbles present.	(2.95-4.0)

3.2 Groundwater Well Installation

All of the 17No. shallow boreholes drilled were installed as permanent groundwater monitoring wells during the site investigation works (BH601-BH617). Each well was completed with a 50mm diameter slotted screen

standpipe of 2m maximum length at the bottom of the borehole with a geo-sock liner and capped at the base to capture groundwater in the targeted strata. A solid standpipe was installed above this to the ground level. A gravel pack was inserted from the base of the borehole to approximately 0.2m above the slotted screen/solid standpipe interface and was finished with a bentonite seal above to prevent any surface water ingress. All monitoring wells were completed with flush mounted heavy duty covers, as presented in the site photographs in Appendix A.

Groundwater monitoring well locations are presented on Figure 2 and the construction details for the installed wells are described in the borehole logs provided in Appendix C.

3.3 Soil Sampling

Soil samples were recovered from the shallow borehole drilling. On average 3No. samples were recovered from each of the shallow percussion drilling locations (BH601-BH617).

Each sample was placed in laboratory supplied containers and was stored at less than 9°C prior to dispatch to the laboratory for analysis. Representative soil samples from each borehole were selected by Verdé for submission to an independent UKAS accredited laboratories for analysis. The soil analytical suite included the following parameters:

- Semi Volatile Organic Compounds (SVOCs) + Tentatively Identified Compounds (TICs)
- Soil pH
- Electrical Conductivity
- Fraction Organic Carbon (FOC)
- Redox Potential
- Ammoniacal Nitrogen as NH4
- Nitrogen species including: Nitrite (NO_2) & Nitrate (NO_3)
- Orthophosphate as PO_4

Selected soil samples were also analysed for the following analytical suite, where physical evidence of hydrocarbon contamination was encountered during drilling:

- Speciated Total Petroleum Hydrocarbons (TPH-CWG)
- EPH Interpretation

- MTBE & BTEX

3.4 Surface Water Sampling

Surface water sampling was undertaken on the 5th April 2022. 3No. samples (SW4, WD1 & WD2) were recovered from three locations along the western drain which runs along the western perimeter of the site, as presented on Figure 2. These additional WD1 & WD2 sampling points in the western drain are included in ongoing quarterly monitoring rounds to provide further trend of COC in this watercourse.

Field readings were recorded including temperature, pH, EC and DO and are presented in the sampling logs in Appendix D. No physical evidence of contamination was observed during the sampling event.

All water samples were taken using a telescopic sampling pole and then placed into laboratory supplied containers and stored at less than 9°C prior to dispatch to the laboratory for analysis. Surface water samples were tested for the following parameters:

- Heavy Metals
- Semi Volatile Organic Compounds (SVOCs) + Tentatively Identified Compounds (TICs)
- Ammoniacal Nitrogen as NH_3
- Nitrogen species including: Nitrite (NO_2), Nitrate (NO_3) & Total Nitrogen
- Sulphate (SO_4)

3.5 Groundwater Sampling

Verde completed a round of groundwater sampling of the newly-installed groundwater wells on the 6th April 2022. Sampling was completed in accordance with the Verde groundwater sampling protocol. Prior to groundwater sampling, water level and total depth of each well was measured, and specific purge volumes calculated. Each monitoring borehole was bailed using dedicated bailer and at least three borehole volumes of water were purged prior to sample collection into laboratory supplied containers. Low-flow sampling was performed on selected monitoring wells which appeared to be free of contamination (BH604, BH606, BH610 & BH614). Inorganic parameters were obtained in plastic containers with sulphuric acid preservative used for ammonia analysis. Organic parameters were collected in glass containers with glass vials with septa used to prevent any headspace loss for VOC analysis.

Field readings were recorded on selected monitoring wells which appeared to be free of contamination using low-flow sampling techniques (including temperature, pH, Electrical Conductivity (EC)) and are presented in the low-flow sampling logs in Appendix D. Field readings were not taken in wells with physical evidence of contamination to prevent damage to the water quality meter.

A total of 16No. groundwater samples were collected from the 17No. newly-installed shallow monitoring wells. There was no groundwater present in BH617 to sample. The majority of the shallow groundwater samples had a grey/brown tint with significant fine brown sediment present. Ten of the newly-installed monitoring wells encountered physical evidence of contamination including an almond odour or hydrocarbon odour and/or sheen. The almond odour is associated with nitrotoluene contamination. BH616 had a grey/brown colour and strong almond odour which is an indication of strong nitrotoluene contamination. Table 3.2 below is a summary of the monitoring wells where PEC was encountered during sampling.

Table 3.2 – Summary of PEC encountered during sampling of the 600 series shallow groundwater wells

Monitoring Well ID	PEC
BH601	Slight H/C odour & sheen
BH602	Very slight H/C odour & sheen
BH605	Mild-moderate almond odour
BH607	Mild almond odour
BH608	Moderate almond odour
BH609	Moderate almond odour, mild H/C odour & sheen
BH611	Very mild almond odour
BH612	Moderate almond odour
BH613	Moderate almond odour
BH616	Strong almond odour

Notes:
PEC = Physical evidence of contamination
H/C = Hydrocarbon

Additional analyses of TPH, BTEX & MTBE was completed on 5No. of the monitoring wells; BH601, BH602, BH603, BH609 and BH612.

All water samples taken were then placed into laboratory supplied containers and stored at less than 9°C prior to dispatch to the laboratory for analysis. Groundwater samples were tested for the following parameters:

- Heavy Metals
- Semi volatile Organic Compounds including Tentatively Identified Compounds (SVOCs & TICs)
- Ammoniacal nitrogen as NH_3
- Nitrogen species including: Nitrite (NO_2), Nitrate (NO_3) & Total Nitrogen
- Orthophosphate as PO_4

Selected groundwater samples were also analysed for the following analytical suite, where physical evidence of hydrocarbon contamination was encountered during the sampling event:

- Speciated Total Petroleum Hydrocarbons (TPH-CWG)
- EPH interpretation
- MTBE & BTEX

3.6 Well Surveying and Water Levels

A topographical survey of the newly-installed wells and existing wells on the site was completed on the 22nd April 2022 by Land & Aerial Surveys. All wells were surveyed from the top of the monitoring wells standpipe. This information was used with manual groundwater level dip measurements from 22nd April 2022 to determine the groundwater levels to Ordnance Datum Malin Head levels, as presented in Table 3.3 below. Ground levels were also recorded at the well locations for both Cross Sections: A-A', B-B' (Figures 4 & 5 respectively).

The static groundwater levels for each monitoring round were used to determine the water table elevation across the site relative to site datum survey levels. All recently-installed and newly-installed monitoring wells (500 & 600 series) were installed in the shallow overburden. Any existing monitoring wells that were surveyed in April 2022 were also installed in the shallow overburden.

Table 3.3: Groundwater Monitoring Well Survey Details and Groundwater Levels 22nd April 2022

Well Name	Easting	Northing	Elevation (mOD)	GW Level (mBTOSP) 22/04/22	GW Level (mOD)
BH501	679117.615	737006.193	74.725	2.22	72.505
BH502	679113.135	736979.442	74.985	2.39	72.595
BH503	679103.763	736946.103	74.898	1.955	72.943
BH504	679104.284	736938.877	74.91	1.92	72.99
BH505	679116.106	736982.981	74.954	2.27	72.684
BH506	679109.959	736957.086	74.917	2.195	72.722
BH507	679127.589	736997.032	74.952	2.28	72.672
BH508	679122.335	736988.171	75.238	2.515	72.723
BH509	679122.195	736968.572	74.985	2.16	72.825
BH510	679117.042	736956.443	74.944	2.1	72.844
BH511	679114.851	736948.118	75.075	2.16	72.915
BH512	679109.101	736936.634	74.893	1.94	72.953
BH513	679140.706	737016.021	74.639	1.41	73.229
BH514	679142.949	736997.708	74.825	2.02	72.805
BH515	679123.79	736978.492	74.997	1.93	73.067
BH516	679124.756	736958.37	75.022	2.09	72.932
BH517	679119.077	736934.743	75.038	2.05	72.988
BH518	679156.106	736994.708	74.758	1.99	72.768
BH519	679148.313	736980.658	75.106	2.26	72.846
BH520	679148.37	736964.767	74.959	1.54	73.419
BH521	679140.663	736940.841	74.825	1.945	72.88
BH601	679145.515	736940.223	74.715	1.25	73.465
BH602	679140.29	736936.888	74.752	1.94	72.812
BH603	679135.138	736941.278	74.703	1.89	72.813
BH604	679141.325	736946.977	74.824	2.03	72.794
BH605	679115.454	736950.987	74.988	2.18	72.808
BH606	679119.349	736947.456	74.978	2.11	72.868
BH607	679110.921	736949.559	75.021	2.21	72.811
BH608	679115.217	736945.354	75.013	2.155	72.858
BH609	679151.856	736979.584	74.941	2.16	72.781
BH610	679144.564	736972.629	75.021	2.23	72.791
BH611	679145.383	736981.307	75.099	2.28	72.819
BH612	679148.114	736981.758	75.084	2.35	72.734
BH613	679146.824	736977.452	75.088	2.34	72.748
BH614	679126.418	736986.044	75.174	2.5	72.674
BH615	679123.493	736986.375	75.177	2.51	72.667
BH616	679120.871	736988.656	75.197	2.55	72.647

BH617	679123.256	736989.208	75.156	-	
BH401	679122.472	736945.164	74.947	2.08	72.867
BH408	679119.909	736979.919	74.946	2.375	72.571
GW8A	679117.307	736995.527	74.85	2.43	72.42
GW9A	679108.489	736963.772	74.856	2.66	72.196
SUMP8A	679117.216	736991.536	75.122	2.88	72.242
SUMP8B	679112.082	736972.663	75.08	3.19	71.89
SUMP9A	679107.136	736956.093	74.948	3.64	71.308
SUMP9B	679104.866	736949.196	75.15	2.69	72.46

Notes:
TOSP = top of standpipe
mBTOSP = metres below top of standpipe
mOD = metres above Ordnance Datum

It can be seen that the shallow groundwater flow in the vicinity of the Garage and Store buildings, as presented in Figure 3, is generally towards the western drain flowing from the east to the west. It can be seen from the groundwater contour map that the four sumps (8a, 8b, 9a & 9b) located to the east of the western drain, which were pumping at the time of the groundwater dip-round on 22nd April 2022, are creating some localised groundwater capture zones around these sumps. These sumps are aimed at capturing the COC in the shallow groundwater and thereby reducing impact to the western drain receptor.

4 GENERIC QUANTITATIVE RISK ASSESSMENT

The report findings are based on information gathered from visual site inspection, the site investigations conducted in 2021 and 2022 and historical site investigations referenced in this report. The content of this report relates to the condition of the site at the time of Verde's investigations in early 2022. In order to help process and visualise the large dataset of soil and groundwater results a contour package called Surfer was used to present the results of the 2021 and 2022 site investigations as 2-D and 3-D plots as presented in Figures 4.1 to 4.18 below. **On the plots where there is a green colour at a well location it is representative of no detection of the COC above laboratory detection limits**. The plots highlight hotspots of contamination in the shallow soil and shallow groundwater in these areas.

4.1 Generic Assessment Criteria

In order to assess the human health and environmental risks posed by potential contaminants within the underlying soils and groundwater, Verde undertook a comparison of the laboratory analysis results against Generic Assessment Criteria (GAC).

The risk to construction workers is not considered under the CLEA (Contaminated Land Exposure Assessment) methodology because it is assumed that health and safety guidelines relating to construction will be adhered to and suitable health and safety measures and controls implemented.

Soils-Derivation of GAC

Soil analysis results from the site-wide trial pit and hand augering works have been compared to LQM/CIEH (3rd Edition) S4ULs for Human Health Risk Assessment (LQM, 2015, Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3484), in which GACs have been derived using the CLEA v1.06 model. The LQM/CIEH S4ULs provide GACs based on minimal or tolerable risk that are intended to be protective of human health. The values have been derived for differing soil organic matter (SOM), i.e., 1%, 2.5% and 6% concentrations and for a variety of standard land uses as follows:

- Residential with plant uptake;
- Residential without plant uptake;
- Commercial and industrial;
- Allotments
- Parks and open spaces - near to residential

- Parks and Open spaces - not near residential

S4ULs have not been published for lead. Consequently the GAC that has been utilised for lead is the Category 4 Screening Level (C4SL) published by DEFRA in 2014 in the document SP1010: "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination".

Any future use of the IIE site is expected to be commercial or industrial with the area not currently zoned for development. Based on this, the most appropriate generic assessment criteria (GACs) are the following:

- Commercial and Industrial

Contaminant concentrations below GACs associated with the two land uses described above are considered not to warrant further risk assessment. However, concentrations of potential contaminants above the GAC may require further consideration through statistical analysis and possibly DQRA and/or remediation.

Water

The analytical results for surface water are discussed with reference to maximum allowable concentrations (MAC) annual average Environmental Quality Standards (EQS) for inland surface waters as quoted in the European Communities Environmental Objectives (Surface Water) Regulations 2015 (S.I. No. 386 of 2015), and Interim Guideline Values (IGVs) from the EPA discussions document “Environment Quality Objectives and Environmental Quality Standards, the Aquatic Environment” 1997.

4.2 Soil Sampling of 600 Series Boreholes (BH601-BH617)

The results of the soil analysis (including the 2021 site investigation) are summarised below. Results from the 2022 further site investigation are presented in Tables 1A-1D. Borehole logs are included in Appendix C, and the laboratory analytical certificates presented in Appendix E.

A total of 56No. soil samples were collected from all of the 17No. newly-drilled boreholes (BH601-BH617), the results of which are summarised below.

Table 4.1 – Results Summary for COPCs

COPC	Unit	No. Of Samples Taken	Min.	Mean	Max.	Max. Sample ID	Sample Depth (mBGL)
2,4-Dinitrotoluene (2,4 DNT)	mg/kg	52[1]	<0.01	57	1,307	BH607-A	0.25-0.65
2,6-Dinitrotoluene (2,6 DNT)	mg/kg	52[1]	<0.01	18	379	BH612-C	3.0-3.3
2 - Nitrotoluene (o-NT)	mg/kg	52[1]	<0.01	43	1,206	BH616-C	3.0-4.0
Ammoniacal Nitrogen as NH4	mg/kg	52[1]	<0.6	17	277	BH611-A	0.6-2.0

Notes:
1 = does not include samples taken for TPH analysis

4.2.1 2,4 DNT

Concentrations of 2,4 DNT were below laboratory detection limits in 28No. of the 52No. soil samples analysed in 2022. Three distinct hotspots of 2,4 DNT contamination were identified in close proximity to BH508, BH519, BH612 within the Garage building, and BH511 and BH607 within the Store building. See Figures 4.1-4.3 below for Surfer Plots illustrating the hotspots of contamination at 0-2m, 2-3m and 3-4m respectively. Summary of results with respect to these three hotspots of 2,4 DNT contamination are summarised as follows:

- Shallow elevated concentrations of 2,4 DNT were detected in and nearby borehole BH519 within the Garage building, with the highest value being recorded at a depth of 2-3m (1,089 mg/kg). Relatively lower concentrations of 2,4 DNT were detected at depths of 1.0-1.5m (20.8 mg/kg) and 3-4m (297.7 mg/kg). Elevated concentrations of 2,4-DNT were detected in BH612, with the highest value being detected at a depth of 3.0-3.3m (712.6 mg/kg).
- Shallow elevated concentrations of 2,4-DNT were detected in borehole BH511 within the Store building, with the highest value being recorded at a depth of 3-4m (194.3 mg/kg). Relatively lower concentrations of 2,4 DNT were detected at depths of 1.0-1.5m (0.16 mg/kg) and 2-3m (71.28 mg/kg). Elevated concentrations of 2,4-DNT were detected in BH612, with the highest value being detected at a depth of 2-3m (712.57 mg/kg). Elevated concentrations of 2,4-DNT were detected in BH607, with the highest value being detected at a depth of 0.25-0.65m (1,307 mg/kg).
- Low concentrations of 2,4 DNT were detected in borehole BH508 within the Garage building, with the highest value being recorded at a depth of 2-3m (0.14 mg/kg). 2,4 DNT were not detected in soils from this borehole at a depths of 1.0-1.5m and 3-4m. Low concentrations of 2,4-DNT were confirmed in BH616 at a depth of 3-4m (0.15mg/kg) which is located west of BH508.

Figure 4.1 – Surfer Plot illustrating hotspots of 2,4-DNT Contamination at 0-2m

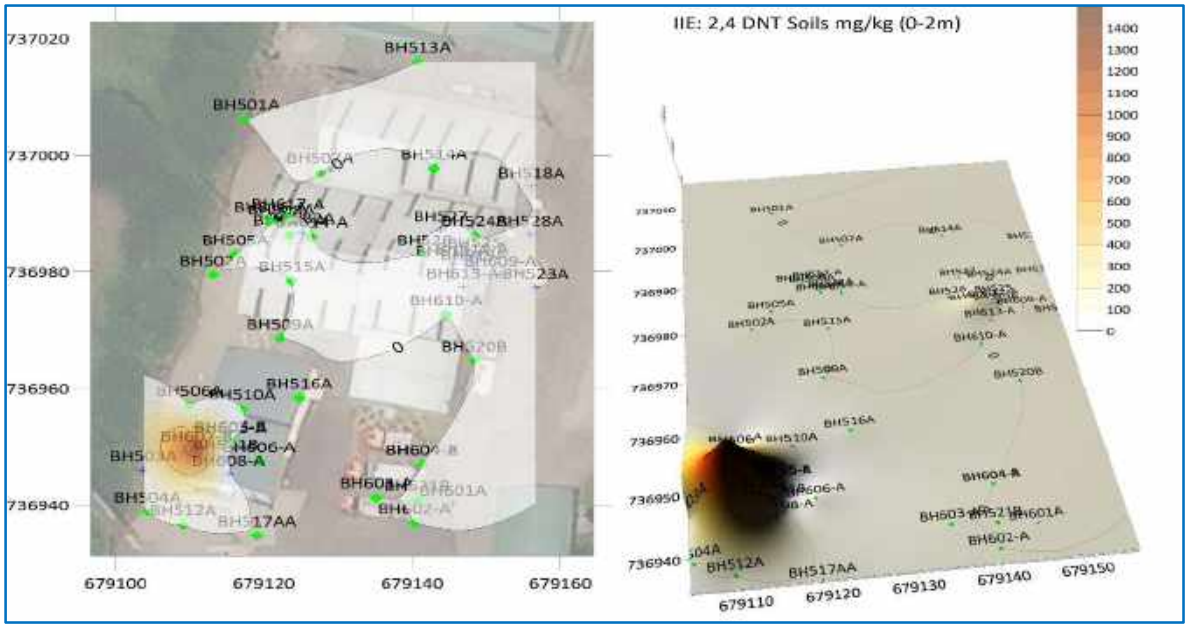


Figure 4.2 – Surfer Plot illustrating hotspots of 2,4-DNT Contamination at 2-3m

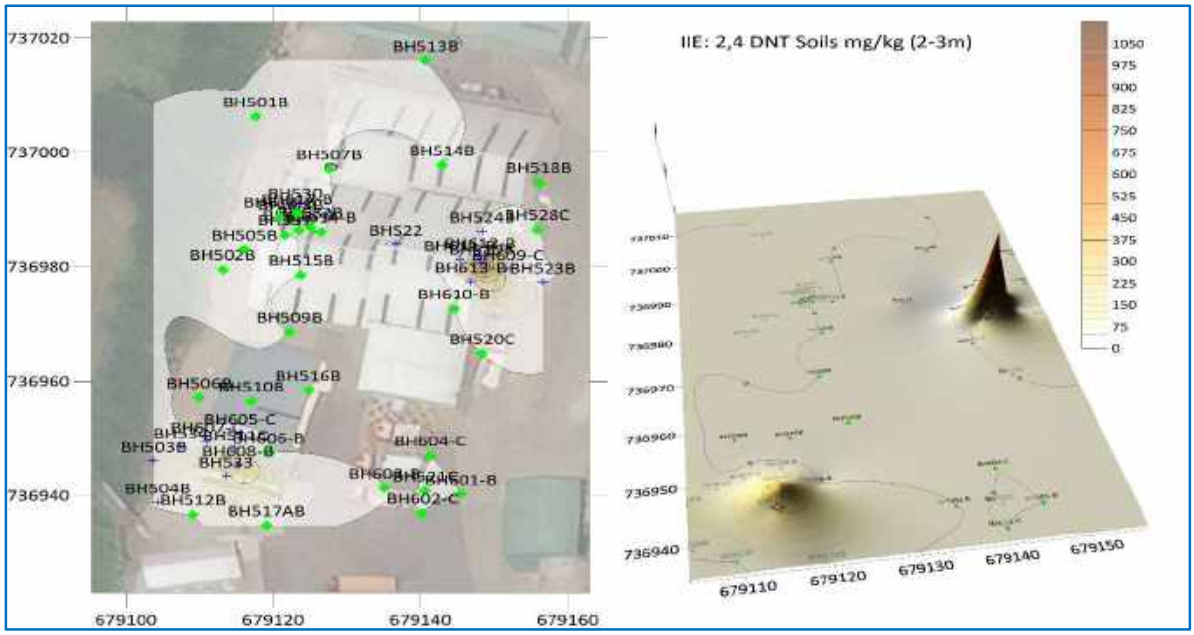
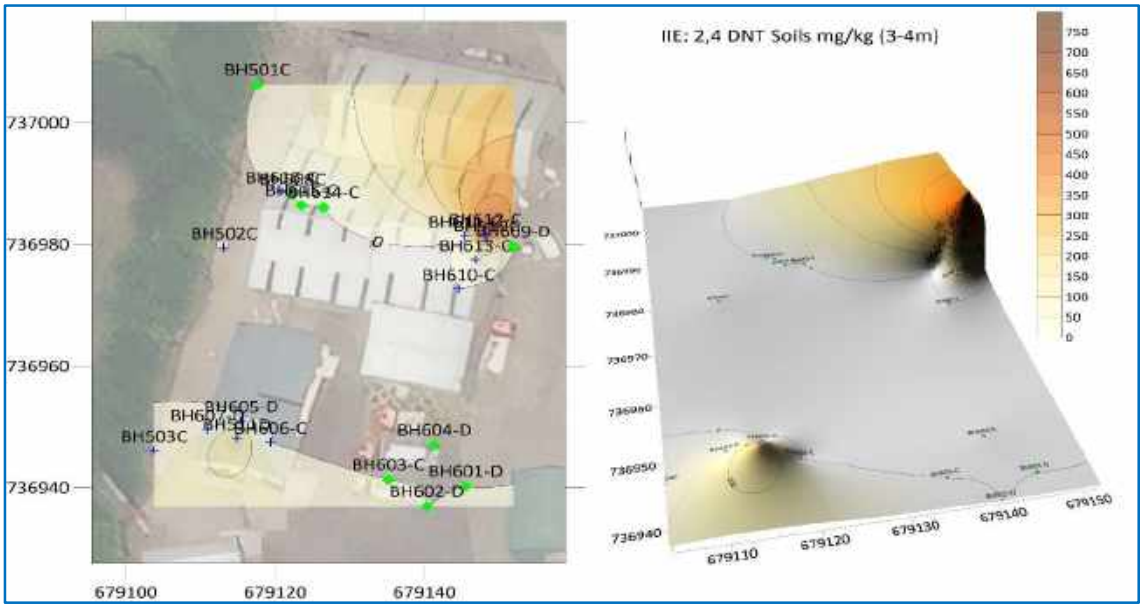


Figure 4.3 – Surfer Plot illustrating hotspots of 2,4-DNT Contamination at 3-4m



4.2.2 2,6 DNT

Concentrations of 2,6 DNT were below laboratory detection limits in 28No. of the 52No. soil samples analysed in 2022.

Three distinct hotspots of 2,6 DNT contamination were identified in close proximity to BH508, BH519, BH612 within the Garage building, and BH511 and BH607 within the Store building. See Figures 4.4-4.6 below for Surfer Plots illustrating the hotspots of contamination at 0-2m, 2-3m and 3-4m respectively. Summary of results with respect to these three hotspots of 2,6 DNT contamination are summarised as follows:

- Shallow elevated concentrations of 2,6 DNT were detected in and nearby borehole BH519 within the Garage building, with the highest value being recorded at a depth of 2-3m (387.2 mg/kg). Relatively lower concentrations of 2,6 DNT were detected at a depths 1.0-1.5m (5.48 mg/kg) and 3-4m (142 mg/kg). Elevated concentrations of 2,6 DNT were detected in BH612, with the highest value being detected at a depth of 3.0-3.3m (379 mg/kg).
- Shallow elevated concentrations of 2,6 DNT were detected in borehole BH511 within the Store building, with the highest value being recorded at a depth of 3-4m (134.4 mg/kg). Relatively low concentrations of 2,6 DNT were detected at depths of 1.0-1.5m (0.2 mg/kg) and 2-3m (58.3 mg/kg).

Elevated concentrations of 2,6-DNT were detected in BH607, with the highest value being detected at a depth of 0.25-0.65m (766 mg/kg).

- Slightly elevated concentrations of 2,6 DNT were detected in borehole BH508 within the Garage building, with the highest value being recorded at a depth of 2-3m (0.1 mg/kg). 2,6 DNT were not detected in soils from this borehole at depths of 1.0-1.5m and 3-4m. Low concentrations of 2,6-DNT were detected in BH616 at a depth of 3-4m (0.04 mg/kg).

Figure 4.4 – Surfer Plot illustrating hotspots of 2,6 DNT Contamination at 0-2m

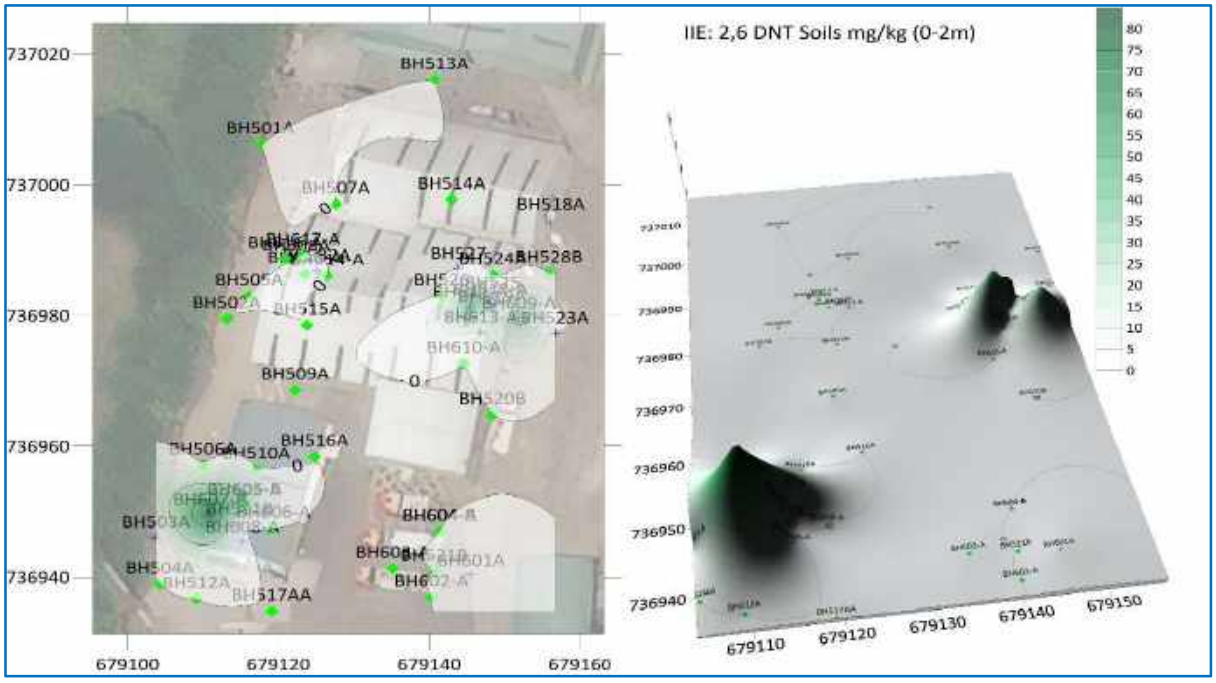


Figure 4.5 – Surfer Plot illustrating hotspots of 2,6 DNT Contamination at 2-3m

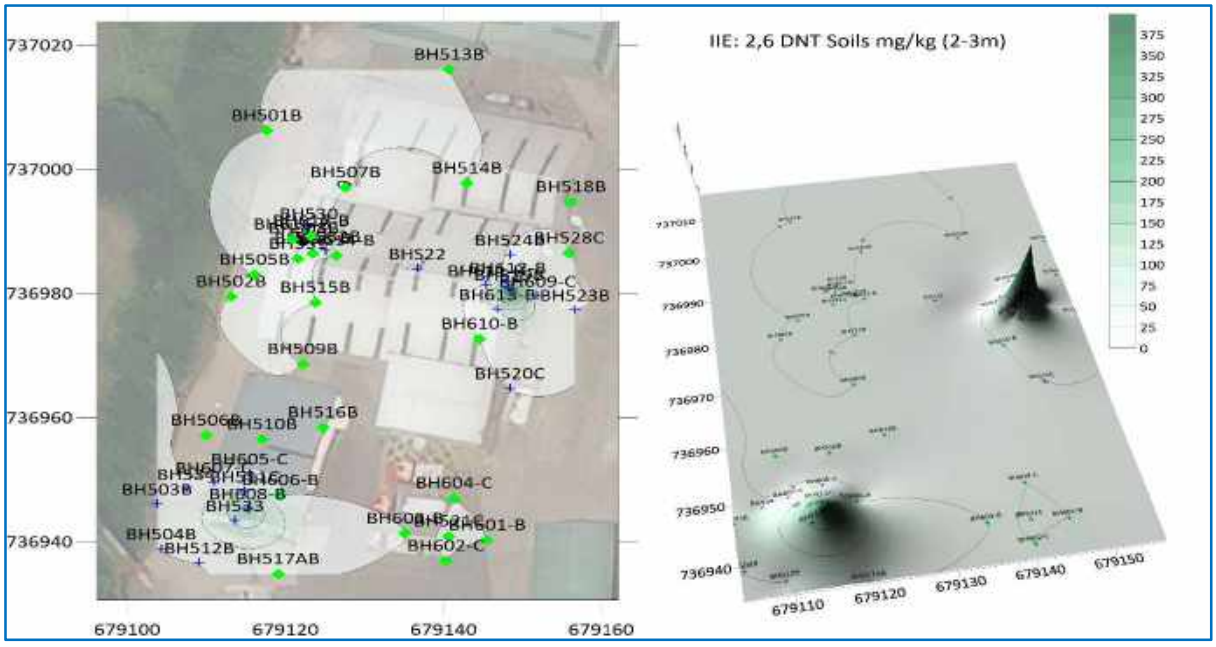
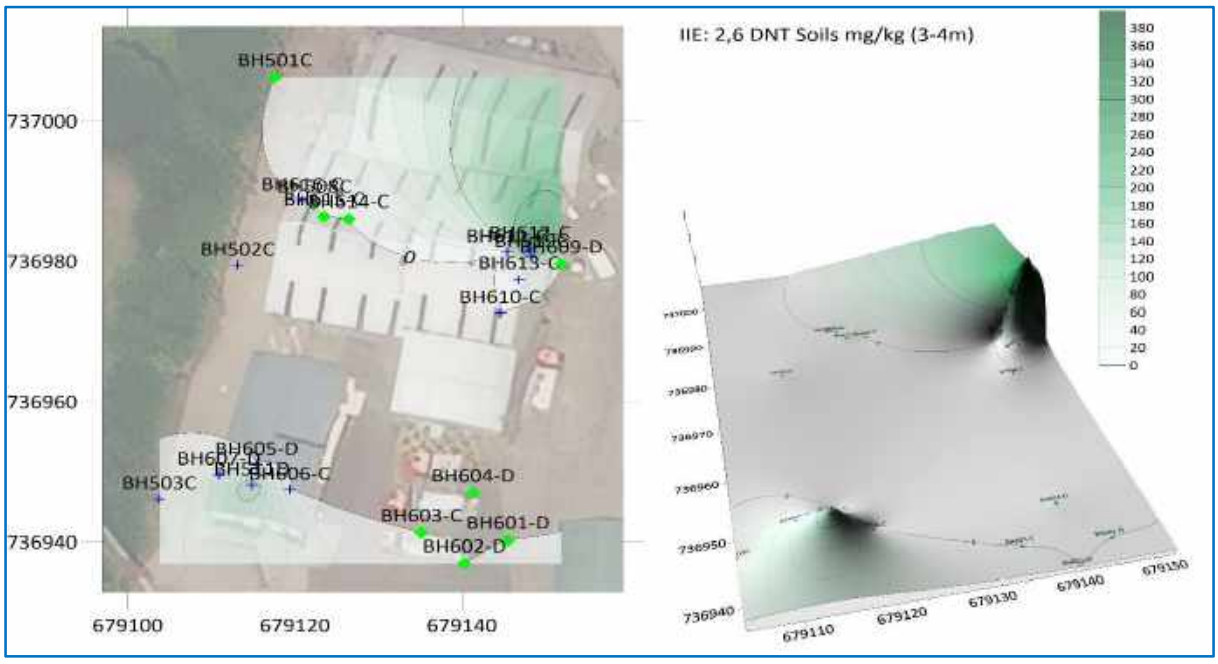


Figure 4.6 – Surfer Plot illustrating hotspots of 2,6 DNT Contamination at 3-4m



4.2.3 o-NT

Concentrations of o-NT were below laboratory detection limits in 24No. of the 52No. soil samples analysed in 2022.

Three distinct hotspots of o-NT contamination were identified in close proximity to BH508, BH530, BH519, BH612 and BH616 within the Garage building, and in BH511 and BH608 within the Store building. Some elevated concentrations of were detected in BH604 to the east of the Store building. See Figures 4.7-4.9 below for Surfer Plots illustrating the hotspots of contamination at 0-2m, 2-3m and 3-4m respectively. Summary of results with respect to these three hotspots of o-NT contamination are summarised as follows:

- Shallow elevated concentrations of o-NT were detected in borehole BH519 within the Garage building, with the highest value being recorded at a depth of 1.0-1.5m (0.67 mg/kg). Concentrations of o-NT were not detected at depths of 1.0-1.5m and 3-4m. Elevated concentrations of o-NT were detected in BH612, with the highest value being detected at a depth of 3.0-3.3m (102.2 mg/kg).
- Shallow elevated concentrations of o-NT were detected in borehole BH511 within the Store building, with the highest value being recorded at a depth of 3-4m (91.7 mg/kg). Relatively lower concentrations of o-NT were detected at a depth of 2-3m (34.8 mg/kg). Concentrations of o-NT were undetected at a depth of 1.0-1.5m. Elevated concentrations of o-NT were detected in BH608, with the highest value being detected at a depth of 2.0-3.0m (66.95 mg/kg).
- Elevated concentrations of o-NT were detected in borehole BH508 within the Garage building, with the highest value being recorded at a depth of 3-4m (58.6 mg/kg). Relatively lower concentrations of o-NT were detected at a depth of 2-3m (13.6 mg/kg). Concentrations of o-NT were not detected in soils from this borehole at a depths of 1.0-1.5m. Elevated concentrations of o-NT were detected in BH616 located west of BH508, with the highest value being detected at a depth of 3.0-4.0m (1,206 mg/kg).
- Elevated concentrations of o-NT were detected in borehole BH530 within the Garage building, at a depth of 2-3m (342.4 mg/kg). BH530 was not sampled below 3m.
- Elevated concentrations of o-NT were detected in BH604, with the highest value being detected at a depth of 0.12-0.4m (61.9 mg/kg). o-NT was undetected in BH604 at depths below this.

Figure 4.7 – Surfer Plot illustrating hotspots of o-NT Contamination at 0-2m

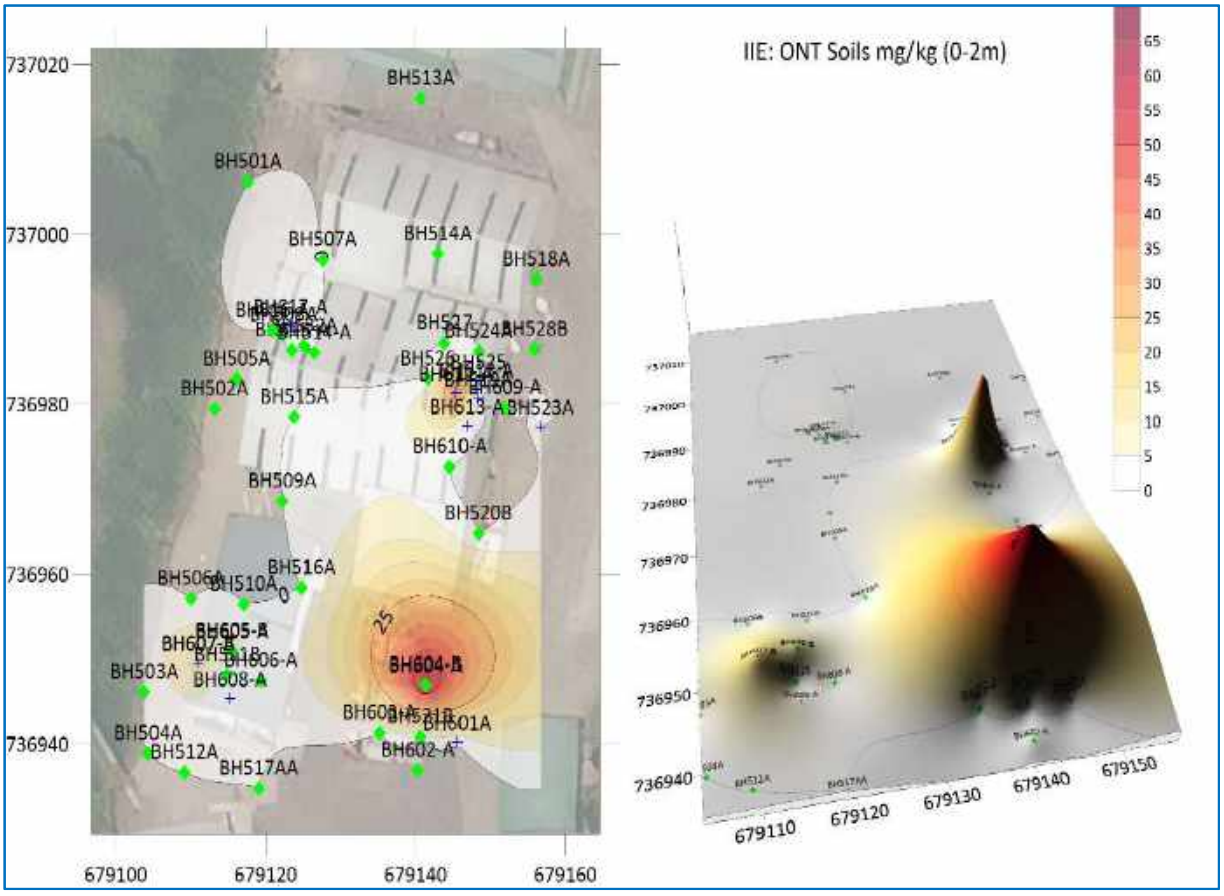


Figure 4.8 – Surfer Plot illustrating hotspots of o-NT Contamination at 2-3m

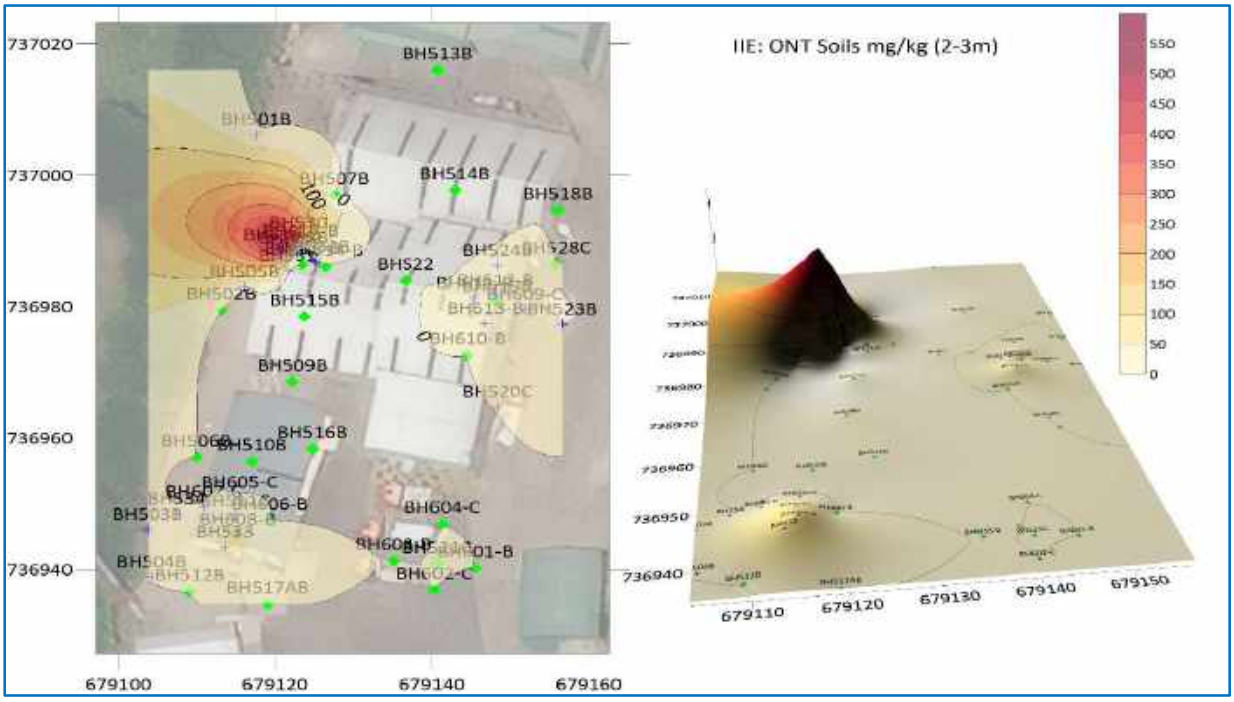
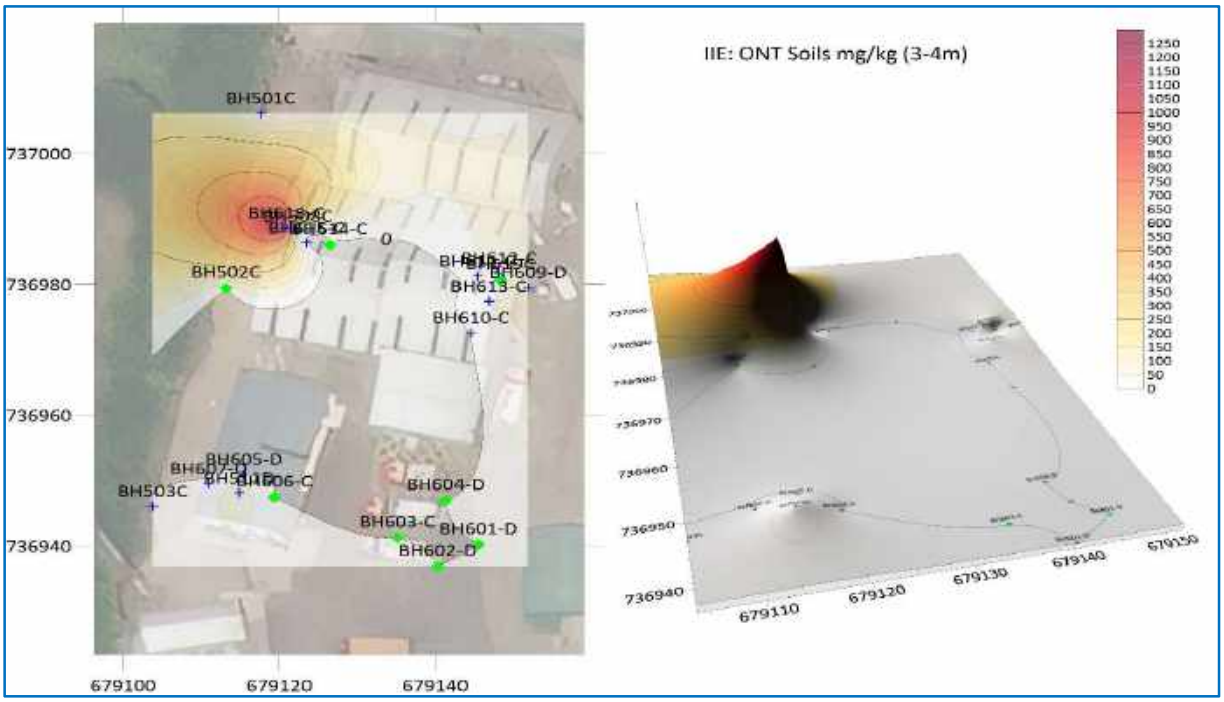


Figure 4.9 – Surfer Plot illustrating hotspots of o-NT Contamination at 3-4m



4.2.4 Ammoniacal nitrogen as NH_4

Concentrations of NH_4 were below laboratory detection limits in 12No. of the 52No. soil samples analysed.

Two distinct hotspot of NH_4 contamination were identified in close proximity to boreholes BH522, BH526 and BH612 within the Garage building, and in close proximity to BH602 to the east of the Store building. See Figures 4.10-4.12 below for Surfer Plots illustrating the hotspot of contamination at 0-2m, 2-3m and 3-4m respectively. Summary of results with respect to these hotspots of NH_4 contamination are summarised as follows:

- Shallow elevated concentrations of NH_4 were detected in borehole BH526 within the Garage building, with the highest value being recorded at a depth of 1.0-1.5m (509.3 mg/kg). This borehole was not sampled below 1.5m.
- Shallow elevated concentrations of NH_4 were detected in borehole BH522 within the Garage building, with the highest value being recorded at a depth of 2-3m (287.9 mg/kg). This borehole was not sampled below 3m.
- Shallow elevated concentrations of NH_4 were detected in borehole BH611 within the Garage building, with the highest value being recorded at a depth of 0.6-2.0m (277 mg/kg). Slightly less elevated values of NH_4 were detected in this borehole at concentrations of 20.64 mg/kg and 13.67 mg/kg at depths of 2.0-3.0m and 3.0-4.0m respectively.
- Shallow elevated concentrations of NH_4 were detected in borehole BH602 to the east of the Store building, with the highest value being recorded at a depth of 0.6-2.0m (47.6 mg/kg). Slightly less elevated values of NH_4 were detected in this borehole at concentrations of 13.55 mg/kg and 12.9 mg/kg at depths of 2.0-3.0m and 3.0-4.0m respectively.

Figure 4.10 – Surfer Plot illustrating hotspot of Ammonia Contamination at 0-2m

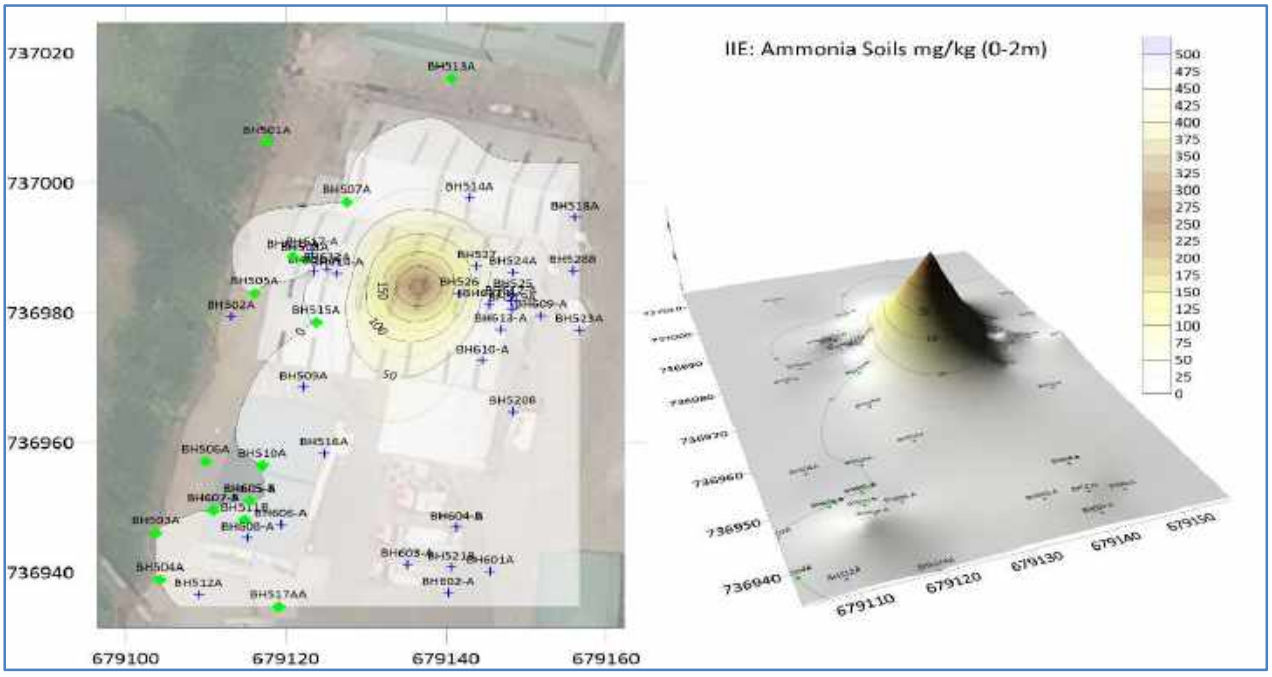


Figure 4.11 – Surfer Plot illustrating hotspot of Ammonia Contamination at 2-3m

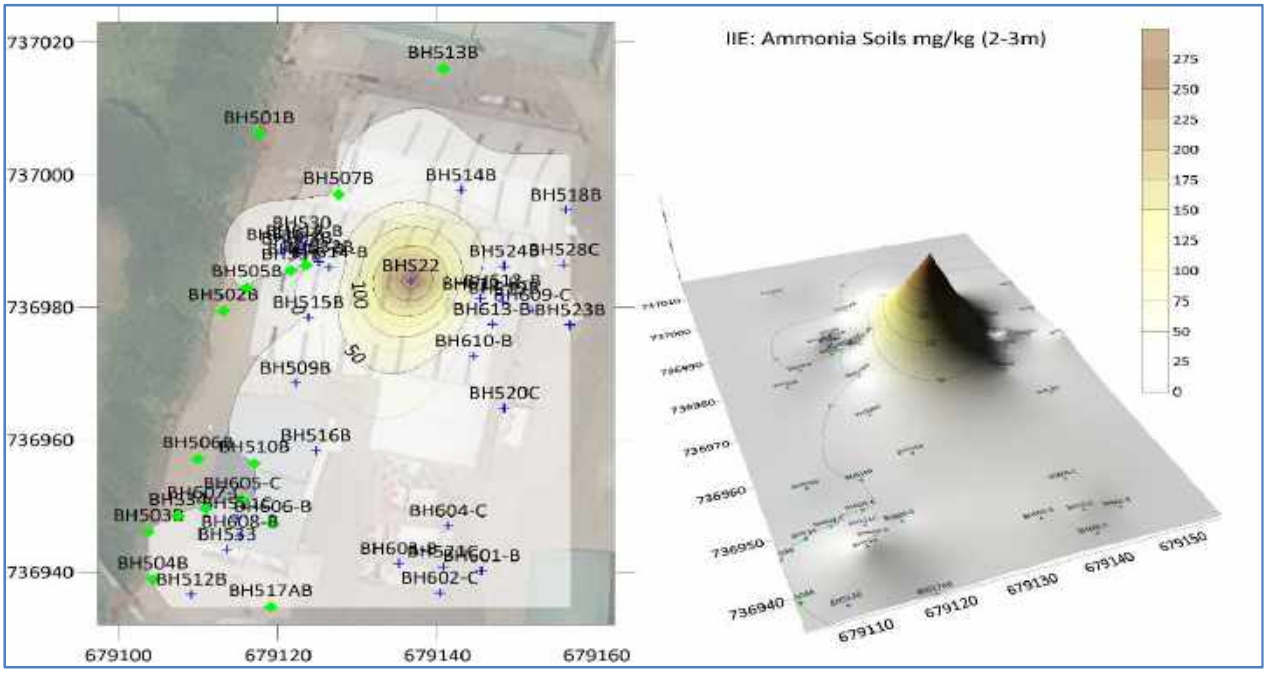
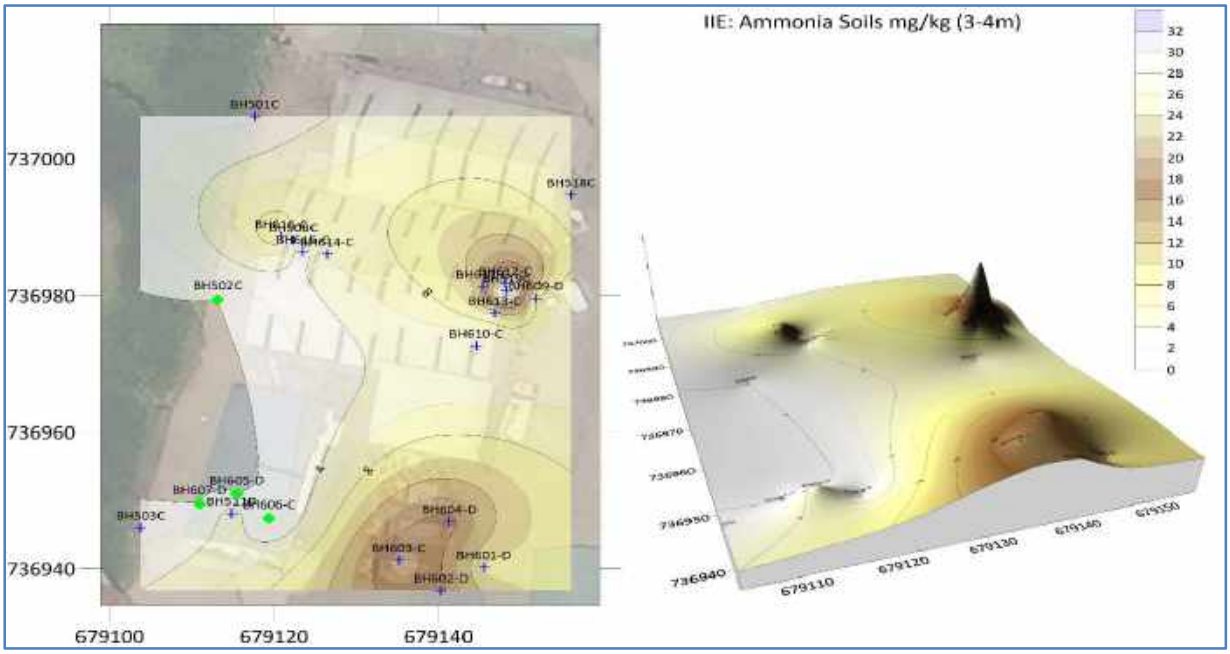


Figure 4.12 – Surfer Plot illustrating hotspot of Ammoniacal Nitrogen as NH4 Contamination at 3-4m



4.2.5 Total Petroleum Hydrocarbons (TPH)

TPH was undetected in 2No. of the 8No. soil samples analysed for hydrocarbons.

Mild concentrations of TPH were detected the remaining 6No. soil samples which are summarised as follows:

- Concentrations of TPH ranged from 303mg/kg in sample BH609-D to 2,033mg/kg in sample BH601-C.
- A laboratory interpretation of the detected hydrocarbon contamination identified them as degraded diesel.

4.2.6 BTEX/MTBE

Trace levels of m/p-xylene were detected in the 8No. soil samples analysed with values ranging from 8 ug/kg in sample BH609-D to 18 ug/kg in sample BH609-C. Trace levels of o-xylene were detected in the 8No. soil samples analysed with values ranging from 13 ug/kg in sample BH609-C to 61 ug/kg in sample BH601-C. MTBE was below its laboratory Limits of Detection in all of the soil samples analysed.

4.2.7 Other Compounds & Parameters

Recorded sample pH ranged from 7.1 and 11.95.

Fraction of Organic Carbon (FOC) was recorded at concentrations ranging from 0.002 to 0.017.

Redox potential ranged between 7.38 – 287.08 mV.

Electrical Conductivity (EC) ranged between 104 and 2,223 uS/cm.

4.3 Groundwater Sampling of Newly-Installed Monitoring Wells (BH601-BH617)

The results of the 16No. groundwater samples analysed are summarised below (including results from the 2021 site investigation). Results of the 2022 site investigation are presented in Table 2A. Groundwater sampling logs are presented in Appendix D, and the laboratory analytical certificates are presented in Appendix E.

Table 4.2 – Results Summary for COPCs

COPC	Unit	No. Of Samples Taken	Min.	Mean	Max.	Max. Sample ID
2,4-Dinitrotoluene (2,4 DNT)	mg/l	16	<0.0005	20	84	BH608
2,6-Dinitrotoluene (2,6 DNT)	mg/l	16	<0.001	14	67	BH608
2 - Nitrotoluene (o-NT)	mg/l	16	<0.001	11	82	BH616
Ammoniacal Nitrogen as NH4	mg/l	16	<0.030	14	34	BH604

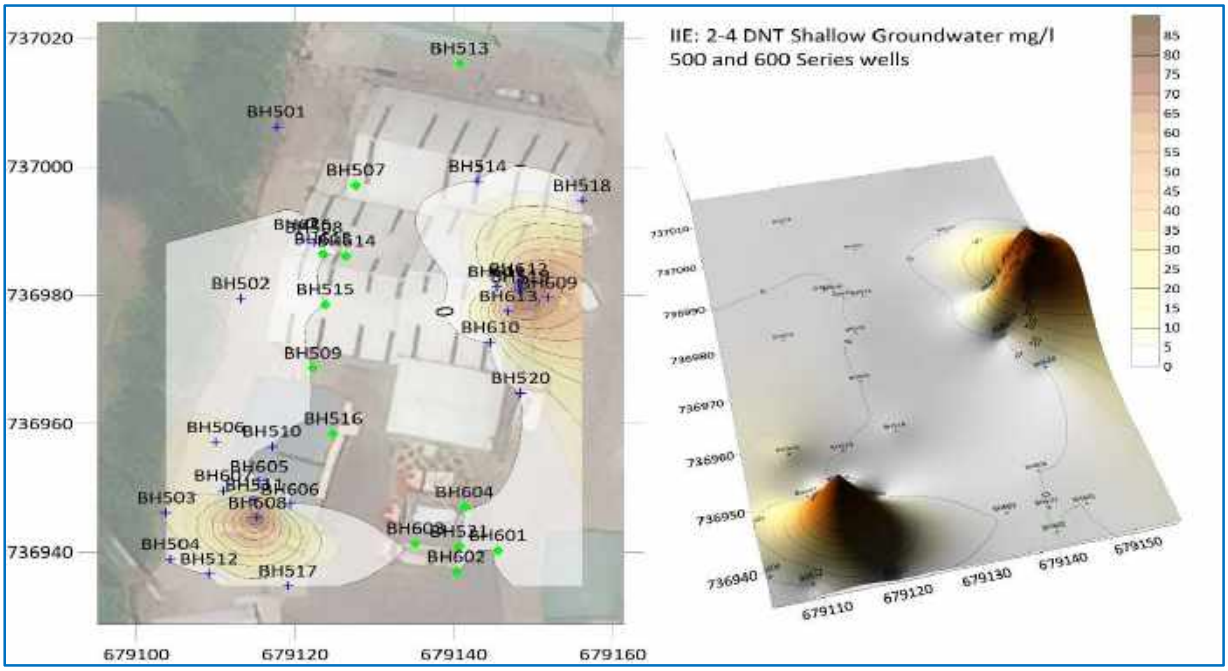
4.3.1 2,4-DNT

Concentrations of 2,4-DNT were below laboratory detection limits in 6No. of the 16No. groundwater samples analysed in 2022.

Two distinct hotspots of 2,4-DNT contamination was identified in close proximity to monitoring wells BH511 and BH608 within the Store building, and BH519 and BH612 within the Garage building. See Figure 4.13 below for Surfer Plots illustrating the hotspots of contamination. Summary of results with respect to these hotspots of 2,4-DNT contamination are summarised as follows:

- Elevated concentrations of 2,4-DNT were detected in monitoring well BH511 within the Store building, with a value of 39.9 mg/l. Elevated concentrations of 2,4-DNT were detected in monitoring well BH608 within the Store building, with a value of 84.4 mg/l.
- Elevated concentrations of 2,4-DNT were detected in monitoring well BH519 within the Garage building, with a concentration of 81.7 mg/l. Elevated concentrations of 2,4-DNT were detected in monitoring well BH612 within the Garage building, with a concentration of 81.4 mg/l.

Figure 4.13 – Surfer Plot illustrating hotspots of 2,4 DNT Contamination



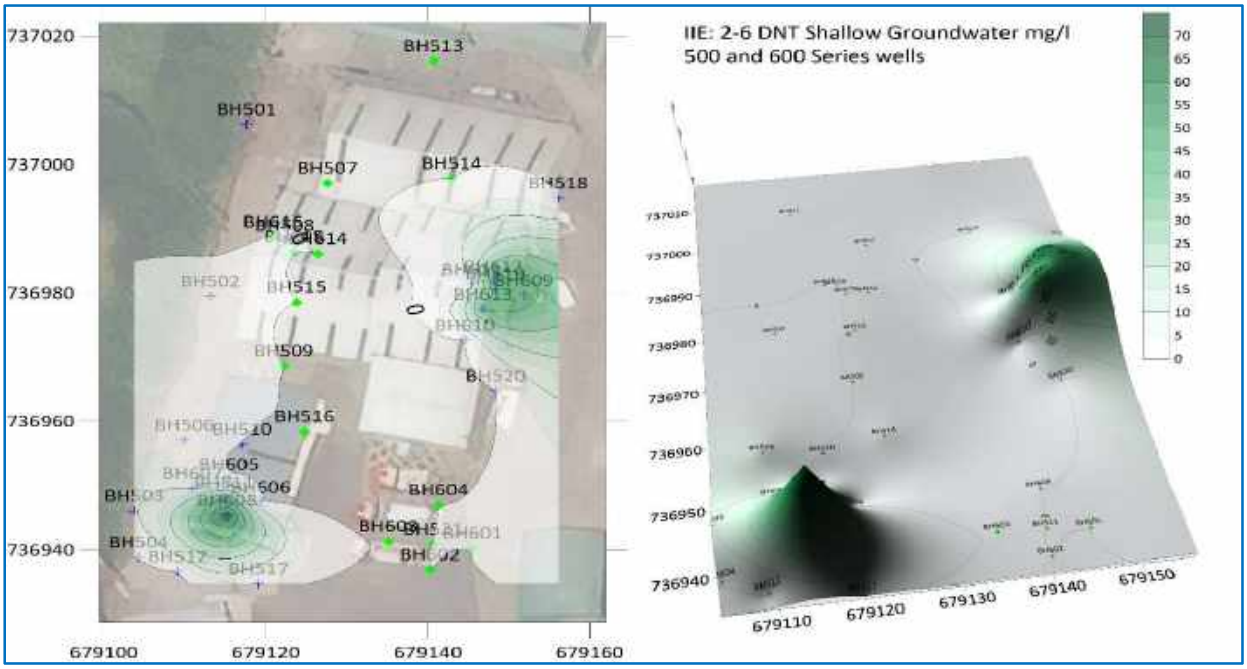
4.3.2 2,6-DNT

Concentrations of 2,6-DNT were below laboratory detection limits in 6No. of the 16No. groundwater samples analysed.

Two distinct hotspots of 2,6-DNT contamination was identified in close proximity to monitoring wells BH511 and BH608 within the Store building, and BH519 and BH612 within the Garage building. See Figure 4.14 below for Surfer Plot illustrating the hotspots of contamination. Summary of results with respect to these hotspots of 2,6-DNT contamination are summarised as follows:

- Elevated concentrations of 2,6-DNT were detected in monitoring well BH511 within the Store building, with a value of 34.6 mg/l. Elevated concentrations of 2,6-DNT were detected in monitoring well BH608 within the Store building, with a value of 67.4 mg/l.
- Elevated concentrations of 2,6-DNT were detected in monitoring well BH519 within the Garage building, with a concentration of 43.6 mg/l. Elevated concentrations of 2,6-DNT were detected in monitoring well BH612 within the Garage building, with a concentration of 47.8 mg/l.

Figure 4.14 – Surfer Plot illustrating hotspots of 2,6-DNT Contamination



4.3.3 o-NT

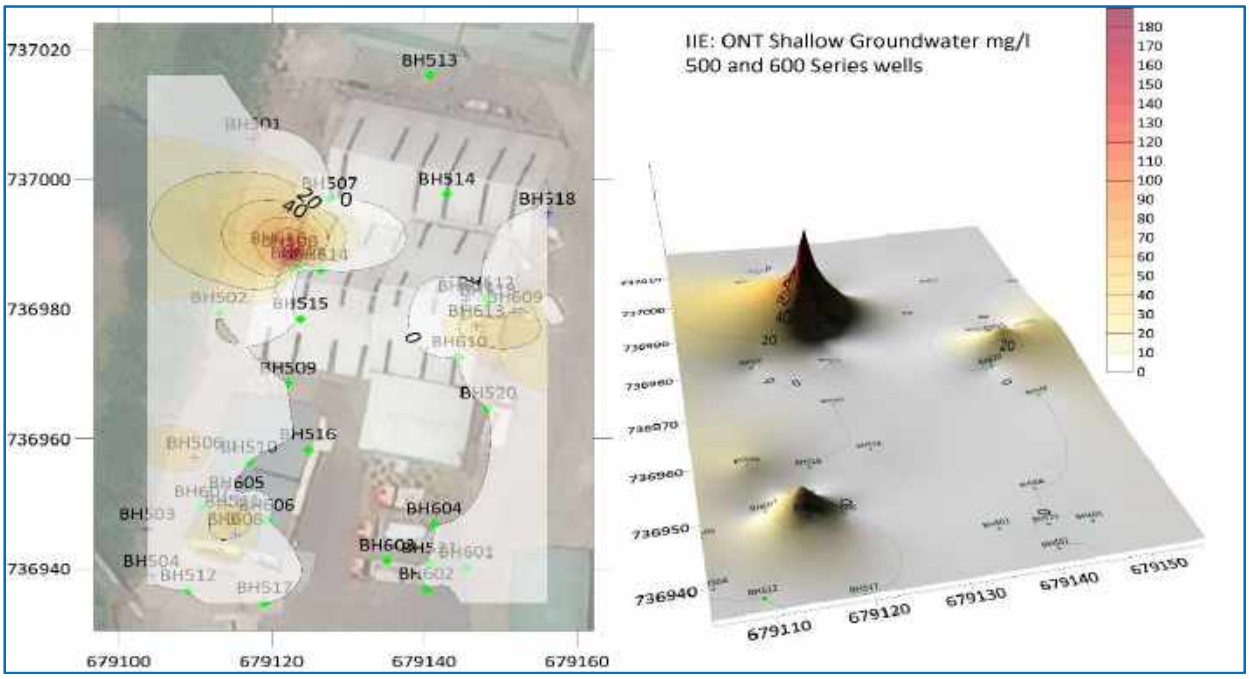
Concentrations of o-NT were below laboratory detection limits in 10No. of the 16No. groundwater samples analysed.

Three distinct hotspots of o-NT contamination was identified in close proximity to monitoring wells BH511 and BH608 within the Store building, in BH508, BH613 and BH616 within the Garage building, and in BH609 just to the east of the Garage building. See Figure 4.15 below for Surfer Plot illustrating the hotspots of contamination. Summary of results with respect to these hotspots of o-NT contamination are summarised as follows:

- Elevated concentrations of o-NT were detected in monitoring wells BH511 and BH608 within the Store building, with values of 55.6 mg/l and 21.9 mg/l respectively.
- Elevated concentrations of o-NT were detected in monitoring wells BH508 and BH616 within the Garage building, with concentrations of 184.1 mg/l and 81.9 mg/l respectively.
- Elevated concentrations of o-NT were detected in monitoring well BH613 within the Garage building, with a concentration of 37.0 mg/l.

– Elevated concentrations of o-NT were detected in monitoring well BH609, located just to the east of the Garage building, with a concentration of 22.1 mg/l.

Figure 4.15 – Surfer Plot illustrating hotspots of o-NT Contamination



4.3.4 Ammonium (NH4)

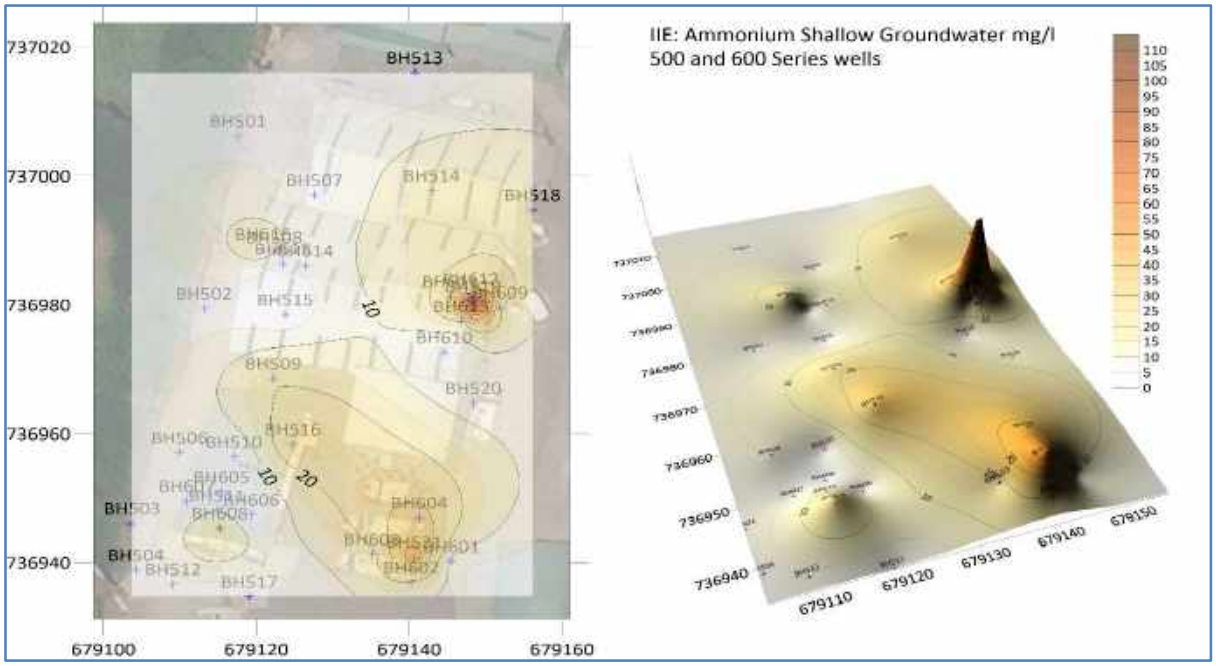
Concentrations of NH4 were above its laboratory detection limits in all 20No. groundwater samples analysed.

Two distinct hotspots of NH_4 contamination was identified in close proximity to monitoring wells BH519 and BH612 within the Garage building, and BH521 and BH604 to the east of the Store building. See Figure 4.16 below for Surfer Plot illustrating the hotspots of contamination. Summary of results with respect to these hotspots of NH_4 contamination are summarised as follows:

– Elevated concentrations of NH_4 were detected in monitoring wells BH519 and BH612 within the Garage building, with values of 108.67 mg/l and 32.97 mg/l respectively.

– Elevated concentrations of NH_4 were detected in monitoring wells BH521 and BH604 located to the east of the Store building, with concentrations of 46.97 mg/l and 33.63 mg/l respectively.

Figure 4.16 – Surfer Plot illustrating hotspots of Ammonium Contamination



4.3.5 Total Petroleum Hydrocarbons (TPH)

TPH was undetected in 2No. of the 5No. groundwater samples analysed for hydrocarbons.

Mild-moderate concentrations of TPH were detected the remaining 3No. groundwater samples which are summarised as follows:

- Concentrations of TPH ranged from 62.04 mg/l in sample BH601 to 131.14 mg/l in sample BH612.
- A laboratory interpretation of the detected hydrocarbons identified them as biodegraded diesel, trace lubricating oil, and dissolved phase aromatics.

4.3.6 BTEX/MTBE

Concentrations of benzene, ethylbenzene and p/m,o-xylenes were below laboratory detection limits in all groundwater samples analysed. Concentrations of toluene were below laboratory detection limits in 3No. of the 5No. groundwater samples analysed. Low levels of toluene were detected in samples BH609 and BH612 at values of 28 and 22 ug/l respectively.

MTBE was not present above the laboratory Limit of Detection in all groundwater samples analysed.

4.3.7 Other Compounds & Parameters

Field readings (temperature, dissolved oxygen (DO) & redox (ORP)) from the 4No. selected monitoring wells (BH604, BH606, BH610 & BH614) are summarised as follows:

- Temperature was recorded at concentrations ranging from 9.6 and 10.8 ^{o}C;
- ORP ranged between 5.1–58.3 mV;
- DO ranged between 0.8–3.23 mg/l.

The low DO and ORP field readings indicate slightly reducing groundwater conditions.

Results of the laboratory analysis for pH and conductivity are summarised below:

- pH ranged from 7.08 and 7.9;
- Conductivity ranged between 450 µS/cm and 2,452 µS/cm.

4.4 Surface Water Sampling of Western Drain

The results of the 3No. surface water samples taken from the western drain are summarised below and presented in Tables 3A-3B, in which results are compared to the relevant generic assessment criteria (GACs) as outlined in Section 5.1 above. Surface water sampling logs are presented in Appendix D, and the laboratory analytical certificates presented in Appendix E.

4.4.1 2,4-DNT

Concentrations of 2,4-DNT were below laboratory detection limits in all three surface samples analysed.

4.4.2 2,6-DNT

Concentrations of 2,6-DNT were below laboratory detection limits in all three surface samples analysed.

4.4.3 o-NT

Concentrations of o-NT were below laboratory detection limits in all three surface samples analysed.

4.4.4 Ammoniacal Nitrogen as NH_3

Concentrations of NH_3 ranged from 0.05 and 0.48 mg/l, which all exceed the IGV of 0.02 mg/l.

4.4.5 Other Compounds & Parameters

Field readings (temperature, dissolved oxygen (DO) & redox (ORP)) from the 3No. surface water samples (SW4, DW1 & WD2) are summarised as follows:

- Temperature was recorded at concentrations ranging from 13.6 and 14.5 ^{o}C;
- pH ranged from 7.4 and 8.1, which are within acceptable ranges;
- Conductivity ranged between 365.2 µS/cm and 562.4 µS/cm;
- ORP ranged between 50.6 mV and 197.3 mV;
- DO ranged between 2.9-8.48 mg/l.

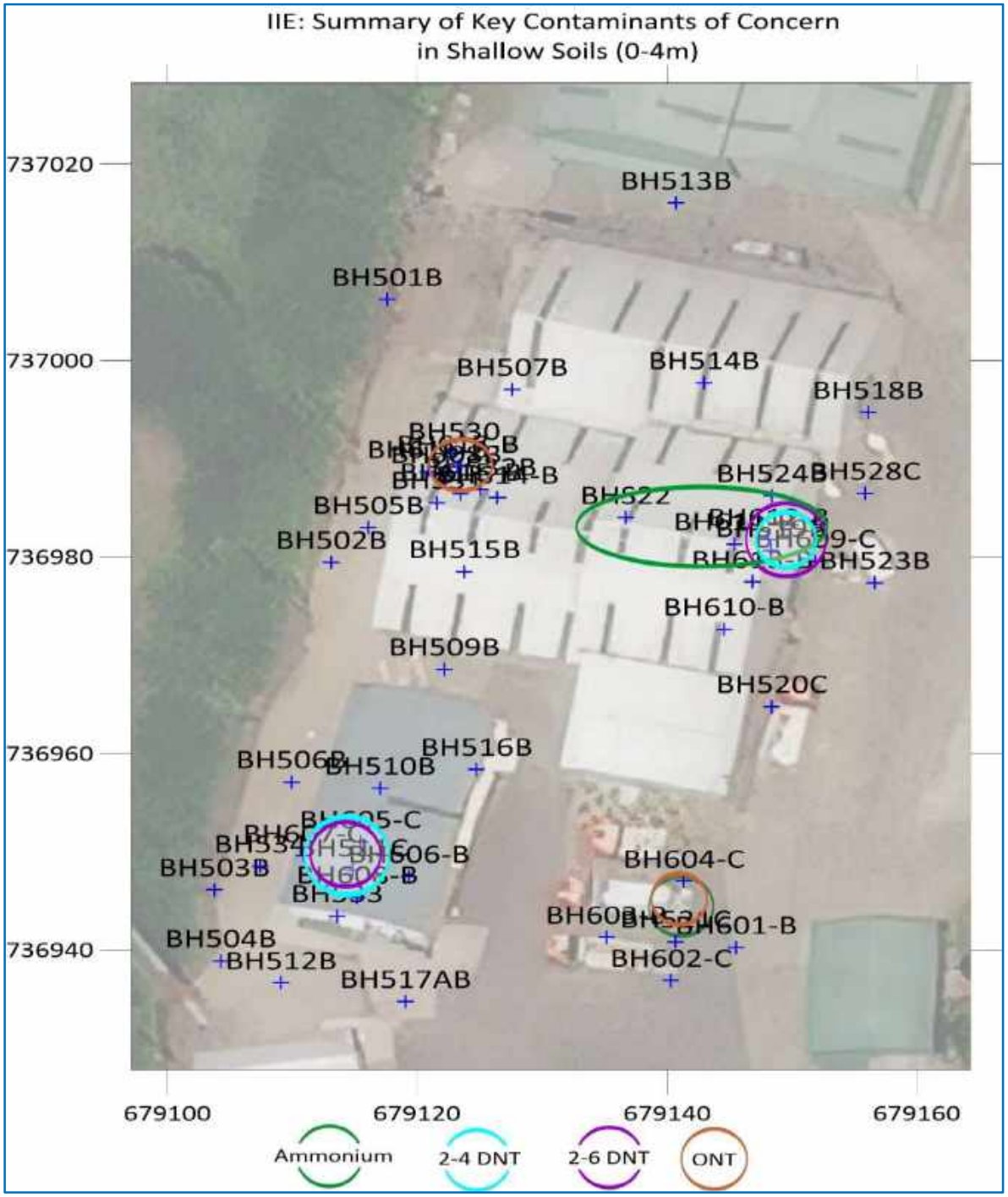
4.5 Summary of Findings of Site Investigation in Vicinity of Garage/Store Buildings

4.5.1 Soils

As discussed in the previous sections, distinct hotspots of shallow soil contamination with COCs were identified within the Garage and Store buildings during the course of the site investigation in Area A, which are summarised as follows and illustrated in Figure 4.17 below:

- Three distinct hotspots of 2,4 DNT and 2,6 DNT contamination were identified in close proximity to BH508, BH519 and BH612 within the Garage building, and BH511 and BH607 within the Store building;
- Three distinct hotspots of o-NT contamination were identified in close proximity to BH508, BH530, BH519, BH612 and BH616 within the Garage building, and in BH511 and BH608 within the Store building. Some shallow elevated concentrations of o-NT were detected in BH604 to the east of the Store building;
- Two distinct hotspot of NH_4 contamination was identified in close proximity to boreholes BH522, BH526 and BH612 within the Garage building, and BH602 to the east of the Store building.

Figure 4.17 – Surfer Plot illustrating identified hotspots of 2,4 DNT, 2,6 DNT, o-NT & Ammoniacal Nitrogen as NH_4 in Shallow Soils within the Garage & Store Buildings

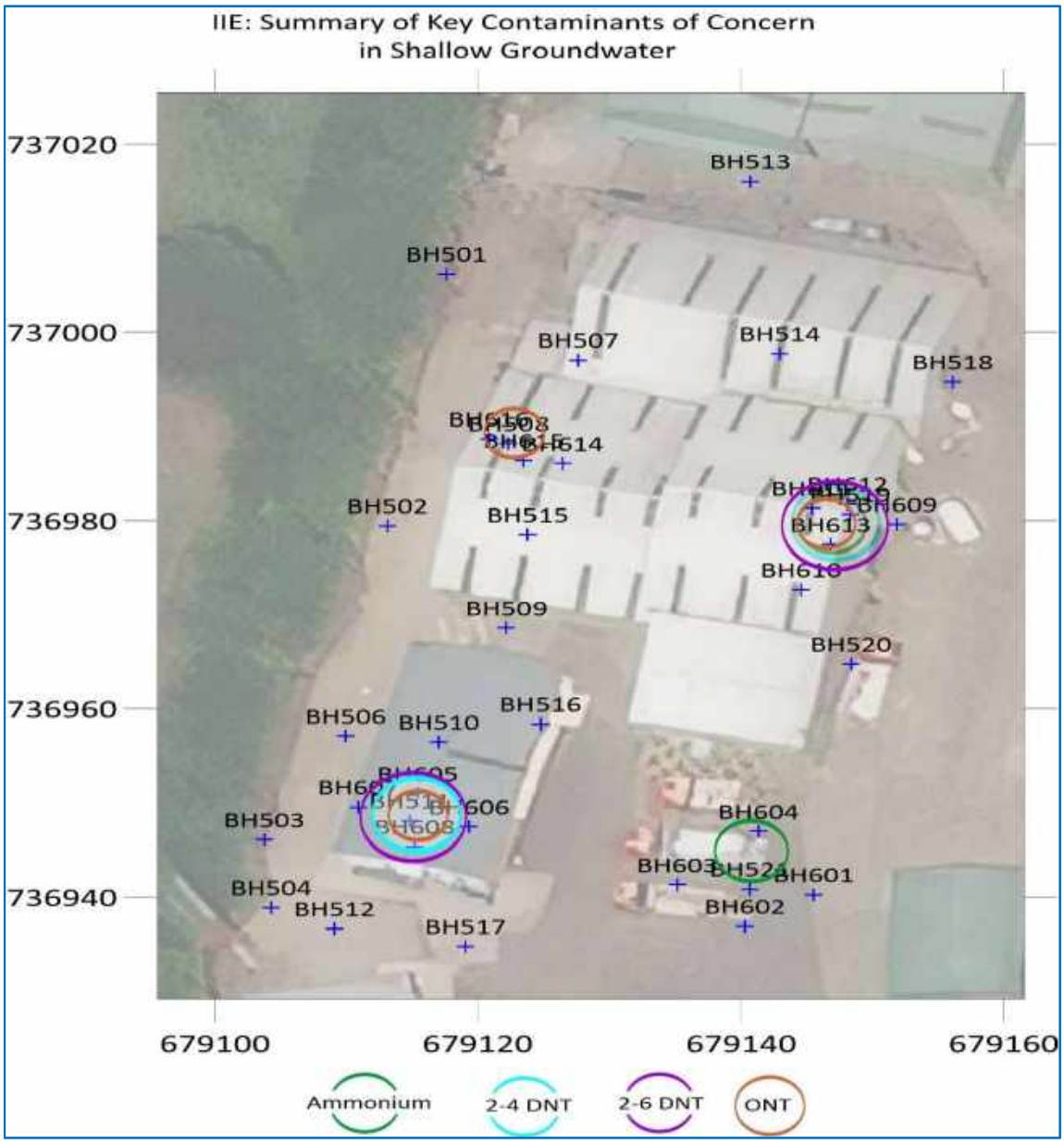


4.5.2 Groundwater

As discussed in the previous sections, distinct hotspots of shallow groundwater contamination with COCs were identified within the Garage and Store buildings during the course of the site investigation in Area A, which are summarised as follows and illustrated in Figure 4.18 below:

- Two distinct hotspots of 2,4-DNT and 2,6-DNT contamination were identified in close proximity to monitoring wells BH511 and BH608 within the Store building, and BH519 and BH612 within the Garage building;
- Three distinct hotspots of o-NT contamination were identified in close proximity to monitoring wells BH511 and BH609 within the Store building, and BH508, BH613 and BH616 within the Garage building;
- Two distinct hotspots of NH_4 contamination were identified in close proximity to monitoring wells BH519 and BH612 within the Garage building, and BH521 and BH604 to the east of the Store building.

Figure 4.18 – Surfer Plot illustrating identified hotspots of 2,4 DNT, 2,6 DNT, o-NT & Ammoniacal Nitrogen as NH_4 Contamination in Shallow Groundwater within the Garage & Store Buildings & to the East of the Store Building



5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Verde was retained to complete a detailed environmental assessment of the site conditions in the vicinity of the Garage and Store buildings in February 2022 to further delineate hotspots of contamination of COCs which were identified during the initial August 2021 site investigation. This Contamination Assessment report has been developed evaluating environmental risks presented by site conditions and is intended to support the surrender of the IPPC licence.

The facility has been manufacturing explosive products since 1967 and was granted an IPC Licence by the EPA in 1996. Although the site remains operational, licensable activities have not occurred at the site since 2003.

This current scope of works is based on the findings of the site investigation which was conducted in the vicinity of the Garage and Store buildings in August 2021 and was intended to further delineate the identified hotspots of COC in this particular area of the site to help decide next steps for remediation of contamination and provide sufficient data for updates to the existing DQRA. The following intrusive investigations were carried out: 17No. shallow boreholes drilled with 17No. shallow groundwater monitoring wells installed and 56No. soil samples recovered from the drilling cores. Following the installation of groundwater monitoring wells, groundwater monitoring was undertaken from the newly-installed wells, along with 3No. surface water samples recovered from the Western drain.

The purpose of the works completed was to:

- Further delineate the hotspots of COCs in the vicinity of the Garage and Store buildings which were identified during the site investigation in August 2021.
- Make recommendations in relation to remediation of contamination in these areas of the site.
- To provide sufficient data to update the existing DQRA.

Results from the site investigation identified distinct hotspots of contamination with COCs within and in close proximity to the Garage and Store buildings which are summarised as follows:

- Three distinct hotspots of 2,4 DNT and 2,6 DNT contamination were identified in shallow soils close proximity to BH508, BH519 and BH612 within the Garage building, and BH511 and BH607 within the Store building;

- Three distinct hotspots of o-NT contamination were identified in shallow soils in close proximity to BH508, BH530, BH519, BH612 and BH616 within the Garage building, and in BH511 and BH608 within the Store building;
- Two distinct hotspot of NH_4 contamination was identified in shallow soils in close proximity to boreholes BH522, BH526 and BH611 within the Garage building, and in close proximity to BH602 to the east of the Store building;
- Two distinct hotspots of 2,4-DNT and 2,6-DNT contamination were identified in shallow groundwater in close proximity to monitoring wells BH511 and BH608 within the Store building, and BH519 and BH612 within the Garage building;
- Three distinct hotspots of o-NT contamination were identified in shallow groundwater in close proximity to monitoring wells BH511 and BH609 within the Store building, and BH508, BH613 and BH616 within the Garage building;
- Two distinct hotspots of NH_4 contamination were identified in shallow groundwater in close proximity to monitoring wells BH519 and BH612 within the Garage building, and BH521 and BH604 to the east of the Store building.

Recent quarterly monitoring, and additional sampling undertaken at the Western drain (SW4, WD1 & WD2) indicates that the Western drain has been largely free of nitrotoluene contamination since December 2020. This improvement in surface water quality is likely associated with shallow groundwater pump & treat sump that are operating in the area between the garage/store buildings and the western drain.

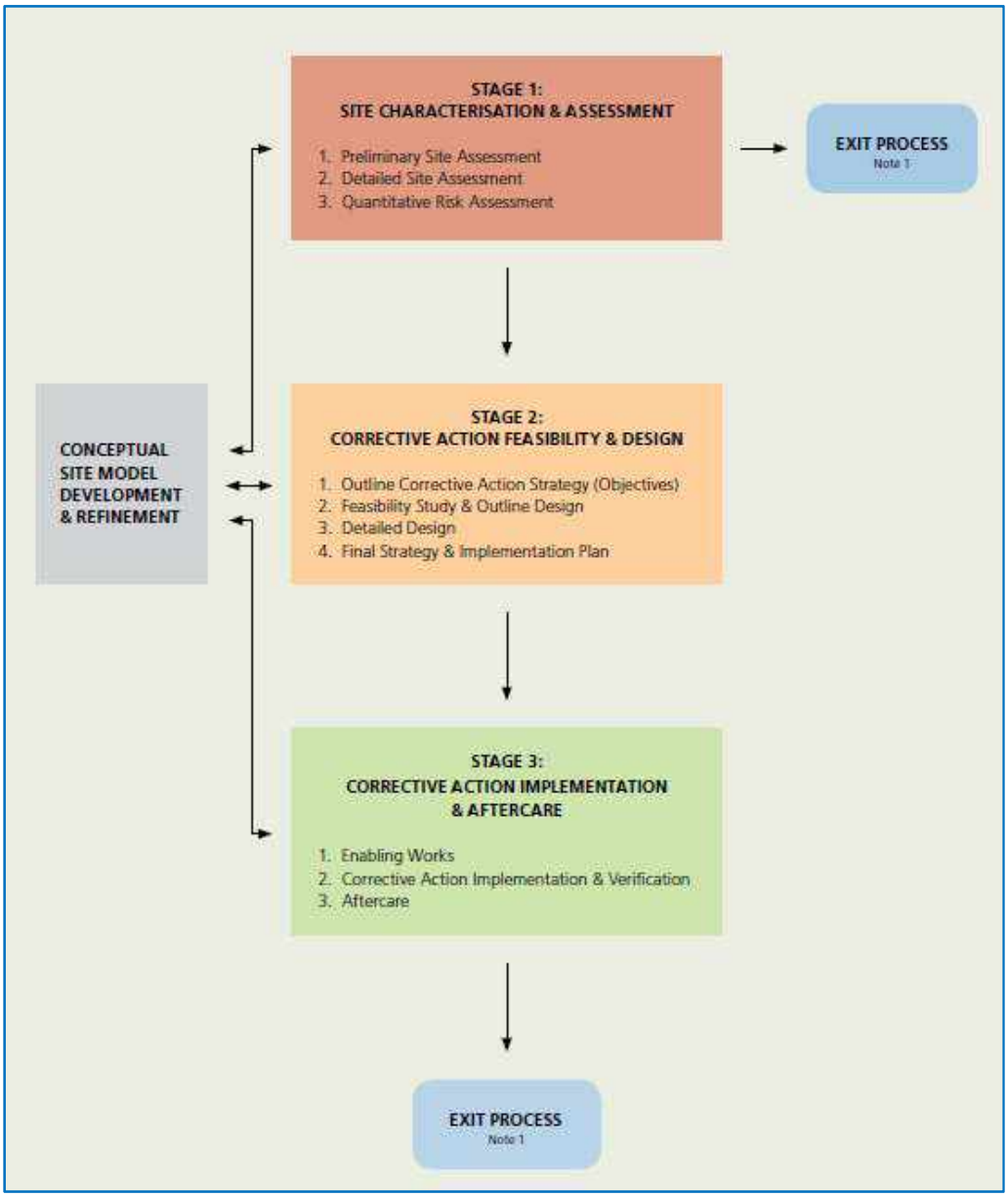
Recent quarterly monitoring also indicates that the bedrock aquifer underneath the site has not been impacted by the presence of COCs.

5.2 Recommendations

In conclusion, Verde have completed steps 1, 2 and part of step 3 (a Preliminary Site Assessment, a Detailed Site Assessment and a Generic Quantitative Risk Assessment (GQRA)) of Stage 1 (Site Characterisation & Assessment) of the methodology set out in the EPA Guidance document On The Management Of Contaminated Land And Groundwater At EPA Licensed Sites (see figure 5.1 below). The final step in this stage of the methodology will be to do the following:

- Update the existing DQRA focusing on the Garage/Store areas with data from these recent phases of site investigation works, with respect to human health and environmental receptors; and existing soil and groundwater RTCs.
- Once the DQRA has been updated, then a Remediation Options Appraisal (ROA) should be developed as per Stage 2 (Corrective Action Feasibility & Design) of the methodology.

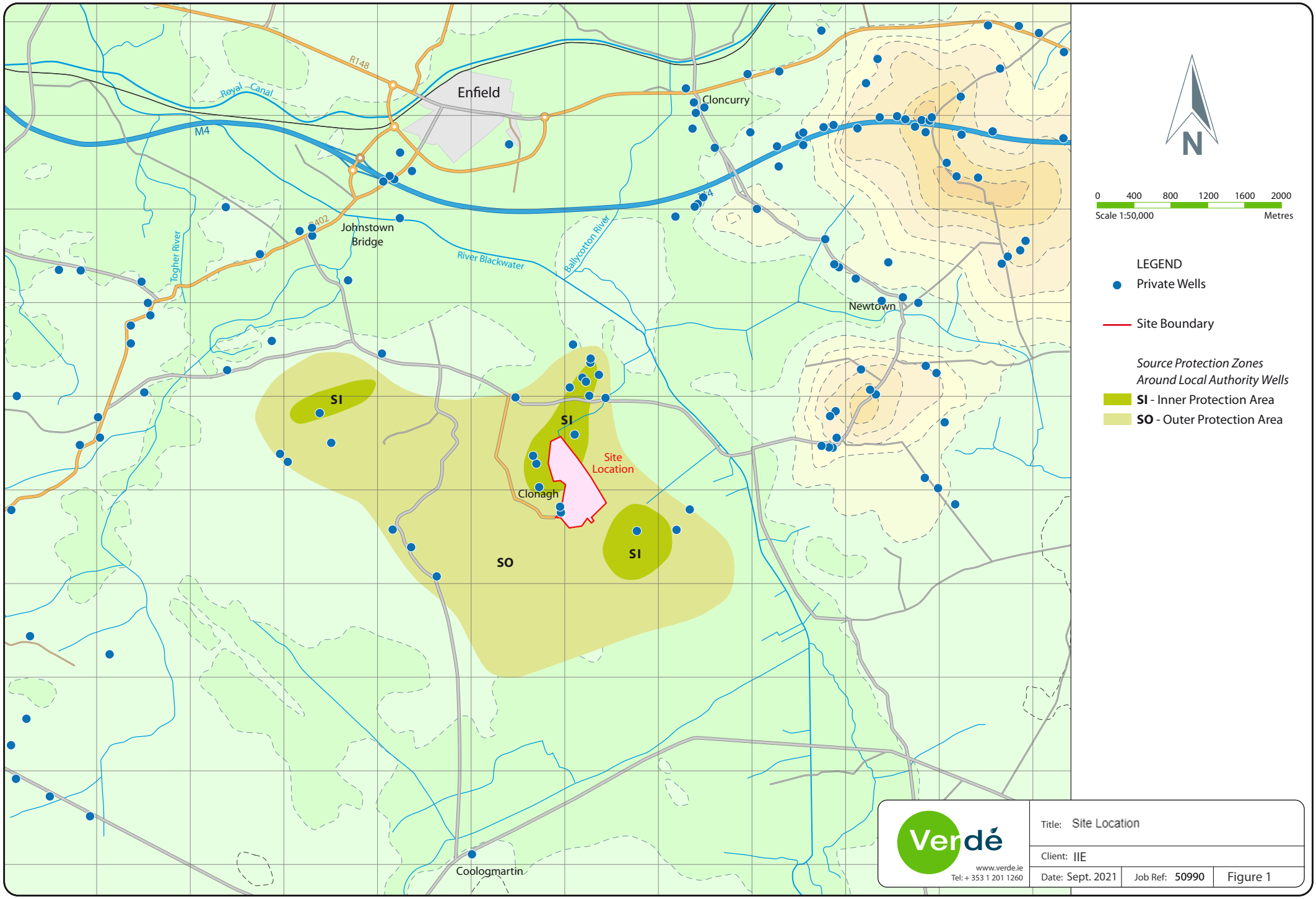
Figure 5.1 - EPA Contaminated Land & Groundwater Risk Assessment Methodology



6 REFERENCES

- Verde Environmental Consultants Ltd. – Contamination Assessment to Support Remediation and Licence Surrender for Irish Industrial Explosives (IIE), Clonagh, Enfield, Co. Kildare, November 2021;
- Verde Environmental Consultants Ltd. – IPC Quarterly Monitoring Reports, 2016-2021;
- Verde Environmental Consultants Ltd. – Soil Investigation Report, January 2018;
- Verde Environmental Consultants Ltd. – Soil & Sediment Analysis – Western Drain Area, May 2017;
- Verde Environmental Consultants Ltd. – Detailed Quantitative Risk Assessment Report for Irish Industrial Explosives (IIE), Clonagh, Enfield, Co. Kildare, March 2015;
- Geological Survey of Ireland, Online geological and groundwater databases;
- Ordinance Survey Ireland, Online historic maps and aerial photographs;
- Environmental Protection Agency, Online Envision Map databases;
- National Parks & Wildlife, Online Envision Map databases;
- Investigation of potentially contaminated sites – Code of Practice, BS 10175:2011+A1:2013;
- Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Facilities, EPA 2013;
- CIRIA Document C552: Contaminated Land Risk assessment 'A Guide to Good Practice.

FIGURES



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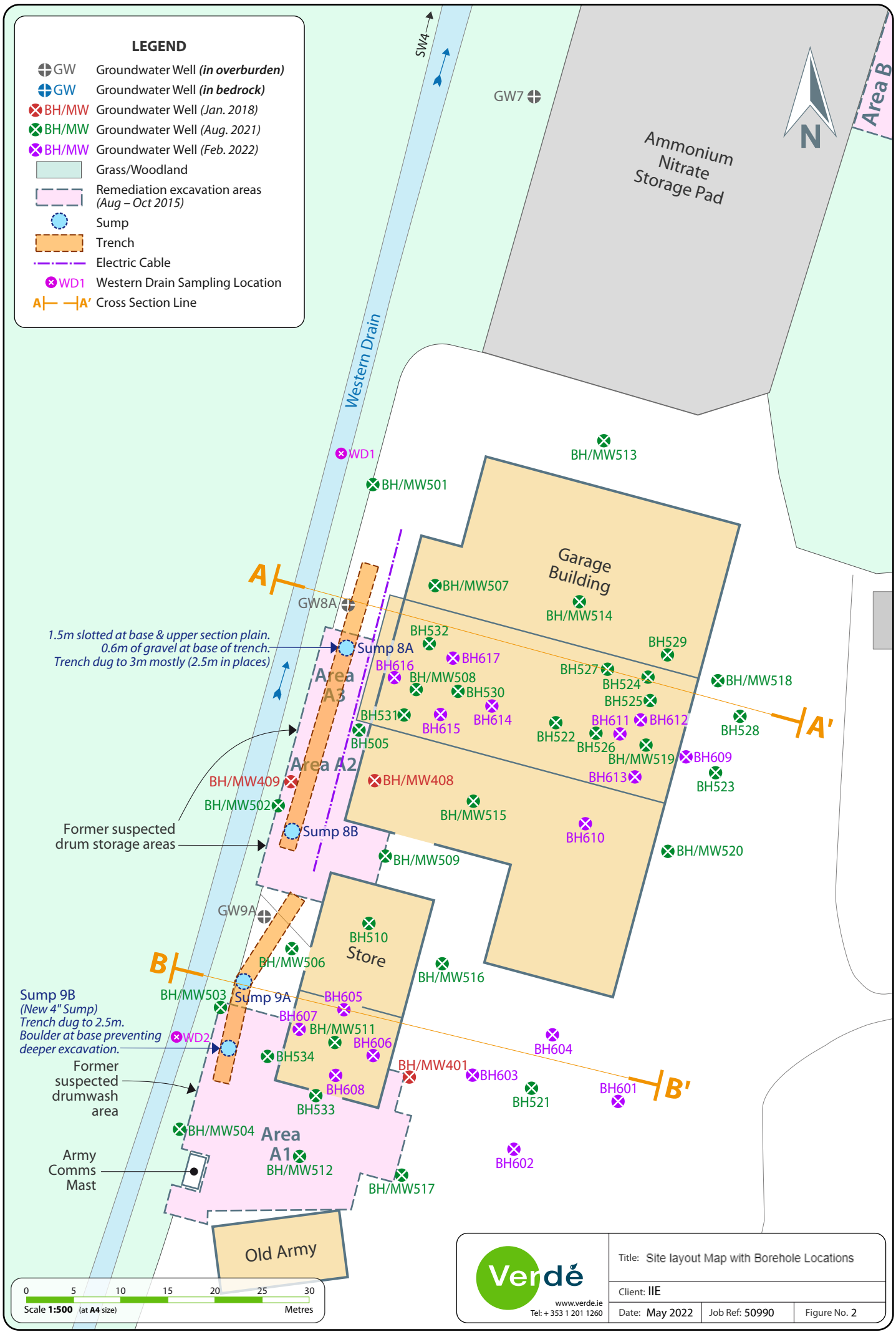
Title: Site Location
Client: IIE
Date: Sept. 2021 | Job Ref: 50990 | Figure 1


LEGEND
GW Groundwater Well (in overburden)
GW Groundwater Well (in bedrock)
BH/MW Groundwater Well (Jan. 2018)
BH/MW Groundwater Well (Aug. 2021)
BH/MW Groundwater Well (Feb. 2022)
Grass/Woodland
Remediation excavation areas (Aug – Oct 2015)
Sump
Trench
Electric Cable
WD1 Western Drain Sampling Location
A A' Cross Section Line
SW4
GW7
Ammonium Nitrate Storage Pad
Area B
N
Western Drain
WD1
BH/MW513
BH/MW501
Garage Building
BH/MW507
BH/MW514
GW8A
A
A'
1.5m slotted at base & upper section plain.
0.6m of gravel at base of trench.
Trench dug to 3m mostly (2.5m in places)
Sump 8A
BH532
BH617
BH616
BH/MW508
BH530
BH614
BH615
BH531
BH505
Area A3
Area A2
BH529
BH527
BH524
BH525
BH/MW518
BH528
BH522
BH526
BH611
BH612
BH/MW519
BH609
BH613
BH523
BH/MW409
BH/MW408
BH/MW502
BH/MW515
BH610
BH/MW520
Former suspected drum storage areas
Sump 8B
BH/MW509
GW9A
BH510
Store
BH/MW506
BH/MW516
B
B'
Sump 9B
(New 4" Sump)
Trench dug to 2.5m.
Boulder at base preventing deeper excavation.
BH/MW503
Sump 9A
BH605
BH607
BH/MW511
BH606
WD2
BH534
BH604
BH/MW401
BH603
BH601
BH608
BH533
BH521
Former suspected drumwash area
BH/MW504
Area A1
BH/MW512
Army Comms Mast
BH602
BH/MW517
Old Army
0 5 10 15 20 25 30
Scale 1:500 (at A4 size)
Metres
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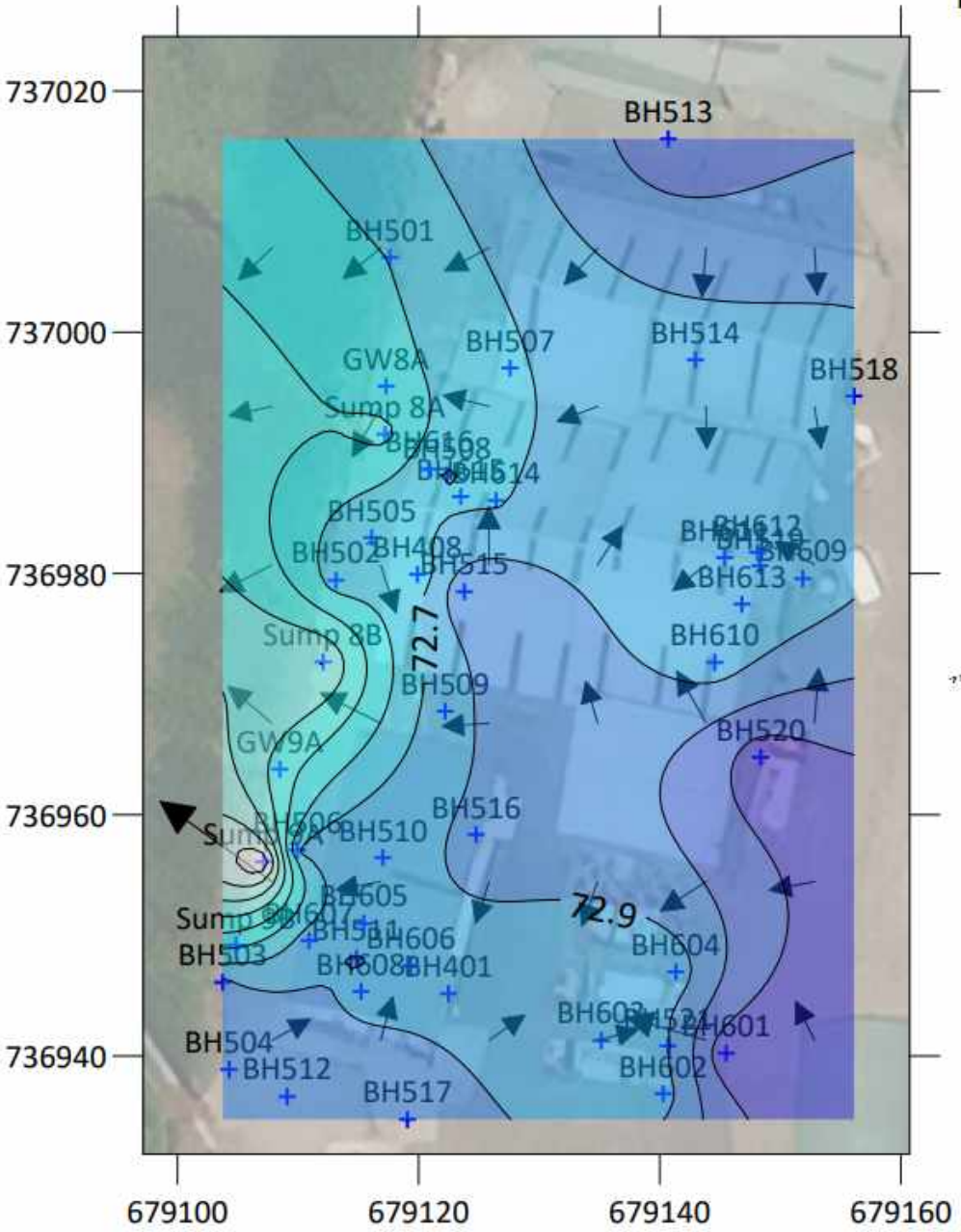
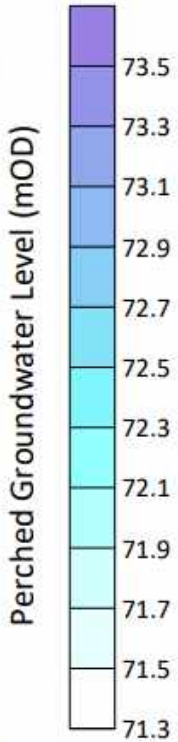
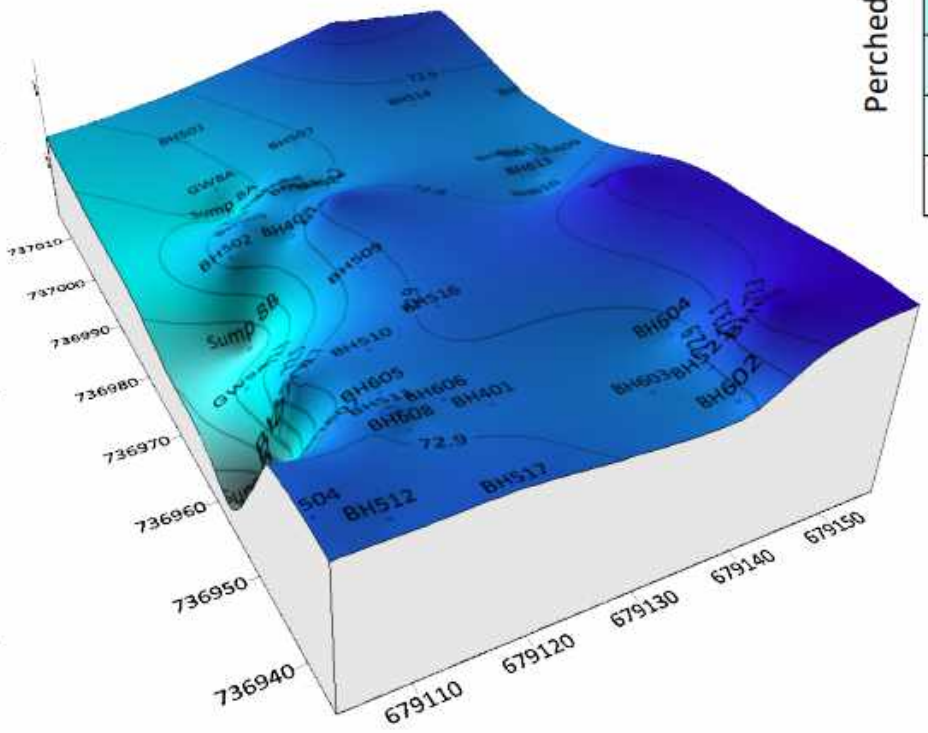
Title: Site layout Map with Borehole Locations
Client: IIE
Date: May 2022
Job Ref: 50990
Figure No. 2



IIE: Shallow Groundwater Contour Map (22/04/22)

500 and 600 Series Shallow Wells and Sumps
(Sump 9A and Sump 8B Pumping)





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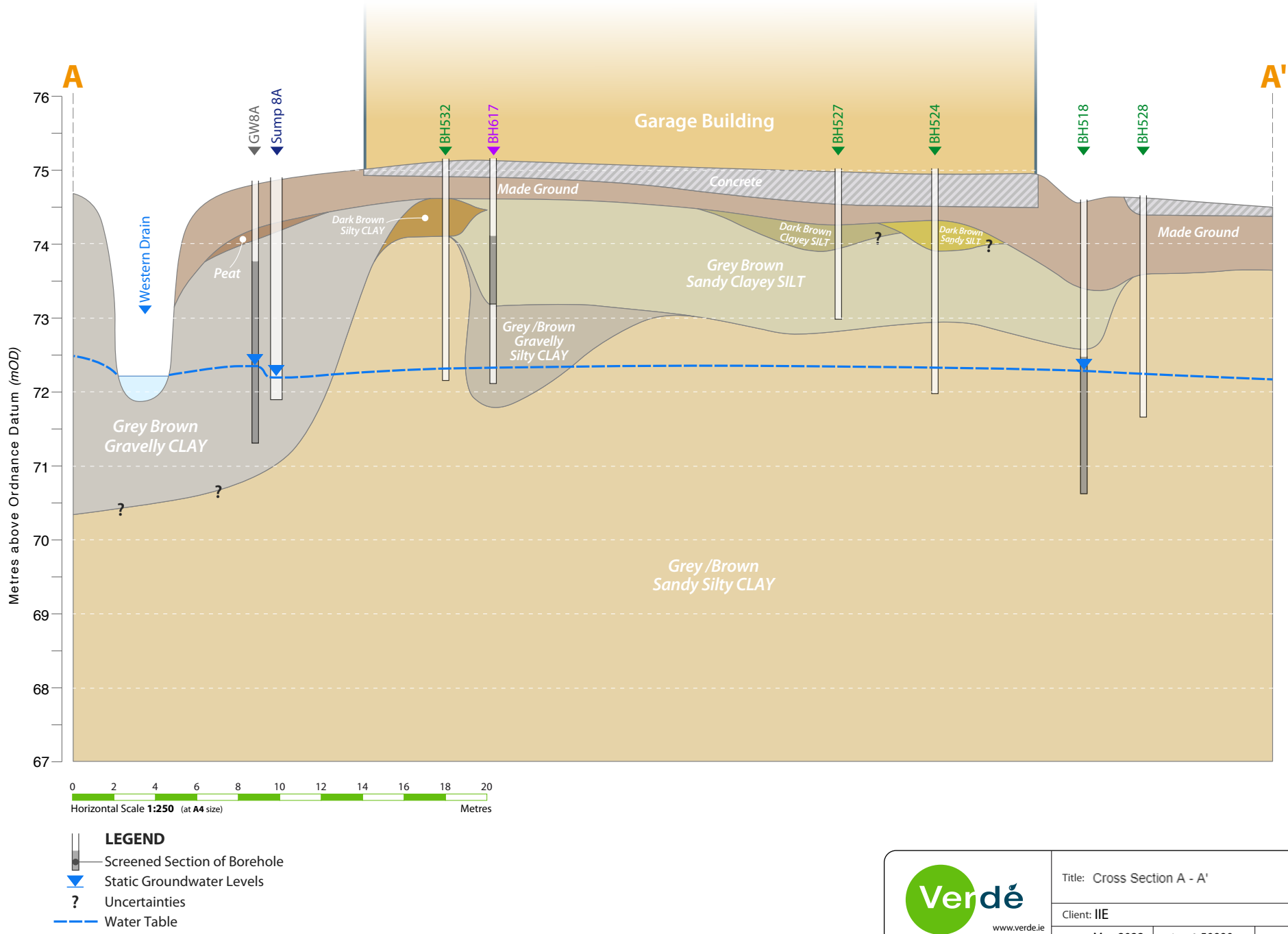
Title: Shallow Soils Groundwater Contour Map (22nd April 2022)

Client: IIE

Date: May 2022 | Job Ref: 50990 | Figure No. 3



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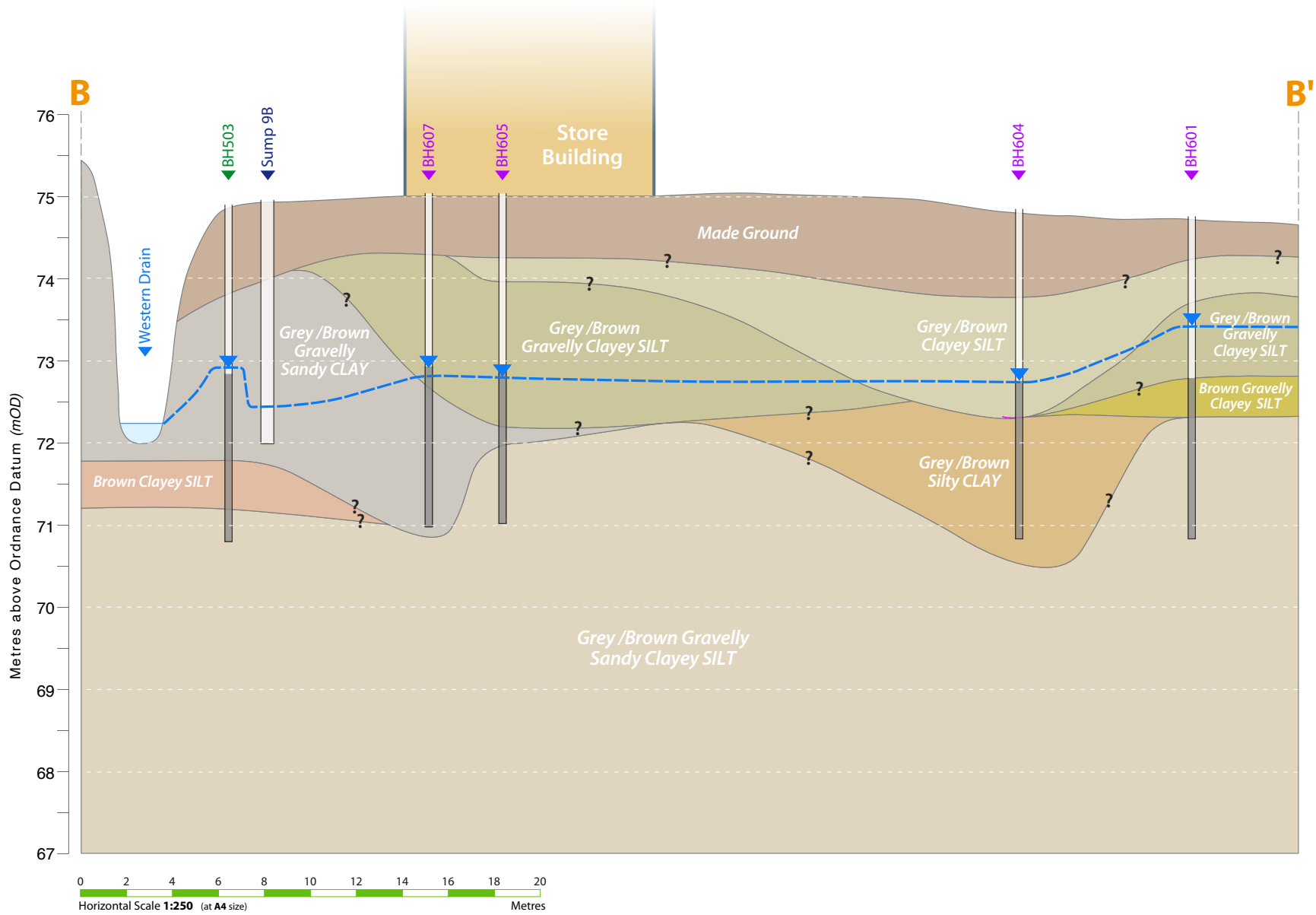
Title: Cross Section A - A'
Client: IIE
Date: May 2022 | Job Ref: 50990 | Figure No. 4



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Title: Cross Section B - B'

Client: IIE

Date: May 2022 | Job Ref: 50990 | Figure No. 5

TABLES

Table 1A-1D - Summary of Key Soil Analytical Results From February 2022 Site Investigation

Analyte	Commercial 2014 S4ULs	Sample ID:	BH601A	BH601-B	BH601-C	BH601-D	BH601E	BH602-A	BH602-B	BH602-C	BH602-D	BH603-A	BH603-B	BH603-C
		Depth:	0.50-2.00	2.00-3.00	2.60	3.00-4.00	3.80-4.00	0.70-2.00	0.70-1.00	2.00-3.00	3.00-4.00	1.00-2.00	2.00-3.00	3.00-4.00
		Units:	22/02/22	22/02/22	22/02/22	22/02/22	22/02/22	22/02/22	22/02/22	22/02/22	22/02/22	22/02/22	22/02/2022	22/02/2022
Other SVOCs														
2,4-Dinitrotoluene	-	ug/kg	**4631**	<10	NA	<10	NA	<10	NA	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	-	ug/kg	**2096**	<10	NA	<10	NA	<10	NA	<10	<10	<10	<10	<10
SVOC TICs														
2 - Nitrotoluene, o-NT (Benzene, 1-methyl-2-nitro-)	-	ug/kg	**584**	ND	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND
2,3-DNT (Benzene, 1-methyl-2,3-dinitro-)	-	ug/kg	ND	ND	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND
3,4-DNT (Benzene, 4-methyl-1,2-dinitro-)	-	ug/kg	ND	ND	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND
Ammoniacal Nitrogen as NH4	-	mg/kg	**18.963**	**7.353**	NA	**7.353**	NA	**47.601**	NA	**13.545**	**12.9**	**32.895**	**18.705**	**14.577**
Total Petroleum Hydrocarbons (TPH)	-	mg/kg	NA	NA	**2033**	NA	**378**	NA	**512**	<38	NA	NA	NA	NA

NOTES

2014 S4ULs values are obtained from "The LQM/CIEH S4ULs for Human Health Risk Assessment, Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3484, All rights reserved", values above are calculated for 1.0% Soil Organic Matter in a sandy loam soil.

"-" = No GAC

"ND" = Not Detected

"NA" = Not Analysed

Results are in **bold** where they exceed Commercial GAC

Table 1A-1D - Summary of Key Soil Analytical Results From February 2022 Site Investigation

Analyte	Commercial 2014 S4ULs	Sample ID:	BH604-A	BH604-B	BH604-C	BH604-D	BH605-A	BH605-B	BH605-C	BH605-D	BH606-A	BH606-B	BH606-C	BH607-A	BH607-B	BH607-C	BH607-D
		Depth:	0.12-0.40	0.40-2.00	2.00-3.00	3.00-4.00	0.25-0.70	0.70-2.00	2.00-3.00	3.00-4.00	0.80-2.00	2.00-3.00	3.00-4.00	0.25-0.65	0.65-2.00	2.00-3.00	3.00-4.00
		Units:	22/02/2022	22/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022
Other SVOCs																	
2,4-Dinitrotoluene	-	ug/kg	<10	<10	<10	<10	**6216**	<10	**7216**	**7063**	<10	<10	**178**	**1307402**	**41406**	**11552**	**40958**
2,6-Dinitrotoluene	-	ug/kg	<10	<10	<10	<10	**30577**	<10	**2385**	**2391**	<10	<10	**112**	**76628**	**1500**	**4862**	**42513**
SVOC TICs																	
2 - Nitrotoluene, o-NT (Benzene, 1-methyl-2-nitro-)	-	ug/kg	**61934**	ND	ND	ND	**7246**	ND	**752**	**816**	ND	ND	ND	**12769**	**267**	**1148**	**6092**
2,3-DNT (Benzene, 1-methyl-2,3-dinitro-)	-	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4-DNT (Benzene, 4-methyl-1,2-dinitro-)	-	ug/kg	ND	ND	ND	ND	**1934**	ND	**321**	**317**	ND	ND	ND	**2062**	**223**	**562**	**4698**
Ammoniacal Nitrogen as NH4	-	mg/kg	**4.128**	**22.059**	**14.835**	**16.899**	<0.6	<0.6	<0.6	<0.6	**1.419**	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Total Petroleum Hydrocarbons (TPH)	-	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES

2014 S4ULs values are obtained from "The LQM/CIEH S4ULs for Human Health Risk Asse
Number S4UL3484, All rights reserved", values above are calculated for 1.0% Soil Organ
"-" = No GAC
"ND" = Not Detected
"NA" = Not Analysed
Results are in **bold** where they exceed Commercial GAC

Table 1A-1D - Summary of Key Soil Analytical Results From February 2022 Site Investigation

Analyte	Commercial 2014 S4ULs	Sample ID:	BH608-A	BH608-B	BH609-A	BH609-B	BH609-C	BH609-D	BH610-A	BH610-B	BH610-C	BH611-A	BH611-B	BH611-C	BH612-A	BH612-B	BH612-C
		Depth:	0.70-2.00	2.00-3.00	0.60-2.00	1.50-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-3.30
		Units:	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22
Other SVOCs																	
2,4-Dinitrotoluene	-	ug/kg	**11532**	**286697**	**23122**	NA	**23478**	<10	<10	<10	**458**	**58402**	**4445**	**19393**	**49744**	**65810**	**712575**
2,6-Dinitrotoluene	-	ug/kg	**2618**	**175395**	**33493**	NA	**15086**	<10	<10	<10	**336**	**44416**	**1369**	**7371**	**40803**	**47863**	**379064**
SVOC TICs																	
2 - Nitrotoluene, o-NT (Benzene, 1-methyl-2-nitro-)	-	ug/kg	**2099**	**66954**	ND	NA	**3579**	**91729**	ND	ND	**1044**	**41527**	**857**	**5645**	**8516**	**18137**	**102178**
2,3-DNT (Benzene, 1-methyl-2,3-dinitro-)	-	ug/kg	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	**15437**	ND	ND
3,4-DNT (Benzene, 4-methyl-1,2-dinitro-)	-	ug/kg	ND	**7563**	**16482**	NA	**4089**	**16461**	ND	ND	ND	**4602**	**468**	**881**	**4856**	**8953**	**70943**
Ammoniacal Nitrogen as NH4	-	mg/kg	**8.127**	**18.06**	**1.161**	NA	**6.45**	**7.095**	**34.572**	**3.87**	**3.87**	**277.092**	**20.64**	**13.674**	**135.063**	**13.287**	**22.962**
Total Petroleum Hydrocarbons (TPH)	-	mg/kg	NA	NA	NA	**1824**	**1271**	**303**	<38	NA	NA	NA	NA	NA	NA	NA	NA

NOTES

2014 S4ULs values are obtained from "The LQM/CIEH S4ULs for Human Health Risk Asse
Number S4UL3484, All rights reserved", values above are calculated for 1.0% Soil Organ
"-" = No GAC
"ND" = Not Detected
"NA" = Not Analysed
Results are in **bold** where they exceed Commercial GAC

Table 1A-1D - Summary of Key Soil Analytical Results From February 2022 Site Investigation

Analyte	Commercial 2014 S4ULs	Sample ID:	BH613-A	BH613-B	BH613-C	BH614-A	BH614-B	BH614-C	BH615-A	BH615-B	BH615-C	BH616-A	BH616-B	BH616-C	BH617-A	BH617-B
		Depth:	0.60-2.00	2.00-3.00	3.00-3.95	0.70-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	3.00-3.60	0.70-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00
		Units:	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22	24/02/22
Other SVOCs																
2,4-Dinitrotoluene	-	ug/kg	**11501**	**61219**	**70023**	<10	<10	<10	<10	<10	<10	<10	<10	**152**	<10	<10
2,6-Dinitrotoluene	-	ug/kg	**4938**	**40256**	**33188**	<10	<10	<10	<10	<10	<10	<10	<10	**35**	<10	<10
SVOC TICs																
2 - Nitrotoluene, o-NT (Benzene, 1-methyl-2-nitro-)	-	ug/kg	**2424**	**30629**	**56894**	ND	ND	ND	ND	ND	**295**	ND	**538345**	**1205981**	**1112**	**1795**
2,3-DNT (Benzene, 1-methyl-2,3-dinitro-)	-	ug/kg	ND	**3570**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4-DNT (Benzene, 4-methyl-1,2-dinitro-)	-	ug/kg	**1227**	**3346**	**563**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammoniacal Nitrogen as NH4	-	mg/kg	**28.509**	**10.062**	**10.32**	**13.416**	**3.354**	**6.45**	**6.579**	<0.6	**2.967**	<0.6	**10.449**	**10.449**	**5.289**	**3.096**
Total Petroleum Hydrocarbons (TPH)	-	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES

2014 S4ULs values are obtained from "The LQM/CIEH S4ULs for Human Health Risk Asse
Number S4UL3484, All rights reserved", values above are calculated for 1.0% Soil Organ
"-" = No GAC
"ND" = Not Detected
"NA" = Not Analysed
Results are in **bold** where they exceed Commercial GAC

Table 2A - Groundwater Analysis - COPCs

Analyte	ID:	BH601	BH602	BH603	BH604	BH605	BH606	BH607	BH608	BH609	BH610	BH611	BH612	BH613	BH614	BH615	BH616
	Strata:	Overburden															
	Units	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022
Nitrogen - based compounds																	
Nitrate as N	mg/l	7.49	ND	0.06	ND	7.02	ND	3.08	1.09	39.81	ND	195.75	107.71	10.69	97.32	139.15	45.13
Nitrite as N	mg/l	0.35	0.008	0.183	ND	4.512	ND	3.017	1.055	1.414	ND	0.923	1.789	0.11	0.49	0.719	7.232
Ammonical Nitrogen as N	mg/l	5.02	14.08	13.15	26.07	0.21	0.93	1.6	16.84	14.75	2.38	24.06	25.56	13.32	5.61	0.67	11.66
Ammonical Nitrogen as NH4	mg/l	6.48	18.16	16.96	33.63	0.27	1.20	2.06	21.72	19.03	3.07	31.04	32.97	17.18	7.24	0.86	15.04
Total Nitrogen	mg/l	14	18.2	19.7	27.6	18.9	8.5	9.7	26.8	60.50	3.40	217.7	137.9	31.8	102.3	142.4	65.2
Explosives																	
2,4-DNT	ug/l	ND	ND	ND	ND	528.2	168.8	5209.6	84350.9	64675.1	6.1	6473	81434.5	69227.8	ND	ND	18.1
2,6-DNT	ug/l	ND	ND	ND	ND	1580	124	8714	67398	43359	2	4843	47815	42065	ND	ND	ND
o-NT	ug/l	ND	ND	ND	ND	595	ND	ND	21885	22064	ND	4993	ND	36994	ND	ND	81879
Other nitrotoluenes	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
"ND" = Not Detected

Tables 3A-3B - Surface Water Analysis - COPCs

Analyte	PVL	IGV		SW4	WD1	WD2
				05/04/2022	05/04/2022	05/04/2022
Field Parameters						
pH #	4.5-9.0	5.5-9.0	-	7.35	8.01	8.05
Electrical Conductivity #	1000	1000	uS/cm	563	405	365
Dissolved Oxygen #	>3	9 mg/l	mg/l	8.62	**2.90**	7.23
Oxidation Reduction Potential #	-	-	mV	201.2	59.3	50.6
Nitrotoluenes						
2,4-DNT	-	-	ug/l	<0.5	<0.5	<0.5
2,6-DNT	-	-	ug/l	<1	<1	<1
2-Nitrotoluene	-	-	ug/l	ND	ND	ND
Other Nitrotoluenes	-	-	ug/l	ND	ND	ND
SVOCs (various additional)						
Phenols (various)	-	-	ug/l	<LOD	<LOD	<LOD
PAHs (various)	-	-	ug/l	<LOD	<LOD	<LOD
Phthalates (various)	-	-	ug/l	<LOD	<LOD	<LOD

Notes

"#" = field reading

"ND" = Not Detected

PVL taken from EU Surface Water (Amendments) Regulations 2019; Annual Average - EQS for inland surface waters

IGV taken from- EPA Discussion Document "Environmental Quality Objectives and Environmental Quality Standards, The Aquatic Environment" 1997

"LOD" = limit of detection ; various individual SVOCs are not listed here when below LOD or detected at race levels. Full laboratory laboratory certificates are included in appendices

Bold = exceeds PVL

Underlined = exceeds IGV

Tables 3A-3B - Surface Water Analysis - Various Parameters

Analyte	PVL	IGV	Units	SW4	WD1	WD2
				31/08/21	31/08/21	31/08/21
pH #	4.5-9.0	5.5-9.0	-	7.35	8.01	8.05
E. Conductivity #	1000	1000	uS/cm	562.70	404.50	365.20
Dissolved O2 #	>3	9 mg/l *	mg/l	8.62	2.90	7.23
Nitrate as N	-	50	mg/l	2.56	0.6	0.60
Nitrite as N	-	-	mg/l	0.03	0.01	<0.006
Ammonical Nitrogen as NH3	≤ 0.04 or ≤ 0.065	0.02	mg/l	**0.48**	**0.08**	0.05
Total Nitrogen	-	-	mg/l	9.60	1.40	1.50

Notes

PVL taken from EU Surface Water Regulations (Amendment) 2019

IGV taken from- EPA Discussion Document "Environmental Quality Objectives and Environmental Quality Standards, The Aquatic Environment" 1997

* guideline value of 9 mg/l demonstrates high oxygen saturation

"#" = Field reading

Bold = exceeds PVL

Underlined = exceeds IGV

APPENDIX A

SITE PHOTOGRAPHS

Plate 1 – View of drilling rig at borehole BH601

Plate 2 – View of soil cores from borehole BH601

Plate 3 – View of drilling rig at borehole BH603

Plate 4 – View of soil cores from borehole BH603

Plate 5 – View of concrete cores from borehole BH603

Plate 6 – View of drilling rig at borehole BH604

Plate 7 – View of soil cores from borehole BH604

Plate 8 – View of drilling rig at borehole BH605

Plate 9 – View of soil cores from borehole BH605

Plate 10 – View of drilling rig at borehole BH606

Plate 11 – View of soil cores from borehole BH606

Plate 12 – View of drilling rig at borehole BH607

Plate 13 – View of soil cores from borehole BH607

Plate 14 – View of drilling rig at borehole BH608

Plate 15 – View of soil cores from borehole BH608

Plate 16 – View of drilling rig at borehole BH609

Plate 17 – View of soil cores from borehole BH609

Plate 18 – View of drilling rig at borehole BH610

Plate 19 – View of soil cores from borehole BH610

Plate 20 – View of soil cores from borehole BH611

Plate 21 – View of soil cores from borehole BH612

Plate 22 – View of soil cores from borehole BH613

Plate 23 – View of soil cores from borehole BH614

Plate 24 – View of soil cores from borehole BH615

Plate 25 – View of drilling rig at borehole BH616

Plate 26 – View of soil cores from borehole BH616

Plate 27 – View of soil cores from borehole BH617

Plate 28 – View of drilling spoils in 1 Tonne bulk bag outside store building

Plate 29 – Sealed well cap BH605

Plate 30 – Sealed well cap BH604

APPENDIX B

SAMPLE OBSERVATIONS SUMMARY SHEET

Borehole Reference	Type of Installation	Date Completed	Supervised by	Layer Interval	Soil Description	Observations - odours, contam, PID etc.	Total Depth (m)	Screen Interval (mbtoc)	Water Strike	Well Permeability	Samples Taken
BH-601	Monitoring Well	22/02/2022	DMC	0.0-0.16	MG - Concrete hardstanding.	No PEC	4.0	2.0-4.0	2.0		BH601A (0.5-2.0) BH601B (2.0-3.0) BH601C (2.6) BH601D(3.0-4.0) BH601E (3.8-4.0)
				0.16-0.5	MG - dry loose grey/brown sandy gravel fill.	No PEC, 0.3PPM					
				0.5-1.0	NG - dry firm grey/brown clayey SILT with subangular cobbles.	No PEC, 0.3PPM					
				1.0-2.0	NG - dry firm grey/brown gravelly clayey SILT.	No PEC, 0.3PPM					
				2.0-2.5	NG - damp firm brown gravelly clayey SILT with freq subangular cobbles.	No PEC, 3.8PPM					
				2.5-4.0	NG - wet firm brown sandy clayey SILT with freq subangular cobbles.	2.5-3.0: No PEC, 50.4PPM 3.0-3.8: Mild HC odour 3.8-4.0: V. mild HC odour					
BH-602	Monitoring Well	22/02/2022	DMC	0.0-0.12	MG - Tarmac		4.0	2.0-4.0	2.3		BH602A (0.7-2.0) BH602B (0.7-1.0) BH602C (2.0-3.0) BH602D (3.0-4.0)
				0.12-0.7	MG - dry loose grey/brown fine to coarse gravel fill	No PEC, 0.1PPM					
				0.7-1.0	NG - dry firm grey/brown sandy SILT with freq subangular cobbles	Mild HC odour, 30.2PPM					
				1.0-2.5	NG - Wet firm grey/brown sandy clayey SILT with freq subangular cobbles	V. mild HC odour, 28.3PPM					
				2.5-4	NG - Wet brown silty CLAY with subangular cobbles	2.5-3.5: No PEC, 0.9PPM 3.5-4.0: No PEC, 0.1PPM					
BH-603	Monitoring Well	22/02/2022	DMC	0.0-0.12	MG - Tarmac		4.0	2.0-4.0	2.3		BH603A (1.0-2.0) BH603B (2.0-3.0) BH603C (3.0-4.0)
				0.12-0.6	MG - dry loose grey/brown fine to coarse gravel fill	No PEC, 0.0PPM					
				0.6-0.8	MG - dry dark brown sandy SILT with cobbles present	No PEC, 0.0PPM					
				0.8-1.0	MG - dry dark brown clayey SILT with cobbles present	No PEC, 0.0PPM					
				1.0-2.0	NG - dry firm grey/brown clayey SILT with freq subangular cobbles present	No PEC, 0.1PPM					
				2.0-2.5	NG - damp firm grey/brown clayey SILT with freq subangular cobbles present	No PEC, 0.0PPM					
				2.5-3.0	NG - wet grey/brown silty CLAY	No PEC, 0.0PPM					
				3.0-4.0	NG - wet firm grey/brown clayey SILT with freq subangular cobbles present	No PEC, 0.0PPM					

Borehole Reference	Type of Installation	Date Completed	Supervised by	Layer Interval	Soil Description	Observations - odours, contam, PID etc.	Total Depth (m)	Screen Interval (mbtoc)	Water Strike	Well Permeability	Samples Taken
BH-604	Monitoring Well	22/02/2022	DMC	0.0-0.12	MG - Tarmac		4.0	2.0-4.0	2.5		BH604A (0.12-0.4) BH604B (0.4-2.0) BH604C (2.0-3.0) BH604D (3.0-4.0)
				0.12-0.4	MG - dry loose grey/brown fine to medium gravel fill	No PEC, 0.0PPM					
				0.4-1.0	MG - dry loose grey/brown fine to coarse gravel fill	No PEC, 0.0PPM					
				1.0-2.0	NG - Dry stiff grey/brown clayey SILT with subangular cobbles and grey mottling present.	No PEC, 0.0PPM					
				2.0-2.5	NG - Damp firm grey/brown clayey SILT with frequent subangular cobbles present.	No PEC, 0.0PPM					
				2.5-4.0	NG - Wet firm grey/brown silty CLAY with small subangular cobbles present.	No PEC, 0.0PPM					
BH-605	Monitoring Well	23/02/2022	DMC	0.0-0.25	MG - Concrete hardstanding.		4.0	2.0-4.0	2.5		BH605A (0.25-0.7) BH605B (0.7-2.0) BH605C (2.0-3.0) BH605D (3.0-4.0)
				0.25-0.7	MG - dry loose grey fine to coarse gravel fill with concrete fragments present	Mild ONT odour, 0.0PPM					
				0.7-1.0	NG - Firm grey/brown SILT with frequent large subangular cobbles present.	No PEC, 0.0PPM					
				1.0-2.8	NG - Dry stiff grey/brown gravelly clayey SILT with frequent subangular cobbles present.	1.0-2.0: No PEC, 0.4PPM 2.0-3.0: No PEC, 0.2PPM					
				2.8-3.0	NG - Wet stiff grey/brown gravelly silty CLAY with frequent subrounded cobbles present.	No PEC, 0.2PPM					
				3.0-4.0	NG - Wet firm grey/brown gravelly clayey SILT with frequent subangular and subrounded cobbles present.	Mild ONT odour, 0.0PPM					
BH-606	Monitoring Well	23/02/2022	DMC	0.0-0.25	MG - Concrete hardstanding.		4.0 Collapsed to 2.5	1.5-2.5			BH606A (0.8-2.0) BH606B (2.0-3.0) BH606C (3.0-4.0)
				0.25-0.8	MG - dry loose grey fine to coarse gravel fill with concrete fragments present	No PEC, 0.0PPM					
				0.8-1.2	NG - Dry soft dark brown gravelly clayey SILT with frequent large subangular cobbles present.	No PEC, 0.0PPM					
				1.2-2.0	NG -Damp firm grey/brown clayey gravelly SILT with frequent subangular cobbles present.	No PEC, 0.0PPM					
				2.0-3.0	NG -Very wet loose grey/brown silty clayey GRAVEL with frequent subrounded cobbles present.	No PEC, 0.0PPM					
				3.0-4.0	NG -Wet soft grey/brown gravelly silty CLAY with subrounded cobbles present.	No PEC, 0.0PPM					

Borehole Reference	Type of Installation	Date Completed	Supervised by	Layer Interval	Soil Description	Observations - odours, contam, PID etc.	Total Depth (m)	Screen Interval (mbtoc)	Water Strike	Well Permeability	Samples Taken
BH-607	Monitoring Well	23/02/2022	DMC, AJ	0.0-0.25	MG - Concrete hardstanding.		4.0	2.0-4.0		2.0	BH607A (0.25-0.65) BH607B (0.65-2.0) BH607C (2.0-3.0) BH607D (3.0-4.0)
				0.25-0.65	MG - dry loose grey fine to coarse gravel fill with concrete fragments present	Strong ONT odour, 0.0PPM					
				0.65-2.2	NG - Dry firm grey/brown gravelly clayey SILT with frequent subangular cobbles present.	Mild ONT odour, 0.0PPM					
				2.2-3.0	NG - Wet stiff grey/brown gravelly CLAY with frequent subrounded and subangular cobbles present.	Strong ONT odour, 0.0PPM					
				3.0-4.0	NG - Wet stiff grey/brown gravelly CLAY with frequent subrounded and subangular cobbles present.	Mild to Moderate ONT odour, 0.0PPM					
BH-608	Monitoring Well	23/02/2022	DMC, AJ	0.0-0.25	MG - Concrete hardstanding.		2.95	0.95-2.95		2.1	BH608A (0.7-2.0) BH608B (2.0-2.95)
				0.25-0.7	MG - dry loose grey fine to coarse gravel fill.	Mild to Moderate ONT odour, 0.0PPM					
				0.7-1.8	NG - Dry dark brown gravelly clayey SILT with subangular and subrounded cobbles present.	Mild ONT odour, 0.0PPM					
				1.8-2.5	NG - Damp firm grey/brown clayey SILT with frequent subangular cobbles present.	1.8-2.0: Mild ONT odour, 0.0PPM 2.0-2.5: Mod to strong odour, 0.7PPM					
				2.5-2.95	NG - Wet grey/brown gravelly very clayey SILT with frequent subangular cobbles present.	Strong ONT odour, 0.0PPM					
BH-609	Monitoring Well	23/02/2022	DMC, AJ	0.0-0.3	MG - Concrete hardstanding.		4.0	2.0-4.0		1.5	BH609A (0.6-2.0) BH609B (1.5-2.0) HC BH609C (2.0-3.0) BH609D (3.0-4.0)
				0.3-0.6	MG - dry loose grey fine to coarse gravel fill.	Mild ONT odour, 0.0PPM					
				0.6-1.3	NG - Dry loose grey/brown sandy GRAVEL with subangular cobbles present.	Mild ONT odour, 0.0PPM					
				1.3-1.5	NG - Dry soft red/brown clayey SILT with roots present.	Mild HC odour					
				1.5-3.0	NG - Wet stiff grey/brown gravelly very clayey SILT with frequent subrounded cobbles present. 2.0-3.0: Little recovery due to driving cobble	1.5-2.0: Mild HC odour 5.4PPM 2.0-3.0: Mild ONT odour, 0.0PPM					
				3.0-4.0	NG - Wet stiff grey/brown gravelly clayey SILT with frequent subangular cobbles present.	Mild ONT odour, 0.0PPM Green staining					

Borehole Reference	Type of Installation	Date Completed	Supervised by	Layer Interval	Soil Description	Observations - odours, contam, PID etc.	Total Depth (m)	Screen Interval (mbtoc)	Water Strike	Well Permeability	Samples Taken
BH-610	Monitoring Well	24/02/2022	DMC, AJ	0.0-0.31	MG - Concrete hardstanding.		4.0	2.0-4.0		2.2	BH610A (0.6-2.0) BH610B (2.0-3.0) BH610C (3.0-4.0)
				0.31-0.6	MG - dry loose grey fine to coarse gravel fill.	Mild ONT odour					
				0.6-0.8	NG - Dry dark brown/red SILT with roots present.	No PEC					
				0.8-1.2	Dry stiff grey gravelly clayey SILT with frequent subangular cobbles present.	No PEC					
				1.2-2.0	Dry stiff grey gravelly clayey SILT with frequent subangular cobbles present.	Mild ONT odour					
				2.0-4.0	Wet stiff grey gravelly silty CLAY with frequent subangular cobbles present.	Mild ONT odour					
BH-611	Monitoring Well	24/02/2022	AJ	0.0-0.3	MG - Concrete hardstanding.		4.0	2.0-4.0		2.2	BH611A (0.6-2.0) BH611B (2.0-3.0) BH611C (3.0-4.0)
				0.3-0.8	MG - dry loose grey fine to coarse gravel fill.	Moderate ONT odour, 0.0PPM					
				0.8-1.0	NG - Dry dark brown/red SILT with roots present.	Mild ONT odour, 0.0PPM					
				1.0-2.2	NG - Dry stiff grey gravelly clayey SILT with frequent large subangular cobbles present.	Mild ONT odour, 0.0PPM					
				2.2-3.0	NG - Wet stiff grey gravelly silty CLAY with frequent large subangular cobbles present.	Mild ONT odour, 0.0PPM					
				3.0-4.0	NG - Wet stiff grey very gravelly CLAY with frequent subangular cobbles present.	Mild ONT odour, 0.0PPM					
BH-612	Monitoring Well	24/02/2022	AJ	0.0-0.35	MG - Concrete hardstanding.		3.3	1.3-3.3		2.2	BH612A (0.6-2.0) BH612B (2.0-3.0) BH612C (3.0-3.3)
				0.35-0.8	MG - dry loose grey fine to coarse gravel fill with concrete fragments present	Mild ONT odour, 0.1PPM					
				0.8-1.1	NG - Dry dark brown/red loose SILT with roots present.	Mild ONT odour, 0.1PPM					
				1.1-2.4	NG - Dry stiff grey/brown gravelly clayey SILT with frequent subangular cobbles present. (gravel content increasing with depth)	1.1-2.0: Mild ONT odour, 0.1PPM 2.0-2.4: Mild to mod. ONT odour, 0.1PPM					
				2.4--3.0	NG - Wet stiff grey/brown very gravelly CLAY with frequent subangular cobbles present.	Moderate ONT odour, 0.0PPM Green staining					
				3.0-3.3	NG - Wet stiff grey/brown gravelly CLAY with frequent subangular cobbles present.	Moderate ONT odour, 0.0PPM					
BH-613	Monitoring Well	24/02/2022	AJ	0.0-0.35	MG - Concrete hardstanding.		3.95	2.0-3.95		2.4	BH613A (0.6-2.0) BH613B (2.0-3.0) BH613C (3.0-3.95)
				0.35-0.75	MG - dry loose grey fine to coarse gravel fill with concrete fragments present	Mild ONT odour, 0.0PPM					
				0.75-1.0	NG - Dry dark brown/red loose SILT with roots present.	No PEC, 0.0PPM					
				1.0-2.4	NG - Dry stiff grey/brown clayey gravelly SILT with frequent subangular cobbles present. (gravel content increasing with depth)	Mild ONT odour, 0.0PPM					
				2.4-3.0	NG - Wet stiff grey/brown gravelly silty CLAY with frequent subangular cobbles present. (Recovery loss- possible driving cobble)	Mild to Moderate ONT odour, 0.0PPM					
				3.0-3.95	NG - Wet stiff grey/brown gravelly silty CLAY with frequent subangular cobbles present. (Recovery loss- possible driving cobble)	Moderate ONT odour, 0.0PPM Green staining					

Borehole Reference	Type of Installation	Date Completed	Supervised by	Layer Interval	Soil Description	Observations - odours, contam, PID etc.	Total Depth (m)	Screen Interval (mbtoc)	Water Strike	Well Permeability	Samples Taken
BH-614	Monitoring Well	24/02/2022	AJ	0.0-0.4	MG - Concrete hardstanding.		4.0	2.0-4.0		2.1	BH614A (0.7-2.0) BH614B (2.0-3.0) BH614C (3.0-4.0)
				0.4-0.7	MG - dry loose grey fine to coarse gravel fill with concrete fragments present	Mild ONT odour, 0.0PPM					
				0.7-0.9	NG - Dry dark brown/red loose SILT with roots present.	No PEC, 0.0PPM					
				0.9-1.0	NG - Dry grey/brown gravelly SILT	No PEC, 0.0PPM					
				1.0-1.7	NG - Dry loose grey/brown gravelly SAND.	No PEC, 0.0PPM					
				1.7-2.1	NG - Dry stiff grey/brown clayey gravelly SILT with subangular cobbles present.	No PEC, 0.0PPM					
				2.1-3.0	NG - Wet firm grey/brown gravelly silty CLAY with frequent subangular cobbles present.	Mild ONT odour, 0.0PPM					
				3.0-4.0	NG - Wet firm grey/brown gravelly clayey SILT with frequent large subangular cobbles present.	No PEC					
BH-615	Monitoring Well	24/02/2022	AJ	0.0-0.4	MG - Concrete hardstanding.		3.6 collapsed to 3.0	2.0-3.0		2.5	BH615A (0.7-2.0) BH615B (2.0-3.0) BH615C (3.0-3.6)
				0.4-0.7	MG - dry loose grey fine to coarse gravel fill with concrete fragments present	No PEC, 0.0PPM					
				0.7-0.9	NG - Dry dark brown/red loose SILT.	No PEC, 0.0PPM					
				0.9-2.0	NG - Dry firm grey/brown sandy gravelly SILTwith subangular cobbles present.	No PEC, 0.0PPM					
				2.0-3.0	NG - Wet stiff grey/brown gravelly clayey SILT with subangular cobbles present.	No PEC, 0.0PPM					
				3.0-3.6	NG - Wet soft grey/brown gravelly silty CLAY with frequent subangular cobbles present. (Reduced recovery- COLLAPSED TO 3M)	No PEC, 0.0PPM					
BH-616	Monitoring Well	25/02/2022	AJ	0.0-0.4	MG - Concrete hardstanding.		4.0	2.0-4.0		2.2	BH616A (0.6-2.0) BH616B (2.0-3.0) BH616C (3.0-4.0)
				0.4-0.7	MG - dry loose grey fine to coarse gravel fill	No PEC, 0.0PPM					
				0.7-0.9	NG - Dry dark brown/red loose SILT containing roots.	No PEC, 0.0PPM					
				0.9-2.5	NG - Dry firm grey/brown sandy gravelly clayey SILT with subangular cobbles and brown mottling present.	0.9-2.0: No PEC, 0.0PPM 2.0-2.5: Yellow/green staining,Strong ONT odour, 0.0PPM					
				2.5-4.0	NG - Wet soft grey/brown gravelly silty CLAY with frequent subangular cobbles present.	V. strong ONT odour, 0.0PPM					
BH-617	Monitoring Well	25/02/2022	AJ	0.0-0.4	MG - Concrete hardstanding.		3.0	1.0-2.0		2.0	BH617A (0.6-2.0) BH617B (2.0-3.0)
				0.4-0.7	MG - dry loose grey fine to coarse gravel fill	Slight ONT odour, 0.0PPM					
				0.7-0.9	NG - Dry dark brown/red loose gravelly sandy SILT containing subrounded cobbles	Slight ONT odour, 0.0PPM					
				0.9-2.0	NG - Dry firm grey/brown sandy gravelly clayey SILT with subangular cobbles.	Slight ONT odour, 0.0PPM					
				2.0-3.0	NG - Wet soft grey/brown gravelly silty CLAY with frequent large subangular cobbles present.	Mild ONT odour, 0.0PPM					

APPENDIX C

BOREHOLE LOGS

Verde Environmental Consultants Ltd | part of the Verde Environmental Group

Borehole Log No.: BH-601

Site: IIE	**Logged By:** DMC	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 22/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	No PEC				MADE GROUND comprising loose grey/brown sandy gravel fill.
		0.3	No PEC	BH-601A (0.5-2.0m)	0.5		Firm grey/brown clayey SILT with frequent subangular cobbles present.
					1.0		Firm grey/brown gravelly clayey SILT. (Poor recovery - driving cobble)
					1.5		
		3.8	No PEC	BH-601B (2.0-3.0m)	2.0		Firm brown gravelly clayey SILT with frequent subangular cobbles present.
		50.4	No PEC	BH-601C (2.6m)	2.5		Firm brown sandy clayey SILT with frequent subangular cobbles present.
		10.5	Mild HC odour	BH-601D (3.0-4.0m)	3.0		
		6.8	V. mild HC odour	BH-601E (3.8-4.0m)	3.5		
					4.0		End of borehole - Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.8m, 1.3 - 4.0m.
Bentinite Seal: 0.8 - 1.3m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.0m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-602**
Site: IIE	**Logged By:** DMC	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 22/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole					0.0		Tarmac
		0.1	No PEC		0.5		MADE GROUND comprising loose grey/brown fine to coarse gravel fill.
		30.2	Mild HC odour	BH-602B (0.7-1.0m)	1.0		Dry grey/brown sandy SILT with frequent subangular cobbles present.
		28.3	V. Mild HC odour	BH-602A (0.7-2.0m)	1.5		Wet firm grey/brown sandy clayey SILT with frequent subangular cobbles and grey mottling present.
		1.0	No PEC	BH-602C (2.0-3.0m)	2.0		
		0.1	No PEC	BH-601D (3.0-4.0m)	2.5		Wet brown silty CLAY with small subangular cobbles present.
					3.0		
					3.5		
					4.0		End of borehole-Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.5m, 1.0 - 4.0m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.2m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-603**
Site: IIE	**Logged By:** DMC	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 22/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Tarmac
		0.0	No PEC		0.5		MADE GROUND comprising loose grey/brown fine to coarse gravel fill.
		0.0	No PEC				MADE GROUND comprising dark brown clayey SILT with cobbles present.
					1.0		MADE GROUND comprising dark brown sandy SILT with cobbles present.
		0.1	No PEC	BH-603A (1.0-2.0m)	1.5		Dry firm grey/brown clayey SILT with subangular cobbles present. (Clay content increasing with depth)
		0.0	No PEC	BH-603B (2.0-3.0m)	2.0 2.5		Damp firm grey/brown clayey SILT with frequent subangular cobbles present. Wet grey/brown silty CLAY.
		0.0	No PEC	BH-603C (3.0-4.0m)	3.0 3.5		Wet firm grey/brown clayey SILT with subangular cobbles present.
					4.0		End of Borehole - Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.7m, 1.2 - 4.0m.
Bentinite Seal: 0.7 - 1.2m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.3m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-604**
Site: IIE	**Logged By:** DMC	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 22/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Tarmac
		0.0	No PEC	BH-604A (0.12-0.4m)			MADE GROUND comprising loose grey/brown fine to medium gravel fill.
					0.5		MADE GROUND comprising loose grey/brown fine to coarse gravel fill.
		0.0	No PEC	BH-604B (0.4-2.0m)	1.0		Dry stiff grey/brown clayey SILT with subangular cobbles and grey mottling present.
					1.5		
		0.0	No PEC	BH-604C (2.0-3.0m)	2.0		Damp firm grey/brown clayey SILT with frequent subangular cobbles present.
					2.5		Wet firm grey/brown silty CLAY with small subangular cobbles present.
		0.0	No PEC	BH-604D (3.0-4.0m)	3.0		
					3.5		
					4.0		End of Borehole - Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.5m, 1.3 - 4.0m.
Bentinite Seal: 0.5 - 1.3m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.5m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-605**
Site: IIE	**Logged By:** DMC	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 23/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	Mild ONT odour	BH-605A (0.25-0.7m)	0.5		MADE GROUND comprising loose grey fine to coarse gravel fill with concrete fragments present.
							Firm grey/brown SILT with frequent large subangular cobbles present.
		0.4	No PEC	BH-605B (0.7-2.0m)	1.0 1.5		Dry stiff grey/brown gravelly clayey SILT with frequent subangular cobbles present.
		0.2.	No PEC	BH-605C (2.0-3.0m)	2.0 2.5		
					3.0		Wet stiff grey/brown gravelly silty CLAY with frequent subrounded cobbles present.
		0.0	No PEC	BH-605D (3.0-4.0m)	3.5		Wet firm grey/brown gravelly clayey SILT with frequent subangular and subrounded cobbles present.
					4.0		End of borehole-Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.5m, 1.0 - 4.0m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.5m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-606**
Site: IIE	**Logged By:** DMC	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 23/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	No PEC		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill with concrete fragments present.
		0.0	No PEC	BH-606A (0.8-2.0m)	1.0		Dry soft dark brown gravelly clayey SILT with frequent large subangular cobbles present.
					1.5		Damp firm grey/brown clayey gravelly SILT with frequent subangular cobbles present.
		0.0	No PEC	BH-606B (2.0-3.0m)	2.0		Very wet loose grey/brown silty clayey GRAVEL with frequent subrounded cobbles present.
borehole collapsed					2.5		
		0.0	No PEC	BH-606C (3.0-4.0m)	3.0		Wet soft grey/brown gravelly silty CLAY with subrounded cobbles present.
					3.5		
					4.0		End of borehole-Target depth achieved.

Well Installation Details:
Slotted screen 1.5 - 2.5m.
Gravel Pack: 0 - 0.5m, 1.0 - 2.5m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-607**
Site: IIE	**Logged By:** DMC	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 23/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole					0.0		Concrete hardstanding.
		0.0	Mod. ONT odour	BH-607A (0.25-0.65m)	0.5		MADE GROUND comprising loose grey fine to coarse gravel fill with concrete fragments present.
		0.0	Mild ONT odour	BH-605B (0.65-2.0m)	1.0 1.5 2.0		Dry firm grey/brown gravelly clayey SILT with frequent subangular cobbles present. (Gravel content increasing)
		0.0	Strong ONT odour	BH-605C (2.0-3.0m)	2.5		Wet stiff grey/brown gravelly CLAY with frequent subrounded and subangular cobbles present.
		0.0	Mild-mod. ONT odour	BH-605D (3.0-4.0m)	3.0 3.5		
					4.0		End of borehole-Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.5m, 1.0 - 4.0m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.0m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-608**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 23/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	Mod. ONT odour		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill.
		0.0	Mild ONT odour	BH-608A (0.7-2.0m)	1.0		Dry dark brown gravelly clayey SILT with subangular and subrounded cobbles present.
					1.5		
		0.6	Strong ONT odour	BH-608B (2.0-2.95m)	2.0		Damp firm grey/brown clayey SILT with frequent subangular cobbles present.
					2.5		Wet grey/brown gravelly clayey SILT with frequent subangular cobbles present.
					3.0		End of borehole-Obstruction Encountered.

Well Installation Details:
Slotted screen 0.95 - 2.95m.
Gravel Pack: 0 - 0.3m, 0.8 - 2.95m.
Bentinite Seal: 0.3 - 0.8m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.0m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-609**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 23/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	Mild ONT odour		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill.
							Dry loose grey/brown sandy GRAVEL with subangular cobbles present.
		0.0	Mild ONT odour		1.0		
		0.0	Mild HC odour	BH-609A (0.6-2.0m)			Dry soft red/brown clayey SILT with roots present.
		5.4	Mild ONT odour Mild HC odour	BH-609B (1.5-2.0m)	1.5		Wet stiff grey/brown gravelly very clayey SILT with frequent subrounded cobbles present.
		0.0	Mild ONT odour	BH-609C (2.0-3.0m)	2.0 2.5		(Driving Cobble - little recovery)
		0.0	Mild ONT odour Green staining	BH-609D (3.0-4.0m)	3.0 3.5		Wet stiff grey/brown gravelly clayey SILT with frequent subangular cobbles present.
					4.0		End of borehole-Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.5m, 1.0 - 4.0m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 1.5m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-610**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 24/02/2022	**Verde Job Ref:** 50990

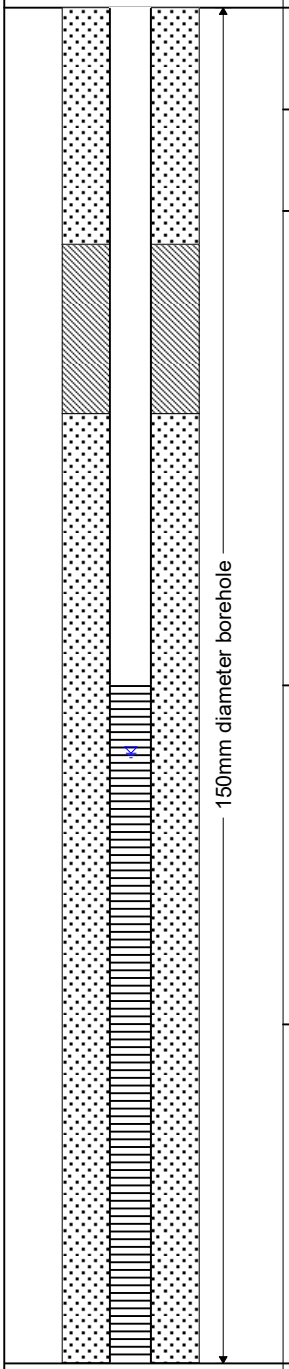
GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole					0.0		Concrete hardstanding.
		0.0	Mild ONT odour		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill.
							Dry dark brown/red SILT with roots present.
		0.0	Mild ONT odour	BH-610A (0.6-2.0m)	1.0		Dry stiff grey gravelly clayey SILT with frequent subangular cobbles present.
					1.5		(clay content increasing)
		0.0	Mild ONT odour	BH-610B (2.0-3.0m)	2.0		Wet stiff grey gravelly silty CLAY with frequent subangular cobbles present.
		0.0	Mild ONT odour	BH-610C (3.0-4.0m)	2.5		
					3.0		
					3.5		
					4.0		End of borehole-Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.4m, 0.9 - 4.0m.
Bentinite Seal: 0.4 - 0.9m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.2m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-611**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 24/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
							Concrete hardstanding.
		0.0	Mod. ONT odour		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill.
							Dry dark brown/red SILT with roots present.
		0.0	Mild ONT odour	BH-611A (0.6-2.0m)	1.0 1.5 2.0		Dry stiff grey gravelly clayey SILT with frequent large subangular cobbles present.
		0.0	Mild ONT odour	BH-611B (2.0-3.0m)	2.5		Wet stiff grey gravelly silty CLAY with frequent large subangular cobbles present.
		0.0	Mild ONT odour	BH-611C (3.0-4.0m)	3.0 3.5		Wet stiff grey very gravelly CLAY with frequent subangular cobbles present.
					4.0		End of borehole-Target depth achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.7m, 1.2 - 4.0m.
Bentinite Seal: 0.7 - 1.2m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.2m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-612**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 24/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	Mild ONT odour		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill with concrete fragments present..
					1.0		Dry dark brown/red loose SILT with roots present.
		0.1	Mild ONT odour	BH-612A (0.6-2.0m)	1.5		Dry stiff grey/brown gravelly clayey SILT with frequent subangular cobbles present. (gravel content increasing)
		0.0	Mod. ONT odour	BH-612B (2.0-3.0m)	2.0 2.5		Wet stiff grey/brown very gravelly CLAY with frequent subangular cobbles present.
		0.0	Mod. ONT odour Green staining	BH612C (3.0-3.3m)	3.0		Wet stiff grey/brown gravelly CLAY with frequent subangular cobbles present.
							End of borehole-Obstruction Encountered.

Well Installation Details:
Slotted screen 1.3 - 3.3m.
Gravel Pack: 0 - 0.4m, 1.0 - 3.3m.
Bentinite Seal: 0.4 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.2m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-613**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 24/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	Mild ONT odour		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill with concrete fragments present.
							Dry dark brown/red loose SILT with roots present.
		0.0	Mild ONT odour	BH-613A (0.6-2.0m)	1.0		Dry stiff grey/brown clayey gravelly SILT with frequent subangular cobbles present.
					1.5		(gravel content increasing)
		0.0	Mod. ONT odour	BH-613B (2.0-3.0m)	2.0		Wet stiff grey/brown gravelly silty CLAY with frequent subangular cobbles present.
					2.5		(Recovery loss - driving cobble)
		0.0	Mod. ONT odour Green staining	BH613C (3.0-3.95m)	3.0		Wet stiff grey/brown gravelly silty CLAY with frequent subangular cobbles present.
					3.5		
					4.0		End of borehole-Obstruction Encountered.

Well Installation Details:
Slotted screen 2.0 - 3.95m.
Gravel Pack: 0 - 0.5m, 1.0 - 3.95m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.4m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-614**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 24/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	Mild ONT odour		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill with concrete fragments present.
							Dry dark brown/red loose SILT.
		0.0	No PEC	BH-614A (0.7-2.0m)	1.0		Dry loose grey/brown gravelly SAND.
					1.5		Dry stiff grey/brown clayey gravelly SILT with subangular cobbles present.
		0.0	Mild ONT odour	BH-614B (2.0-3.0m)	2.0		Wet firm grey/brown gravelly silty CLAY with frequent subangular cobbles present.
		0.0	No PEC	BH614C (3.0-4.0m)	2.5		
					3.0		Wet firm grey/brown gravelly clayey SILT with frequent large subangular cobbles present.
					3.5		
					4.0		End of borehole-Target Depth Achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.5m, 1.0 - 4.0m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.1m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-615**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 24/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	No PEC		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill with concrete fragments present.
							Dry dark brown/red loose SILT.
		0.0	No PEC	BH-615A (0.7-2.0m)	1.0 1.5		Dry firm grey/brown sandy gravelly SILTwith subangular cobbles present.
		0.0	No PEC	BH-615B (2.0-3.0m)	2.0 2.5		Wet stiff grey/brown gravelly clayey SILT with subangular cobbles present.
borehole collapsed		0.0	No PEC	BH615C (3.0-3.6m)	3.0 3.5		Wet soft grey/brown gravelly silty CLAY with frequent subangular cobbles present. (Reduced recovery)
							End of borehole-Obstruction Encountered.

Well Installation Details:
Slotted screen 2.0 - 3.0m.
Gravel Pack: 0 - 0.5m, 1.0 - 3.0m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.5m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-616**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 25/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	No PEC		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill.
							Dry dark brown/red loose sandy SILT with roots present.
		0.0	No PEC	BH-616A (0.6-2.0m)	1.0		Dry firm grey/brown slightly sandy gravelly clayey SILT with subangular cobbles and brown mottling present.
					1.5		(Clay content increasing)
		0.0	Strong ONT odour Yellow staining	BH-616B (2.0-3.0m)	2.0		
					2.5		Wet soft grey/brown gravelly silty CLAY with frequent subangular cobbles present.
		0.0	V. strong ONT odour Yellow staining	BH614C (3.0-4.0m)	3.0		(Gravel content increasing)
					3.5		
					4.0		End of borehole-Target Depth Achieved.

Well Installation Details:
Slotted screen 2.0 - 4.0m.
Gravel Pack: 0 - 0.5m, 1.0 - 4.0m.
Bentinite Seal: 0.5 - 1.0m.

PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.2m.

Verde Environmental Consultants Ltd | part of the Verde Environmental Group			**Borehole Log No.: BH-617**
Site: IIE	**Logged By:** DMC, AJ	**Contractor:** Causeway Geotech	**Sheet:** 1 of 1
Client: IIE	**Drilling method:** Percussion	**Date:** 25/02/2022	**Verde Job Ref:** 50990

GROUNDWATER	SAMPLES AND INSITU TESTING					STRATA RECORD	
Well	Depth/ Type (m)	PID (ppm)	Observations	Sample ID	Depth (m)	Key	Description
							Ground surface
150mm diameter borehole							Concrete hardstanding.
		0.0	Mild ONT odour		0.5		MADE GROUND comprising loose grey fine to coarse gravel fill.
							Dry dark brown/red loose gravelly sandy SILT with subrounded cobbles present.
		0.0	Mild ONT odour	BH-617A (0.6-2.0m)	1.0		Dry firm grey/brown gravelly sandy SILTwith frequent subangular cobbles and brown mottling present.
					1.5		
					2.0		Wet soft grey/brown gravelly silty CLAY with frequent large subangular cobbles present. (Boulder encountered- casing lost)
Plugged casing		0.0	Mild ONT odour	BH-617B (2.0-3.0m)	2.5		
					3.0		End of borehole-Obstruction Encountered.

Well Installation Details:
Slotted screen 1.0 - 2.0m.
Gravel Pack: 0 - 0.4m, 0.9 - 2.0m.
Bentinite Seal: 0.4 - 0.9m.
Plugged casing: Bentonite 2.4-3.0m, Gravel 2.0-2.4m.
PEC: Physical Evidence of Contamination

GROUNDWATER REMARKS:
Groundwater strike at 2.0m.

APPENDIX D

GROUNDWATER & SURFACE WATER SAMPLING LOGS

GROUNDWATER SITE LOG SHEET

Client:	IIE	**Job Ref:**	50990
Date:	6th April 2022	**Log by:**	DMC
Site:	IIE, Enfield	**Weather:**	Overcast, mild, breezy

Sample ID	pH	Temp (°C)	EC (µS/cm)	DO, %	ORP, mV	Water Level, mBTOC	Well Depth, mBTOC	Purge Vol (L)	Recharge Notes	Sampling date	BH dia.	Odour	Visual Notes
BH601	-	-	-	-	-	1.23	3.83	12	Moderate	06-Apr-22	50mm	Slight H/C	Grey/brown, silty, H/C sheen
BH602	-	-	-	-	-	1.89	3.72	6	Poor	06-Apr-22	50mm	Very slight H/C	Grey/brown, silty, H/C sheen
BH603	-	-	-	-	-	1.86	3.69	4	Poor	06-Apr-22	50mm	None	Grey/brown, silty
BH604#	-	-	-	-	-	1.98	3.86	2	Poor	06-Apr-22	50mm	None	Grey/brown, silty
BH605	-	-	-	-	-	2.11	2.64	2	Poor	06-Apr-22	50mm	Mild-moderate almond	Grey/brown, silty
BH606#	-	-	-	-	-	2.11	2.5	2	Poor	06-Apr-22	50mm	None	Grey/brown, silty
BH607	-	-	-	-	-	2.13	3.82	2	Poor	06-Apr-22	50mm	Mild almond	Grey/brown, silty
BH608	-	-	-	-	-	2.13	2.83	2	Poor	06-Apr-22	50mm	Moderate almond	Grey/brown, silty
BH609	-	-	-	-	-	2.15	3.87	12	Moderate	06-Apr-22	50mm	Moderate almond, mild H/C	Green/cream/brown tint, silty, some H/C sheen present
BH610#	-	-	-	-	-	2.21	3.87	2	Poor	06-Apr-22	50mm	None	Grey/brown, silty
BH611	-	-	-	-	-	2.26	3.9	2	Poor	06-Apr-22	50mm	Very mild almond	Slight orange/brown tint
BH612	-	-	-	-	-	2.28	3.28	3	Poor	06-Apr-22	50mm	Moderate almond	Orange/brown tint, some H/C sheen present
BH613	-	-	-	-	-	2.275	3.85	3	Poor	06-Apr-22	50mm	Moderate almond	Orange/brown tint, silty
BH614#	-	-	-	-	-	2.44	3.74	2	Poor	06-Apr-22	50mm	None	Grey/brown, silty
BH615	-	-	-	-	-	2.48	2.88	2	Poor	06-Apr-22	50mm	None	Grey/brown, silty
BH616	-	-	-	-	-	2.52	3.73	3	Poor	06-Apr-22	50mm	Strong almond	Grey/brown, silty
BH617	-	-	-	-	-	-	1.92	-	-	06-Apr-22	50mm	-	-

Notes:
pH & Electrical Conductivity analysis completed in Lab.
"#" = Sampling completed with low-flow sampling - see low-flow sampling logs.

Low Flow Sample Log

	Client	IIE	**Job Ref**	50990
	Date	6th April 2022	**Log by**	Ronan Doyle
	Site	IIE	**Contact**	
	Weather	Overcast, mild, breezy		
	Sample Point	BH604	**Description**	Monitoring Well

Total Well Depth TOC mBGL	**Height of Water Column**	**Free Product** **None**
Depth to Water TOC mBGL	**Caclulated System Vol**	**Casing diameter and material** **50mm PVC**

Field Equipment

Make	Model	Serial No
YSI Multimeter		
Geotech Peristaltic Pump		
Interface probe		-

Field Measurement

Time	Vol removed (litres)	Temp (oC)	EC (uS/cum)	DO (%)	DO (mg/l)	pH	pHmV	ORP	DTW	Colour/Odour
12:32	0.3	11.2	368	63	6.9	7.15	-47.6	58.3		Grey/brown, none
12:37	0.3	10.7	379	9.80	1.00	7.03	-41.6	31		Grey/brown, none
12:42	0.3	10.5	380	8.70	0.90	6.97	-38.6	24.3		Grey/brown, none
12:47	0.3	10.8	384	7.70	0.80	6.95	-37.9	18.3		Grey/brown, none
12:52	0.3	10.8	387	7.40	0.80	6.96	-38.2	13.7		Grey/brown, none
12:57	0.3	10.5	387	7.20	0.80	6.95	-37.7	10.3		Grey/brown, none
13:02	0.3	10.3	385	7.20	0.80	6.95	-37.7	5.8		Grey/brown, none
13:07	0.3	10.1	382	7.30	0.80	6.95	-37.6	5.1		Grey/brown, none
Critera	**Purge Vol of sample line (min)**	**+/- 3%**	**+/- 3%**	**10%**	**10%**	**+/- 0.1**	**NA**	**+/- 10mV**	**drop not to exceed 0.1m**	**NA**

Low Flow Sample Log

	Client	IIE	**Job Ref**	50990
	Date	6th April 2022	**Log by**	Ronan Doyle
	Site	IIE	**Contact**	
	Weather	Overcast, mild, breezy		
	Sample Point	BH606	**Description**	Monitoring Well

Total Well Depth TOC mBGL	**Height of Water Column**	**Free Product** **None**
Depth to Water TOC mBGL	**Caclulated System Vol**	**Casing diameter and material** **50mm PVC**

Field Equipment

Make	Model	Serial No
YSI Multimeter		
Geotech Peristaltic Pump		
Interface probe		-

Field Measurement

Time	Vol removed (litres)	Temp (oC)	EC (uS/cum)	DO (%)	DO (mg/l)	pH	pHmV	ORP	DTW	Colour/Odour
11:48	0.3	9.6	356	21.6	2.46	7.45	-61.7	27.5		Grey/brown, none
11:53	0.3	9.6	338	13.10	1.49	7.2	-49.7	22.1		Grey/brown, none
11:58	0.3	9.6	335.9	24.80	2.82	7.12	-46.1	25.1		Grey/brown, none
12:03	0.3	9.6	335.5	19.90	2.26	7.08	-44	23.2		Grey/brown, none
12:08	0.3	9.6	336.0	17.90	2.04	7.05	-42.4	21.5		Grey/brown, none
12:13	0.3	9.6	335.5	16.60	1.69	7.03	-41.4	20.3		Grey/brown, none
12:18	0.3	9.6	334.5	23.00	2.61	7.01	-40.4	22.6		Grey/brown, none
12:23	0.3	9.6	333.9	28.70	3.26	7.01	-40.5	27.5		Grey/brown, none
Critera	**Purge Vol of sample line (min)**	**+/- 3%**	**+/- 3%**	**10%**	**10%**	**+/- 0.1**	**NA**	**+/- 10mV**	**drop not to exceed 0.1m**	**NA**

Low Flow Sample Log

	Client	IIE	**Job Ref**	50990
	Date	6th April 2022	**Log by**	Ronan Doyle
	Site	IIE	**Contact**	
	Weather	Overcast, mild, breezy		
	Sample Point	BH610	**Description**	Monitoring Well

Total Well Depth TOC mBGL	**Height of Water Column**	**Free Product** **None**
Depth to Water TOC mBGL	**Caclulated System Vol**	**Casing diameter and material** **50mm PVC**

Field Equipment

Make	Model	Serial No
YSI Multimeter		
Geotech Peristaltic Pump		
Interface probe	-	-

Field Measurement

Time	Vol removed (litres)	Temp (oC)	EC (uS/cum)	DO (%)	DO (mg/l)	pH	pHmV	ORP	DTW	Colour/Odour
09:35	0.3	10.5	520	16.6	1.84	7.33	-53.1	20.6	2.21	Clear/None
09:40	0.3	10.7	517	12.40	1.37	7.22	-50	15.4	2.34	Clear/None
09:45	0.25	10.7	520	12.30	1.39	7.18	-48.6	14.2	2.3	Clear/None
09:50	0.25	10.7	519	11.70	1.31				2.29	Clear/None
09:55	0.25	10.7		11.20	1.24				2.29	Clear/None
10:00	0.25	10.7	518.9	11.10	1.23	7.06	-42.8	11.3	2.29	Clear/None
10:05	0.25	10.8	519	10.60	1.18	7.03	-41.8	8.2	2.3	Clear/None
10:10	0.25	10.8	519.2	10.10	1.12	7.0	-40	7.3	2.29	Clear/None
Critera	**Purge Vol of sample line (min)**	**+/- 3%**	**+/- 3%**	**10%**	**10%**	**+/- 0.1**	**NA**	**+/- 10mV**	**drop not to exceed 0.1m**	**NA**

Low Flow Sample Log

	Client	IIE	**Job Ref**	50990
	Date	6th April 2022	**Log by**	Ronan Doyle
	Site	IIE	**Contact**	
	Weather	Overcast, mild, breezy		
	Sample Point	BH614	**Description**	Monitoring Well

Total Well Depth TOC mBGL	**Height of Water Column**	**Free Product** **None**
Depth to Water TOC mBGL	**Caclulated System Vol**	**Casing diameter and material** **50mm PVC**

Field Equipment

Make	Model	Serial No
YSI Multimeter		
Geotech Peristaltic Pump		
Interface probe		-

Field Measurement

Time	Vol removed (litres)	Temp (oC)	EC (uS/cum)	DO (%)	DO (mg/l)	pH	pHmV	ORP	DTW	Colour/Odour
10:50	0.35	10.1	725	20.4	2.41	7.25	-51.2	34.5	2.44	Brown tint, no odour
10:55	0.35	10.1	1250	9.70	1.68	6.99	-39.6	25.1	2.49	Brown tint, no odour
11:00	0.35	10.1	1268	8.80	0.99	6.89	-34.9	19.5	2.51	Brown tint, no odour
11:05	0.35	10.1	1264	9.30	1.04	6.85	-32.8	16	2.53	Brown tint, no odour
11:10	0.3	10.2	1227	8.50	0.95	6.83	-31.8	13.9	2.52	Brown tint, no odour
11:15	0.3	10.2	1197	8.00	0.89	6.82	-31.2	12.3	2.51	Brown tint, no odour
11:20	0.3	10.2	1162	8.00	0.89	6.82	-31.2	11.2	2.52	Brown tint, no odour
Critera	**Purge Vol of sample line (min)**	**+/- 3%**	**+/- 3%**	**10%**	**10%**	**+/- 0.1**	**NA**	**+/- 10mV**	**drop not to exceed 0.1m**	**NA**

SURFACE WATER SITE LOG SHEET

Client:	IIE	**Job Ref:**	50990
Date:	5th April 2022	**Log by:**	DMcC
Site:	IIE, Enfield	**Weather:**	Overcast, mild, breezy

Sample ID	pH	Temp (°C)	EC (µS/cm)	DO (mV)	ORP, mV	Odour	Flow	Visual Notes
SW4	7.4	10.1	562.4	8.48	197.30	None	Very slow	Yellow tint, shallow, silty bed, some vegetation present
WD1	8.0	9.8	404.5	2.9	59.30	None	Very slow	Clear, some dark suspended solids present, shallow, silty bed, some vegetation present
WD2	8.1	10.0	365.2	7.2	50.60	None	Very slow	Clear, some dark suspended solids present, shallow, silty bed, some vegetation present

General Notes:

APPENDIX E

LABORATORY CERTIFICATES

Element Materials Technology
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Verde Environmental Consultants
Unit 3 Airport E.Business & Technology Park
Farmers Cross
Cork

Attention :	Donal Hogan
Date :	11th March, 2022
Your reference :	50990
Our reference :	Test Report 22/3302 Batch 1 Schedule A 22/3302 Batch 1 Schedule B 22/3302 Batch
Location :	
Date samples received :	28th February, 2022
Status :	Final Report
Issue :	1

Twenty four samples were received for analysis on 28th February, 2022 of which twenty four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH610-A	BH610-B	BH610-C	BH611-A	BH611-B	BH611-C	BH612-A	BH612-B	BH612-C	BH613-A			
Depth	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-3.30	0.60-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
Antimony	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM15
Arsenic #	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM15
Barium #	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM15
Cadmium #	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM15
Chromium #	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM15
Copper #	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM15
Lead #	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM15
Mercury #	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM15
Molybdenum #	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM15
Nickel #	-	-	-	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM15
Selenium #	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	-	-	-	-	-	-	-	-	-	-	<50	mg/kg	TM50/PM29
Water Soluble Boron #	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM74/PM32
Zinc #	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM15
Methyl Tertiary Butyl Ether #	-	-	-	-	-	-	-	-	-	-	<2	ug/kg	TM15/PM10
Benzene #	-	-	-	-	-	-	-	-	-	-	<3	ug/kg	TM15/PM10
Toluene #	-	-	-	-	-	-	-	-	-	-	<3	ug/kg	TM15/PM10
Ethylbenzene #	-	-	-	-	-	-	-	-	-	-	<3	ug/kg	TM15/PM10
m/p-Xylene #	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM15/PM10
o-Xylene #	-	-	-	-	-	-	-	-	-	-	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	-	-	-	-	-	-	-	-	-	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	-	-	-	-	-	-	-	-	-	<0	%	TM15/PM10
SVOC TICs	ND	ND	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached		None	TM16/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	-	-	-	-	-	-	-	-	-	-	<30	mg/kg	TM5/PM8/PM16
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	-	-	-	-	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	-	-	-	-	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	-	-	-	-	-	-	-	-	-	-	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	<19	-	-	-	-	-	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10 (HS_1D_AL)	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	-	-	-	-	-	-	-	-	-	-	<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	-	-	-	-	-	-	-	-	-	-	<10	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH610-A	BH610-B	BH610-C	BH611-A	BH611-B	BH611-C	BH612-A	BH612-B	BH612-C	BH613-A			
Depth	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-3.30	0.60-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	<0.2	-	-	-	-	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	<4	-	-	-	-	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	<7	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	<7	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	<19	-	-	-	-	-	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	-	-	-	-	-	-	-	-	-	-	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	<38	-	-	-	-	-	-	-	-	-	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	-	-	-	-	-	-	-	-	-	-	<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 (HS_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	-	-	-	-	-	-	-	-	-	-	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	-	-	-	-	-	-	-	-	-	-	<10	mg/kg	TM5/PM8/PM16
MTBE#	<5	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Benzene#	<5	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Toluene#	<5	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene#	<5	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene#	<5	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
o-Xylene#	<5	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
PCB 28#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 52#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 101#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 118#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 138#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 153#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
PCB 180#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM17/PM8
Total 7 PCBs#	-	-	-	-	-	-	-	-	-	-	<35	ug/kg	TM17/PM8
Phenol#	-	-	-	-	-	-	-	-	-	-	<0.01	mg/kg	TM26/PM21B
Natural Moisture Content	-	-	-	-	-	-	-	-	-	-	<0.1	%	PM4/PM0
Ammoniacal Nitrogen as N	26.8	3.0	3.0	214.8	16.0	10.6	104.7	10.3	17.8	22.1	<0.6	mg/kg	TM38/PM20
Hexavalent Chromium#	-	-	-	-	-	-	-	-	-	-	<0.3	mg/kg	TM38/PM20
Nitrate as NO3	<2.5	<2.5	<2.5	1936.8	170.5	22.6	438.5	61.6	<2.5	47.8	<2.5	mg/kg	TM38/PM20
Nitrite as NO2	<0.05	<0.05	<0.05	0.62	<0.05	<0.05	0.53	0.20	0.53	0.33	<0.05	mg/kg	TM38/PM20
Ortho Phosphate as PO4	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH610-A	BH610-B	BH610-C	BH611-A	BH611-B	BH611-C	BH612-A	BH612-B	BH612-C	BH613-A			
Depth	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-3.30	0.60-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
Total Cyanide #	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	-	-	-	-	-	-	-	-	-	<0.02	%	TM21/PM24
Fraction Organic Carbon	0.008	0.003	0.003	0.014	0.002	0.002	0.013	0.002	0.002	0.014	<0.001	None	TM21/PM24
Sulphide	-	-	-	-	-	-	-	-	-	-	<10	mg/kg	TM107/PM45
Electrical Conductivity @25C (5:1 ext)	151	158	104	947	172	147	347	183	141	187	<100	uS/cm	TM76/PM58
Elemental Sulphur	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM108/PM114
Loss on Ignition #	-	-	-	-	-	-	-	-	-	-	<1.0	%	TM22/PM0
pH #	8.16	8.52	8.47	7.97	8.40	8.51	8.24	8.22	8.60	8.31	<0.01	pH units	TM73/PM11
Redox Potential	193.48	191.67	188.14	168.38	197.89	176.69	173.05	180.21	162.41	190.35		mV	TM139/PM0
Mass of raw test portion	-	-	-	-	-	-	-	-	-	-		kg	NONE/PM17
Mass of dried test portion	-	-	-	-	-	-	-	-	-	-		kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-58	59-61	LOD/LOR	Units	Method No.
Sample ID	BH613-B	BH613-C	BH614-A	BH614-B	BH614-C	BH615-A	BH615-B	BH615-C	Spoil Comp	BH616-A			
Depth	2.00-3.00	3.00-3.95	0.70-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	3.00-3.60		0.70-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J T	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
Antimony	-	-	-	-	-	-	-	-	2	-	<1	mg/kg	TM30/PM15
Arsenic #	-	-	-	-	-	-	-	-	8.2	-	<0.5	mg/kg	TM30/PM15
Barium #	-	-	-	-	-	-	-	-	43	-	<1	mg/kg	TM30/PM15
Cadmium #	-	-	-	-	-	-	-	-	2.5	-	<0.1	mg/kg	TM30/PM15
Chromium #	-	-	-	-	-	-	-	-	72.4	-	<0.5	mg/kg	TM30/PM15
Copper #	-	-	-	-	-	-	-	-	24	-	<1	mg/kg	TM30/PM15
Lead #	-	-	-	-	-	-	-	-	12	-	<5	mg/kg	TM30/PM15
Mercury #	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM30/PM15
Molybdenum #	-	-	-	-	-	-	-	-	3.4	-	<0.1	mg/kg	TM30/PM15
Nickel #	-	-	-	-	-	-	-	-	60.3	-	<0.7	mg/kg	TM30/PM15
Selenium #	-	-	-	-	-	-	-	-	1	-	<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	-	-	-	-	-	-	-	-	195	-	<50	mg/kg	TM50/PM29
Water Soluble Boron #	-	-	-	-	-	-	-	-	0.3	-	<0.1	mg/kg	TM74/PM32
Zinc #	-	-	-	-	-	-	-	-	114	-	<5	mg/kg	TM30/PM15
Methyl Tertiary Butyl Ether #	-	-	-	-	-	-	-	-	<2	-	<2	ug/kg	TM15/PM10
Benzene #	-	-	-	-	-	-	-	-	<3	-	<3	ug/kg	TM15/PM10
Toluene #	-	-	-	-	-	-	-	-	34	-	<3	ug/kg	TM15/PM10
Ethylbenzene #	-	-	-	-	-	-	-	-	<3	-	<3	ug/kg	TM15/PM10
m/p-Xylene #	-	-	-	-	-	-	-	-	<5	-	<5	ug/kg	TM15/PM10
o-Xylene #	-	-	-	-	-	-	-	-	<3	-	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	-	-	-	-	-	-	-	101	-	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	-	-	-	-	-	-	-	88	-	<0	%	TM15/PM10
SVOC TICs	See Attached	See Attached	ND	ND	ND	ND	ND	See Attached	-	ND		None	TM16/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	-	-	-	-	-	-	-	-	<30	-	<30	mg/kg	TM5/PM8/PM16
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	-	-	-	-	-	-	-	-	<0.2	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	-	-	-	-	-	-	-	-	<4	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	-	-	-	-	-	-	-	-	<7	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	-	-	-	-	-	-	-	-	<7	-	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	-	-	-	-	-	-	-	-	<7	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	-	-	-	-	-	-	-	-	<26	-	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	-	-	-	-	-	-	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10 (HS_1D_AL)	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	-	-	-	-	-	-	-	-	<10	-	<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	-	-	-	-	-	-	-	-	<10	-	<10	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-58	59-61	LOD/LOR	Units	Method No.
Sample ID	BH613-B	BH613-C	BH614-A	BH614-B	BH614-C	BH615-A	BH615-B	BH615-C	Spoil Comp	BH616-A			
Depth	2.00-3.00	3.00-3.95	0.70-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	3.00-3.60		0.70-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J T	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR)#	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	683.5	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	61	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	<7	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	<7	-	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	-	-	-	-	-	-	-	-	<7	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	-	-	-	-	-	-	-	-	745	-	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	-	-	-	-	-	-	-	-	-	-	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	-	-	-	-	-	-	-	-	745	-	<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 (HS_1D_AR)#	-	-	-	-	-	-	-	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	-	-	-	-	-	-	-	-	1133	-	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	-	-	-	-	-	-	-	-	<10	-	<10	mg/kg	TM5/PM8/PM16
MTBE#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Benzene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Toluene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
o-Xylene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
PCB 28#	-	-	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 52#	-	-	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 101#	-	-	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 118#	-	-	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 138#	-	-	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 153#	-	-	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 180#	-	-	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
Total 7 PCBs#	-	-	-	-	-	-	-	-	<35	-	<35	ug/kg	TM17/PM8
Phenol#	-	-	-	-	-	-	-	-	<0.01	-	<0.01	mg/kg	TM26/PM21B
Natural Moisture Content	-	-	-	-	-	-	-	-	11.2	-	<0.1	%	PM4/PM0
Ammoniacal Nitrogen as N	7.8	8.0	10.4	2.6	5.0	5.1	<0.6	2.3	-	<0.6	<0.6	mg/kg	TM38/PM20
Hexavalent Chromium#	-	-	-	-	-	-	-	-	<0.3	-	<0.3	mg/kg	TM38/PM20
Nitrate as NO3	22.1	25.7	4488.8	371.6	198.4	5671.3	115.2	62.4	-	502.7	<2.5	mg/kg	TM38/PM20
Nitrite as NO2	0.36	0.23	<0.05	0.43	<0.05	1.45	0.23	0.53	-	0.20	<0.05	mg/kg	TM38/PM20
Ortho Phosphate as PO4	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	-	-	-	-	-	-	-	-	72.4	-	<0.5	mg/kg	NONE/NONE

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-58	59-61	LOD/LOR	Units	Method No.
Sample ID	BH613-B	BH613-C	BH614-A	BH614-B	BH614-C	BH615-A	BH615-B	BH615-C	Spoil Comp	BH616-A			
Depth	2.00-3.00	3.00-3.95	0.70-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	3.00-3.60		0.70-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J T	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
Total Cyanide #	-	-	-	-	-	-	-	-	<0.5	-	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	-	-	-	-	-	-	-	0.47	-	<0.02	%	TM21/PM24
Fraction Organic Carbon	0.002	0.003	0.004	0.003	0.002	0.013	0.003	0.003	-	0.009	<0.001	None	TM21/PM24
Sulphide	-	-	-	-	-	-	-	-	<10	-	<10	mg/kg	TM107/PM45
Electrical Conductivity @25C (5:1 ext)	153	162	2166	199	190	2223	154	140	-	313	<100	uS/cm	TM76/PM58
Elemental Sulphur	-	-	-	-	-	-	-	-	2	-	<1	mg/kg	TM108/PM114
Loss on Ignition #	-	-	-	-	-	-	-	-	1.6	-	<1.0	%	TM22/PM0
pH #	8.16	8.19	7.70	7.96	8.15	7.10	8.20	8.30	7.94	7.80	<0.01	pH units	TM73/PM11
Redox Potential	197.31	182.67	234.61	249.32	217.28	257.80	265.11	214.66	-	274.40		mV	TM139/PM0
Mass of raw test portion	-	-	-	-	-	-	-	-	0.1032	-		kg	NONE/PM17
Mass of dried test portion	-	-	-	-	-	-	-	-	0.09	-		kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	62-64	65-67	68-70	71-73							LOD/LOR	Units	Method No.
Sample ID	BH616-B	BH616-C	BH617-A	BH617-B									
Depth	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022									
Antimony	-	-	-	-							<1	mg/kg	TM30/PM15
Arsenic #	-	-	-	-							<0.5	mg/kg	TM30/PM15
Barium #	-	-	-	-							<1	mg/kg	TM30/PM15
Cadmium #	-	-	-	-							<0.1	mg/kg	TM30/PM15
Chromium #	-	-	-	-							<0.5	mg/kg	TM30/PM15
Copper #	-	-	-	-							<1	mg/kg	TM30/PM15
Lead #	-	-	-	-							<5	mg/kg	TM30/PM15
Mercury #	-	-	-	-							<0.1	mg/kg	TM30/PM15
Molybdenum #	-	-	-	-							<0.1	mg/kg	TM30/PM15
Nickel #	-	-	-	-							<0.7	mg/kg	TM30/PM15
Selenium #	-	-	-	-							<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	-	-	-	-							<50	mg/kg	TM50/PM29
Water Soluble Boron #	-	-	-	-							<0.1	mg/kg	TM74/PM32
Zinc #	-	-	-	-							<5	mg/kg	TM30/PM15
Methyl Tertiary Butyl Ether #	-	-	-	-							<2	ug/kg	TM15/PM10
Benzene #	-	-	-	-							<3	ug/kg	TM15/PM10
Toluene #	-	-	-	-							<3	ug/kg	TM15/PM10
Ethylbenzene #	-	-	-	-							<3	ug/kg	TM15/PM10
m/p-Xylene #	-	-	-	-							<5	ug/kg	TM15/PM10
o-Xylene #	-	-	-	-							<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	-	-	-							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	-	-	-							<0	%	TM15/PM10
SVOC TICs	See Attached	See Attached	See Attached	See Attached								None	TM16/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	-	-	-	-							<30	mg/kg	TM5/PM8/PM16
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	-	-	-	-							<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	-	-	-	-							<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-	-							<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	-	-	-	-							<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	-	-	-	-							<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	-	-	-	-							<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	-	-	-	-							<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	-	-	-	-							<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	-	-	-	-							<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	-	-	-	-							<19	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10 (HS_1D_AL)	-	-	-	-							<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	-	-	-	-							<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	-	-	-	-							<10	mg/kg	TM5/PM8/PM16

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	62-64	65-67	68-70	71-73							LOD/LOR	Units	Method No.
Sample ID	BH616-B	BH616-C	BH617-A	BH617-B									
Depth	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022									
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR)#	-	-	-	-							<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	-	-	-	-							<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	-	-	-	-							<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	-	-	-	-							<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	-	-	-	-							<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	-	-	-	-							<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	-	-	-	-							<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	-	-	-	-							<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	-	-	-	-							<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	-	-	-	-							<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	-	-	-	-							<38	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	-	-	-	-							<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 (HS_1D_AR)#	-	-	-	-							<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	-	-	-	-							<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	-	-	-	-							<10	mg/kg	TM5/PM8/PM16
MTBE#	-	-	-	-							<5	ug/kg	TM36/PM12
Benzene#	-	-	-	-							<5	ug/kg	TM36/PM12
Toluene#	-	-	-	-							<5	ug/kg	TM36/PM12
Ethylbenzene#	-	-	-	-							<5	ug/kg	TM36/PM12
m/p-Xylene#	-	-	-	-							<5	ug/kg	TM36/PM12
o-Xylene#	-	-	-	-							<5	ug/kg	TM36/PM12
PCB 28#	-	-	-	-							<5	ug/kg	TM17/PM8
PCB 52#	-	-	-	-							<5	ug/kg	TM17/PM8
PCB 101#	-	-	-	-							<5	ug/kg	TM17/PM8
PCB 118#	-	-	-	-							<5	ug/kg	TM17/PM8
PCB 138#	-	-	-	-							<5	ug/kg	TM17/PM8
PCB 153#	-	-	-	-							<5	ug/kg	TM17/PM8
PCB 180#	-	-	-	-							<5	ug/kg	TM17/PM8
Total 7 PCBs#	-	-	-	-							<35	ug/kg	TM17/PM8
Phenol#	-	-	-	-							<0.01	mg/kg	TM26/PM21B
Natural Moisture Content	-	-	-	-							<0.1	%	PM4/PM0
Ammoniacal Nitrogen as N	8.1	8.1	4.1	2.4							<0.6	mg/kg	TM38/PM20
Hexavalent Chromium#	-	-	-	-							<0.3	mg/kg	TM38/PM20
Nitrate as NO3	46.1	<2.5	2324.8	60.7							<2.5	mg/kg	TM38/PM20
Nitrite as NO2	5.22	0.33	0.49	<0.05							<0.05	mg/kg	TM38/PM20
Ortho Phosphate as PO4	<0.3	<0.3	<0.3	<0.3							<0.3	mg/kg	TM38/PM20
Chromium III	-	-	-	-							<0.5	mg/kg	NONE/NONE

Element Materials Technology

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	62-64	65-67	68-70	71-73									
Sample ID	BH616-B	BH616-C	BH617-A	BH617-B									
Depth	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Total Cyanide #	-	-	-	-							<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	-	-	-							<0.02	%	TM21/PM24
Fraction Organic Carbon	0.003	0.002	0.008	0.002							<0.001	None	TM21/PM24
Sulphide	-	-	-	-							<10	mg/kg	TM107/PM45
Electrical Conductivity @25C (5:1 ext)	146	152	1026	140							<100	uS/cm	TM76/PM58
Elemental Sulphur	-	-	-	-							<1	mg/kg	TM108/PM114
Loss on Ignition #	-	-	-	-							<1.0	%	TM22/PM0
pH #	8.13	8.70	7.44	8.21							<0.01	pH units	TM73/PM11
Redox Potential	187.18	162.95	287.08	245.60								mV	TM139/PM0
Mass of raw test portion	-	-	-	-								kg	NONE/PM17
Mass of dried test portion	-	-	-	-								kg	NONE/PM17

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	55-58										LOD/LOR	Units	Method No.
Sample ID	Spoil Comp												
Depth													
COC No / misc													
Containers	V J T												
Sample Date	24/02/2022												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	28/02/2022												
Dissolved Antimony #	<0.002										<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02										<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025										<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025										<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.038										<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.38										<0.03	mg/kg	TM30/PM17
Dissolved Boron #	<0.012										<0.012	mg/l	TM30/PM17
Dissolved Boron (A10) #	<0.12										<0.12	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005										<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005										<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015										<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015										<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007										<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07										<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005										<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05										<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.005										<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.05										<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002										<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02										<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003										<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03										<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003										<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03										<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001										<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001										<0.0001	mg/kg	TM61/PM0
Phenol	<0.01										<0.01	mg/l	TM26/PM0
Phenol	<0.1										<0.1	mg/kg	TM26/PM0
Fluoride	<0.3										<0.3	mg/l	TM173/PM0
Fluoride	<3										<3	mg/kg	TM173/PM0
Sulphate as SO4 #	4.1										<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	41										<5	mg/kg	TM38/PM0
Chloride #	1.4										<0.3	mg/l	TM38/PM0
Chloride #	14										<3	mg/kg	TM38/PM0
Ammoniacal Nitrogen as N #	0.77										<0.03	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	7.7										<0.3	mg/kg	TM38/PM0
Dissolved Organic Carbon	39										<2	mg/l	TM60/PM0
Dissolved Organic Carbon	390										<20	mg/kg	TM60/PM0
Total Dissolved Solids #	134										<35	mg/l	TM20/PM0
Total Dissolved Solids #	1340										<350	mg/kg	TM20/PM0

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

SVOC Report : **Solid**

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH610-A	BH610-B	BH610-C	BH611-A	BH611-B	BH611-C	BH612-A	BH612-B	BH612-C	BH613-A			
Depth	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-3.30	0.60-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	39	<10	<10	ug/kg	TM16/PM8
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	14	<10	<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenanthrene #	<10	<10	<10	<10	<10	14	<10	<10	21	<10	<10	ug/kg	TM16/PM8
Anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluoranthene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pyrene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Chrysene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	2184	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

SVOC Report : **Solid**

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH610-A	BH610-B	BH610-C	BH611-A	BH611-B	BH611-C	BH612-A	BH612-B	BH612-C	BH613-A			
Depth	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-4.00	0.60-2.00	2.00-3.00	3.00-3.30	0.60-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	27	<10	186	<10	<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	458	58402	4445	19393	49744	65810	712575$_{AA}$	11501	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	336	44416	1369	7371	40803	47863	379064$_{AA}$	4938	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	67	<10	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	112	118	112	122	103	119	109	112	116	113	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	108	107	109	110	100	107	109	109	113	112	<0	%	TM16/PM8

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

SVOC Report : **Solid**

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	59-61	62-64	LOD/LOR	Units	Method No.
Sample ID	BH613-B	BH613-C	BH614-A	BH614-B	BH614-C	BH615-A	BH615-B	BH615-C	BH616-A	BH616-B			
Depth	2.00-3.00	3.00-3.95	0.70-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	3.00-3.60	0.70-2.00	2.00-3.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	145	<10	ug/kg	TM16/PM8
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	52	<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenanthrene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluoranthene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pyrene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Chrysene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

SVOC Report : **Solid**

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	59-61	62-64	LOD/LOR	Units	Method No.
Sample ID	BH613-B	BH613-C	BH614-A	BH614-B	BH614-C	BH615-A	BH615-B	BH615-C	BH616-A	BH616-B			
Depth	2.00-3.00	3.00-3.95	0.70-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	3.00-3.60	0.70-2.00	2.00-3.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022	24/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	15	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	61219	70023	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	40256	33188	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	119	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	110	114	113	110	105	107	108	110	108	121	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	107	111	106	105	100	105	105	107	112	120	<0	%	TM16/PM8

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

SVOC Report : **Solid**

EMT Sample No.	65-67	68-70	71-73									
Sample ID	BH616-C	BH617-A	BH617-B									
Depth	3.00-4.00	0.70-2.00	2.00-3.00							Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V J	V J	V J									
Sample Date	24/02/2022	24/02/2022	24/02/2022									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	28/02/2022	28/02/2022	28/02/2022							LOD/LOR	Units	Method No.
SVOC MS												
Phenols												
2-Chlorophenol #	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10							<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10							<10	ug/kg	TM16/PM8
PAHs												
2-Chloronaphthalene #	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	136	<10	<10							<10	ug/kg	TM16/PM8
Naphthalene	49	<10	<10							<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10							<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10							<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10							<10	ug/kg	TM16/PM8
Phenanthrene #	<10	<10	<10							<10	ug/kg	TM16/PM8
Anthracene	<10	<10	<10							<10	ug/kg	TM16/PM8
Fluoranthene #	<10	<10	<10							<10	ug/kg	TM16/PM8
Pyrene #	<10	<10	<10							<10	ug/kg	TM16/PM8
Benzo(a)anthracene	30	<10	<10							<10	ug/kg	TM16/PM8
Chrysene	14	<10	<10							<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	<10							<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	<10							<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10							<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10							<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10							<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	<10							<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10							<10	ug/kg	TM16/PM8
Phthalates												
Bis(2-ethylhexyl) phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100							<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100							<100	ug/kg	TM16/PM8

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

SVOC Report : **Solid**

EMT Sample No.	65-67	68-70	71-73									
Sample ID	BH616-C	BH617-A	BH617-B									
Depth	3.00-4.00	0.70-2.00	2.00-3.00							Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V J	V J	V J									
Sample Date	24/02/2022	24/02/2022	24/02/2022									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	28/02/2022	28/02/2022	28/02/2022							LOD/LOR	Units	Method No.
SVOC MS												
Other SVOCs												
1,2-Dichlorobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10							<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	152	<10	<10							<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	35	<10	<10							<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10							<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10							<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10							<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10							<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10							<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10							<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10							<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10							<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10							<10	ug/kg	TM16/PM8
Nitrobenzene #	326	<10	<10							<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	110	104	103							<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	113	108	102							<0	%	TM16/PM8

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3302

VOC Report : **Solid**

EMT Sample No.	55-58										LOD/LOR	Units	Method No.
Sample ID	Spoil Comp												
Depth													
COC No / misc													
Containers	V J T												
Sample Date	24/02/2022												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	28/02/2022												
VOC MS													
Dichlorodifluoromethane	<2										<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2										<2	ug/kg	TM15/PM10
Chloromethane #	<3										<3	ug/kg	TM15/PM10
Vinyl Chloride	<2										<2	ug/kg	TM15_A/PM10
Bromomethane	<1										<1	ug/kg	TM15/PM10
Chloroethane #	<2										<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2										<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6										<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7										<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3										<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3										<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3										<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4										<4	ug/kg	TM15/PM10
Bromochloromethane #	<3										<3	ug/kg	TM15/PM10
Chloroform #	<3										<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3										<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3										<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4										<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4										<4	ug/kg	TM15/PM10
Benzene #	<3										<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3										<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6										<6	ug/kg	TM15/PM10
Dibromomethane #	<3										<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3										<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4										<4	ug/kg	TM15/PM10
Toluene #	34										<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3										<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3										<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3										<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3										<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3										<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3										<3	ug/kg	TM15/PM10
Chlorobenzene #	<3										<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3										<3	ug/kg	TM15/PM10
Ethylbenzene #	<3										<3	ug/kg	TM15/PM10
m/p-Xylene #	<5										<5	ug/kg	TM15/PM10
o-Xylene #	<3										<3	ug/kg	TM15/PM10
Styrene	<3										<3	ug/kg	TM15_A/PM10
Bromoform	<3										<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3										<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3										<3	ug/kg	TM15/PM10
Bromobenzene	<2										<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4										<4	ug/kg	TM15/PM10
Propylbenzene #	<4										<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3										<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5										<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	13										<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4										<4	ug/kg	TM15/PM10
4-Isopropyltoluene	<4										<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
n-Butylbenzene	<4										<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane	<4										<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene	<7										<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4										<4	ug/kg	TM15/PM10
Naphthalene	<27										<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene	<7										<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	101										<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	88										<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 9
Sample identity: BH610-C
Sample depth: 3.00-4.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	90	1044
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.450	97	207
99-55-8	Benzenamine, 2-methyl-5-nitro-	9.426	94	182

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 12
Sample identity: BH611-A
Sample depth: 0.60-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.648	91	41527
99-99-0	Benzene, 1-methyl-4-nitro-	7.092	96	213
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.456	95	260
119-32-4	Benzenamine, 4-methyl-3-nitro-	9.101	83	131
618-85-9	Benzene, 1-methyl-3,5-dinitro-	9.150	98	374
603-02-1	2,4-Dinitro-1,3-dimethyl-benzene	9.219	90	273
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.323	97	4602
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.901	96	453

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 15
Sample identity: BH611-B
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	91	857
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.329	94	468

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 18
Sample identity: BH611-C
Sample depth: 3.00-4.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.648	91	5645
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.456	98	904
570-24-1	2-Methyl-6-nitroaniline	8.984	83	2685
99-55-8	Benzenamine, 2-methyl-5-nitro-	9.101 - 9.431	90,91	2799
618-85-9	Benzene, 1-methyl-3,5-dinitro-	9.150	93	113
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.323	97	881
611-05-2	Benzenamine, 3-methyl-4-nitro-	9.706	97	173
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.893	96	503

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 21
Sample identity: BH612-A
Sample depth: 0.60-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	91	8516
99-99-0	Benzene, 1-methyl-4-nitro-	7.084	94	237
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.450	97	1032
121-14-2	Benzene, 1-methyl-2,4-dinitro-	8.822	80	240
602-01-7	Benzene, 1-methyl-2,3-dinitro-	9.004	87	15437
618-85-9	Benzene, 1-methyl-3,5-dinitro-	9.156	94	609
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.329	91	4856
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.583	91	495
611-05-2	Benzenamine, 3-methyl-4-nitro-	9.704	93	254
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.899	95	1271

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 24
Sample identity: BH612-B
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	91	18137
99-99-0	Benzene, 1-methyl-4-nitro-	7.084	96	133
619-15-8	Benzene, 2-methyl-1,4-dinitro-	8.822	95	1849
618-85-9	Benzene, 1-methyl-3,5-dinitro-	9.156	93	420
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.329	94	8953
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.583	91	1022
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.899	96	377

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 27
Sample identity: BH612-C
Sample depth: 3.00-3.30
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.662	90	102178
99-99-0	Benzene, 1-methyl-4-nitro-	7.084	96	951
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.462	98	842
619-15-8	Benzene, 2-methyl-1,4-dinitro-	8.835	91	21635
618-85-9	Benzene, 1-methyl-3,5-dinitro-	9.169	91	3075
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.375	91	70943
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.584	90	2167
611-05-2	Benzenamine, 3-methyl-4-nitro-	9.710	95	652
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.905	96	1606

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 30
Sample identity: BH613-A
Sample depth: 0.60-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	91	2424
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.450	97	319
89-62-3	Benzenamine, 4-methyl-2-nitro-	9.108	95	1169
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.330	91	1227
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.585	80	490
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.898	94	394

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 33
Sample identity: BH613-B
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.651	91	30629
619-15-8	Benzene, 2-methyl-1,4-dinitro-	8.822	95	683
602-01-7	Benzene, 1-methyl-2,3-dinitro-	9.004	87	3570
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.329	94	3346
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.583	90	436
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.899	95	187

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 36
Sample identity: BH613-C
Sample depth: 3.00-3.95
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.849	93	257
88-72-2	Benzene, 1-methyl-2-nitro-	6.651	91	56894
99-99-0	Benzene, 1-methyl-4-nitro-	7.084	95	241
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.450	98	424
603-83-8	2-Methyl-3-nitroaniline	8.991	98	4668
119-32-4	Benzenamine, 4-methyl-3-nitro-	9.095	99	192
618-85-9	Benzene, 1-methyl-3,5-dinitro-	9.156	93	205
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.329	93	563
99-55-8	Benzenamine, 2-methyl-5-nitro-	9.426	97	6134
611-05-2	Benzenamine, 3-methyl-4-nitro-	9.704	93	314
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.899	95	622

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 54
Sample identity: BH615-C
Sample depth: 3.00-3.60
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	90	295

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 64
Sample identity: BH616-B
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.459	91	538345

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 67
Sample identity: BH616-C
Sample depth: 3.00-4.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.459	91	1205981

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 70
Sample identity: BH617-A
Sample depth: 0.70-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	91	1112

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3302
Sample number: 73
Sample identity: BH617-B
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	90	1795

All solid results are expressed on a dry weight basis unless stated otherwise.

Mass of sample taken (kg)	-	Dry Matter Content Ratio (%) =	87.1
Mass of dry sample (kg) =	0.09	Leachant Volume (l)	-
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
EMT Job No	**22/3302**			
Sample No	**58**			
Client Sample No	**Spoil Comp**			
Depth/Other		**Inert**	**Stable Non-reactive**	**Hazardous**
Sample Date	**24/02/2022**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.47	3	5	6
Sum of BTEX (mg/kg)	0.034	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	<30	500	-	-
PAH Sum of 6 (mg/kg)	-	-	-	-
PAH Sum of 17 (mg/kg)	-	100	-	-

Eluate Analysis	**10:1 concn leached**	**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	A10			
	mg/kg	**mg/kg**		
Arsenic	<0.025	0.5	2	25
Barium	0.38	20	100	300
Cadmium	<0.005	0.04	1	5
Chromium	<0.015	0.5	10	70
Copper	<0.07	2	50	100
Mercury	<0.0001	0.01	0.2	2
Molybdenum	0.05	0.5	10	30
Nickel	<0.02	0.4	10	40
Lead	<0.05	0.5	10	50
Antimony	<0.02	0.06	0.7	5
Selenium	<0.03	0.1	0.5	7
Zinc	<0.03	4	50	200
Chloride	14	800	15000	25000
Fluoride	<3	10	150	500
Sulphate as SO4	41	1000	20000	50000
Total Dissolved Solids	1340	4000	60000	100000
Phenol	<0.1	1	-	-
Dissolved Organic Carbon	390	500	800	1000

Client Name: Verde Environmental Consultants

Reference: 50990

Location:

Contact: Donal Hogan

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
22/3302	1	BH610-A	0.60-2.00	1-3	No interpretation possible
22/3302	1	Spoil Comp		55-58	Degraded diesel

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/3302						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x200 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/3302

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

EMT Job No: 22/3302

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified BS1377-3:1990 Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (35C-440C). On request modified ASTM D2974-00 LOI (105C-440C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.	Yes		AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes

EMT Job No: 22/3302

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes		AD	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Determination of Mercury by Cold Vapour Atomic Fluorescence - WATERS: Modified USEPA Method 245.7, Rev 2, Feb 2005. SOILS: Modified USEPA Method 7471B, Rev.2, Feb 2007	PM0	No preparation is required.	Yes		AR	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No

EMT Job No: 22/3302

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM58	Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker.			AD	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM108	Determination of Elemental Sulphur by Reversed Phase High Performance Liquid Chromatography with Ultra Violet spectroscopy.	PM114	End over end extraction of dried and crushed soil samples for organic analysis. The solvent mix varies depending on analysis required			AD	Yes
TM139	ASTM G200-09 (2014) Oxidation-Reduction potential of soil samples removed from the ground, using Redox probe and meter.	PM0	No preparation is required.			AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	

EMT Job No: 22/3302

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15_A	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

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Verde Environmental Consultants
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Farmers Cross
Cork

Attention :	Donal Hogan
Date :	15th March, 2022
Your reference :	50990
Our reference :	Test Report 22/3306 Batch 1
Location :	
Date samples received :	28th February, 2022
Status :	Final Report
Issue :	1

Thirty three samples were received for analysis on 28th February, 2022 of which thirty three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH601-A	BH601-B	BH601-C	BH601-D	BH601-E	BH602-A	BH602-B	BH602-C	BH602-D	BH603-A			
Depth	0.50-2.00	2.00-3.00	2.60	3.00-4.00	3.80-4.00	0.70-2.00	0.70-1.00	2.00-3.00	3.00-4.00	1.00-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC TICs	See Attached	See Attached	-	See Attached	-	See Attached	-	ND	ND	ND		None	TM16/PM8
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	-	-	<0.1	-	<0.1	-	<0.1	<0.1	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	-	-	0.1	-	<0.1	-	<0.1	<0.1	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	2.2	-	0.6	-	0.4	<0.1	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	-	-	39.5	-	7.4	-	14.2	<0.2	-	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	-	-	260	-	58	-	99	<4	-	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	-	-	441	-	106	-	179	<7	-	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	-	-	355	-	98	-	49	<7	-	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	-	-	1098	-	270	-	342	<19	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	-	-	<0.1	-	<0.1	-	<0.1	<0.1	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	-	-	<0.1	-	<0.1	-	<0.1	<0.1	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	-	-	<0.1	-	<0.1	-	<0.1	<0.1	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	-	-	14.9	-	3.5	-	4.5	<0.2	-	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	-	-	175	-	32	-	55	<4	-	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	-	-	428	-	61	-	98	<7	-	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	-	-	317	-	11	-	12	<7	-	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	-	-	935	-	108	-	170	<19	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	-	-	2033	-	378	-	512	<38	-	-	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE#	-	-	<5	-	<5	-	<5	<5	-	-	<5	ug/kg	TM36/PM12
Benzene#	-	-	<5	-	<5	-	<5	<5	-	-	<5	ug/kg	TM36/PM12
Toluene#	-	-	<5	-	<5	-	<5	<5	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene#	-	-	<5	-	<5	-	<5	<5	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene#	-	-	<5	-	<5	-	13	<5	-	-	<5	ug/kg	TM36/PM12
o-Xylene#	-	-	61	-	12	-	<5	<5	-	-	<5	ug/kg	TM36/PM12
Ammoniacal Nitrogen as N	14.7	5.7	-	5.7	-	36.9	-	10.5	10.0	25.5	<0.6	mg/kg	TM38/PM20
Nitrate as NO3	19.5	<2.5	-	<2.5	-	<2.5	-	<2.5	<2.5	<2.5	<2.5	mg/kg	TM38/PM20
Nitrite as NO2	0.66	<0.05	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	mg/kg	TM38/PM20
Ortho Phosphate as PO4	<0.3	<0.3	-	<0.3	-	<0.3	-	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Fraction Organic Carbon	0.006	0.004	-	0.002	-	0.017	-	0.002	0.002	0.003	<0.001	None	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	1099	157	-	152	-	205	-	142	185	169	<100	uS/cm	TM76/PM58
pH#	8.18	7.83	-	10.88	-	7.99	-	8.31	8.30	8.62	<0.01	pH units	TM73/PM11
Redox Potential	7.38	172.74	-	170.02	-	188.34	-	182.18	146.21	173.82		mV	TM139/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	LOD/LOR	Units	Method No.
Sample ID	BH603-B	BH603-C	BH604-A	BH604-B	BH604-C	BH604-D	BH605-A	BH605-B	BH605-C	BH605-D			
Depth	2.00-3.00	3.00-4.00	0.12-0.40	0.40-2.00	2.00-3.00	3.00-4.00	0.25-0.70	0.70-2.00	2.00-3.00	3.00-4.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/02/2022	22/02/2022	22/02/2022	22/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC TICs	ND	ND	See Attached	See Attached	See Attached	See Attached	See Attached	ND	See Attached	See Attached		None	TM16/PM8
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	-	-	-	-	-	-	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	-	-	-	-	-	-	-	-	-	-	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Benzene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Toluene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
o-Xylene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Ammoniacal Nitrogen as N	14.5	11.3	3.2	17.1	11.5	13.1	<0.6	<0.6	<0.6	<0.6	<0.6	mg/kg	TM38/PM20
Nitrate as NO3	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	96.6	31.0	<2.5	<2.5	<2.5	mg/kg	TM38/PM20
Nitrite as NO2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.76	<0.05	<0.05	<0.05	<0.05	mg/kg	TM38/PM20
Ortho Phosphate as PO4	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Fraction Organic Carbon	0.002	0.002	0.011	0.004	0.002	0.002	0.003	0.002	0.002	0.002	<0.001	None	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	146	166	111	268	153	169	200	137	138	135	<100	uS/cm	TM76/PM58
pH#	8.64	8.32	8.12	11.95	8.57	8.32	11.04	8.52	8.67	8.69	<0.01	pH units	TM73/PM11
Redox Potential	176.43	173.45	167.51	167.94	172.66	138.21	22.98	248.28	215.35	195.74		mV	TM139/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90	LOD/LOR	Units	Method No.
Sample ID	BH606-A	BH606-B	BH606-C	BH607-A	BH607-B	BH607-C	BH607-D	BH608-A	BH608-B	BH609-A			
Depth	0.80-2.00	2.00-3.00	3.00-4.00	0.25-0.65	0.65-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	0.60-2.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC TICs	ND	ND	ND	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached		None	TM16/PM8
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	-	-	-	-	-	-	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	-	-	-	-	-	-	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	-	-	-	-	-	-	-	-	-	-	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Benzene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Toluene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
o-Xylene#	-	-	-	-	-	-	-	-	-	-	<5	ug/kg	TM36/PM12
Ammoniacal Nitrogen as N	1.1	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	6.3	14.0	0.9	<0.6	mg/kg	TM38/PM20
Nitrate as NO3	<2.5	37.6	<2.5	51.8	67.8	14.6	<2.5	16.4	<2.5	93.5	<2.5	mg/kg	TM38/PM20
Nitrite as NO2	0.43	0.26	<0.05	17.48	<0.05	<0.05	0.20	<0.05	<0.05	1.35	<0.05	mg/kg	TM38/PM20
Ortho Phosphate as PO4	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Fraction Organic Carbon	0.016	0.005	0.004	0.002	0.003	0.002	0.002	0.003	0.003	0.011	<0.001	None	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	172	163	162	295	221	145	172	192	147	187	<100	uS/cm	TM76/PM58
pH#	7.81	10.05	8.28	11.18	8.44	8.52	8.54	8.33	8.79	7.84	<0.01	pH units	TM73/PM11
Redox Potential	259.18	108.38	217.33	37.86	243.09	210.99	193.94	195.11	132.77	212.58		mV	TM139/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	91-93	94-96	97-99	LOD/LOR	Units	Method No.
Sample ID	BH609-B	BH609-C	BH609-D			
Depth	1.50-2.00	2.00-3.00	3.00-4.00			
COC No / misc						
Containers	V J	V J	V J			
Sample Date	23/02/2022	23/02/2022	23/02/2022			
Sample Type	Soil	Soil	Soil			
Batch Number	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022			
SVOC TICs	-	See Attached	See Attached		None	TM16/PM8
TPH CWG						
Aliphatics						
>C5-C6 (HS_1D_AL)#	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	0.2	0.8	0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	22.3	19.3	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	323	229	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	695	488	11	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	214	154	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	1255	891	<19	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics						
>C5-EC7 (HS_1D_AR)#	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	5.1	16.4	109.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	148	153	194	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	314	154	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	102	57	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	569	380	303	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	1824	1271	303	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE#	<5	<5	<5	<5	ug/kg	TM36/PM12
Benzene#	<5	<5	<5	<5	ug/kg	TM36/PM12
Toluene#	<5	18	31	<5	ug/kg	TM36/PM12
Ethylbenzene#	<5	<5	<5	<5	ug/kg	TM36/PM12
m/p-Xylene#	<5	15	8	<5	ug/kg	TM36/PM12
o-Xylene#	<5	13	<5	<5	ug/kg	TM36/PM12
Ammoniacal Nitrogen as N	-	5.0	5.5	<0.6	mg/kg	TM38/PM20
Nitrate as NO3	-	<2.5	<2.5	<2.5	mg/kg	TM38/PM20
Nitrite as NO2	-	0.20	<0.05	<0.05	mg/kg	TM38/PM20
Ortho Phosphate as PO4	-	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Fraction Organic Carbon	-	0.004	0.002	<0.001	None	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	-	162	132	<100	uS/cm	TM76/PM58
pH#	-	8.45	8.25	<0.01	pH units	TM73/PM11
Redox Potential	-	196.17	168.29		mV	TM139/PM0

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

SVOC Report : **Solid**

EMT Sample No.	1-3	4-6	10-12	16-18	22-24	25-27	28-30	31-33	34-36	37-39	LOD/LOR	Units	Method No.
Sample ID	BH601-A	BH601-B	BH601-D	BH602-A	BH602-C	BH602-D	BH603-A	BH603-B	BH603-C	BH604-A			
Depth	0.50-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	3.00-4.00	1.00-2.00	2.00-3.00	3.00-4.00	0.12-0.40			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	97	165	33	195	<10	<10	<10	<10	<10	1892	<10	ug/kg	TM16/PM8
Naphthalene	<10	<10	<10	26	<10	<10	<10	<10	<10	750	<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluorene	56	162	43	89	<10	<10	<10	<10	<10	187	<10	ug/kg	TM16/PM8
Phenanthrene #	118	240	65	<10	<10	<10	<10	<10	<10	521	<10	ug/kg	TM16/PM8
Anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	58	<10	ug/kg	TM16/PM8
Fluoranthene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	158	<10	ug/kg	TM16/PM8
Pyrene #	26	30	<10	27	<10	<10	<10	<10	<10	150	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	29	<10	<10	<10	<10	<10	<10	<10	<10	54	<10	ug/kg	TM16/PM8
Chrysene	13	<10	<10	<10	<10	<10	<10	<10	<10	97	<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	89	<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	45	<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	57	<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	64	<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	25	<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	346	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

SVOC Report : **Solid**

EMT Sample No.	1-3	4-6	10-12	16-18	22-24	25-27	28-30	31-33	34-36	37-39	LOD/LOR	Units	Method No.
Sample ID	BH601-A	BH601-B	BH601-D	BH602-A	BH602-C	BH602-D	BH603-A	BH603-B	BH603-C	BH604-A			
Depth	0.50-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	3.00-4.00	1.00-2.00	2.00-3.00	3.00-4.00	0.12-0.40			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	4631	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	2096	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	42	<10	<10	<10	<10	<10	<10	<10	86	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	114	126	114	117	118	111	110	118	114	116	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	123	129	125	126	115	117	114	115	115	122	<0	%	TM16/PM8

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

SVOC Report : **Solid**

EMT Sample No.	40-42	43-45	46-48	49-51	52-54	55-57	58-60	61-63	64-66	67-69	LOD/LOR	Units	Method No.
Sample ID	BH604-B	BH604-C	BH604-D	BH605-A	BH605-B	BH605-C	BH605-D	BH606-A	BH606-B	BH606-C			
Depth	0.40-2.00	2.00-3.00	3.00-4.00	0.25-0.70	0.70-2.00	2.00-3.00	3.00-4.00	0.80-2.00	2.00-3.00	3.00-4.00			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022			
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenanthrene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluoranthene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pyrene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Chrysene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

SVOC Report : **Solid**

EMT Sample No.	40-42	43-45	46-48	49-51	52-54	55-57	58-60	61-63	64-66	67-69			
Sample ID	BH604-B	BH604-C	BH604-D	BH605-A	BH605-B	BH605-C	BH605-D	BH606-A	BH606-B	BH606-C			
Depth	0.40-2.00	2.00-3.00	3.00-4.00	0.25-0.70	0.70-2.00	2.00-3.00	3.00-4.00	0.80-2.00	2.00-3.00	3.00-4.00	Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	LOD/LOR	Units	Method No.
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	6216	<10	7216	7063	<10	<10	178	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	30577	<10	2385	2391	<10	<10	112	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	114	115	126	111	110	114	114	112	111	114	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	118	101	111	100	97	98	99	114	101	99	<0	%	TM16/PM8

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

SVOC Report : **Solid**

EMT Sample No.	70-72	73-75	76-78	79-81	82-84	85-87	88-90	94-96	97-99				
Sample ID	BH607-A	BH607-B	BH607-C	BH607-D	BH608-A	BH608-B	BH609-A	BH609-C	BH609-D				
Depth	0.25-0.65	0.65-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	0.60-2.00	2.00-3.00	3.00-4.00		Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J				
Sample Date	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022		LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Nitrophenol	DR	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	<10	33	453	171	106		<10	ug/kg	TM16/PM8
Naphthalene	12	<10	<10	<10	<10	64	24	25	20		<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	57	36	<10		<10	ug/kg	TM16/PM8
Phenanthrene #	<10	<10	<10	<10	<10	<10	98	41	40		<10	ug/kg	TM16/PM8
Anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Fluoranthene #	<10	<10	<10	<10	<10	<10	13	<10	<10		<10	ug/kg	TM16/PM8
Pyrene #	<10	<10	<10	<10	<10	<10	11	<10	<10		<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Chrysene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	355	<100	<100		<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	1966	<100	<100		<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/kg	TM16/PM8

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

SVOC Report : **Solid**

EMT Sample No.	70-72	73-75	76-78	79-81	82-84	85-87	88-90	94-96	97-99				
Sample ID	BH607-A	BH607-B	BH607-C	BH607-D	BH608-A	BH608-B	BH609-A	BH609-C	BH609-D				
Depth	0.25-0.65	0.65-2.00	2.00-3.00	3.00-4.00	0.70-2.00	2.00-3.00	0.60-2.00	2.00-3.00	3.00-4.00		Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J				
Sample Date	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022	28/02/2022		LOD/LOR	Units	Method No.
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	26		<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	1307402 AB	41406	11552	40958	11532	286697 AA	23122	23478	156409 AA		<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	76628	1500	4862	42513	2618	175395 AA	33493	15086	76134 AA		<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Dibenzofuran #	<2000 AB	<10	<10	<10	<10	<10	51	12	13		<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	118	113	113	113	118	109	122	120	110		<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	109	111	98	99	104	103	124	122	111		<0	%	TM16/PM8

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/3306

SVOC Report : **Solid (Duplicate results)**

EMT Sample No.	70-72												
Sample ID	BH607-A												
Depth	0.25-0.65												
COC No / misc													
Containers	V J												
Sample Date	23/02/2022												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	28/02/2022												
SVOC MS													
Phenols													
4-Nitrophenol	<2000$_{AB}$											<10	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

Job number: 22/3306
Sample number: 3
Sample identity: BH601-A
Sample depth: 0.50-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.849	95	2124
1120-21-4	Undecane	6.387	93	277
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	90	584
629-50-5	Tridecane	7.913 - 9.490	89,91	1852
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	8.427 - 10.724	91,96	3254
606-20-2	Benzene, 2-methyl-1,3-dinitro-	8.583	90	976
575-43-9	Naphthalene, 1,6-dimethyl-	8.621	96	502
119-32-4	Benzenamine, 4-methyl-3-nitro-	9.108	96	3008
99-55-8	Benzenamine, 2-methyl-5-nitro-	9.427	92	817
544-76-3	Hexadecane	9.673 - 10.173	94,98	7992
13187-99-0	2-Bromo dodecane	9.942	91	1687
31295-56-4	Dodecane, 2,6,11-trimethyl-	10.228	91	3318
593-45-3	Octadecane	10.658 - 12.414	96,97	3980
629-92-5	Nonadecane	11.105	95	3354
112-95-8	Eicosane	11.967	98	1680

Job number: 22/3306
Sample number: 6
Sample identity: BH601-B
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
17302-32-8	Nonane, 3,7-dimethyl-	8.433	87	1562
582-16-1	Naphthalene, 2,7-dimethyl-	8.526	93	2108
581-40-8	Naphthalene, 2,3-dimethyl-	8.614	98	1594
581-42-0	Naphthalene, 2,6-dimethyl-	8.639	97	1746
2245-38-7	Naphthalene, 1,6,7-trimethyl-	9.219 - 9.368	83,97	1746
829-26-5	Naphthalene, 2,3,6-trimethyl-	9.277	97	806
13187-99-0	2-Bromo dodecane	9.946	94	2669
3892-00-0	Pentadecane, 2,6,10-trimethyl-	10.232	87	3727
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	10.727	94	4221
112-95-8	Eicosane	11.100	83	1625

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 12
Sample identity: BH601-D
Sample depth: 3.00-4.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
2051-30-1	Octane, 2,6-dimethyl-	7.753	86	555
3891-98-3	Dodecane, 2,6,10-trimethyl-	8.427	91	689
3892-00-0	Pentadecane, 2,6,10-trimethyl-	9.942	93	911
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	10.228 - 10.724	94,96	2969
629-59-4	Tetradecane	11.097	91	1069

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 18
Sample identity: BH602-A
Sample depth: 0.70-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
629-92-5	Nonadecane	6.388	94	795
17301-23-4	Undecane, 2,6-dimethyl-	7.324	90	1729
124-18-5	Decane	7.913	90	1743
3891-98-3	Dodecane, 2,6,10-trimethyl-	8.427	91	1265
629-59-4	Tetradecane	8.558 - 10.173	94,96	6462
581-40-8	Naphthalene, 2,3-dimethyl-	8.621	97	1526
13798-23-7	Hexathiane	9.017	90	897
544-76-3	Hexadecane	9.673 - 11.105	95,95,97	10126
3892-00-0	Pentadecane, 2,6,10-trimethyl-	9.942	93	2963
31295-56-4	Dodecane, 2,6,11-trimethyl-	10.228	92	4889
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	10.724	96	4552

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 39
Sample identity: BH604-A
Sample depth: 0.12-0.40
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
124-18-5	Decane	5.432	95	1454
95-53-4	o-Toluidine	5.862	97	21178
1120-21-4	Undecane	6.388	94	4575
88-72-2	Benzene, 1-methyl-2-nitro-	6.651	91	61934
6117-97-1	Dodecane, 4-methyl-	7.644	95	1788
17312-55-9	Decane, 3,8-dimethyl-	7.674	81	1828
629-50-5	Tridecane	7.913	86	7457
629-59-4	Tetradecane	8.558 - 10.724	90,97	10930
629-62-9	Pentadecane	9.146	90	4246
544-76-3	Hexadecane	9.673 - 11.105	93,95,95,97	16902
629-94-7	Heneicosane	9.942	90	2152
31295-56-4	Dodecane, 2,6,11-trimethyl-	10.228	92	3864
112-95-8	Eicosane	11.536	95	3261

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 42
Sample identity: BH604-B
Sample depth: 0.40-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.849	97	2474

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 45
Sample identity: BH604-C
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.662	97	3322

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 48
Sample identity: BH604-D
Sample depth: 3.00-4.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.662	97	2816

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 51
Sample identity: BH605-A
Sample depth: 0.25-0.70
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.459	90	7246
99-99-0	Benzene, 1-methyl-4-nitro-	6.900	86	116
578-46-1	5-Methyl-2-nitroaniline	8.925	98	290
618-85-9	Benzene, 1-methyl-3,5-dinitro-	8.961	93	174
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.134	93	1934
86-57-7	Naphthalene, 1-nitro-	9.357	95	147
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.389	83	264

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 57
Sample identity: BH605-C
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.459	86	752
578-46-1	5-Methyl-2-nitroaniline	8.925	92	191
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.134	90	321

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 60
Sample identity: BH605-D
Sample depth: 3.00-4.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.459	86	816
602-01-7	Benzene, 1-methyl-2,3-dinitro-	8.807	81	321
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.134	80	317

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 72
Sample identity: BH607-A
Sample depth: 0.25-0.65
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
100-51-6	Benzyl Alcohol	5.280	97	945
88-72-2	Benzene, 1-methyl-2-nitro-	6.460	91	12769
99-99-0	Benzene, 1-methyl-4-nitro-	6.901	95	167
700-38-9	5-Methyl-2-nitrophenol	7.268	93	118
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.269	97	324
619-15-8	Benzene, 2-methyl-1,4-dinitro-	8.636	92	351
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.150	87	2062
86-57-7	Naphthalene, 1-nitro-	9.374	95	902
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.708	94	242

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 75
Sample identity: BH607-B
Sample depth: 0.65-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.640	86	267
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.329	93	223
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.583	87	292

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 78
Sample identity: BH607-C
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.459	91	1148
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.134	94	562

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 81
Sample identity: BH607-D
Sample depth: 3.00-4.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.459	91	6092
619-15-8	Benzene, 2-methyl-1,4-dinitro-	8.627	95	633
618-85-9	Benzene, 1-methyl-3,5-dinitro-	8.961	90	166
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.134	93	4698

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 84
Sample identity: BH608-A
Sample depth: 0.70-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.662	91	121
88-72-2	Benzene, 1-methyl-2-nitro-	6.459	90	2099
603-83-8	2-Methyl-3-nitroaniline	8.789	98	1214
99-55-8	Benzenamine, 2-methyl-5-nitro-	9.230	96	1335
86-57-7	Naphthalene, 1-nitro-	9.357	91	112
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.700	91	159

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 87
Sample identity: BH608-B
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.849	97	618
88-72-2	Benzene, 1-methyl-2-nitro-	6.662	91	66954
99-99-0	Benzene, 1-methyl-4-nitro-	7.084	96	175
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.462	98	512
619-15-8	Benzene, 2-methyl-1,4-dinitro-	8.822	93	596
603-83-8	2-Methyl-3-nitroaniline	9.004	97	8140
119-32-4	Benzenamine, 4-methyl-3-nitro-	9.108	98	1480
618-85-9	Benzene, 1-methyl-3,5-dinitro-	9.158	94	281
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.273	94	213
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.330	94	7563
99-55-8	Benzenamine, 2-methyl-5-nitro-	9.427	92	6780
86-57-7	Naphthalene, 1-nitro-	9.564	97	3677
611-05-2	Benzenamine, 3-methyl-4-nitro-	9.710	95	290
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.898	96	512

Job number: 22/3306
Sample number: 90
Sample identity: BH609-A
Sample depth: 0.60-2.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
2051-30-1	Octane, 2,6-dimethyl-	7.567	86	677
629-50-5	Tridecane	7.736	94	874
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.268	96	966
578-46-1	5-Methyl-2-nitroaniline	8.925	98	3321
629-62-9	Pentadecane	8.943	94	3072
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.150	93	16482
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.389	90	4553
544-76-3	Hexadecane	9.475	95	2224
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.700	91	1526
3892-00-0	Pentadecane, 2,6,10-trimethyl-	9.744	95	2510
629-59-4	Tetradecane	9.977	95	2803
1921-70-6	Pentadecane, 2,6,10,14-tetramethyl-	10.029	93	4235

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 96
Sample identity: BH609-C
Sample depth: 2.00-3.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.460	91	3579
112-40-3	Dodecane	7.021	96	679
629-50-5	Tridecane	7.729	94	1691
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	8.245 - 10.900	91,94,97	7482
629-59-4	Tetradecane	8.368 - 9.977	96,97	5442
629-62-9	Pentadecane	8.943	96	3869
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.134	93	4089
544-76-3	Hexadecane	9.475	97	3696
3892-00-0	Pentadecane, 2,6,10-trimethyl-	9.745	97	1796
54105-67-8	Heptadecane, 2,6-dimethyl-	10.029	94	3307
593-45-3	Octadecane	10.451	95	3041

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/3306
Sample number: 99
Sample identity: BH609-D
Sample depth: 3.00-4.00
Sample Type: Soil
Units: ug/kg

Method: SVOC
Matrix: Solid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.651	91	91729
99-99-0	Benzene, 1-methyl-4-nitro-	7.084	94	529
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.462	96	2230
619-15-8	Benzene, 2-methyl-1,4-dinitro-	8.822	95	957
89-62-3	Benzenamine, 4-methyl-2-nitro-	8.991	91	3487
618-85-9	Benzene, 1-methyl-3,5-dinitro-	9.156	90	828
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.271	95	368
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.340	90	16461
544-76-3	Hexadecane	9.674	95	449
611-05-2	Benzenamine, 3-methyl-4-nitro-	9.704	97	1145
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.899	95	2301
629-59-4	Tetradecane	10.175	95	791

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants

Reference: 50990

Location:

Contact: Donal Hogan

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
22/3306	1	BH601-C	2.60	7-9	Degraded diesel & Possible lubricating oil
22/3306	1	BH601-E	3.80-4.00	13-15	Degraded diesel & Possible lubricating oil
22/3306	1	BH602-B	0.70-1.00	19-21	Degraded diesel
22/3306	1	BH602-C	2.00-3.00	22-24	No interpretation possible
22/3306	1	BH609-B	1.50-2.00	91-93	Degraded diesel
22/3306	1	BH609-C	2.00-3.00	94-96	Degraded diesel & Possible PAH's
22/3306	1	BH609-D	3.00-4.00	97-99	Trwce of possible degraded diesel & Unknown aromatic hydrocarbons 3.5-4.25 mins

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/3306						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/3306

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x50 Dilution
AB	x200 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/3306

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes

EMT Job No: 22/3306

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AR	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM58	Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker.			AD	Yes
TM139	ASTM G200-09 (2014) Oxidation-Reduction potential of soil samples removed from the ground, using Redox probe and meter.	PM0	No preparation is required.			AR	No

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Verde Environmental Consultants
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Farmers Cross
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Attention :	Donal Hogan
Date :	27th April, 2022
Your reference :	50990
Our reference :	Test Report 22/5883 Batch 1
Location :	
Date samples received :	8th April, 2022
Status :	Final Report
Issue :	1

Sixteen samples were received for analysis on 8th April, 2022 of which sixteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5883

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-6	7-12	13-18	19-22	23-26	27-30	31-34	35-38	39-44	45-48	LOD/LOR	Units	Method No.
Sample ID	BH601	BH602	BH603	BH604	BH605	BH606	BH607	BH608	BH609	BH610			
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G	V H HN P G	H HN P G	H HN P G	H HN P G	H HN P G	H HN P G	V H HN P G	H HN P G			
Sample Date	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022			
Dissolved Aluminium #	<20	111	<20	<20	<20	<20	<20	<20	<20	<20	<20	ug/l	TM30/PM14
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	ug/l	TM30/PM14
Dissolved Barium #	345	445	159	406	219	197	201	371	354	136	<3	ug/l	TM30/PM14
Dissolved Calcium #	166.6	96.7	39.9	97.8	206.5	132.0	136.2	138.6	327.7 AA	130.4	<0.2	mg/l	TM30/PM14
Total Dissolved Iron #	<20	139	41	<20	<20	<20	<20	<20	<20	<20	<20	ug/l	TM30/PM14
Dissolved Manganese #	1601	2104	207	1496	2192	519	1318	810	2020	1530	<2	ug/l	TM30/PM14
Dissolved Sodium #	26.9	82.4	19.2	21.8	6.9	11.5	43.2	14.4	26.4	17.4	<0.1	mg/l	TM30/PM14
SVOC TICs	See Attached	ND	ND	See Attached	See Attached	ND	ND AB	See Attached	See Attached	ND		None	TM16/PM30
MTBE #	<5	<5	<5	-	-	-	-	-	<5	-	<5	ug/l	TM36/PM12
Benzene #	<5	<5	<5	-	-	-	-	-	<5	-	<5	ug/l	TM36/PM12
Toluene #	<5	<5	<5	-	-	-	-	-	28	-	<5	ug/l	TM36/PM12
Ethylbenzene #	<5	<5	<5	-	-	-	-	-	<5	-	<5	ug/l	TM36/PM12
m/p-Xylene #	<5	<5	<5	-	-	-	-	-	<5	-	<5	ug/l	TM36/PM12
o-Xylene #	<5	<5	<5	-	-	-	-	-	<5	-	<5	ug/l	TM36/PM12
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10	-	-	-	-	-	<10	-	<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	-	-	-	-	-	15	-	<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10	-	-	-	-	-	113	-	<10	ug/l	TM36/PM12
>C10-C12 #	1157	<5	<5	-	-	-	-	-	<5	-	<5	ug/l	TM5/PM16/PM30
>C12-C16 #	7890	<10	<10	-	-	-	-	-	<10	-	<10	ug/l	TM5/PM16/PM30
>C16-C21 #	13680	<10	<10	-	-	-	-	-	<10	-	<10	ug/l	TM5/PM16/PM30
>C21-C35 #	12510	<10	<10	-	-	-	-	-	<10	-	<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	35237	<10	<10	-	-	-	-	-	128	-	<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10	-	-	-	-	-	<10	-	<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	-	-	-	-	-	28	-	<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	-	-	-	-	-	<10	-	<10	ug/l	TM36/PM12
>EC10-EC12 #	422	<5	<5	-	-	-	-	-	55676	-	<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	4710	<10	<10	-	-	-	-	-	55090	-	<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	11010	<10	<10	-	-	-	-	-	200	-	<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	10660	<10	<10	-	-	-	-	-	<10	-	<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	26802	<10	<10	-	-	-	-	-	110994	-	<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	62039	<10	<10	-	-	-	-	-	111122	-	<10	ug/l	TM5/TM36/PM12/PM16/PM30
Ortho Phosphate as PO4 #	<0.06	0.08	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/l	TM38/PM0
Nitrate as N #	7.49	<0.05	0.06	<0.05	7.02	<0.05	3.08	1.09	39.81	<0.05	<0.05	mg/l	TM38/PM0
Nitrite as N #	0.350	0.008	0.183	<0.006	4.512	<0.006	3.017	1.055	1.414	<0.006	<0.006	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	5.02	14.08	13.15	26.07	0.21	0.93	1.60	16.84	14.75	2.38	<0.03	mg/l	TM38/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5883

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-6	7-12	13-18	19-22	23-26	27-30	31-34	35-38	39-44	45-48	LOD/LOR	Units	Method No.
Sample ID	BH601	BH602	BH603	BH604	BH605	BH606	BH607	BH608	BH609	BH610			
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G	V H HN P G	H HN P G	H HN P G	H HN P G	H HN P G	H HN P G	V H HN P G	H HN P G			
Sample Date	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022			
Electrical Conductivity @25C #	990	1040	450	-	1156	-	957	1008	1593	-	<2	uS/cm	TM76/PM0
pH #	7.37	7.53	7.90	-	7.10	-	7.33	7.34	7.08	-	<0.01	pH units	TM73/PM0
Total Nitrogen	14.0	18.2	19.7	27.6	18.9	8.5	9.7	26.8	60.5	3.4	<0.5	mg/l	TM38/TM125/PM0

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5883

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	49-51	52-57	58-60	61-64	65-67	68-70					LOD/LOR	Units	Method No.
Sample ID	BH611	BH612	BH613	BH614	BH615	BH616							
Depth													
COC No / misc													
Containers	H P G	V H HN P G	H P G	H HN P G	H P G	H P G							
Sample Date	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022							
Dissolved Aluminium #	<20	<20	<20	<20	<20	<20					<20	ug/l	TM30/PM14
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5					<2.5	ug/l	TM30/PM14
Dissolved Barium #	376	356	269	201	154	311					<3	ug/l	TM30/PM14
Dissolved Calcium #	381.1 AA	287.2 AA	310.3 AA	293.8 AA	307.3 AA	196.4					<0.2	mg/l	TM30/PM14
Total Dissolved Iron #	<20	<20	<20	<20	<20	<20					<20	ug/l	TM30/PM14
Dissolved Manganese #	951	1022	1458	1346	154	1105					<2	ug/l	TM30/PM14
Dissolved Sodium #	44.5	25.1	21.5	23.0	24.0	20.5					<0.1	mg/l	TM30/PM14
SVOC TICs	See Attached	See Attached	See Attached	ND	ND	See Attached						None	TM16/PM30
MTBE #	-	<5	-	-	-	-					<5	ug/l	TM36/PM12
Benzene #	-	<5	-	-	-	-					<5	ug/l	TM36/PM12
Toluene #	-	22	-	-	-	-					<5	ug/l	TM36/PM12
Ethylbenzene #	-	<5	-	-	-	-					<5	ug/l	TM36/PM12
m/p-Xylene #	-	<5	-	-	-	-					<5	ug/l	TM36/PM12
o-Xylene #	-	<5	-	-	-	-					<5	ug/l	TM36/PM12
TPH CWG													
Aliphatics													
>C5-C6 #	-	<10	-	-	-	-					<10	ug/l	TM36/PM12
>C6-C8 #	-	<10	-	-	-	-					<10	ug/l	TM36/PM12
>C8-C10 #	-	53	-	-	-	-					<10	ug/l	TM36/PM12
>C10-C12 #	-	<5	-	-	-	-					<5	ug/l	TM5/PM16/PM30
>C12-C16 #	-	<10	-	-	-	-					<10	ug/l	TM5/PM16/PM30
>C16-C21 #	-	<10	-	-	-	-					<10	ug/l	TM5/PM16/PM30
>C21-C35 #	-	<10	-	-	-	-					<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	-	53	-	-	-	-					<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	-	<10	-	-	-	-					<10	ug/l	TM36/PM12
>EC7-EC8 #	-	22	-	-	-	-					<10	ug/l	TM36/PM12
>EC8-EC10 #	-	<10	-	-	-	-					<10	ug/l	TM36/PM12
>EC10-EC12 #	-	42820	-	-	-	-					<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	-	87980	-	-	-	-					<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	-	260	-	-	-	-					<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	-	<10	-	-	-	-					<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	-	131082	-	-	-	-					<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	-	131135	-	-	-	-					<10	ug/l	TM5/TM36/PM12/PM16/PM30
Ortho Phosphate as PO4 #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06					<0.06	mg/l	TM38/PM0
Nitrate as N #	195.75	107.71	10.69	97.32	139.15	45.13					<0.05	mg/l	TM38/PM0
Nitrite as N #	0.923	1.789	0.110	0.490	0.719	7.232					<0.006	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	24.06	25.56	13.32	5.61	0.67	11.66					<0.03	mg/l	TM38/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5883

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	49-51	52-57	58-60	61-64	65-67	68-70					LOD/LOR	Units	Method No.
Sample ID	BH611	BH612	BH613	BH614	BH615	BH616							
Depth													
COC No / misc													
Containers	H P G	V H HN P G	H P G	H HN P G	H P G	H P G							
Sample Date	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022							
Electrical Conductivity @25C #	2452	1823	1575	-	1767	1365					<2	uS/cm	TM76/PM0
pH #	7.18	7.22	7.09	-	7.39	7.16					<0.01	pH units	TM73/PM0
Total Nitrogen	217.7	137.9	31.8	102.3	142.4	65.2					<0.5	mg/l	TM38/TM125/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5883

SVOC Report : **Liquid**

EMT Sample No.	1-6	7-12	13-18	19-22	23-26	27-30	31-34	35-38	39-44	45-48			
Sample ID	BH601	BH602	BH603	BH604	BH605	BH606	BH607	BH608	BH609	BH610			
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V H HN P G	V H HN P G	V H HN P G	H HN P G	H HN P G	H HN P G	H HN P G	H HN P G	V H HN P G	H HN P G			
Sample Date	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
2-Methylphenol #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	20.1 AB	23.1 AB	<0.5	<0.5	ug/l	TM16/PM30
2-Nitrophenol	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
4-Methylphenol	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	44 AB	31 AB	<1	<1	ug/l	TM16/PM30
4-Nitrophenol	<200 AB	<10	<10	<10	<200 AB	<10	<200 AB	<200 AB	<200 AB	<10	<10	ug/l	TM16/PM30
Pentachlorophenol	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Phenol	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Naphthalene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Acenaphthylene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Acenaphthene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Fluorene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Phenanthrene #	15.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Anthracene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Fluoranthene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Pyrene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Chrysene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Benzo(a)pyrene	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<100 AB	<5	<5	<5	<100 AB	<5	<100 AB	<100 AB	<100 AB	<5	<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<30.0 AB	<1.5	<1.5	<1.5	<30.0 AB	<1.5	<30.0 AB	<30.0 AB	<30.0 AB	<1.5	<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Diethyl phthalate #	<20 AB	1	<1	<1	<20 AB	<1	<20 AB	31 AB	70 AB	<1	<1	ug/l	TM16/PM30
Dimethyl phthalate	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5883

SVOC Report : **Liquid**

EMT Sample No.	1-6	7-12	13-18	19-22	23-26	27-30	31-34	35-38	39-44	45-48	LOD/LOR	Units	Method No.
Sample ID	BH601	BH602	BH603	BH604	BH605	BH606	BH607	BH608	BH609	BH610			
Depth													
COC No / misc													
Containers	V H HN P G	V H HN P G	V H HN P G	H HN P G	H HN P G	H HN P G	H HN P G	H HN P G	V H HN P G	H HN P G			
Sample Date	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022			
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
2-Nitroaniline	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<10.0 AB	<0.5	<0.5	<0.5	528.2 AB	168.8	5209.6 AB	84350.9 AC	64675.1 AC	6.1	<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<20 AB	<1	<1	<1	1580 AB	124	8714 AB	67398 AC	43359 AC	2	<1	ug/l	TM16/PM30
3-Nitroaniline	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
4-Chloroaniline	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
4-Nitroaniline	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Azobenzene #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Carbazole #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Dibenzofuran #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Hexachloroethane #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Isophorone #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<10.0 AB	<0.5	<0.5	<0.5	<10.0 AB	<0.5	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	ug/l	TM16/PM30
Nitrobenzene #	<20 AB	<1	<1	<1	<20 AB	<1	<20 AB	<20 AB	<20 AB	<1	<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	116 AB	122	116	121	114 AB	112	115 AB	129 AB	130 AB	124	<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	121 AB	131 SV	127	126	99 AB	120	103 AB	116 AB	127 AB	132 SV	<0	%	TM16/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5883

SVOC Report : **Liquid**

EMT Sample No.	49-51	52-57	58-60	61-64	65-67	68-70							
Sample ID	BH611	BH612	BH613	BH614	BH615	BH616							
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	H P G	V H HN P G	H P G	H HN P G	H P G	H P G							
Sample Date	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022					LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
2-Methylphenol #	14.1 AB	<10.0 AB	17.3 AB	<0.5	<0.5	101.0 AB					<0.5	ug/l	TM16/PM30
2-Nitrophenol	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
4-Methylphenol	<20 AB	<20 AB	24 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
4-Nitrophenol	<200 AB	<200 AB	<200 AB	<10	<10	<200 AB					<10	ug/l	TM16/PM30
Pentachlorophenol	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Phenol	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Naphthalene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Acenaphthylene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Acenaphthene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Fluorene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Phenanthrene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Anthracene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Fluoranthene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Pyrene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Chrysene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Benzo(a)pyrene	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<100 AB	<100 AB	<100 AB	<5	<5	<100 AB					<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<30.0 AB	<30.0 AB	<30.0 AB	<1.5	<1.5	<30.0 AB					<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Diethyl phthalate #	<20 AB	79 AB	36 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Dimethyl phthalate	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5883

SVOC Report : **Liquid**

EMT Sample No.	49-51	52-57	58-60	61-64	65-67	68-70							
Sample ID	BH611	BH612	BH613	BH614	BH615	BH616							
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	H P G	V H HN P G	H P G	H HN P G	H P G	H P G							
Sample Date	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022					LOD/LOR	Units	Method No.
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
2-Nitroaniline	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	6473.0 AB	81434.5 AC	69227.8 AC	<0.5	<0.5	18.1 AB					<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	4843 AB	47815 AC	42065 AC	<1	<1	<20 AB					<1	ug/l	TM16/PM30
3-Nitroaniline	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
4-Chloroaniline	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
4-Nitroaniline	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Azobenzene #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Carbazole #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Dibenzofuran #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Hexachloroethane #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Isophorone #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<10.0 AB	<10.0 AB	<10.0 AB	<0.5	<0.5	<10.0 AB					<0.5	ug/l	TM16/PM30
Nitrobenzene #	<20 AB	<20 AB	<20 AB	<1	<1	<20 AB					<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	121 AB	123 AB	114 AB	116	115	118 AB					<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	103 AB	110 AB	108 AB	123	122	104 AB					<0	%	TM16/PM30

Job number: 22/5883
Method: SVOC
Sample number: 6
Matrix: Liquid
Sample identity: BH601
Sample depth:
Sample Type: Ground Water
Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
3892-00-0	Pentadecane, 2,6,10-trimethyl-	9.844	90	118
55045-07-3	Dodecane, 2-methyl-8-propyl-	10.128	89	160
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	10.624	94	186

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5883
Sample number: 22
Sample identity: BH604
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
108-44-1	Benzenamine, 3-methyl-	5.771	94	632

Job number: 22/5883
Sample number: 26
Sample identity: BH605
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.758	97	412
88-72-2	Benzene, 1-methyl-2-nitro-	6.550	90	595

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5883
Sample number: 38
Sample identity: BH608
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.721	97	897
88-72-2	Benzene, 1-methyl-2-nitro-	6.502	95	21885
603-83-8	2-Methyl-3-nitroaniline	8.819	99	3694
119-32-4	Benzenamine, 4-methyl-3-nitro-	8.947	98	1361
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.162	96	734
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.257	94	2147
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.419	90	411

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5883
Sample number: 44
Sample identity: BH609
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.502	95	22064
556-67-2	Cyclotetrasiloxane, octamethyl-	7.191	86	230
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.300	99	819
619-15-8	Benzene, 2-methyl-1,4-dinitro-	8.666	96	114
96-09-3	Oxirane, phenyl-	8.712	91	181
603-83-8	2-Methyl-3-nitroaniline	8.818	97	3880
602-01-7	Benzene, 1-methyl-2,3-dinitro-	8.838	96	1407
570-24-1	2-Methyl-6-nitroaniline	8.946	90	2356
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.161	94	1347
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.256 - 9.725	94,97	2716
616-72-8	4,6-Dinitro-1,3-dimethyl-benzene	9.417	83	218
611-05-2	Benzenamine, 3-methyl-4-nitro-	9.539	96	271

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5883
Sample number: 51
Sample identity: BH611
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.758	97	494
88-72-2	Benzene, 1-methyl-2-nitro-	6.560	90	4993
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.363	98	643
603-83-8	2-Methyl-3-nitroaniline	8.897	98	2400
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.232	94	457
578-46-1	5-Methyl-2-nitroaniline	9.337	81	1265
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.799	97	231

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5883
Method: SVOC
Sample number: 57
Matrix: Liquid
Sample identity: BH612
Sample depth:
Sample Type: Ground Water
Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
75840-23-2	1,2,3,4-Tetrahydronaphthalene-d12	6.591	83	306
556-67-2	Cyclotetrasiloxane, octamethyl-	7.191	87	313
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.300	99	178
602-01-7	Benzene, 1-methyl-2,3-dinitro-	8.837	98	2954
89-62-3	Benzenamine, 4-methyl-2-nitro-	8.956	94	486
618-85-9	Benzene, 1-methyl-3,5-dinitro-	8.995	97	314
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.161	91	3014
99-52-5	Benzenamine, 2-methyl-4-nitro-	9.725	96	439

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5883
Sample number: 60
Sample identity: BH613
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.721	95	739
88-72-2	Benzene, 1-methyl-2-nitro-	6.510	94	36994
601-87-6	Benzenamine, 3-methyl-2-nitro-	8.301	99	289
119-32-4	Benzenamine, 4-methyl-3-nitro-	8.947	98	2181
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.162	83	463
99-55-8	Benzenamine, 2-methyl-5-nitro-	9.257	97	3406

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5883
Sample number: 70
Sample identity: BH616
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.721	95	1327
88-72-2	Benzene, 1-methyl-2-nitro-	6.510	94	81879
75840-23-2	1,2,3,4-Tetrahydronaphthalene-d12	6.591	81	339

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants

Reference: 50990

Location:

Contact: Donal Hogan

Matrix : Liquid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
22/5883	1	BH601		1-6	Biodegraded Diesel, trace Lubricating Oil
22/5883	1	BH602		7-12	No interpretation possible
22/5883	1	BH603		13-18	No interpretation possible
22/5883	1	BH609		39-44	Dissolved Phase Aromatics
22/5883	1	BH612		52-57	Dissolved Phase Aromatics

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/5883						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x20 Dilution
AC	x200 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/5883

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.	Yes			
TM38/TM125	Total Nitogen/Organic Nitrogen by calculation	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

EMT Job No: 22/5883

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

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Verde Environmental Consultants
Unit 3 Airport E.Business & Technology Park
Farmers Cross
Cork

Attention :	Donal Hogan
Date :	25th April, 2022
Your reference :	50990
Our reference :	Test Report 22/5885 Batch 1
Location :	
Date samples received :	8th April, 2022
Status :	Final Report
Issue :	1

Fourteen samples were received for analysis on 8th April, 2022 of which fourteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Liza Klebe
Project Co-ordinator

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5885

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-3	4-6	7-10	11-13	14-16	17-18	19-20	21-22	23-26	27-30	LOD/LOR	Units	Method No.
Sample ID	GW- 7	GW- 8A	GW- 9A	GW- 14	GW- 15	SW-1	SW-2	SW-3	SW-4	SW-5			
Depth	24.5	18.3	8.30										
COC No / misc													
Containers	H P G	H P G	H HN P G	H P G	H P G	H P	H P	H P	H HN P G	H HN P G			
Sample Date	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022			
Dissolved Aluminium #	-	-	-	-	-	-	-	-	<20	<20	<20	ug/l	TM30/PM14
Dissolved Antimony #	-	-	-	-	-	-	-	-	<2	<2	<2	ug/l	TM30/PM14
Dissolved Arsenic #	-	-	-	-	-	-	-	-	<2.5	<2.5	<2.5	ug/l	TM30/PM14
Dissolved Barium #	-	-	-	-	-	-	-	-	84	80	<3	ug/l	TM30/PM14
Dissolved Boron	-	-	-	-	-	-	-	-	<12	<12	<12	ug/l	TM30/PM14
Dissolved Cadmium #	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	ug/l	TM30/PM14
Dissolved Calcium #	-	-	-	-	-	-	-	-	145.0	145.9	<0.2	mg/l	TM30/PM14
Total Dissolved Chromium #	-	-	-	-	-	-	-	-	<1.5	<1.5	<1.5	ug/l	TM30/PM14
Dissolved Copper #	-	-	-	-	-	-	-	-	<7	<7	<7	ug/l	TM30/PM14
Total Dissolved Iron #	-	-	-	-	-	-	-	-	<20	36	<20	ug/l	TM30/PM14
Dissolved Lead #	-	-	-	-	-	-	-	-	<5	<5	<5	ug/l	TM30/PM14
Dissolved Manganese #	-	-	-	-	-	-	-	-	77	77	<2	ug/l	TM30/PM14
Dissolved Nickel #	-	-	-	-	-	-	-	-	<2	<2	<2	ug/l	TM30/PM14
Dissolved Selenium #	-	-	-	-	-	-	-	-	<3	<3	<3	ug/l	TM30/PM14
Dissolved Sodium #	-	-	-	-	-	-	-	-	6.2	7.4	<0.1	mg/l	TM30/PM14
Dissolved Zinc #	-	-	-	-	-	-	-	-	7	<3	<3	ug/l	TM30/PM14
SVOC TICs	ND	See Attached	See Attached	ND	ND	-	-	-	ND	ND		None	TM16/PM30
Ortho Phosphate as PO4 #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/l	TM38/PM0
Nitrate as N #	<0.05	0.43	1.16	<0.05	<0.05	1.67	26.90	12.99	2.56	2.12	<0.05	mg/l	TM38/PM0
Nitrite as N #	<0.006	<0.006	0.160	<0.006	<0.006	<0.006	0.198	0.038	0.025	<0.006	<0.006	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	91.91	4.46	1.72	0.05	0.09	0.17	4.09	0.03	0.45	<0.03	<0.03	mg/l	TM38/PM0
Total Nitrogen	90.3	1.5	12.8	0.7	<0.5	10.7	32.9	15.2	9.6	3.1	<0.5	mg/l	TM38/TM125/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5885

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	31-34	35-38	39-42	43-45							LOD/LOR	Units	Method No.
Sample ID	SW-6	WD-1	WD-2	PUMP OUTLET									
Depth													
COC No / misc													
Containers	H HN P G	H HN P G	H HN P G	H P G									
Sample Date	05/04/2022	05/04/2022	05/04/2022	05/04/2022									
Sample Type	Surface Water	Surface Water	Surface Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022									
Dissolved Aluminium #	<20	<20	<20	-							<20	ug/l	TM30/PM14
Dissolved Antimony #	<2	<2	<2	-							<2	ug/l	TM30/PM14
Dissolved Arsenic #	<2.5	<2.5	<2.5	-							<2.5	ug/l	TM30/PM14
Dissolved Barium #	70	117	117	-							<3	ug/l	TM30/PM14
Dissolved Boron	<12	<12	<12	-							<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	-							<0.5	ug/l	TM30/PM14
Dissolved Calcium #	127.5	141.2	142.7	-							<0.2	mg/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5	<1.5	-							<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7	<7	-							<7	ug/l	TM30/PM14
Total Dissolved Iron #	188	<20	<20	-							<20	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	-							<5	ug/l	TM30/PM14
Dissolved Manganese #	80	45	10	-							<2	ug/l	TM30/PM14
Dissolved Nickel #	3	<2	<2	-							<2	ug/l	TM30/PM14
Dissolved Selenium #	<3	<3	<3	-							<3	ug/l	TM30/PM14
Dissolved Sodium #	7.3	9.6	9.7	-							<0.1	mg/l	TM30/PM14
Dissolved Zinc #	<3	5	<3	-							<3	ug/l	TM30/PM14
SVOC TICs	ND	ND	ND	See Attached								None	TM16/PM30
Ortho Phosphate as PO4 #	<0.06	<0.06	<0.06	-							<0.06	mg/l	TM38/PM0
Nitrate as N #	2.04	0.61	0.60	-							<0.05	mg/l	TM38/PM0
Nitrite as N #	<0.006	0.007	<0.006	-							<0.006	mg/l	TM38/PM0
Ammoniacal Nitrogen as N #	0.05	0.08	0.05	1.08							<0.03	mg/l	TM38/PM0
Total Nitrogen	2.7	1.4	1.5	-							<0.5	mg/l	TM38/TM125/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5885

SVOC Report : **Liquid**

EMT Sample No.	1-3	4-6	7-10	11-13	14-16	23-26	27-30	31-34	35-38	39-42	LOD/LOR	Units	Method No.
Sample ID	GW- 7	GW- 8A	GW- 9A	GW- 14	GW- 15	SW-4	SW-5	SW-6	WD-1	WD-2			
Depth	24.5	18.3	8.30										
COC No / misc													
Containers	H P G	H P G	H HN P G	H P G	H P G	H HN P G	H HN P G	H HN P G	H HN P G	H HN P G			
Sample Date	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022			
SVOC MS													
Phenols													
2-Chlorophenol #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<200 AA	<200 AA	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Phenol	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Naphthalene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Acenaphthylene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Acenaphthene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Fluorene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Phenanthrene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Anthracene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Fluoranthene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Pyrene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Chrysene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Benzo(a)pyrene	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5	<100 AA	<100 AA	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<30.0 AA	<30.0 AA	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5885

SVOC Report : **Liquid**

EMT Sample No.	1-3	4-6	7-10	11-13	14-16	23-26	27-30	31-34	35-38	39-42	LOD/LOR	Units	Method No.
Sample ID	GW- 7	GW- 8A	GW- 9A	GW- 14	GW- 15	SW-4	SW-5	SW-6	WD-1	WD-2			
Depth	24.5	18.3	8.30										
COC No / misc													
Containers	H P G	H P G	H HN P G	H P G	H P G	H HN P G	H HN P G	H HN P G	H HN P G	H HN P G			
Sample Date	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022			
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	46.2 AA	751.3 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	28 AA	604 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Carbazole #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Isophorone #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<10.0 AA	<10.0 AA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<20 AA	<20 AA	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	113	115 AA	123 AA	125	127	107	118	121	117	100	<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	137	95 AA	120 AA	132 SV	134 SV	112	123	128	124	106	<0	%	TM16/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5885

SVOC Report : **Liquid**

EMT Sample No.	43-45												
Sample ID	PUMP OUTLET												
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	H P G												
Sample Date	05/04/2022												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	08/04/2022												
SVOC MS													
Phenols													
2-Chlorophenol #	<20 AA										<1	ug/l	TM16/PM30
2-Methylphenol #	<10.0 AA										<0.5	ug/l	TM16/PM30
2-Nitrophenol	<10.0 AA										<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<10.0 AA										<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<20 AA										<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<10.0 AA										<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<20 AA										<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<10.0 AA										<0.5	ug/l	TM16/PM30
4-Methylphenol	<20 AA										<1	ug/l	TM16/PM30
4-Nitrophenol	<200 AA										<10	ug/l	TM16/PM30
Pentachlorophenol	<20 AA										<1	ug/l	TM16/PM30
Phenol	<20 AA										<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<20 AA										<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<20 AA										<1	ug/l	TM16/PM30
Naphthalene #	<20 AA										<1	ug/l	TM16/PM30
Acenaphthylene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Acenaphthene #	<20 AA										<1	ug/l	TM16/PM30
Fluorene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Phenanthrene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Anthracene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Fluoranthene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Pyrene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Chrysene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<20 AA										<1	ug/l	TM16/PM30
Benzo(a)pyrene	<20 AA										<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<20 AA										<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<100 AA										<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<20 AA										<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<30.0 AA										<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<20 AA										<1	ug/l	TM16/PM30
Diethyl phthalate #	<20 AA										<1	ug/l	TM16/PM30
Dimethyl phthalate	<20 AA										<1	ug/l	TM16/PM30

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 50990
Location:
Contact: Donal Hogan
EMT Job No: 22/5885

SVOC Report : **Liquid**

EMT Sample No.	43-45												
Sample ID	PUMP OUTLET												
Depth													
COC No / misc													
Containers	H P G												
Sample Date	05/04/2022												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	08/04/2022												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene #	<20 AA										<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<20 AA										<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<20 AA										<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<20 AA										<1	ug/l	TM16/PM30
2-Nitroaniline	<20 AA										<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	535.6 AA										<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	1485 AA										<1	ug/l	TM16/PM30
3-Nitroaniline	<20 AA										<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<20 AA										<1	ug/l	TM16/PM30
4-Chloroaniline	<20 AA										<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<20 AA										<1	ug/l	TM16/PM30
4-Nitroaniline	<10.0 AA										<0.5	ug/l	TM16/PM30
Azobenzene #	<10.0 AA										<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<10.0 AA										<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<20 AA										<1	ug/l	TM16/PM30
Carbazole #	<10.0 AA										<0.5	ug/l	TM16/PM30
Dibenzofuran #	<10.0 AA										<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<20 AA										<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<20 AA										<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<20 AA										<1	ug/l	TM16/PM30
Hexachloroethane #	<20 AA										<1	ug/l	TM16/PM30
Isophorone #	<10.0 AA										<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<10.0 AA										<0.5	ug/l	TM16/PM30
Nitrobenzene #	<20 AA										<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	121 AA										<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	107 AA										<0	%	TM16/PM30

Job number: 22/5885
Sample number: 6
Sample identity: GW- 8A
Sample depth: 18.3
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.697	83	107280

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5885
Sample number: 10
Sample identity: GW- 9A
Sample depth: 8.30
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
95-53-4	o-Toluidine	5.900	97	156
88-72-2	Benzene, 1-methyl-2-nitro-	6.682	90	306
570-24-1	2-Methyl-6-nitroaniline	9.010	81	170
602-01-7	Benzene, 1-methyl-2,3-dinitro-	9.028	83	219
578-46-1	5-Methyl-2-nitroaniline	9.136	95	133
610-39-9	Benzene, 4-methyl-1,2-dinitro-	9.349	93	154

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/5885
Method: SVOC
Sample number: 45
Matrix: Liquid
Sample identity: PUMP OUTLET
Sample depth:
Sample Type: Ground Water
Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
88-72-2	Benzene, 1-methyl-2-nitro-	6.682	90	457

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants

Reference: 50990

Location:

Contact: Donal Hogan

Matrix : Liquid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
22/5885	1	SW-4		23-26	SVOC	Sample holding time exceeded
22/5885	1	WD-1		35-38	SVOC	Sample holding time exceeded
22/5885	1	WD-2		39-42	SVOC	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

EMT Job No.: 22/5885

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x20 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/5885

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.	Yes			
TM38/TM125	Total Nitogen/Organic Nitrogen by calculation	PM0	No preparation is required.				