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Ref: 13-887-L8
Date: 26th July 2022

Environment Agency
Richard Fairclough House
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BY Email

FORMER MANOX SITE – MILES PLATTING SUPPLEMENTARY SITE INVESTIGATION

Further to the completion of our Supplementary Ground Investigation works, E3P has prepared a Geo-Environmental Site Investigation letter report for the Manox sector of the site where a phase of supplementary works has taken place. This letter provides an assessment concerning contaminated land to address Condition 56 of planning permission ref 131895/JO/2021, which states the following:

"Prior to the commencement of the development (excluding Phase 0 works), and where necessary, additional ground investigations (based on the information already provided, the outline remediation scheme and the remediation phasing plan) to address information gaps, are identified for each phase of the development so as to provide sufficient information for a detailed assessment of risks to human and environmental receptors for each phase as identified in the remediation phase plan, shall be submitted to and approved in writing by the City Council as local planning authority. The development shall be implemented in full accordance with the details so approved".

As a precursor, it is recommended that the previously submitted letter 13-887-L2 (dated June 2022) be read which outlines the requirements and scope for this phase of supplementary works.

Site Address	Land north of Coleshill Street, Miles Platting, Manchester, M40 7LE
Grid Reference	N 386202, E 399393
Site Area	 Manox Zone (approximately 3.0 ha)  Zone 5W (approximately 1.3 ha)  Zone 7 (approximately 2.0 ha)



Current Site Use	Previously the site was subdivided into three discrete parcels to represent the differing prior land uses. The parcels are referred to as Manox Zone, Zone 5W and Zone 7. This letter is only pertinent for the Manox sector of the site. Manox Site The site comprises an elongated vacant parcel of land and all structures have now been demolished. The site is primarily surfaced by concrete hardstanding. Dense woodland is present throughout the south western and eastern parts of the site. The site is surfaced by a number of stockpiles comprising demolition rubble and fly tipped material. 
Proposed Development	It is intended to construct a residential development comprising 409 low rise residential dwellings across the site as a whole with associated gardens, public open space, estate roads and infrastructure. Drawing 13-882-002 (Appendix III) identifies the proposed development layout. The subject site is designated for housing delivery: In the Manchester Core Strategy 2012 – 2027, Miles Platting and the Manox site is allocated as one of Manchester’s strategic housing location. According to the core strategy the Manox site has the potential to accommodate regeneration objectives and create sustainable communities by delivering increased housing numbers to underpin local services and facilities. The Manox site plays a key role in the regeneration aspirations for the wider Miles Platting area, accordingly the site is already designated for ‘higher density residential including family housing’ in MCC’s Eastland’s Regeneration Planning Framework.



SITE INVESTIGATION

Ground Investigation Works	On the 27th and 28th September 2021, E3P attended site and has completed a phase of supplementary intrusive ground investigation comprising 16 mechanically excavated trial pits (TP801-TP816) in areas previously highlighted as having the highest concentrations of the contaminants of concern or where sufficient testing was not previously carried out. The results of such are to be utilised to inform a detailed remediation strategy and assist with treatment trials for the remediation of soils during enabling works. Five trenches (TT801-TT805) were also advanced along the anticipated tar channel.
Ground Conditions	MADE GROUND – 0.00 m bgl to 2.90 m bgl A review of the URS 2004-2006 logs confirms Made Ground was encountered within all locations to a maximum proven depth of 2.70 m (BH205), consisting of granular fill with clinker, ash, coal and brick. The ERM investigation logs from 2009 confirm Made Ground was encountered at each of the exploratory locations, with trial pits often terminating at the base of the made ground. The thickness of Made Ground was proven to a maximum depth of 3.00 m bgl in TP415, however the thickness was typically 2.00 m. The made ground encountered was variable in composition and consistency, but generally comprised gravels of brick and concrete rubble with wood fragments, and areas of reworked clay. In several trial pits (TP401, TP402, TP405, TP406, TP407, TP408, TP419 and TP421), a second concrete or brick obstruction was encountered, potentially from a former below-ground structure or former foundation, suggesting there are remaining constraints at the site, below which has not been investigated. The Westlakes 2019 logs confirm that Made Ground was found across the site from surface level to an average depth of 2.20 m bgl and maximum proven depth of 3.20 m (WS606). Most of the site was covered with hardstanding, except areas located mainly in the far northeast and southwest of the site which contained granular hardcore with some silty made ground at surface level. Made Ground was encountered in all exploratory positions across the site from surface level to an average depth of 2.20 m bgl. These deepest areas are in the central eastern part of the site, however generally there is no spatial pattern to the distribution of made ground, which is relatively deep across the site. Groundwater monitoring found perched groundwater in the made ground between 0.40 m and 1.70 m bgl. Ash was noted in some locations. Gravel content varied and usually comprised a mix of man-made materials such as concrete and brick although clinker, bitumen, mudstone, sandstone, limestone, slate and coal were also encountered. Cobbles of brick and concrete were mainly encountered within the made ground along with limestone and sandstone and lesser amounts of slate, mudstone, slag, macadam and clinker. Boulders of brick and concrete were also encountered and lesser amounts of macadam. Fragments of wood, glass and ceramic were also found.



From the 2021 E3P Site investigation logs, Made Ground was identified within all locations advanced to a maximum proven depth of 2.90m bgl (TP806). In general, this was in line with previous findings whereby concrete or asphalt surface covering was underlain by subbase gravels and reworked gravels. Reworked clays were encountered in TP807, TP810, TP813 and TP815.

Significant blue staining was noted within soils at TP802-TP804, TP810-TP813, TP816 and TT801-TT803.

Oily sheens and black staining were noted within soils at TP806, TP807, TP813, TP814, TP815 and TT804. Hydrocarbon odours were noted at TP801, TP802, TP806, TP807, TP811, TP813, TP814 and TT803. Hydrocarbon impact in the form of sheens or odours was noted in the water at TP806, TP811, TP814 and TT804.

A Depth of Made Ground Plan is presented as Drawing 13-877-006 in Appendix III.

DRIFT – 1.5 m bgl to 9.8 m bgl

Drift deposits were encountered within the majority of the URS 2004-2006 boreholes, the exceptions of which were BH104, BH107, BH201 and BH209, where the full extent of the Made Ground could not be proven due to brick and concrete obstructions in these areas. Drift deposits comprised of stiff, dark brown CLAY with cobbles and silt veins to a maximum proven depth of 4.40 m bgl (BH202A).

The natural strata encountered within the ERM 2009 works comprised soft to stiff brown to grey CLAY with silt / sand lenses to a maximum proven depth of 3.10 m bgl (TP415). The base of the CLAY was not proven in this site investigation.

Westlakes concluded that beneath the Made Ground, Glacial Till was encountered, generally as cohesive Glacial Till comprising firm or stiff silty and slightly gravelly CLAY to a maximum proven depth of 10.00 m bgl in cable percussive boreholes.

During the 2021 E3P Investigation, drift deposits were encountered within the majority of the locations with the exception of TP806-TP810, TP812-TP815 and TT802. Drift deposits were in line with previous investigations and were proven to 3.00m (TP803) and generally comprised firm to stiff brown grey mottled sandy CLAY.

SOLID – 9.8 m bgl to 25 m bgl

The bedrock geology was encountered at 6.30 m (BH107) during the URS 2004-2006 works, but it is noted elsewhere in the report that bedrock lies circa 13.00 m bgl when reviewing available BGS data.

The E3P 2021 investigation did not encounter bedrock.

A review of online borehole records held by the BGS confirms the absence of bedrock up to 31.00 m bgl (SJ89NE673).

GROUNDWATER – URS identified groundwater strikes between 0.40 m bgl to 2.70 m bgl during investigation works.

ERM identified groundwater strikes between 0.30 m bgl to 1.00 m bgl within Made Ground during the investigation works.



	Westlakes (for RSK) identified groundwater strikes at 0.20 m to 2.50 m bgl within Made Ground. E3P identified groundwater strikes between 0.40 m and 2.50 m bgl. Hydrocarbon impact in the form of oily sheens or odours were noted in the water at TP806, TP811, TP814 and TT804. Groundwater monitoring by Westlakes 2019 found perched groundwater in the Made Ground between 0.40 m and 1.70 m bgl. E3P found groundwater between 0.50 m and 7.50 m bgl.
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CONTAMINATED LAND ASSESSMENT

Human Health	The Manox sector has been proven to be impacted by significant inorganic heavy metals, inorganic cyanide salts and aromatic hydrocarbons (coal tar derived). Such is the magnitude of the impact and the presence of primary sources measures to remove the identified exposure pathway (such as cover systems) are not considered sufficiently robust in isolation due to the long-term risk that is associated with these hazardous compounds. A large-scale land remediation project will be completed in accordance with the broad requirements as defined within the E3P Outline Remediation Options Appraisal Report and subsequent detailed Remediation Method Statement. Remediation will include the identification, delineation and treatment of all material considered to be a primary or secondary source of contamination utilising the remediation treatment train. This process will render all materials to be largely stabilised and solidified to remove any future risk. The site will be prepared and developed in a manner that includes the construction of robust physical barriers to mitigate any exposure to the treated and stabilise materials. The human health risk assessment assessed using all available data from previous investigations and the E3P 2021 samples identified site-wide concentrations of non-volatile, insoluble heavy metals, PAH and hydrocarbon compounds that would present unacceptable degrees of theoretical risk to the identified receptors associated with direct exposure pathways. As such, it will be necessary to design and construct the proposed development in a manner that will ensure the risk is mitigated by source removal, treatment and stabilisation and removal of the identified exposure pathways by construction of mitigation measures. Trace asbestos fibres have been identified within a number of samples collected from the Made Ground in previous investigations however none were identified in soils sent for analysis in the E3P 2021 investigation. It is considered that the development will be suitable for the intended use, subject to the careful management and placement of anthropogenic materials in accordance with the developed CSM. Areas of volatile/semi-volatile hydrocarbon, naphthalene, mercury, VOC and SVOC impact have been identified within multiple locations (hotspots); these compounds pose a theoretical risk associated with volatilisation and subsequent ingress into the proposed dwellings (indoor air). Former land use has resulted in the impact of soils with a multitude of potentially semi-volatile aromatic hydrocarbons and inorganic salts in the dissolved phase and residual solvent within the perched groundwater. It is not possible to derive site-specific assessment criteria for several aromatic compounds within the solid phase due to the absence of peer-reviewed toxicological data. However, the residual risk is low when considering the chemical composition.
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	E3P has utilised the As Low As Reasonably Possible (ALARP) principal to demonstrate the absence of any unacceptable risk by recommending the construction of all dwellings with specialist vapour membranes to be compliant with CIRIA 748 and BS8485, to be installed and validated in accordance with CIRIA 735 with robust capping to areas of soft-standing and a physical barrier to the canal boundary. Further post-demolition ground gas and vapour monitoring is required to ensure the post-remediated site condition is understood.
Controlled Waters	The E3P review of the historical and updated factual ground investigation data and subsequent assessment of the identified contamination impact associated with the prolonged and significant industrial land use has confirmed extensive contamination impact with the area of the former Manox facility for heavy metals, naphthalene, hydrocarbons. The Environment Agency (EA) website (accessed October 2013) shows the superficial deposits underlying the Site (Glacial Till) to be classified as unproductive strata. These generally relate to deposits with low permeability that have negligible significance for water supply or river base flow. No viable aquifer has been identified within the superficial drift deposits. Bedrock underlying the site (Upper Coal Measures strata) is classified as a Secondary A aquifer (aquifers formerly classified as minor aquifers). Secondary A aquifers are described as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of baseflow to rivers. The Environment Agency indicates that the site is not located within a Groundwater Source Protection Zone for a public water supply abstraction. The underlying coal measures aquifer is determined to be of reduced sensitivity due to the presence of elevated suspended soils and iron concentrations that are a direct result of prolonged coal mining. During the historical ERM investigations (2009) only perched water within Made Ground deposits was encountered; this was largely confirmed by the 2019 RSK ground investigations. It is therefore considered that a perched water is present, however its later and vertical migration is impeded by the clay aquitard which is proven to underlie the site to depths circa 13.00 m bgl. No groundwater monitoring installations are installed within the granular horizons; however, this is not considered a viable aquifer, furthermore no deep monitoring wells are installed within the coal measures. Given the presence of low permeability clay deposits beneath the Made Ground, it is considered extremely unlikely that the shallow perched water encountered will be in hydraulic continuity with the coal measures aquifer. When considering the initial CSM and chemical structure of the key metalloids, inorganic salts (primarily cyanide), PAH and TPH compounds have a reduced mobility when compared to other compounds that are known to have a greater potential for vertical and lateral migration. The ground investigation data to date identifies aromatic solvents, however, no chlorinated or halogenated compounds are identified, again this corresponds with the site CSM.



	The primary contaminant groups are associated with aromatic hydrocarbons derived from the processing and refinement of coal tars and the resulting residues and inorganic and organic compounds (salts) either used in the refinement process or as a result of the chemical production. During the historical site investigation works undertaken, the most common observations of impacts within the soil arisings included blue / green staining of fill materials and associated perched water; and dark brown / black staining of fill materials and the upper clay units, sometimes associated with oil / tarry odours. Again, these visual observations generally match the known contaminant grouping and chemical test data. Anecdotal information suggests historical service clearance works reported drains identified as being blocked with a blue / black silty clay material and some of the water observed in the channels was blue in colour. Several chambers were also observed to have rubble and general waste in, and the service clearance contractor noted during the works that the main chamber prior to off-site discharge was damaged. Field observations and historical information confirm the presence of tar materials on-site which comprise mainly TPH and PAH compounds. These tar materials appear to be in the former tar channel beneath the site. Previous investigations identified the channel to have been backfilled with granular fill, which was observed to be impacted with thick, black, glossy DNAPL with a tarry odour. It is possible that TT804 has identified similar contamination to this, however the trial trenches were advanced either side of this location and contamination of the same nature has not been identified. E3P has completed an updated Tier 1 controlled waters risk assessment utilizing leachate samples only from the supplementary 2021 investigation. This, in line with all previous investigations, has highlighted the prevalence of cyanide throughout the Made Ground in the Manox site at significant concentrations within the soil matrices that are considered to represent an ongoing and persistent source of pollution. Arsenic and lead are locally impacted in discreet locations. Significant concentrations of polycyclic aromatic hydrocarbons (naphthalene) associated with the refinement of coal tar are identified within the solid and aqueous phase within all phases of historical ground investigation works. Of the samples submitted for leachate analysis during the 2021 site investigation, it is apparent the chemical levels are in line with previous investigations. The aim of this investigation was to collect data from previously untested areas and to obtain samples to inform the detailed remediation strategy.
Ground Gas	Based on historical investigations, post remediation ground gas monitoring is recommended to update the initial classification given by RSK / Westlakes in 2019 of CS2 / Amber 1. The presence of semi-volatile compounds in the soils suggests the requirement for a vapour analysis at the site also, with subsequent gas sample analysis. Vapour membranes may be required in the construction of new residential dwellings, to break the vapour release to indoor air pathway to residential end users, from the site wide VOC impact. The use of vapour membranes will be determined in the post-enabling works VOC vapour risk assessment.



	The assessment should be completed in accordance with the methodology outlined with the CIRIA publication C665, utilising the results of the ground gas monitoring surveys to calculate a tentative gas screening value (GSV) The GSV should be compared to the criteria outlined with CIRIA C665 to determine the level of risk to the proposed development and to ensure the appropriate remedial options are incorporated into any future building design in this area. Ground gas monitoring and assessment to date suggests that the site can be predominantly classified as CS2, and in these areas it is considered that gas protection measures will be required.
Potable Water Infrastructure	This will need to be confirmed following the completion of a UKWIR risk assessment. Post-remediation and enabling works ground conditions may be different from those identified during this site investigation. It is likely that barrier pipe will be utilised at the site.

RECOMMENDATIONS

Based on the findings of the geoenvironmental site assessment, the following additional works are recommended to be completed in due course:

-  Geotechnical earthworks strategy (infrastructure)
-  Detailed remediation and enabling works strategy.

I trust this information is satisfactory to your requirements, and should I be able to be of any further assistance, please do not hesitate to contact me.

Yours sincerely,

Olivia Jackson

Senior Geoenvironmental Consultant

For and on behalf of E3P Ltd

Appended

Tier 1 Human Health Assessment (E3P 2021 Investigation only)
Tier 1 Controlled Waters Assessment (E3P 2021 Investigation only)
Proposed Development Plan
Historical Features Plan
Exploratory Hole Location Plan
Depth of Made Ground Plan
Exploratory Hole Logs
Chemical Testing Certificates



TIER 1 HUMAN HEALTH ASSESSMENT UTILISING GAC FOR RESIDENTIAL WITH PLANT UPTAKE END-USE

DETERMINANT	UNITS	GAC	N	MC	LOC OF EX	PATHWAY	ASSESSMENT
Arsenic	mg/kg	37	15	3600 260 68 1000 320 73 83 98 45 1000 66 400 1200	TP807 TP801 TP803 TP806 TP809 TP810 TP812 TP813 TP814 TP815 TT803 TT803 TT804	1	Further Action
Cadmium	mg/kg	11	15	<0.2	N/A	1	No Further Action
Chromium (VI)	mg/kg	6.1	15	<4	N/A	1	No Further Action
Lead	mg/kg	200	15	2300 590 200 730 220 230 300 760 280 600 1400	TP807 TP801 TP803 TP806 TP809 TP810 TP812 TP813 TP814 TT803 TT804	1	Further Action
Mercury	mg/kg	1.2	15	1.9 1.7 1.5 1.2 1.8	TP801 TP803 TP813 TP815 TT804	2	Further Action
Nickel	mg/kg	180	15	49	N/A	1	No Further Action
Selenium	mg/kg	250	15	15	N/A	1	No Further Action
Copper	mg/kg	2400	15	42000 3400	TP807 TT804	1	Further Action
Zinc	mg/kg	3700	15	560	N/A	1	No Further Action
Cyanide - Total	mg/kg	791	16	16000 9500 840 5000 4300 1200 2800 4300 2800	TP804 TP814 TP803 TP807 TP809 TP810 TP813 TT803 TT804	1	Further Action
Phenols - Total.	mg/kg	210	11	210	N/A	1	No Further Action
Asbestos	Fibres	NFD	15		N/A	3	No Further Action
Naphthalene	mg/kg	2.3	15	2900 3.9 9.7 33 600 6.5 41	TP813 TP801 TP807 TP809 TP814 TP815 TT804	4	Further Action



DETERMINANT	UNITS	GAC	N	MC	LOC OF EX	PATHWAY	ASSESSMENT
Acenaphthylene	mg/kg	170	15	8.3	N/A	2	No Further Action
Acenaphthene	mg/kg	210	15	810 630	TT804 TP814	1	Further Action
Fluorene	mg/kg	170	15	520 200 500	TT804 TP813 TP815	1	Further Action
Phenanthrene	mg/kg	95	15	1300 370 1200 340	TT804 TP813 TP814 TP815	2	Further Action
Anthracene	mg/kg	2400	15	300	N/A	2	No Further Action
Fluoranthene	mg/kg	280	15	690 310	TT804 TP814	2	Further Action
Pyrene	mg/kg	620	15	500	N/A	2	No Further Action
Benzo(a)Anthracene	mg/kg	7.2	15	130 7.7 31 34 8.4 9.3 11	TT804 TP801 TP813 TP814 TP815 TT803 TT803	2	Further Action
Chrysene	mg/kg	15	15	93 23 31	TT804 TP813 TP814	2	Further Action
Benzo(b)Fluoranthene	mg/kg	2.6	15	39 8 3.1 5.5 15 11 7 4.6	TT804 TP801 TP806 TP807 TP813 TP814 TT803 TT8032	2	Further Action
Benzo(k)Fluoranthene	mg/kg	77	15	25	N/A	2	No Further Action
Benzo(a)Pyrene	mg/kg	2.2	15	23 7.7 3.5 3 9.8 5.3 8.1 4	TT804 TP801 TP806 TP807 TP813 TP814 TT803 TT8032	2	Further Action
Indeno(123-cd)Pyrene	mg/kg	27	12	12	N/A	2	No Further Action
Dibenzo(a,h)Anthracene	mg/kg	0.24	15	4.2 1.1 0.48 0.44 2.7 1.2 0.55	TT804 TP801 TP806 TP807 TP813 TT803 TT8032	2	Further Action
Benzo(ghi)Perylene	mg/kg	320	15	13	N/A	2	No Further Action
TPH C5-C6 (aliphatic)*	mg/kg	42	15	79	TP813	4	Further Action
TPH C6-C8 (aliphatic)*	mg/kg	100	15	130	TP813	4	Further Action
TPH C8-C10 (aliphatic)*	mg/kg	27	15	300	TP813	4	Further Action



DETERMINANT	UNITS	GAC	N	MC	LOC OF EX	PATHWAY	ASSESSMENT
TPH C10-C12 (aromatic)*	mg/kg	74	15	6300 180	TP813 TP814	4	Further Action
TPH C12-C16 (aromatic)*	mg/kg	140	15	4000 2700 170 200	TP813 TP814 TP815 TT804	4	Further Action
TPH C16-C21 (aromatic)*	mg/kg	260	15	4000 3900 1800 570	TP813 TP813 TP814 TP815	1	Further Action
TPH C21-C35 (aromatic)*	mg/kg	1100	15	2400	TP813	1	Further Action
Benzene	mg/kg	0.137	3	0.22	TP814	4	Further Action
Toluene	mg/kg	113	3	0.21	N/A	4	No Further Action
Ethylbenzene	mg/kg	50.7	3	0.23	N/A	4	No Further Action
P&M xylene	mg/kg	25	3	0.47	N/A	4	No Further Action
o xylene	mg/kg	24	3	0.65	N/A	4	No Further Action
Methyl tertbutyl ether	mg/kg	27.6	3	0.223	N/A	4	No Further Action
1,2,4-Trimethylbenzene	mg/kg	1.17	3	8.3	TP814	4	Further Action
1,3,5-trimethylbenzene	mg/kg	-	3	1.7	TP814	4	Further Action
p-Isopropyltoluene	mg/kg	-	3	0.46	TP814	4	Further Action

Notes

PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation

Abbreviations: GAC = general assessment criteria, n = number of samples, MC = maximum concentration; Loc of Ex = location of exceedance; NFD = no fibres detected.

* The Tier 1 GAC for the hydrocarbon fraction is derived from the CIEH assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. E3P has utilised the Tier 1 values for aliphatic compounds for the volatile and semi volatile fractions (C5-C12) and the Tier 1 values for aromatic compound for the non-volatile fractions (C12-C35). The comparison of a total (aliphatic/aromatic) compounds to an individual fraction is considered to be a conservative approach and satisfactory for the protection of human health.

** Atkins ATRISK

*** USEPA Risk Management Levels



TIER 1 CONTROLLED WATERS RISK ASSESSMENT

DETERMINANT	UNIT	EQS ^{1,2,3}	DWS _{3,4,5}	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
		AA					
Arsenic	µg/l	50	10	4	24 16 12	TP815 TP813 TP806	Further Action
Cadmium	µg/l	0.08-0.25	5	4	< 0.08	N/A	No Further Action
Chromium (VI)	µg/l	3.4	–	4	< 5.0	N/A	No Further Action
Chromium (III)	µg/l	4.7	50	4	2.7	N/A	No Further Action
Copper	µg/l	1	2000	4	18 12 13 11	TP813 TP806 TP812 TP815	Further Action
Total Cyanide	µg/l	1	50	4	17000 5800 750 270	TP813 TP812 TP806 TP815	Further Action
Lead	µg/l	1.2	10	4	4.4 3.4 1.3	TP813 TP806 TP812	Further Action
Mercury	µg/l	–	1.0	4	<0.5	N/A	No Further Action
Nickel	µg/l	4	20	4	8.7 5 2.6 7.8	TP806 TP812 TP813 TP815	Further Action
Selenium	µg/l	–	10	4	<4	N/A	No Further Action
Zinc	µg/l	10.9	–	4	13	TP812	Further Action
pH	6–9			4	7.5-8.1	N/A	No Further Action
Naphthalene	µg/l	2	10*	4	3100 9.5	TP813 TP815	Further Action
Anthracene	µg/l	0.1	10*	4	<0.01	N/A	No Further Action



DETERMINANT	UNIT	EQS ^{1, 2, 3}	DWS _{3,4,5}	NO. OF LEACHATE SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
		AA					
Benzo[b]fluoranthene	µg/l	0.00017*	10*	4	<0.01	N/A	No Further Action
Benzo[k]fluoranthene	µg/l	0.00017*	10*	4	<0.01	N/A	No Further Action
Benzo(a)pyrene	µg/l	0.00017*	10*	4	<0.01	N/A	No Further Action
Indeno(123-cd)pyrene	µg/l	0.00017*	10*	4	<0.01	N/A	No Further Action
Fluoranthene	µg/l	0.0063	10*	4	<0.01	N/A	No Further Action
Benzo(ghi)perylene	µg/l	1.7–4	10*	4	<0.01	N/A	No Further Action
TPH C5-C6 (benzene)	µg/l	10	1	4	7500** 3.7	TP813	Further Action
TPH C6-C8 (toluene)	µg/l	74	700	4	11000**	TP813	Further Action
TPH C8-C10 (ethyl benzene)	µg/l	20	300	4	9100	TP813	Further Action
TPH C10-C12 (xylene)	µg/l	30	500	4	4100	TP813	Further Action
TPH C12-C16	µg/l	2	90 ⁵	4	2700	TP813	Further Action
TPH C16-C35	µg/l	50#	90 ⁵	4	320	TP813	Further Action
TPH C5-C6	µg/l	–	15000	4	< 1.0	N/A	No Further Action
TPH C6-C8	µg/l	–	15000	4	< 1.0	N/A	No Further Action
TPH C8-C10	µg/l	–	300	4	< 1.0	N/A	No Further Action
TPH C10-C12	µg/l	–	300	4	< 10	N/A	No Further Action
TPH C12-C16	µg/l	–	300	4	< 10	N/A	No Further Action
TPH C16-C21	µg/l	–	300**	4	< 10	N/A	No Further Action
TPH C21-C35	µg/l	–	300**	4	< 10	N/A	No Further Action

Notes

Solubility <0.01µg/l
AA – Annual Average
MAC- Maximum Admissible Concentration



* Polyaromatic hydrocarbons (PAH) - Benzo(a)pyrene (BaP), Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)-perylene and Indeno(1,2,3-cd)-pyrene. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water

** There are no WHO Guideline Values for aliphatic fractions C16-C21 and C21-C35, therefore the guideline value for aliphatic fractions inclusive of C8-C16 (300µg/l) has been applied.

1. The Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations (2015)
2. Directive establishing a framework for Community action in the field of water policy (Water Framework Directive)
3. Council Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (Dangerous Substances Directive) - List II substances
4. Council Directive on the quality of water intended for human consumption (Drinking Water Directive)
5. WHO Guidelines for Drinking Water Quality. Third edition (2004)

*Unsuitable due to high contamination with cyanides

**over range data, sample diluted and results estimated from an extrapolated calibration





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Analytical Report Number : 21-13788

Replaces Analytical Report Number: 21-13788, issue no. 1
Report format change.

Project / Site name:	Manox	Samples received on:	29/09/2021
Your job number:	13-887	Samples instructed on/ Analysis started on:	01/10/2021
Your order number:	13-887-GC-I	Analysis completed by:	12/10/2021
Report Issue Number:	2	Report issued on:	12/10/2021
Samples Analysed:	5 leachate samples - 16 soil samples		

Signed:

Izabela Wójcik

Izabela Wójcik
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032259	2032260	2032261	2032262	2032263
Sample Reference				TP801	TP802	TP803	TP804	TP805
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.60	2.00	1.00	0.80	0.60
Date Sampled				27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	39	< 0.1	< 0.1	U/S*	< 0.1
Moisture Content	%	0.01	NONE	11	20	27	U/S*	11
Total mass of sample received	kg	0.001	NONE	0.60	0.60	0.40	0.50	0.50

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	U/S*	Not-detected
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General Inorganics

pH - Manual	pH Units	N/A	MCERTS	-	-	-	U/S*	-
pH - Automated	pH Units	N/A	MCERTS	-	7.6	-	-	-
Total Cyanide	mg/kg	1	MCERTS	470	29	840	16000***	200
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	2300	-	U/S*	-
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	-	0.93	-	U/S*	-
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	-	1900	-	U/S*	-
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	-	934	-	U/S*	-
Sulphide	mg/kg	1	MCERTS	-	26	-	U/S*	-
Total Sulphur	mg/kg	50	MCERTS	-	1600	-	U/S*	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.9	1.2	2.6	U/S*	0.6
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	-	U/S*	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	3.9	0.31	1.8	U/S*	0.45
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	U/S*	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.89	1.2	2.9	U/S*	0.60
Fluorene	mg/kg	0.05	MCERTS	1.4	1.4	2.2	U/S*	0.60
Phenanthrene	mg/kg	0.05	MCERTS	7.9	4.5	7.1	U/S*	3.5
Anthracene	mg/kg	0.05	MCERTS	1.4	0.80	1.3	U/S*	0.60
Fluoranthene	mg/kg	0.05	MCERTS	13	2.0	3.8	U/S*	2.3
Pyrene	mg/kg	0.05	MCERTS	12	1.7	3.4	U/S*	2.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	7.7	0.38	1.7	U/S*	0.79
Chrysene	mg/kg	0.05	MCERTS	8.0	0.57	1.6	U/S*	0.87
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	8.0	< 0.05	1.2	U/S*	0.51
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	4.1	< 0.05	0.77	U/S*	0.40
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.7	< 0.05	1.4	U/S*	0.60
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	4.1	< 0.05	0.56	U/S*	0.20
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.1	< 0.05	0.21	U/S*	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	5.2	< 0.05	0.81	U/S*	0.28

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	86.1	12.7	30.7	< 0.80	13.7
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Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032259	2032260	2032261	2032262	2032263
Sample Reference				TP801	TP802	TP803	TP804	TP805
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.60	2.00	1.00	0.80	0.60
Date Sampled				27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	260	29	68	U/S*	15
Barium (aqua regia extractable)	mg/kg	1	MCERTS	62	-	180	-	160
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	-	2.6	-	0.88
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	-	0.9	-	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	U/S*	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	U/S*	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	35	-	U/S*	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	270	22	110	U/S*	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	590	38	200	U/S*	50
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.9	< 0.3	1.7	U/S*	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	17	46	U/S*	32
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	15	< 1.0	< 1.0	U/S*	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	49	-	73	-	27
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220	52	140	U/S*	84

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	-

TPH (C5 - C6)	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	U/S*	< 1.0
TPH (C6 - C8)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	U/S*	< 0.1
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	U/S*	< 0.1
TPH (C10 - C12)	mg/kg	2	MCERTS	6.3	< 2.0	4.8	U/S*	< 2.0
TPH (C12 - C16)	mg/kg	4	MCERTS	21	7.2	16	U/S*	9.4
TPH (C16 - C21)	mg/kg	1	MCERTS	56	7.8	20	U/S*	24
TPH (C21 - C35)	mg/kg	1	MCERTS	95	8.0	34	U/S*	78
TPH (C35 - C40)	mg/kg	10	MCERTS	20	< 10	16	U/S*	35
TPH Total C5 - C40	mg/kg	10	MCERTS	200	23	90	< 10	150

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032259	2032260	2032261	2032262	2032263
Sample Reference				TP801	TP802	TP803	TP804	TP805
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.60	2.00	1.00	0.80	0.60
Date Sampled				27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

VOCs

Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	NONE	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	NONE	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032259	2032260	2032261	2032262	2032263
Sample Reference				TP801	TP802	TP803	TP804	TP805
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.60	2.00	1.00	0.80	0.60
Date Sampled				27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-

SVOCs

Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032259	2032260	2032261	2032262	2032263
Sample Reference				TP801	TP802	TP803	TP804	TP805
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.60	2.00	1.00	0.80	0.60
Date Sampled				27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

* U/S due to high contamination with cyanides

**Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.

*** Estimated result

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032264	2032265	2032266	2032267	2032268
Sample Reference				TP806	TP807	TP809	TP810	TP812
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	1.80	2.10	1.70	0.30
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	22	19	18	16	13
Total mass of sample received	kg	0.001	NONE	0.50	0.50	1.0	0.50	0.60

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
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General Inorganics

pH - Manual	pH Units	N/A	MCERTS	7.7	8.2	11.1	8.6	8.1
pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	-
Total Cyanide	mg/kg	1	MCERTS	550	5000	4300	1200	670
Total Sulphate as SO ₄	mg/kg	50	MCERTS	16000	5100	3200	3900	37000
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	1.8	1.7	0.56	0.33	2.5
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	3500	3400	1100	660	5000
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	1750	1700	555	328	2520
Sulphide	mg/kg	1	MCERTS	140	410	7.3	5.8	40
Total Sulphur	mg/kg	50	MCERTS	17000	26000	1300	2100	14000
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.4	3.7	1.3	1.7	1.8
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.7	-	33	0.33	1.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.9	-	3.7	0.20	0.39
Fluorene	mg/kg	0.05	MCERTS	1.7	-	4.0	< 0.05	0.29
Phenanthrene	mg/kg	0.05	MCERTS	6.9	-	11	0.84	1.9
Anthracene	mg/kg	0.05	MCERTS	1.4	-	1.6	< 0.05	0.34
Fluoranthene	mg/kg	0.05	MCERTS	8.1	-	4.3	0.87	3.0
Pyrene	mg/kg	0.05	MCERTS	8.3	-	3.3	0.85	2.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.2	-	1.2	0.68	2.0
Chrysene	mg/kg	0.05	MCERTS	4.4	-	1.0	0.58	1.7
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.1	-	0.61	0.61	2.0
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.0	-	0.46	0.51	0.95
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.5	-	0.40	0.70	1.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.4	-	< 0.05	0.45	0.94
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.48	-	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	-	< 0.05	0.60	1.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	51.3	-	63.9	7.22	20.5
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Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032264	2032265	2032266	2032267	2032268
Sample Reference				TP806	TP807	TP809	TP810	TP812
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	1.80	2.10	1.70	0.30
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	1000	3600	320	73	83
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	21	35	35	45
Copper (aqua regia extractable)	mg/kg	1	MCERTS	140	42000	160	240	240
Lead (aqua regia extractable)	mg/kg	1	MCERTS	730	2300	220	230	300
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	29	31	49	34
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	560	130	440	360

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	7.8	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	30	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	70	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	110	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	4.4	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	31	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	100	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	120	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	250	-	-	-

TPH (C5 - C6)	mg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0	< 1.0
TPH (C6 - C8)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	< 0.1
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	< 0.1	< 0.1
TPH (C10 - C12)	mg/kg	2	MCERTS	4.0	-	17	2.1	3.9
TPH (C12 - C16)	mg/kg	4	MCERTS	10	-	36	11	23
TPH (C16 - C21)	mg/kg	1	MCERTS	25	-	57	33	74
TPH (C21 - C35)	mg/kg	1	MCERTS	62	-	60	120	220
TPH (C35 - C40)	mg/kg	10	MCERTS	23	-	11	27	57
TPH Total C5 - C40	mg/kg	10	MCERTS	120	-	180	190	370

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Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032264	2032265	2032266	2032267	2032268
Sample Reference				TP806	TP807	TP809	TP810	TP812
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	1.80	2.10	1.70	0.30
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Chloroethane	µg/kg	1	NONE	-	< 1.0	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Tribromomethane	µg/kg	1	NONE	-	< 1.0	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032264	2032265	2032266	2032267	2032268
Sample Reference				TP806	TP807	TP809	TP810	TP812
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	1.80	2.10	1.70	0.30
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-

SVOCs

Aniline	mg/kg	0.1	NONE	-	< 0.1	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	9.7	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	3.8	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.29	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	17	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	6.6	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	9.6	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	21	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	4.8	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	20	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	17	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	-	-	-

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032264	2032265	2032266	2032267	2032268
Sample Reference				TP806	TP807	TP809	TP810	TP812
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	1.80	2.10	1.70	0.30
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	5.6	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	5.3	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	5.5	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	5.9	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	3.0	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	1.3	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.44	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	2.0	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

* U/S due to high contamination with cyanides

**Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.

*** Estimated result

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032269	2032270	2032271	2032272	2032273
Sample Reference				TP813	TP814	TP815	TT803	TT803
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.40	1.90	0.40	2.00
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	8.0	19	11	16
Total mass of sample received	kg	0.001	NONE	1.2	0.60	0.60	0.60	0.60

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
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General Inorganics

pH - Manual	pH Units	N/A	MCERTS	7.1	8.0	-	8.2	7.7
pH - Automated	pH Units	N/A	MCERTS	-	-	-	-	-
Total Cyanide	mg/kg	1	MCERTS	2800	9500	13	460	4300
Total Sulphate as SO ₄	mg/kg	50	MCERTS	31000	140000	-	18000	13000
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	1.8	3.0	-	1.2	1.6
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	3700	6100	-	2400	3200
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	1830	3050	-	1190	1590
Sulphide	mg/kg	1	MCERTS	100	220	-	38	89
Total Sulphur	mg/kg	50	MCERTS	23000	55000	-	4800	16000
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	5.0	2.1	1.9	1.9
Total Organic Carbon (TOC)	%	0.1	MCERTS	8.7	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	210	7.9	-	< 1.0	8.3
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	2900	-	6.5	1.6	1.6
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	0.39
Acenaphthene	mg/kg	0.05	MCERTS	180	-	100	2.8	5.8
Fluorene	mg/kg	0.05	MCERTS	200	-	88	1.7	22
Phenanthrene	mg/kg	0.05	MCERTS	370	-	340	14	57
Anthracene	mg/kg	0.05	MCERTS	83	-	53	3.1	19
Fluoranthene	mg/kg	0.05	MCERTS	130	-	85	18	44
Pyrene	mg/kg	0.05	MCERTS	98	-	67	16	37
Benzo(a)anthracene	mg/kg	0.05	MCERTS	31	-	8.4	9.3	11
Chrysene	mg/kg	0.05	MCERTS	23	-	6.3	7.8	12
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	15	-	2.2	7.0	4.6
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	7.5	-	1.2	6.0	2.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	9.8	-	1.9	8.1	4.0
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.5	-	< 0.05	4.0	1.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	2.7	-	< 0.05	1.2	0.55
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	7.1	-	< 0.05	5.0	1.9

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	4070	-	755	106	227
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Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032269	2032270	2032271	2032272	2032273
Sample Reference				TP813	TP814	TP815	TT803	TT803
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.40	1.90	0.40	2.00
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	98	45	1000	66	400
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	160	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	1.3	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	0.6	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	24	-	86	260
Copper (aqua regia extractable)	mg/kg	1	MCERTS	210	58	37	440	120
Lead (aqua regia extractable)	mg/kg	1	MCERTS	760	280	89	150	600
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.5	0.9	1.2	0.6	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	9.5	34	45	36
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	32	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	120	110	140	160

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	220	-	-	-
Toluene	µg/kg	1	MCERTS	-	210	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	230	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	470	-	-	-
o-xylene	µg/kg	1	MCERTS	-	650	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	180	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	240	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	98	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	130	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	650	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	0.22	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	0.21	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	11	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	600	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	2700	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	1800	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	630	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	5800	-	-	-

TPH (C5 - C6)	mg/kg	1	NONE	79**	-	< 1.0	< 1.0	< 1.0
TPH (C6 - C8)	mg/kg	0.1	MCERTS	130**	-	< 0.1	< 0.1	< 0.1
TPH (C8 - C10)	mg/kg	0.1	MCERTS	300**	-	0.1	< 0.1	< 0.1
TPH (C10 - C12)	mg/kg	2	MCERTS	6300	-	14	3.9	11
TPH (C12 - C16)	mg/kg	4	MCERTS	4000	-	170	20	44
TPH (C16 - C21)	mg/kg	1	MCERTS	3900	-	570	46	150
TPH (C21 - C35)	mg/kg	1	MCERTS	2400	-	88	89	110
TPH (C35 - C40)	mg/kg	10	MCERTS	110	-	< 10	< 10	33
TPH Total C5 - C40	mg/kg	10	MCERTS	17000	-	840	160	350

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Lab Sample Number				2032269	2032270	2032271	2032272	2032273
Sample Reference				TP813	TP814	TP815	TT803	TT803
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.40	1.90	0.40	2.00
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Chloroethane	µg/kg	1	NONE	-	< 1.0	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
Benzene	µg/kg	1	MCERTS	-	220	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Toluene	µg/kg	1	MCERTS	-	210	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	230	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	470	-	-	-
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Tribromomethane	µg/kg	1	NONE	-	< 1.0	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	650	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	55	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	1700	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	8300	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	460	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-

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Project / Site name: Manox

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Lab Sample Number				2032269	2032270	2032271	2032272	2032273
Sample Reference				TP813	TP814	TP815	TT803	TT803
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.40	1.90	0.40	2.00
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-

SVOCs

Aniline	mg/kg	0.1	NONE	-	9.4	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	600	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	440	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	630	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	620	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	500	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	1200	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	300	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	70	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	39	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	310	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	210	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	-	-	-

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Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032269	2032270	2032271	2032272	2032273
Sample Reference				TP813	TP814	TP815	TT803	TT803
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.40	1.90	0.40	2.00
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	34	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	31	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	11	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	3.5	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	5.3	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	2.5	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	3.0	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

* U/S due to high contamination with cyanides

**Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.

*** Estimated result

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032274
Sample Reference				TT804
Sample Number				None Supplied
Depth (m)				1.80
Date Sampled				28/09/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	27
Total mass of sample received	kg	0.001	NONE	1.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
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General Inorganics

pH - Manual	pH Units	N/A	MCERTS	7.6
pH - Automated	pH Units	N/A	MCERTS	-
Total Cyanide	mg/kg	1	MCERTS	2800
Total Sulphate as SO ₄	mg/kg	50	MCERTS	41000
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	2.0
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	4000
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	1980
Sulphide	mg/kg	1	MCERTS	100
Total Sulphur	mg/kg	50	MCERTS	24000
Total Organic Carbon (TOC)	%	0.1	MCERTS	4.1
Total Organic Carbon (TOC)	%	0.1	MCERTS	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	2.3
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-
Acenaphthylene	mg/kg	0.05	MCERTS	-
Acenaphthene	mg/kg	0.05	MCERTS	-
Fluorene	mg/kg	0.05	MCERTS	-
Phenanthrene	mg/kg	0.05	MCERTS	-
Anthracene	mg/kg	0.05	MCERTS	-
Fluoranthene	mg/kg	0.05	MCERTS	-
Pyrene	mg/kg	0.05	MCERTS	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-
Chrysene	mg/kg	0.05	MCERTS	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-
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Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032274
Sample Reference				TT804
Sample Number				None Supplied
Depth (m)				1.80
Date Sampled				28/09/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	1200
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	3400
Lead (aqua regia extractable)	mg/kg	1	MCERTS	1400
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.8
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	260

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	8.0
p & m-xylene	µg/kg	1	MCERTS	6.3
o-xylene	µg/kg	1	MCERTS	11
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	22
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	70
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	100
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	200

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	0.12
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	56
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	2200
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	4000
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	910
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	7200

TPH (C5 - C6)	mg/kg	1	NONE	-
TPH (C6 - C8)	mg/kg	0.1	MCERTS	-
TPH (C8 - C10)	mg/kg	0.1	MCERTS	-
TPH (C10 - C12)	mg/kg	2	MCERTS	-
TPH (C12 - C16)	mg/kg	4	MCERTS	-
TPH (C16 - C21)	mg/kg	1	MCERTS	-
TPH (C21 - C35)	mg/kg	1	MCERTS	-
TPH (C35 - C40)	mg/kg	10	MCERTS	-
TPH Total C5 - C40	mg/kg	10	MCERTS	-

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032274
Sample Reference				TT804
Sample Number				None Supplied
Depth (m)				1.80
Date Sampled				28/09/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
VOCs				
Chloromethane	µg/kg	1	ISO 17025	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	8.0
p & m-Xylene	µg/kg	1	MCERTS	6.3
Styrene	µg/kg	1	MCERTS	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0
o-Xylene	µg/kg	1	MCERTS	11
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	4.5
Bromobenzene	µg/kg	1	MCERTS	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	4.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	43
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	43
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	9.5
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032274
Sample Reference				TT804
Sample Number				None Supplied
Depth (m)				1.80
Date Sampled				28/09/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	41
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	82
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	8.3
Acenaphthene	mg/kg	0.05	MCERTS	810
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	460
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2
Fluorene	mg/kg	0.05	MCERTS	520
Azobenzene	mg/kg	0.3	MCERTS	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	1300
Anthracene	mg/kg	0.05	MCERTS	170
Carbazole	mg/kg	0.3	MCERTS	56
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	690
Pyrene	mg/kg	0.05	MCERTS	500
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3

Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032274
Sample Reference				TT804
Sample Number				None Supplied
Depth (m)				1.80
Date Sampled				28/09/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	130
Chrysene	mg/kg	0.05	MCERTS	93
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	39
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	25
Benzo(a)pyrene	mg/kg	0.05	MCERTS	23
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	12
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	4.2
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	13

U/S = Unsuitable Sample I/S = Insufficient Sample

* U/S due to high contamination with cyanides

**Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.

*** Estimated result



Analytical Report Number: 21-13788

Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032275	2032276	2032277	2032278	2032279
Sample Reference				TP804	TP806	TP812	TP813	TP815
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	2.10	0.30	2.00	1.90
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	U/S*	7.9	8.1	7.5	8.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	U/S*	750	5800	17000	270

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	U/S*	4.5	5.1	3000	62
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	3100**	9.5
Acenaphthylene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	1.2	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	12	22
Fluorene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	5.9	9.0
Phenanthrene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	4.3
Anthracene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	U/S*	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	U/S*	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	3200	44
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	U/S*	12	< 1.0	16	24
Cadmium (dissolved)	µg/l	0.08	ISO 17025	U/S*	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	U/S*	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	U/S*	< 0.4	2.7	1.0	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	U/S*	12	13	18	11
Lead (dissolved)	µg/l	1	ISO 17025	U/S*	3.4	1.3	4.4	< 1.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	U/S*	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	U/S*	8.7	5.0	2.6	7.8
Selenium (dissolved)	µg/l	4	ISO 17025	U/S*	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	U/S*	3.7	13	4.8	5.3

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	U/S*	< 1.0	3.7	7500**	< 1.0
Toluene	µg/l	1	ISO 17025	U/S*	< 1.0	12	11000**	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	U/S*	< 1.0	< 1.0	780	< 1.0
p & m-xylene	µg/l	1	ISO 17025	U/S*	< 1.0	3.7	5300	< 1.0
o-xylene	µg/l	1	ISO 17025	U/S*	< 1.0	< 1.0	2400	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	U/S*	< 10	< 10	< 10	< 10



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Project / Site name: Manox

Your Order No: 13-887-GC-I

Lab Sample Number				2032275	2032276	2032277	2032278	2032279
Sample Reference				TP804	TP806	TP812	TP813	TP815
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	2.10	0.30	2.00	1.90
Date Sampled				28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status					

Petroleum Hydrocarbons

TPH1 (C10 - C40)	µg/l	10	NONE	U/S*	< 10	< 10	7200	46
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TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	U/S*	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	U/S*	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	U/S*	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	U/S*	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	U/S*	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	U/S*	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	U/S*	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	U/S*	< 1.0	3.7	7500**	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	U/S*	< 1.0	12	11000**	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	U/S*	< 1.0	3.7	9100	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	U/S*	< 10	< 10	4100	10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	U/S*	< 10	< 10	2700	31
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	U/S*	< 10	< 10	320	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	U/S*	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	19	35000	41

U/S = Unsuitable Sample I/S = Insufficient Sample

* U/S due to high contamination with cyanides

**Over range data, sample was diluted and results are estimated from an extrapolated calibration. Results should be interpreted with care.

Analytical Report Number : 21-13788
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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2032259	TP801	None Supplied	1.6	Brown loam and clay with gravel and stones.
2032260	TP802	None Supplied	2	Brown clay and loam with gravel.
2032261	TP803	None Supplied	1	Brown clay with gravel.
2032262	TP804	None Supplied	0.8	U/S**
2032263	TP805	None Supplied	0.6	Brown clay and loam with gravel and vegetation.
2032264	TP806	None Supplied	2.1	Brown clay and loam with gravel.
2032265	TP807	None Supplied	1.8	Black loam and clay with gravel and oil / petroleum.
2032266	TP809	None Supplied	2.1	Brown clay and loam with gravel.
2032267	TP810	None Supplied	1.7	Brown clay and loam with gravel and vegetation.
2032268	TP812	None Supplied	0.3	Brown clay and loam with gravel and vegetation.
2032269	TP813	None Supplied	2	Black clay and loam with gravel and oil / petroleum.
2032270	TP814	None Supplied	0.4	Black loam and clay with gravel and vegetation.
2032271	TP815	None Supplied	1.9	Brown clay and loam with gravel.
2032272	TT803	None Supplied	0.4	Brown loam and clay with gravel and vegetation.
2032273	TT803	None Supplied	2	Brown clay and loam with gravel.
2032274	TT804	None Supplied	1.8	Black loam and clay with gravel and oil / petroleum.

** U/S due to high contamination with cyanides

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Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS

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Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
TPH1 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	MCERTS



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Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report



Analytical Report Number : 21-13788

Project / Site name: Manox

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP809	None Supplied	S	2032266	b	Monohydric phenols in soil	L080-PL	b
TP809	None Supplied	S	2032266	b	Speciated EPA-16 PAHs in soil	L064-PL	b
TP809	None Supplied	S	2032266	b	TPH in (Soil)	L076-PL	b
TT804	None Supplied	S	2032274	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TT804	None Supplied	S	2032274	b	Monohydric phenols in soil	L080-PL	b
TT804	None Supplied	S	2032274	b	Semi-volatile organic compounds in soil	L064-PL	b
TT804	None Supplied	S	2032274	b	TPHCWG (Soil)	L088/76-PL	b
TT804	None Supplied	S	2032274	b	Volatile organic compounds in soil	L073B-PL	b