PRELIMINARY RISK ASSESSMENT REPORT FOR HILLHOUSE BUSINESS PARK, THORNTON CLEVELEYS

TE1674-TE-00-XX-RP-GE-001-V01

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Prepared for:

Sesona Ltd

Prepared by: Stuart Milne

Tier Environmental Ltd

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EXECUTIVE SUMMARY

Introduction	Tier Environmental was commissioned by Sesona Ltd to undertake a desk study and Phase I Preliminary Risk Assessment of the proposed commercial/industrial development at Hillhouse Business Park, Thornton Cleveleys. The purpose of this investigation was to establish land use history and review the available information to determine the geoenvironmental setting of the Site and develop a preliminary conceptual site model with due consideration of potential soil and groundwater contamination, hazardous ground gases and mining.
Proposed land use	It is proposed that the site will be developed as The Thornton Energy Recovery Centre (TERC), an energy-from-waste (EFW) facility.
Site location and surrounding land uses	The site is located at Hillhouse Business Park, off Bourne Road, Thronton Cleveleys, FY5 4QD. The surrounding land uses are predominantly commercial/industrial.
Site history	The Site was undeveloped until 1932 when railway lines were shown on maps. As of 1969, buildings associated with a chemical works (VC4 - vinylidene chloride) are shown on site along with multiple associated tanks, water storage facilities, yards and chimneys. These buildings are no longer shown on maps as of 2010, however information provided to Tier details the plant being decommissioned in 2000. It is understood that the main vinylidene chloride storage tanks were bunded and located immediately to the east of the study site. The surrounding land use is commercial/industrial with multiple off-site developments. An Ammonia Soda Works is shown approx. 40m north and 120m west of the site which extends northwards in the west approx. 500m to a reservoir; this is no longer shown on mapping from 1969.
Geology, Hydrogeology and Hydrology	Published geology indicates Made Ground to a maximum depth of 5.5m. Historic boreholes within the site suggest that the depth of Made Ground increases from approximately 2.5m in the north to 5.5m in the south. The Made Ground was likely to have been placed during the enabling works for the previous chemical works and may include Site generated waste. The Made Ground is shown to be underlain by Tidal Flat Deposits comprising firm clays and soft organic silts to depths of between 6m and 11m, again deepening in a southerly direction. These are in turn shown to be underlain by stiff and very stiff clays of Glacial Till. The solid geology beneath the site is shown to be the Kirkham Mudstone Member – Mudstone. The Preesall Halite Member – Mudstone and Halite-stone is shown to subcrop immediately to the east of the site. It is understood that the halite from this unit was a resource for the former saline works. The Made Ground is shown to have low to very high permeability with a mixed flow type. The superficial deposits are shown to be an Unproductive Aquifer with a very low to low permeability with a mixed flow type. The bedrock is shown to be a Secondary Aquifer with a low permeability with a fracture flow type. The River Wyre is situated 59m northeast of the Site.
Ground Gases	Potential sources of hazardous ground gases include: • Made Ground on site. • Volatile organic compounds, notably vinylidene chloride, from historic spillages/leaks. • Organic soils within the Tidal Flat Deposits. • A refuse pit shown in 1959 located 43m east of the site.
Radon Requirements	Basic radon protection measures are not currently required for the proposed development on this Site.
Ecological Sensitivity	The Site is not located within an ecologically sensitive area, however there is a SSSI, conserved wetland area, special protection area, and a marine conservation zone all associated with the River Wyre. The site does lie within a SSSI risk impact zone.
Potential contaminative features	Multiple tanks were shown previously on Site and within the close vicinity of site from the previous uses of the site and immediate surrounding area as a chemical works. It is understood that the main vinylidene chloride storage tanks were above ground and to the immediate east of the site. There is also the potential for contamination associated with Made Ground from previous developments on Site.
Mining and quarrying	The Site is not located within a mining area or an area subject to historic quarrying.
Previous investigations	No previous investigations have been made available to Tier Environmental for the Site.
Unexploded Ordnance	Zetica's online UXO risk map shows the area to be a low bomb risk, however it is highlighted that there was industry on Site and that a UXO has been found approx. 600m to the southwest.

Waste Soils Classification	Based on the history of the Site and the anticipated potential contaminants of concern, it is considered possible that hazardous waste soil materials may be present beneath some areas of the Site. This, however, will be subject to confirmatory investigation, sampling, laboratory analysis and waste classification in accordance with the Guidance on the Classification and Assessment of Waste (WM3).
Materials re-use	Subject to volumetric fill requirements and a future assessment of suitability of re-use (both chemically and geotechnically), some materials may be considered for potential re-use in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP). Please note that any previously landfilled or mining waste materials may not be appropriately subject to consideration under DoWCoP and may not be re-used under DoWCoP unless sufficient lines of evidence and agreement with the local Environment Agency Waste Team can be sought beforehand. In addition, Section 4.10 of this report includes statements with respect to re-use of excavated and stockpiled clean naturally occurring soils within the Site and re-use on other Sites. These statements are designed to provide a clear intention to reuse any clean, naturally occurring soils derived from future excavations at this Site (which may also include temporary future stockpiling these materials).

1. INTRODUCTION

Tier Environmental was commissioned by Sesona Ltd to undertake a Land Contamination Risk Management (LCRM) Preliminary Risk Assessment for an area of land referred to as Hillhouse Business Park, located off Bourne Road, Thornton Cleveleys FY5 4QD (the "Site").

The full title of this report, a *'Stage 1 - LCRM Tier 1 Preliminary Risk Assessment Report'*, is in accordance with that described in the Land Contamination Risk Management guidance (available at https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm) which has superseded CLR 11.

1.1. Proposed Development

It is proposed that the Site will be developed as The Thornton Energy Recovery Centre (TERC), an energy-from-waste (EFW) facility as presented in Appendix A. As such, in accordance with the 'Updated technical background to the CLEA model' (Environment Agency, 2009) and 'Suitable 4 Use Levels' (LQM / CIEH 2015) the proposed generic land use for this development commercial/industrial.

1.2. Previous Reports

No previous pertinent reports pertaining to this Site have been made available.

1.3. Objectives

Taking into account the proposed development of the Site, the objectives of this appraisal were:

- To determine the historical and current land use.
- To establish the environmental setting of the Site.
- To evaluate whether past mining or other extractive industries could have an influence on the Site.
- To determine likely ground and groundwater conditions.
- To determine the potential risks to human health and the wider environment.
- To determine potential risks posed to the Site from hazardous ground gases and / or vapours.
- To derive a Preliminary Conceptual Site Model.

1.4. Assumptions

The following assumptions are made in this report:

- It is assumed that ground levels will not change significantly from those described in this report or a shown on proposed development drawings. If this is not the case, then amendments to the recommendations made in this report may be required.
- Any references to observations of suspected asbestos-containing materials are for information only and should be verified by a suitably qualified asbestos specialist and/or confirmed by laboratory analysis.
- The use of the term 'Topsoil' within this report is based on a visual identification only and that these materials have not been classified in accordance with BS3882:2015.

- The use of the terms 'shallow' and 'deep' within this report (from a geotechnical perspective) assume *typically* between ground level to circa 3.00m below ground level (bgl) for 'shallow' and greater than 3.00m bgl regarded as 'deep;'
- The comments and opinions presented in this report are based on the findings of the desk study performed by Tier Environmental. There may be other conditions prevailing on the Site which have not been revealed by this investigation and which have not been taken into account by this report at this stage.
- Responsibility cannot be accepted for any conditions not revealed by this investigation. Any diagram or opinion on the possible configuration of the findings is conjectural and given for guidance only. Confirmation of ground conditions should be undertaken if deemed necessary.

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2. SITE DETAILS AND DESCRIPTION

Table 2.1 Current Site Overview.

Site name	Hillhouse Business Park
Site address	Off Bourne Road, Thornton Cleveleys, FY5 4QD. A Site location plan is included as Drawing No. TE1674-TE-00-XX-DR-GE-001-V01 within Appendix A.
National Grid Reference (NGR)	334405 443974
Approximate Site area	1.01 ha
Site shape	The Site is rectangular in shape.
Current land use on the Site	The site is currently vacant after demolition of former buildings/infrastructure.
Surrounding land uses	The surrounding Site uses are predominantly commercial/industrial.
General topography and ground levels	The Site is approximately 9.00m AOD in the north sloping to approximately 8.00m AOD in the south.

An aerial photograph (from the Groundsure report) of the Site and Site boundary is shown below.

Figure 2.1 Recent Aerial Photograph from Groundsure

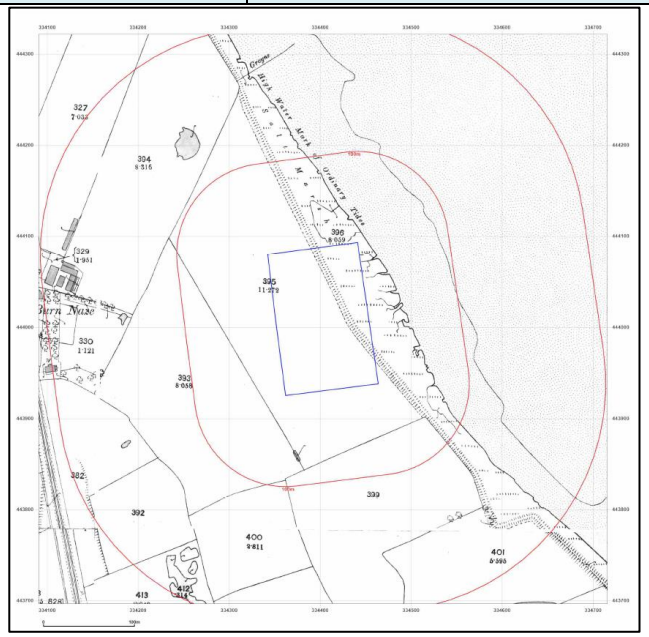
3. SITE HISTORY

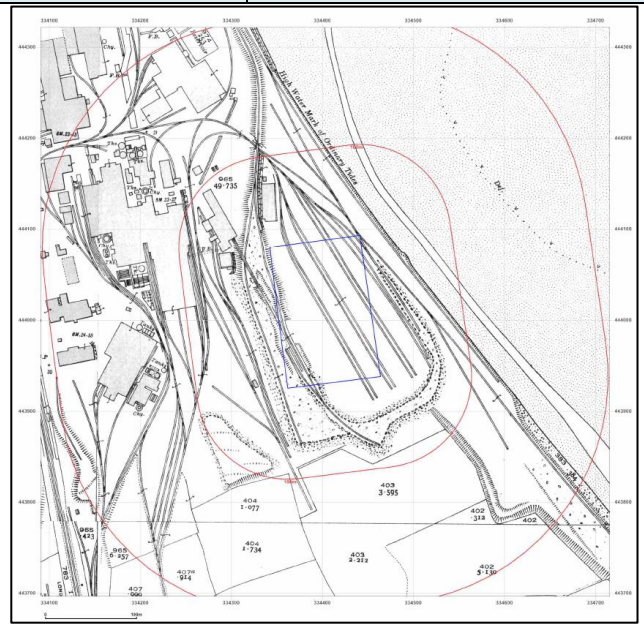
3.1. Site History Review

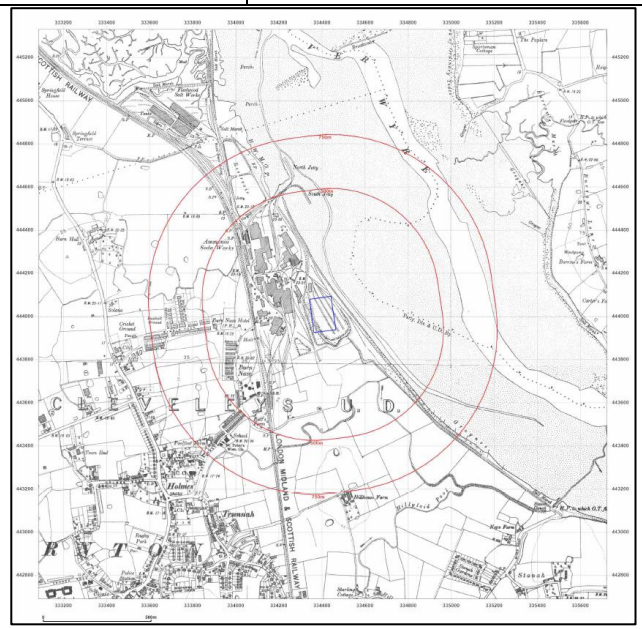
Extracts of Ordnance Survey (OS) plans dated from 1848 to 2022 were reviewed. These were obtained as part of the Groundsure report for the Site, which is presented in Appendix B.

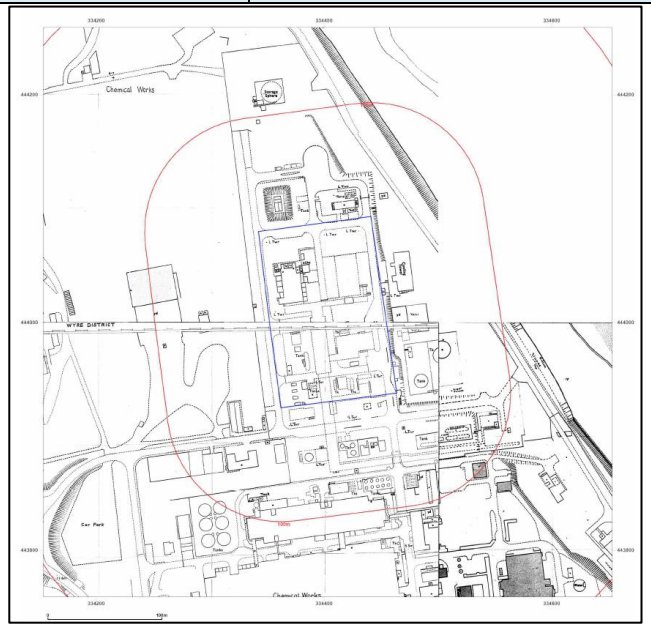
Table 3.1 below presents a summary of the main aspects of the Site relevant to the current and proposed future end uses. It is not the intention of this report to describe in detail all of the changes that have occurred on or adjacent to the Site, where these are not relevant to the land use.

Table 3.1 Site History.

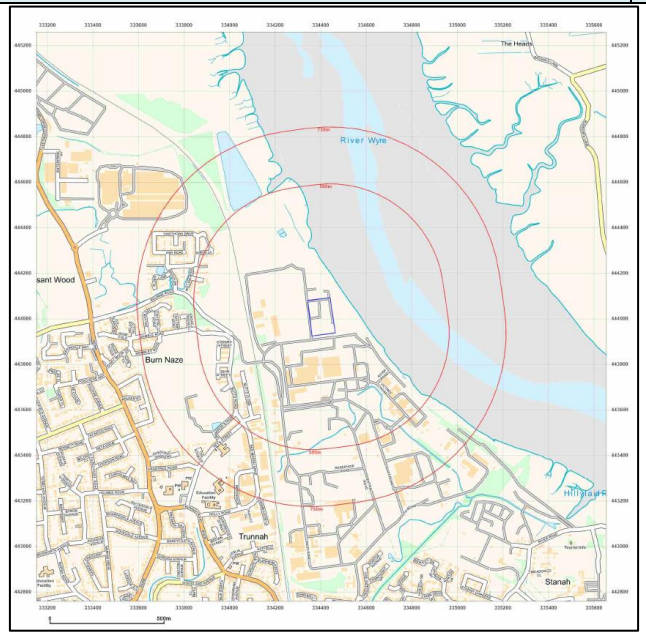
Time Period	On-Site features	Off-Site features
Pre-1900	 1890 – 1:2,500	
	• Site is undeveloped. • Slope down to the River Wyre Salt Marsh in the east of the Site. • The position of the River Wyre is shown to migrate; in the first available map (1848 – 1:10,560) the river is shown on Site in the northeast corner. As time progressed the position of the river shifted eastwards. In the 1890s, the northeast corner of the Site is then occupied by the salt marsh associated with the river, and the river itself is approx. 10m east of Site.	• Buildings associated with Burn Naze shown approx. 230m west of Site. • 7 No. ponds shown within 250m of the Site, the closest is situated approx. 80m south-southwest. • L&Y and L&NW Railway shown running north – south approx. 380m west of site.

Time Period	On-Site features	Off-Site features
1900 to 1939 (Pre-war period)	 1932 – 1:2,500	
	• Sloped embankments with gravel shown in the west of the Site. • Railway sidings.	• Northeast corner of the Site is no longer occupied by the River Wyre salt marshes and the river itself is shown to be approx. 40m northeast of Site. • Multiple off-site development in the west of the Site. • Ammonia Soda works development is shown approx. 40m north and 120m west of Site and extends northwards in the west to approx. 500m to a reservoir. • Closest building associated soda works development is shown approx. 60m northwest. • Ponds no longer shown. • 20 No. tanks shown associated with off-site development in the northwest. The closest is approx. 130m west. • 3 No. chimneys associated with the off-site development in the northwest. The closest is approx. 145m west.

Time Period	On-Site features	Off-Site features
		• The onsite railway tracks converge into 1 No. line approx. 180m north of the Site, shown to connect to the previously named L&Y and L&NW now shown as Scottish Railway.
1939 – 1945 (World War II period)*	 *No map available for 1939 – 1945 (World War II period). The closest map available to the time is from 1938 – 1:10,560	
	• No significant change.	• Ammonia Soda works have extended further south, closer to Site. The closest building to Site associated with the soda works in now approx. 35m north.

Time Period	On-Site features	Off-Site features
1945-1980 (Post war period)	 1979 – 1:1,250	
	• Site now shown with multiple buildings on Site. Information from the Client shows it as the VC4 plant present until 2000. • 3 No. lighting towers shown on Site. • 6 No. tanks now shown on Site.	• Cooling tower now shown approx. 15m northeast of Site. • Chemical works shown approx. 140m south of Site and approx. 245m northwest of Site. • Multiple lighting towers, tanks and yards shown within 250m of the Site. • Storage Sphere shown approx. 160m north of Site.

Time Period	On-Site features	Off-Site features
1980 – 2000 (Late 20th century period)	 1994 – 1:1,250	
	• No significant change.	• No significant change.

Time Period	On-Site features	Off-Site features
2000 to 2020 (Modern day period)	 2022 – 1,10,000	
	• No buildings shown on Site now – information provided to Tier Environmental details the VC4 plant being decommissioned by 2000.	• Buildings still present surrounding Site however no labelled mentioned of chemical works, tanks, yards etc. • Railway not labelled but still shown.

3.2. Site History information obtained from the Client

The following information has been provided by the client:

- The Site was occupied by a Vinylidene Chloride (VC4) plant from 1968 to 1999.
- There was no underground storage/processing, with everything being above ground installations (AGIs).
- The plant was decommissioned in 2000 and demolished with concrete foundations remaining *in situ* to date.
- The two large tanks to the east were for the VC storage and were located in bunds.

The photograph below outlines the extent of the VC4 plant overlain with the current Site boundary:

Figure 3.1 Historic Aerial Photograph showing the VC4 plant on Site from 1968 to 1999, overlain with the current Site red line boundary.

3.3. Preliminary Unexploded Ordnance Risk Assessment

Information obtained from Zetica UXO's online mapping service is detailed in the table below:

Table 3.2 Preliminary UXO Risk Assessment.

	Yes/no	Comments
Is the Site indicated to have been directly bombed?	No	There are no records of a direct bomb drop on Site.
Is the Site within an area recorded to have been bombed?	Yes	According to publicly available anecdotal online information, Thornton Cleveleys suffered 1 No. bombing raid on 12th October 1940.
Could the Site have been a high-risk target?	No	Zetica's online UXO risk map shows the area to be a low bomb risk, however it is highlighted that there was industry on Site and that a UXO has been found approx. 600m southwest of the Site.
Any development cycles since 1945?	Yes.	
Mitigating Factors		Deep Made Ground and soft superficial deposits could increase the depth of a UXO.
Preliminary assessment of UXO Risk	Low	The Site is highlighted at low risk for bombs
Further works?	N/A	

4. ENVIRONMENTAL SETTING

4.1. Geology

Table 4.1 Geological Summary.

Maps and publications referenced	Groundsure, BGS maps and BGS logs.
Made Ground / artificial ground	The Site is shown to be located within an area of artificial ground according to the Groundsure report. Given the history of development on the Site, the presence of Made Ground is anticipated. It is highlighted that the Made Ground permeability is shown to be very high to low with a mixed flow type. Published geology indicates Made Ground to a maximum depth of 5.5m. Historic boreholes within the Site suggest that the depth of Made Ground increases from approximately 2.5m in the north to 5.5m in the south. The Made Ground was likely to have been placed during the enabling works for the previous railway sidings and/or chemical works and may include Site generated waste.
Drift geology	Tidal Flat Deposits (clay and silt) are shown to be present across the whole Site. These are in turn shown to be underlain by stiff and very stiff clays of Glacial Till. The permeability of the superficial deposits on Site is shown to be low to very low with a mixed flow type.
Solid geology	The Site is shown to be underlain by the bedrock of the Kirkham Mudstone Member. Bedrock is Anisian in age (lower Mid-Triassic; 247.2 Ma to 242 Ma). The Preesall Halite Member – Mudstone and Halite-stone is shown to subcrop immediately to the east of the Site. It is understood that the halite from this unit was a resource for the former saline works. The permeability of bedrock deposits on Site is shown to be low with a fracture flow type.
Faults	No faults recorded on or in the immediate vicinity of the Site. The axial plane trace of a major syncline is located approximately 473m east of Site
Coal seams	None shown to outcrop or subcrop on or in the immediate vicinity of the Site.

4.2. Mining and Quarrying

Table 4.2 Coal Mining Activities.

	Yes/No	**Comments**
Is the Site in an area of potential shallow coal workings?	No	
Is the Site in a high risk development area?	No	
Are there any known shafts, adits, tips, lagoons, or opencast workings likely to affect the Site?	No	
Is exploratory work required to investigate the potential risk from shallow mining or quarrying?	No	

Table 4.3 Other Extractive Industries.

	Yes/No	Comments
Superficial drift deposits		
Evidence of extraction on or within 250 m of the Site?	Yes	A number of historical refuse heaps, unspecified pits and unspecified ground workings are listed both on Site and within 250m.
Action required?	No	
Solid Strata		
Any evidence of mineral extraction on or within 250 m of the Site?	No	
Action required?	No	

Other, undocumented mineral workings on or close to the Site cannot be completely dismissed.

4.3. Hydrogeology

Table 4.4 Groundwater Occurrence and Abstraction.

	Presence/location	Comments
Environment Agency aquifer designation – Superficial Deposits	On Site	Unproductive Aquifer
Environment Agency aquifer designation – Bedrock	On Site	Secondary B Aquifer
Groundwater vulnerability	Superficial	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: High
	Bedrock	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
Soluble Rock Risk	On Site	65.0%: Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.
Anticipated groundwater depth(s)		Publicly available BGS logs located close to the Site record 'standing water' 0.71m and 0.54m bgl perched within clay and clayey silt.
Direction of flow		Likely to be east/northeast flowing towards the River Wyre.
Current licensed abstractions – potable	NR	No records within 250m
Current licensed abstractions – non-potable	NR	No records within 250m
Private wells		No records within 250m

	Presence/location	Comments
Source Protection Zones	NR	No records within 250m
Springs		No records within 250m

NR - none recorded.

For definition of Source Protection Zones, see Appendix D.

4.4. Hydrology

Table 4.5 Surface Water Features.

	Presence/location	Comments
Nearest surface water feature	59m NE	River Wyre
Other surface water features		No records within 250m
Canals, ponds, lakes, etc.	NR	No records within 250m
Water Framework Directive (WFD) Surface Water Bodies	59m NE	Name: Wyre Overall Rating: Poor Chemical Rating: Fail Ecological Rating: Poor
Licensed surface water abstractions	NR	No records within 250m
Surface run-off and Site drainage		The full nature and extent of underground drainage system is unknown at this stage.

NR - none recorded. Environment Agency GQA assessments: A = very good to E = poor

4.5. Flood Risk Summary

Table 4.6 below represents a summary of the flood risk data contained within the Groundsure report obtained for the Site.

Table 4.6 Flood Risk Summary

	Presence/location	Comments
Risk of Flooding from Rivers and Sea (RoFRaS)	On Site 0 – 50m	N/A High Risk
Historical Flood Events	NR	No records within 250m
Flood Defences	NR	No records within 250m
Areas Benefiting from Flood Defences	28m South	Groundsure reports denotes an 'area benefiting from flood defences'
Flood Storage Areas	NR	No records within 250m
Records of Flood Zone 2	23m South	Zone 2 (Fluvial/Tidal Models)
Records of Flood Zone 3	28m South	Zone 3 (Fluvial Models)
Surface water flooding	On Site	Highest risk on Site: 1 in 100 year, 0.1-0.3m rise
Groundwater flooding	On Site	Highest risk on Site: Negligible

NR - none recorded

4.6. Environmental Designations

Table 4.7 Summary of Environmental Designations.

	Presence/location	Comments
Sites of Special Scientific Interest (SSSI)	57m NE	Wyre Estuary
Conserved wetland sites (Ramsar sites)	56m NE	Morecambe Bay
Special Areas of Conservation (SAC)	NR	No records within 2000m
Special Protection Areas (SPA)	57m NE	Morecambe Bay and Duddon Estuary
National Nature Reserves (NNR)	NR	No records within 2000m
Local Nature Reserves (LNR)	NR	No records within 2000m
Designated Ancient Woodland	NR	No records within 2000m
Biosphere Reserves	NR	No records within 2000m
Forest Parks	NR	No records within 2000m
Marine Conservation Zones	61m NE, 124 – 540m E	Wyre-Lune
Green Belt	NR	No records within 250m
Proposed Ramsar sites	NR	No records within 2000m
Possible Special Areas of Conservation (pSAC)	NR	No records within 2000m
Potential Special Protection Areas (pSPA)	NR	No records within 2000m
Nitrate Sensitive Areas	NR	No records within 2000m
Nitrate Vulnerable Zones	NR	No records within 2000m
SSSI Units	57m NE	Wyre Estuary Unit Name: Hill House International Frontage Broad Habitat: Littoral Sediment Condition: Favourable

NR - none recorded

4.7. Landfill and Waste Management Activity

Table 4.8 Waste Management Activities.

	Presence/location	Comments
Active or recent landfill	NR	No records within 250m
Historical landfill (BGS records)	NR	No records within 250m
Historical landfill (LA/mapping records)	NR	No records within 250m
Historical landfill (EA/NRW records)	NR	No records within 250m
Historical waste sites	40m SE	Site unknown Type: Refuse Pit Date: 1959

	Presence/location	Comments
Licensed waste sites	NR	No records within 250m
Waste exemptions	NR	No records within 250m
Evidence of other landfilling or potential infilling on or within 250m of Site	On-site	Historical Ordnance Survey plans and BGS borehole logs indicate that land raising has taken to provide a development platform for the historic railway sidings and/or VC4 plant
	40m SE	Historical Waste Site Type of Site: Refuse Pit Planning application reference: N/A Description: N/A Data source: Historic mapping Date: 1959
Walkover evidence of fly-tipping on Site?	N/A	Walkover has not been conducted. A Site reconnaissance will be conducted prior to the start.
Is a landfill/ground gas risk assessment required?	Yes	Potential for a significant thickness of Made Ground and off-site refuse pit as a gas generation source along with potentially organic rich tidal flat deposits as a source.

NR - none recorded

4.8. Local Industrial Land Uses

Other potentially contaminative activities are shown in Table 4.9 below with those features considered pertinent to the conceptual site model highlighted in **bold**. The entries relate to activities within *circa* 250 m of the Site, with the exception of COMAH facilities where the assessment is extended to a distance of *circa* 500m from the Site.

Table 4.9 Other Potentially Contaminative Processes in the Locality

	Location	Comments
Recent industrial land uses	On Site, 44m SE, 54m E, 64m N, 73m S, 123m S, 237m W	4 No. Tank features on Site 7 No. between 11m to 236m from Site
	62m SE	Gantry – Travelling Cranes and Gantries
	147m W	Hillhouse International Business Park
	185m S, 143m NW	Unspecified Works or Factories
	220m W	Electricity Sub Station
Current or recent petrol stations	NR	No records within 250m
Electricity cables	NR	No records within 250m
Gas pipelines	NR	No records within 250m
Sites determined as Contaminated Land	NR	No records within 250m
Control of Major Accident Hazards (COMAH)	On Site and 224m S	Victrex Manufacturing Ltd COMAH Lower Tier Operator
	On Site	AGC Chemicals Europe Ltd COMAH Lower Tier Operator
Regulated explosive sites	NR	No records within 250m

	Location	Comments
Hazardous substance storage/usage	134m S	Application reference number: 11/00338/HAZ Application date: 09/05/2011 Address: Victrex Manufacturing Limited Details: Application for Hazardous Substances Consent associated with the manufacture of Polyaryletherketone polymers
Historical licensed industrial activities (IPC)	NR	No records within 250m
Licensed industrial activities (Part A(1))	223m W	BOC Ltd: Flourine Technology Support Facility Process: Inorganic Chemicals; Using Halogens etc if Release to Air/Water (Unless Otherwise Prescribed) (Unless Chlorination of Water) Status: Superceded (last date 01/01/2022)
		Victrex Manufacturing Ltd: Victrex Polymer Production Process: Organic Chemicals; Plastic Materials eg Polymers Status: Superceded (last date 01/01/2022)
Licensed pollutant release (Part A(2)/B)	NR	No records within 250m
Radioactive Substance Authorisations	NR	No records within 250m
Licensed Discharges to controlled waters	111m N	Main Outfall, Hillhouse International Business Centre Effluent Type: Trade Discharges - Process Effluent - Not Water Company Effective Dates: 1980-to 1996
Pollutant release to surface waters (Red List)	NR	No records within 250m
Pollutant release to public sewer	NR	No records within 250m
List 1 Dangerous Substances	NR	No records within 250m
List 2 Dangerous Substances	111m N	ICI Chemicals & Polymers, Hillhouse North Status: Not Active Receiving Water: Wyre Estuary Substance: Chromium
Pollution Incidents (EA/NRW)	NR	No records within 250m
Pollution inventory substances	NR	No records within 250m
Pollution inventory waste transfers	NR	No records within 250m
Pollution inventory radioactive waste	NR	No records within 250m

NR - none recorded

COMAH – Control of Major Accident Hazards (regulations); NIHHS – Notification of Installations Handling Hazardous Substances (regulations)

4.9. Radon Risk

Table 4.10 Radon Risk Status.

	Comments
Estimated properties affected	Less than 1% of properties above the Action Level
Radon Protection Measures required?	No

4.10. Waste Classification and Materials Re-Use

If the Site is to be redeveloped and materials are disposed off site, the material exported from the Site to Landfill should be hauled by a register waste character in accordance with Duty of Care Regulations 1991 and the Hazardous Waste Regulations 2005.

Based on the history of the Site and the anticipated potential contaminants of concern, it is considered likely that hazardous waste soil materials may be present beneath some areas of the Site; however, this will be subject to confirmatory investigation, sampling, laboratory analysis and waste classification in accordance with the Guidance on the Classification and Assessment of Waste (WM3).

It will be necessary to register the Site in advance of the intended reclamation works with the Environment Agency before disposal to landfill can take place. There will be requirement for the waste producer to provide appropriate Waste Acceptance Criteria (WAC) testing of the Soils for disposal to ensure that the soils are appropriately classified and that the landfill is licensed to receive such soils. A consignment note shall be completed, signed and retained by all parties involved. The consignment note shall state the volume of waste, a physical description of the material and statement of its chemical composition. The waste consignment notes shall be kept by the contractor for a period of at least two years.

Subject to volumetric fill requirements and a future assessment of suitability of re-use (both chemically and geotechnically), some materials may be considered for potential re-use in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP). Please note that any previously landfilled or mining waste materials may not be appropriately subject to consideration under DoWCoP and may not be re-used under DoWCoP unless sufficient lines of evidence and agreement with the local Environment Agency Waste Team can be sought beforehand.

Re-Use of Excavated and Stockpiled Clean Naturally Occurring Soils on Other Sites

In addition, Tier Environmental are aware that CL:AIRE is classing stockpiled clean, naturally occurring soils as waste, unless their final destination is identified in a Materials Management Plan, before they are excavated. However, Tier Environmental consider that any clean naturally occurring soils arising from enabling works, earthworks or construction activities would be regarded as an asset and the default assumption for this Site (prior to excavation and stockpiling) is not the intention to discard these materials where they may be reasonably re-used on this, or another, development site. Stockpiling is a recognised, recommended means of safely storing soils. Whilst there may be advantages to leaving soils in-situ, stripping topsoil and subsoil prior to earthworks is a routine construction activity. Tier Environmental consider that it is not unreasonable to state that in the event that the developer owns another site where the construction phase is ongoing, soils can be transferred between their sites as an owned product and never become waste.

The above paragraph above is therefore considered a clear intention to reuse any clean, naturally occurring soils derived from excavations at this Site (which may also include temporary stockpiling these materials). It is considered; however, that in addition to this the following must be adhered to:

- Reuse does need to occur within a 'reasonable' timeframe (12 No. months); and,
- If soils are transferred to a third party (another developer), there needs to be some contractual agreement in place, as in this situation it is important to have something in place confirming that surplus soils are required by the third party.

Re-Use of Excavated and Stockpiled Clean Naturally Occurring Soils Within The Site They Are Excavated From

Further to the above, where soils are naturally occurring, uncontaminated and re-used on the Site they are excavated from, they fall outside of the Waste Framework Directive (WFD) i.e. they will not be classified as a waste Currently the CL:AIRE Definition of Waste Code of Practice states the following which appears to support this position: *"If the material is waste an Environmental Permit will be required to lawfully deposit or re-use it unless the material is "uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated", which is excluded from waste regulation by the Waste Framework Directive (2008)."*

5. PREVIOUS INVESTIGATION FINDINGS

No previous desk study or site investigation reports pertaining to this Site have been made available.

6. PRELIMINARY CONCEPTUAL SITE MODEL

Based on the information provided in the previous sections of this report a combined preliminary conceptual site model and conceptual exposure model has been developed for the proposed future land use. This summarises the understanding of surface and sub-surface features, the potential contaminant sources, transport pathways and receptors. In assessing the likely contaminants of concern present at the Site, reference has also been made to Defra and Environment Agency supporting documentation. A preliminary qualitative risk assessment has also been made of the likelihood of the linkage operating and its potential significance in accordance with CIRIA C552.

The preliminary conceptual model is presented in schematic form in Appendix A Drawing No. TE1674-TE-00-XX-DR-GE-003-V01. The potential pollutant linkages identified and the qualitative risk assessment for these are presented in Table 6.1 below. The terms used in the preliminary qualitative risk assessment are defined in Appendix C.

6.1. Uncertainties

The following uncertainties exist in the preliminary conceptual model:

- The presence of any features unrecorded by the historic maps.
- Any unrecorded geological features.
- Any unrecorded pollution events during the Site's history.

Table 6.1 Preliminary Assessment of Potential Pollutant Linkages.

Justification / Comments	Source	Potential Contaminants of Concern	Pathway	Receptor	Consequence	Probability	Qualitative Risk Assessment
• The Site is situated off Bourne Road, Thornton Cleveleys, FY5 4QD. the site is currently derelict after previous commercial/industrial developments on Site were demolished to slab level; • The Site was undeveloped until 1932 when railway sidings were shown on maps. As of 1969, buildings associated with a chemical works (VC4 - vinylidene chloride) are shown on site along with multiple associated tanks, water storage facilities, yards and chimneys. These buildings are no longer shown on maps as of 2010, however information provided to Tier details the plant being decommissioned in 2000. It is understood that the main vinylidene chloride storage tanks were bunded and located immediately to the east of the study site. The surrounding land use is commercial/industrial with multiple off-site developments. An Ammonia Soda Works is shown approx. 40m north and 120m west of the site which extends northwards in the west approx. 500m to a reservoir; this is no longer shown on mapping from 1969. • Published geology indicates Made Ground to a maximum depth of 5.5m. Historic boreholes within the site suggest that the depth of Made Ground increases from approximately 2.5m in the north to 5.5m in the south. The Made Ground was likely to have been placed during the enabling works for the previous chemical works and may include site generated waste. The Made Ground is shown to be underlain by Tidal Flat Deposits comprising firm clays and soft organic silts to depths of between 6m and 11m, again deepening in a southerly direction. These are in turn shown to be underlain by stiff and very stiff clays of Glacial Till. The solid geology beneath the site is shown to be the Kirkham Mudstone Member – Mudstone. The Preesall Halite Member – Mudstone and Halite-stone is shown to subcrop immediately to the east of the site. It is understood that the halite from this unit was a resource for the former saline works. The Made Ground is shown to have low to very high permeability with a mixed flow type. The superficial deposits are shown to be an Unproductive Aquifer with a very low to low permeability with a mixed flow type. The bedrock is shown to be a Secondary Aquifer with a low permeability with a fracture flow type. • The nearest surface water feature is located 59m northeast of site - the River Wyre. there are no other recorded surface water features within 250m of the Site. The River Wyre, 59m northeast is a Water Framework Directive surface water body. It has an overall rating of poor, a failed chemical rating and an ecological rating of poor. There are no licensed surface water abstractions recorded within 250m of the Site. the nature and extent of surface water run off and site drainage systems is unknown at this point • There is 1 No. historical waste site located 40m east of site. The name of the site is unknown but it appears as a refuse tips on mapping in 1959. Less than 1% of the properties on the Site area are above the Radon Action level meaning no Radon protection measures are required. • Potential Made Ground on site, possibly to a significant depth based on previous industrial uses of the Site, volatile organic carbons (notable vinylidene Chloride) from potential former spills on site, off site refuse tip and organic rich clays and silts of the tidal flat deposits present a hazardous ground gas generation risk. • The Site is not located within an ecologically sensitive area, however	Anticipated Widespread Made Ground associated with former developments on site, especially associated with former tanks and chemical works.	Metals, PAHs, Phenols, TPH and pH, Asbestos, VOCs and SVOCs, PCBs, Hexavalent Chromium and Coal Tar	Direct contact, ingestion and inhalation of dust	Future on Site users, off site users and properties, superficial and bedrock aquifers, on site buildings and services and off site surface water features.	Medium	Likely	Moderate risk
			Vapour inhalation				
			Leaching and migration via groundwater				
			Lateral and vertical migration of mobile contaminants				
			Dust migration and inhalation				
			Lateral / vertical migration via preferential pathway				
	Anticipated widespread Made Ground, potential VOCs, off Site refuse tip and potentially organic rich Tidal Flat Deposits	Hazardous ground gas	Vapour inhalation	Future on Site users, off site users and properties and on site buildings and services.	Severe	Low Likelihood	Moderate risk
			Dust migration and inhalation				
			Lateral / vertical migration via preferential pathway				

there is a SSSI, conserved wetland area, special protection area, and a marine conservation zone all associated with the River Wyre. The site does lie within a SSSI risk impact zone.							

For definition of the terms used in the qualitative risk assessment, please see Appendix C.

7. PROPOSED FURTHER WORKS

7.1. Further works

The Phase 1 Preliminary Risk Assessment has determined a moderate risk to human health and a moderate risk to controlled waters at the Site with respect to potential contamination and hazardous ground gases.

It is recommended that a ground investigation is undertaken in order to further assess the potential risks associated with the pollutant linkages identified in the Preliminary Conceptual Site Model (presented in Section 6).

The objectives of the Phase II Ground Investigation will be:

- To determine shallow soil and groundwater (if encountered) conditions, including whether significant contamination has resulted from past or current land uses;
- To determine the risks posed by any ground contamination and provide recommendations on remedial measures to manage such risks;
- To determine the risks posed to the site from hazardous ground gases;
- To determine the existence, and if applicable, the extent of contamination within local groundwater beneath the site; and,
- To provide advice relating to geotechnical issues associated with the proposed redevelopment of the site.

7.2. Proposed Scope of Works

The following scope of works are proposed:

- 1 No. days trial pitting to determine the nature and extent of Made Ground and natural deposits across the Site, facilitate soil sampling for environmental and geotechnical testing and determine the extent of historic foundations and structures present on site.
- 1 No. day window sample drilling and installation of 4 No. monitoring wells for gas and groundwater (if encountered) monitoring purposes, to determine the nature and extent of Made Ground and natural deposits across the Site and to facilitate soil sampling for environmental and geotechnical testing.
- 3 No. day cable percussive drilling and installation of 3 No. monitoring wells for gas and groundwater (if encountered) monitoring purposes, to determine the nature and extent of Made Ground and natural deposits across the Site and to facilitate soil sampling for environmental and geotechnical testing.
- In situ geotechnical testing to assist with foundation design and recommendations;
- Geoenvironmental chemical testing on selected soil samples for metals, pH, speciated PAH, speciated TPH, phenol, SVOC/SVOC, sulphate, TOC and asbestos screens in order to assess potential risks to human health based on historical land uses on and within close proximity to the Site and to assist with basic waste characterisation.
- The Control of Asbestos Regulations 2012 should be adhered to. A summary of complying with CAR: risk assessments, licensing and training is provided in Appendix E.

8. REGULATORY APPROVALS

The conclusions and recommendations presented above are considered reasonable based on the findings of the site investigation. However, these cannot be guaranteed to gain regulatory approval and, therefore, the report should be passed to the appropriate regulatory authorities and/or other organisations for their comment and approval prior to undertaking any works on site.

It is recommended that conditions placed on any planning permission are discharged prior to commencement of site works.

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10.GLOSSARY OF TERMS

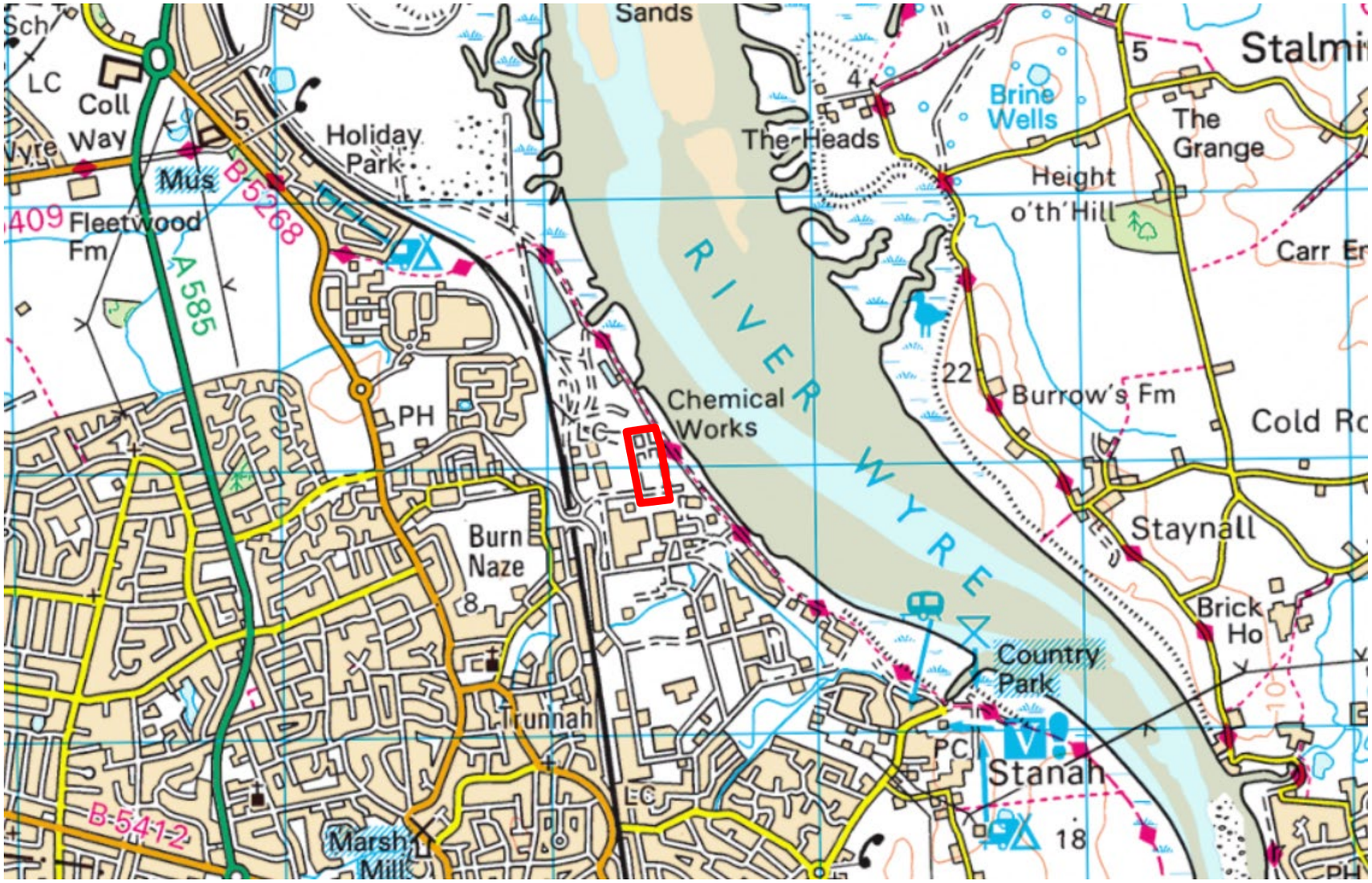
ACEC	Aggressive Chemical Environment for Concrete (classification)
aOD	Above Ordnance Datum
bgl	Below ground level
BGS	British Geological Survey
BRE	Building Research Establishment
CBR	California Bearing Ratio (test)
COMAH	Control of Major Accident Hazards (regulations)
Designated location	Site (and the ecosystem on that site) protected under national of international legislation. A potential ecological receptor to be considered as part of the assessment of land contamination. Example designated locations include SSSIs (q.v.), SACs (q.v.), national nature reserves, Ramsar sites and bird special protection areas.
DQA	Data Quality Assessment
DQO	Data Quality Objective
DQRA	Detailed Quantitative Risk Assessment
DWS	Drinking Water Standard
EQS	Environmental Quality Standard
GAC	Generic Assessment Criterion
GQA	General Quality Assessment (Environment Agency)
GSV	Gas Screening Value
HCV	Health Criteria Value
IPPC	Integrated Pollution Prevention and Control (regulations)
K_{ow}	Octanol-water partition coefficient
LEL	Lower Explosive Limit
LL	Liquid Limit
LoD	Limit of Detection (analytical)
LoQ	Limit of Quantification (analytical)
Mean Value Test	Statistical test (described in the CIEH Guidance) to estimate the mean value of a normally distributed population of data at a given level of confidence. Normally for contaminated land assessment, the 95th percentile (referred to as the 95%UCL or US95) is applied as a reasonable but conservative estimate of the mean concentration for comparison with the relevant assessment criteria.
Maximum Value Test	Statistical test (described in the CIEH Guidance) to identify whether an elevated concentration within a normally distributed data set forms part of the underlying population from which it has been sampled or whether it is an outlier (such as a localised area of contamination) that merits further consideration.
MC	Moisture Content
NGR	National Grid Reference
NIHHS	Notification of Installations Handling Hazardous Substances (regulations)
OS	Ordnance Survey
PI	Plasticity Index
PID	Photoionisation Detector
PL	Plastic Limit
ppm	Parts per million
ppmv	Parts per million by volume
QA	Quality Assurance
QC	Quality Control
SAC	Special Area of Conservation
SOM	Soil Organic Matter

SPT	Standard Penetration Test
SPZ	Source Protection Zone (see Appendix D)
SSAC	Site-Specific Assessment Criterion
SSSI	Site of Special Scientific Interest
SVOC	Semi-Volatile Organic Compound
TEF	Toxicity Equivalent Factor
TPH	Total Petroleum Hydrocarbons
TWA	Time Weighted Average
US95	95th percentile estimate of the true mean value of a data population (also known as 95%UCL).
VOC	Volatile Organic Compound

APPENDIX A - DRAWINGS

Contract Number	TE1674
Contract	Hillhouse Business Park, off Bourne Road, Thorton Cleveleys FY5 4QD
Client	Sesona Ltd

Site Location Plan



0 km 1

Approximate Scale

Scale	NTS		
Drawn by	AH	Approved	SL
Drawing Number	TE1674-TE-00-XX-DR-GE-001-V01		

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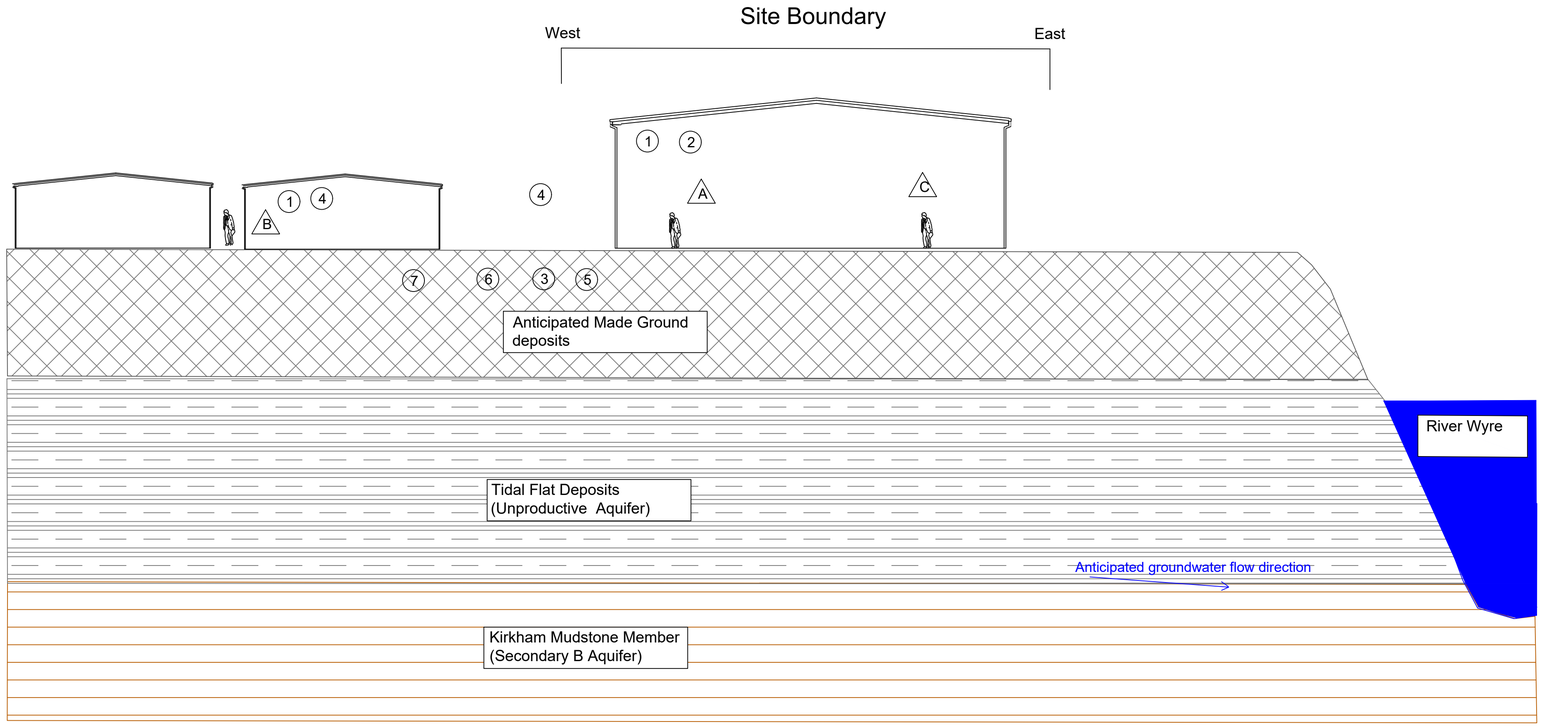


A Future site users

B Adjacent site users

C Construction, site investigation, demolition and future maintenance workers

1 Inhalation of indoor and outdoor gas

2 Direct contact

3 Migration of ground gas through permeable Made Ground

4 Dust migration and inhalation/ingestion

5 Migration of mobile contaminants

6 Migration of mobile contaminants from Made Ground soils to adjacent sites along services and conduits

7 Migration of mobile contaminants through water pipes

Notes

This drawing is purely schematic and is a representation of the ground conditions and process, based upon information derived from the preliminary risk assessment.

Please refer to the table in the PRA Report for the identified potential pollutant linkages and associated qualitative risk assessment.

This model should be revised, following the site investigation and any additional information to ensure its relevance to actual conditions.

Rev	Date	By	Description	Appd
V01	27/07/22	ER	Preliminary CSM	SL

Revisions

Status

FINAL

Tier Environmental Ltd.
Chadwick House
Warrington Road
Birchwood
Warrington | Wa3 6AE
t: 01925 818388

Client

SESONA_LTD

Project

HILLHOUSE_BUSINESS_PARK

Title

PRELIMINARY_CSM

Scale	Drawn	Revision
DNS	ER	01
Date	Checked	
27/07/22	SL	

Drawing Ref : TE1674-TE-00-XX-DR-GE-003-V01

TE1674 003

APPENDIX B - GROUNDSURE REPORT

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

HILLHOUSE INTERNATIONAL WORKS, FLEETWOOD ROAD NORTH, THORNTON CLEVELEYS, FY5 4QA

Order Details

Date: 26/07/2022

Your ref: TE1674_-_2140

Our Ref: GS-8932631

Site Details

Location: 334397 444015

Area: 1.58 ha

Authority: Wyre Council

Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	15	5	37	53	-
18	1.2	Historical tanks	11	17	54	82	-
24	1.3	Historical energy features	0	0	2	9	-
25	1.4	Historical petrol stations	0	0	0	0	-
25	1.5	Historical garages	0	0	0	1	-
25	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
26	2.1	Historical industrial land uses	20	13	59	91	-
33	2.2	Historical tanks	37	41	98	128	-
44	2.3	Historical energy features	0	0	2	18	-
45	2.4	Historical petrol stations	0	0	0	0	-
45	2.5	Historical garages	0	0	0	2	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
47	3.1	Active or recent landfill	0	0	0	0	-
47	3.2	Historical landfill (BGS records)	0	0	0	0	-
48	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
48	3.4	Historical landfill (EA/NRW records)	0	0	0	1	-
48	3.5	Historical waste sites	0	1	0	1	-
49	3.6	Licensed waste sites	0	0	0	1	-
49	3.7	Waste exemptions	0	0	0	5	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
51	4.1	Recent industrial land uses	4	3	11	-	-
53	4.2	Current or recent petrol stations	0	0	0	0	-
53	4.3	Electricity cables	0	0	0	0	-
53	4.4	Gas pipelines	0	0	0	0	-
53	4.5	Sites determined as Contaminated Land	0	0	0	0	-

53	4.6	Control of Major Accident Hazards (COMAH)	3	0	1	0	-
54	4.7	Regulated explosive sites	0	0	0	0	-
54	4.8	Hazardous substance storage/usage	0	0	2	2	-
55	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
55	4.10	Licensed industrial activities (Part A(1))	0	0	9	11	-
59	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	4	-
60	4.12	Radioactive Substance Authorisations	0	0	0	0	-
60	4.13	Licensed Discharges to controlled waters	0	0	21	23	-
66	4.14	Pollutant release to surface waters (Red List)	0	0	0	4	-
67	4.15	Pollutant release to public sewer	0	0	0	0	-
67	4.16	List 1 Dangerous Substances	0	0	3	3	-
68	4.17	List 2 Dangerous Substances	0	0	2	2	-
68	4.18	Pollution Incidents (EA/NRW)	0	0	0	2	-
69	4.19	Pollution inventory substances	0	0	0	5	-
71	4.20	Pollution inventory waste transfers	0	0	0	1	-
74	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
75	5.1	Superficial aquifer	Identified (within 500m)				
76	5.2	Bedrock aquifer	Identified (within 500m)				
78	5.3	Groundwater vulnerability	Identified (within 50m)				
79	5.4	Groundwater vulnerability- soluble rock risk	Identified (within 0m)				
79	5.5	Groundwater vulnerability- local information	None (within 0m)				
81	5.6	Groundwater abstractions	0	0	0	0	0
81	5.7	Surface water abstractions	0	0	0	0	0
81	5.8	Potable abstractions	0	0	0	0	0
81	5.9	Source Protection Zones	0	0	0	0	-
82	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
83	6.1	Water Network (OS MasterMap)	0	0	3	-	-

84	6.2	Surface water features	0	0	0	-	-
84	6.3	WFD Surface water body catchments	1	-	-	-	-
84	6.4	WFD Surface water bodies	0	0	1	-	-
85	6.5	WFD Groundwater bodies	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
86	7.1	Risk of flooding from rivers and the sea	High (within 50m)				
87	7.2	Historical Flood Events	0	0	0	-	-
87	7.3	Flood Defences	0	0	0	-	-
87	7.4	Areas Benefiting from Flood Defences	0	1	0	-	-
88	7.5	Flood Storage Areas	0	0	0	-	-
89	7.6	Flood Zone 2	Identified (within 50m)				
90	7.7	Flood Zone 3	Identified (within 50m)				
Page	Section	Surface water flooding					
91	8.1	Surface water flooding	1 in 100 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
93	9.1	Groundwater flooding	Negligible (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
94	10.1	Sites of Special Scientific Interest (SSSI)	0	0	1	1	3
95	10.2	Conserved wetland sites (Ramsar sites)	0	0	1	1	3
97	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
97	10.4	Special Protection Areas (SPA)	0	0	2	2	6
100	10.5	National Nature Reserves (NNR)	0	0	0	0	0
100	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
101	10.7	Designated Ancient Woodland	0	0	0	0	0
101	10.8	Biosphere Reserves	0	0	0	0	0
101	10.9	Forest Parks	0	0	0	0	0
101	10.10	Marine Conservation Zones	0	0	2	0	30
103	10.11	Green Belt	0	0	0	0	2
103	10.12	Proposed Ramsar sites	0	0	0	0	0

103	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
103	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
104	10.15	Nitrate Sensitive Areas	0	0	0	0	0
104	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
105	**10.17**	**SSSI Impact Risk Zones**	3	-	-	-	-
107	**10.18**	**SSSI Units**	0	0	1	2	8
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
112	11.1	World Heritage Sites	0	0	0	-	-
112	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
112	11.3	National Parks	0	0	0	-	-
112	11.4	Listed Buildings	0	0	0	-	-
113	11.5	Conservation Areas	0	0	0	-	-
113	11.6	Scheduled Ancient Monuments	0	0	0	-	-
113	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
114	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
115	12.2	Open Access Land	0	0	0	-	-
115	12.3	Tree Felling Licences	0	0	0	-	-
115	12.4	Environmental Stewardship Schemes	0	0	0	-	-
115	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
116	**13.1**	**Priority Habitat Inventory**	0	1	6	-	-
117	**13.2**	**Habitat Networks**	1	2	7	-	-
118	**13.3**	**Open Mosaic Habitat**	1	0	0	-	-
118	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
119	**14.1**	**10k Availability**	Identified (within 500m)				
120	**14.2**	**Artificial and made ground (10k)**	1	0	0	0	-
121	**14.3**	**Superficial geology (10k)**	1	0	1	2	-

122	14.4	Landslip (10k)	0	0	0	0	-
123	14.5	Bedrock geology (10k)	1	0	3	5	-
124	14.6	Bedrock faults and other linear features (10k)	0	0	0	2	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
125	15.1	50k Availability	Identified (within 500m)				
126	15.2	Artificial and made ground (50k)	1	0	0	0	-
127	15.3	Artificial ground permeability (50k)	1	0	-	-	-
128	15.4	Superficial geology (50k)	1	1	0	2	-
129	15.5	Superficial permeability (50k)	Identified (within 50m)				
129	15.6	Landslip (50k)	0	0	0	0	-
129	15.7	Landslip permeability (50k)	None (within 50m)				
130	15.8	Bedrock geology (50k)	1	0	1	4	-
131	15.9	Bedrock permeability (50k)	Identified (within 50m)				
131	15.10	Bedrock faults and other linear features (50k)	0	0	0	1	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
132	16.1	BGS Boreholes	2	5	7	-	-
Page	Section	Natural ground subsidence					
134	17.1	Shrink swell clays	Low (within 50m)				
135	17.2	Running sands	Moderate (within 50m)				
137	17.3	Compressible deposits	Moderate (within 50m)				
139	17.4	Collapsible deposits	Negligible (within 50m)				
140	17.5	Landslides	Low (within 50m)				
142	17.6	Ground dissolution of soluble rocks	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
144	18.1	Natural cavities	0	0	0	0	-
145	18.2	BritPits	0	0	0	0	-
145	18.3	Surface ground workings	7	4	21	-	-
146	18.4	Underground workings	0	0	0	0	0
146	18.5	Historical Mineral Planning Areas	0	0	0	0	-

147	18.6	Non-coal mining	0	0	0	0	0
147	18.7	Mining cavities	0	0	0	0	0
147	18.8	JPB mining areas	None (within 0m)				
147	18.9	Coal mining	None (within 0m)				
147	18.10	Brine areas	None (within 0m)				
148	18.11	Gypsum areas	None (within 0m)				
148	18.12	Tin mining	None (within 0m)				
148	18.13	Clay mining	None (within 0m)				

Page	Section	Radon					
149	**19.1**	**Radon**	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
150	**20.1**	**BGS Estimated Background Soil Chemistry**	2	2	-	-	-
150	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
150	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
151	21.1	Underground railways (London)	0	0	0	-	-
151	21.2	Underground railways (Non-London)	0	0	0	-	-
152	21.3	Railway tunnels	0	0	0	-	-
152	**21.4**	**Historical railway and tunnel features**	10	6	27	-	-
154	21.5	Royal Mail tunnels	0	0	0	-	-
154	21.6	Historical railways	0	0	0	-	-
154	21.7	Railways	0	0	0	-	-
154	21.8	Crossrail 1	0	0	0	0	-
154	21.9	Crossrail 2	0	0	0	0	-
155	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 22/04/2019

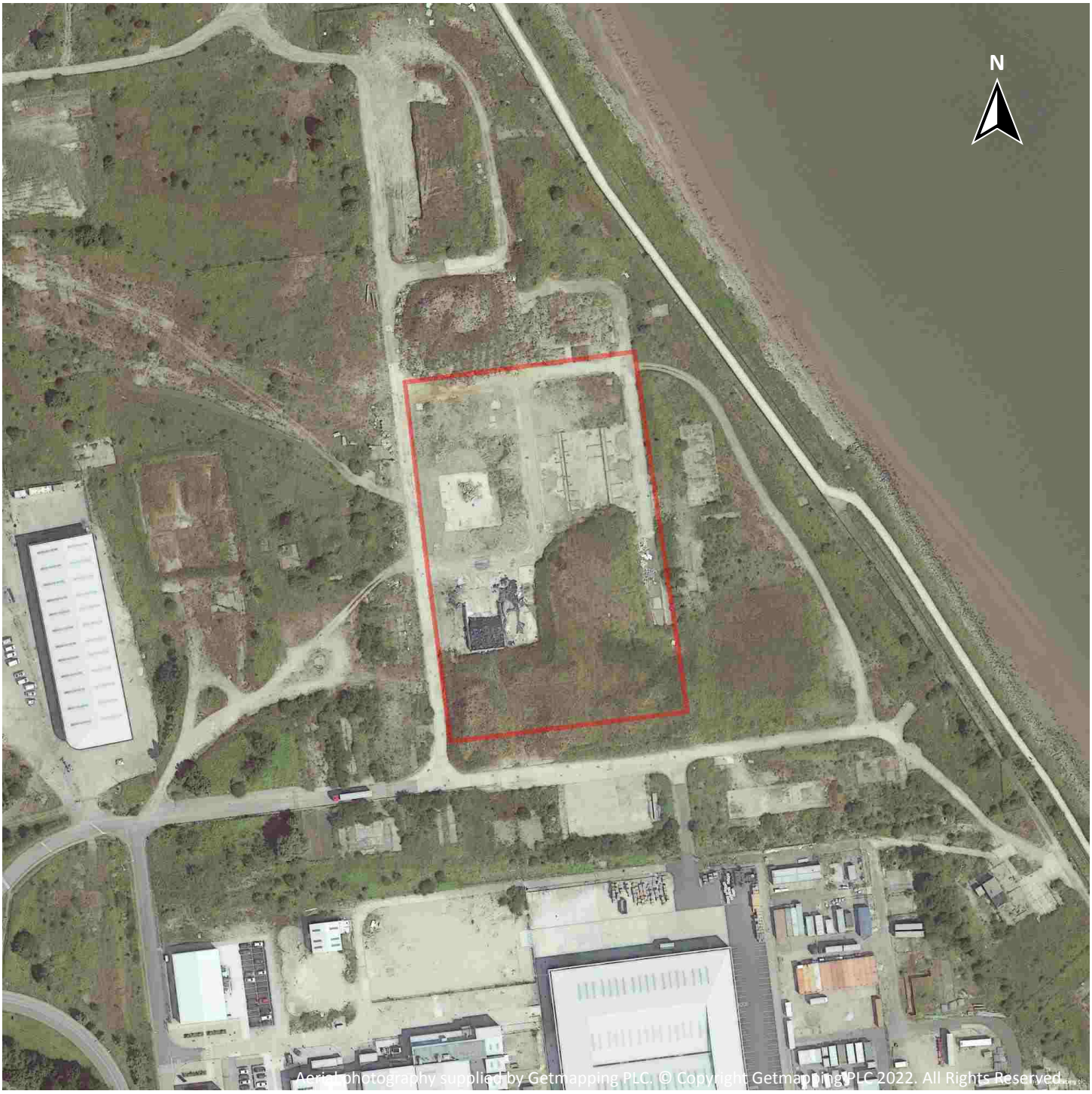
Site Area: 1.58ha

Recent site history - 2018 aerial photograph

Capture Date: 05/09/2018

Site Area: 1.58ha

Recent site history - 2013 aerial photograph



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Capture Date: 19/07/2013

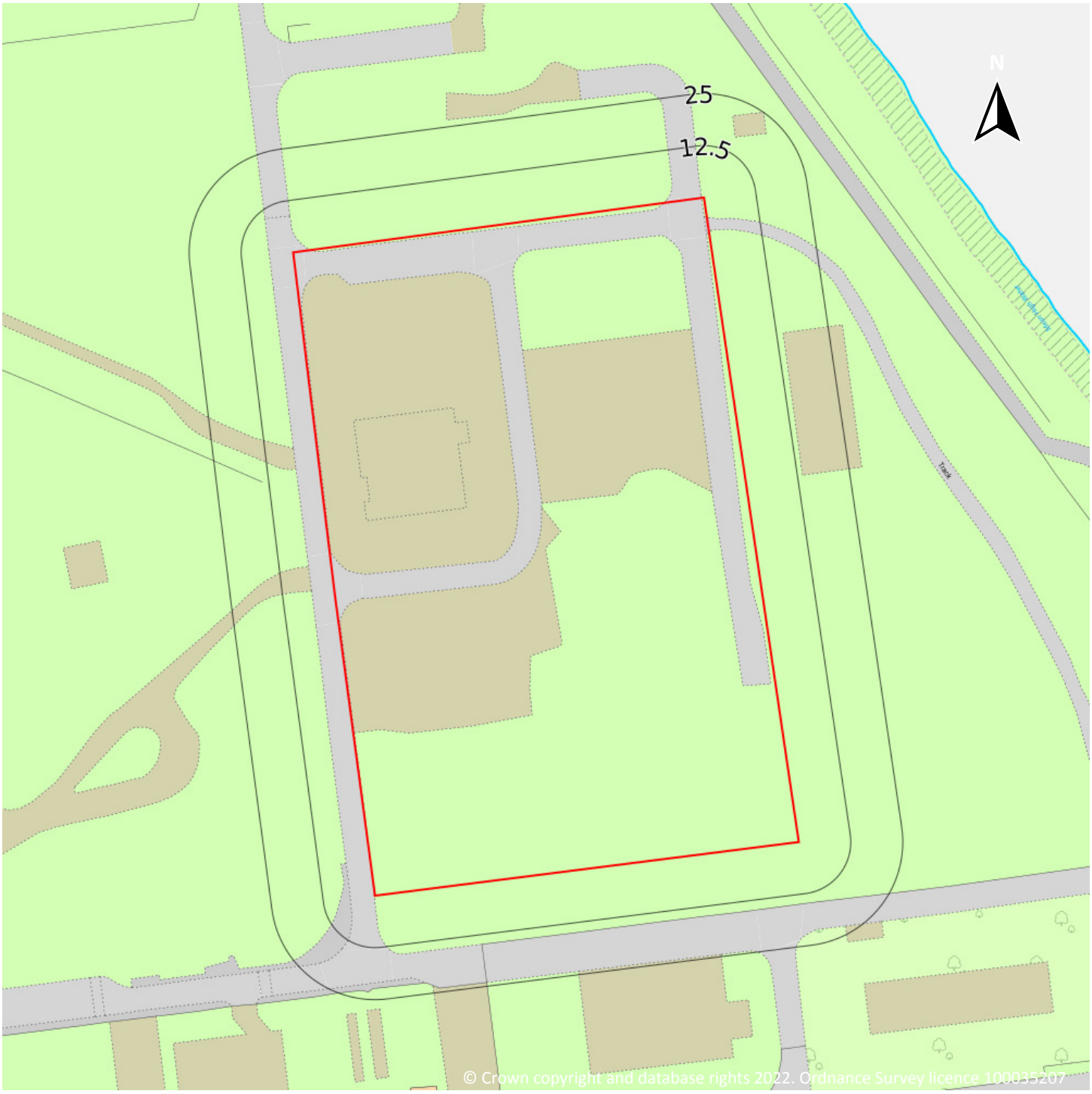
Site Area: 1.58ha

Recent site history - 2000 aerial photograph

Capture Date: 05/04/2000

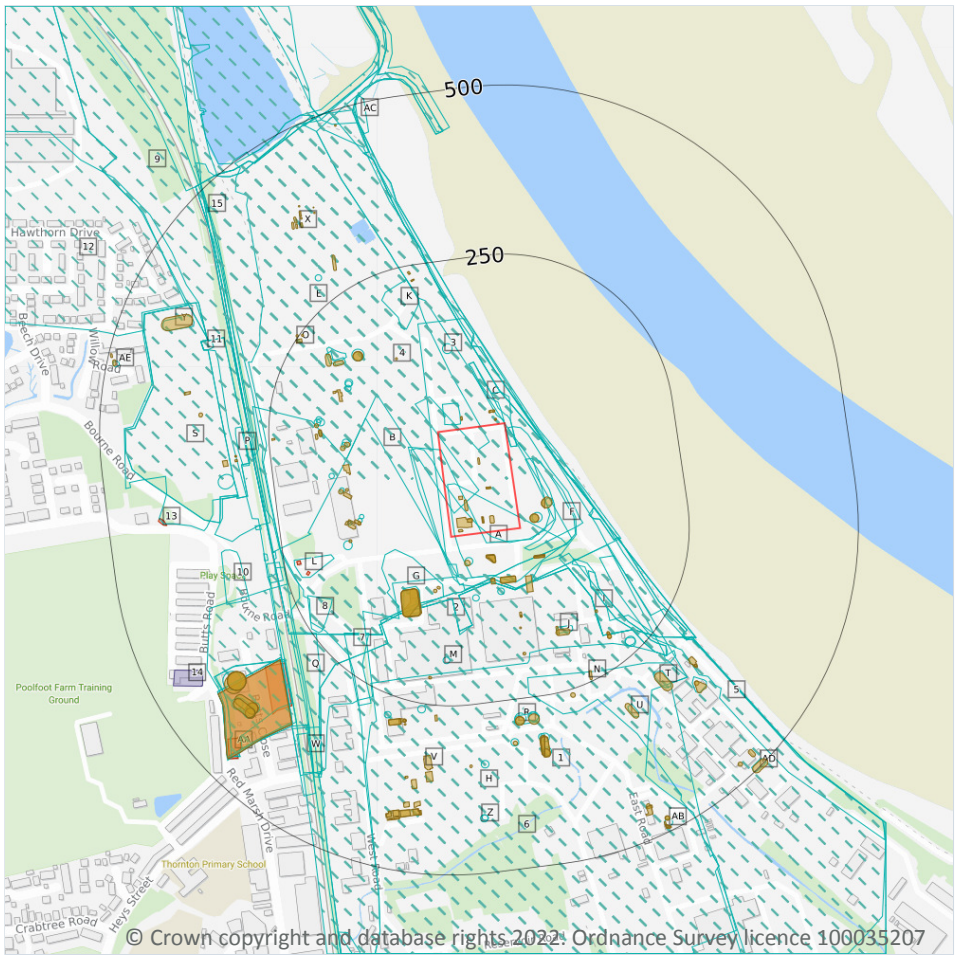
Site Area: 1.58ha

OS MasterMap site plan



Site Area: 1.58ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	110

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Unspecified Works**	**1992**	**746126**

ID	Location	Land use	Dates present	Group ID
2	**On site**	**Railway Sidings**	**1951 - 1967**	**698470**
A	**On site**	**Unspecified Heap**	**1910**	**649453**
A	**On site**	**Refuse Heap**	**1951**	**699689**
A	**On site**	**Unspecified Works**	**1967**	**716375**
A	**On site**	**Unspecified Works**	**1973 - 1981**	**729518**
A	**On site**	**Refuse Heap**	**1930 - 1938**	**784740**
B	**On site**	**Ammonia Soda Works**	**1951**	**694922**
B	**On site**	**Ammonia Soda Works**	**1910**	**705524**
C	**On site**	**Unspecified Ground Workings**	**1973**	**711042**
C	**On site**	**Unspecified Ground Workings**	**1981 - 1992**	**785624**
D	**On site**	**Railway Sidings**	**1938**	**738290**
D	**On site**	**Ammonia Soda Works**	**1930 - 1938**	**757831**
D	**On site**	**Railway Sidings**	**1930**	**775128**
E	**On site**	**Railway Sidings**	**1910 - 1930**	**761098**
F	4m E	Refuse Heap	1967	731548
C	7m N	Unspecified Pit	1973 - 1992	753535
F	20m E	Unspecified Tank	1973 - 1992	768627
A	34m S	Unspecified Tank	1973 - 1992	762749
F	43m E	Unspecified Tank	1973 - 1992	747403
G	61m SW	Refuse Heap	1930 - 1938	748771
H	68m S	Chemical Works	1951	682676
I	73m SE	Unspecified Heap	1930 - 1938	748322
A	84m S	Unspecified Tank	1951	673317
A	90m S	Unspecified Tank	1951	673319
G	90m SW	Unspecified Tanks	1967 - 1992	712574
I	91m SE	Unspecified Ground Workings	1973	734208
3	113m N	Unspecified Tank	1973 - 1992	743907
I	119m SE	Unspecified Ground Workings	1981 - 1992	777538

ID	Location	Land use	Dates present	Group ID
B	124m W	Unspecified Tank	1951	696103
5	126m E	Railway Sidings	1973	714213
B	127m W	Unspecified Tank	1930 - 1938	746395
B	130m W	Unspecified Tank	1951 - 1967	778377
B	135m W	Unspecified Tank	1930 - 1938	790938
B	143m W	Unspecified Tank	1930 - 1938	773777
B	143m NW	Unspecified Tank	1930 - 1938	756437
B	145m NW	Chimney	1967	684450
B	145m NW	Unspecified Tanks	1951	666068
B	147m W	Chimney	1967	684452
B	148m W	Unspecified Tank	1930 - 1938	715316
B	155m NW	Unspecified Tank	1967	673323
J	157m S	Unspecified Tanks	1967 - 1973	716149
K	159m N	Unspecified Pit	1910	688580
B	160m W	Unspecified Tank	1910	673322
B	168m W	Chimney	1967	684451
B	171m NW	Unspecified Tanks	1930 - 1938	712046
B	173m W	Unspecified Tank	1951	773330
B	174m W	Unspecified Tank	1930 - 1938	742890
B	175m NW	Unspecified Tanks	1951	738318
L	176m W	Unspecified Pit	1992	688582
M	178m S	Unspecified Tank	1967	673318
6	183m S	Railway Sidings	1973 - 1981	697482
7	188m SW	Railway Sidings	1931 - 1938	714212
8	199m SW	Cuttings	1930 - 1938	781303
I	226m SE	Unspecified Tank	1967 - 1973	767586
I	227m SE	Unspecified Tank	1981 - 1992	728267
Q	245m SW	Railway Sidings	1931 - 1938	714211

ID	Location	Land use	Dates present	Group ID
L	251m W	Railway Station	1967 - 1973	782144
M	253m S	Unspecified Tank	1951	673320
L	256m W	Railway Station	1951	718217
L	260m W	Railway Building	1930 - 1938	790708
9	263m W	Railway Sidings	1973 - 1992	697648
R	271m S	Unspecified Tank	1981 - 1992	744362
R	272m S	Unspecified Tank	1981 - 1992	730697
R	272m S	Unspecified Tank	1967	764137
L	273m W	Railway Building	1930 - 1938	698844
R	274m S	Unspecified Tanks	1973	666069
M	275m S	Unspecified Tank	1951	673321
L	277m W	Railway Building	1930 - 1938	756755
Q	279m W	Unspecified Commercial/Industrial	1951	757009
S	282m W	Unspecified Works	1981	698946
S	282m W	Unspecified Works	1992	784843
P	283m W	Railway Buildings	1973	681526
E	284m NW	Unspecified Tank	1930 - 1938	784135
T	291m SE	Unspecified Tanks	1967 - 1973	752240
S	304m W	Unspecified Works	1967 - 1973	772574
R	305m S	Unspecified Tank	1967 - 1973	713686
R	305m S	Unspecified Tank	1951	775226
Q	306m SW	Gas Holders	1973	659878
Q	306m SW	Unspecified Works	1967	678572
U	308m SE	Unspecified Tanks	1967 - 1992	789517
R	308m S	Unspecified Tank	1967	673314
P	308m W	Unspecified Tank	1967 - 1992	790926
Q	308m SW	Gas Works	1910	648798
Q	308m SW	Unspecified Commercial/Industrial	1931 - 1938	700836

ID	Location	Land use	Dates present	Group ID
10	312m W	Unspecified Pit	1967 - 1973	758988
R	326m S	Unspecified Tank	1967 - 1992	788469
H	334m S	Chimney	1967	684453
T	338m SE	Unspecified Tanks	1967 - 1973	713245
W	342m SW	Cuttings	1931 - 1938	763422
W	349m SW	Railway Building	1951	669450
W	351m SW	Cuttings	1910	694496
11	354m W	Railway Building	1967 - 1973	736024
W	360m SW	Cuttings	1951	707577
Q	374m SW	Unspecified Tank	1951 - 1973	742055
Q	377m SW	Unspecified Tank	1973	747178
Q	385m SW	Unspecified Tanks	1951 - 1967	751283
Q	387m SW	Gasometer	1910	654968
Q	387m SW	Unspecified Tank	1931 - 1938	760558
Q	393m SW	Unspecified Tank	1931 - 1938	733311
Y	394m NW	Unspecified Tanks	1981 - 1992	740619
Z	414m S	Unspecified Tank	1992	714437
12	414m NW	Unspecified Works	1981 - 1992	724453
Z	414m S	Unspecified Tank	1967 - 1973	695680
AC	454m N	Unspecified Pit	1992	688579
15	469m NW	Railway Building	1891	669475
AE	482m W	Unspecified Tank	1981 - 1992	768670
AB	482m SE	Unspecified Tank	1967 - 1973	771286
AD	492m SE	Unspecified Tanks	1967 - 1973	763973
AC	494m NW	Pipe	1846	655741

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	164

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Tanks**	**1994**	**86577**
A	**On site**	**Unspecified Tank**	**1970 - 1994**	**90128**
A	**On site**	**Tanks**	**1994**	**96405**
A	**On site**	**Unspecified Tank**	**1970 - 1994**	**96671**
A	**On site**	**Unspecified Tank**	**1979 - 1988**	**96963**
A	**On site**	**Unspecified Tank**	**1979 - 1988**	**97713**
A	**On site**	**Tanks**	**1970 - 1994**	**97930**
A	**On site**	**Unspecified Tank**	**1970 - 1994**	**100190**
A	**On site**	**Unspecified Tank**	**1970 - 1994**	**102176**
A	**On site**	**Unspecified Tank**	**1979 - 1988**	**102247**
A	**On site**	**Tanks**	**1970 - 1988**	**102406**
C	6m N	Unspecified Tank	1994	92574
C	7m N	Unspecified Tank	1979	104196
C	13m N	Unspecified Tank	1971 - 1994	96431
F	17m E	Unspecified Tank	1970 - 1988	101668
F	17m E	Unspecified Tank	1994	103594
C	18m N	Tanks	1994	93351
C	18m N	Tanks	1994	99215
C	19m N	Tanks	1979	101360
A	33m S	Tanks	1994	101062
A	34m S	Tanks	1970	96018

ID	Location	Land use	Dates present	Group ID
A	35m S	Tanks	1979 - 1988	89771
F	36m E	Unspecified Tank	1979 - 1994	91036
F	37m E	Unspecified Tank	1970	90790
A	37m S	Unspecified Tank	1970 - 1994	88636
A	46m SE	Unspecified Tank	1994	102515
A	47m SE	Unspecified Tank	1970	103278
A	47m SE	Unspecified Tank	1979 - 1988	102134
A	69m S	Tanks	1994	88909
A	69m S	Tanks	1994	100310
A	69m S	Tanks	1960 - 1988	92526
A	70m S	Tanks	1970 - 1988	90796
A	72m S	Tanks	1970	86572
G	76m S	Unspecified Tank	1979 - 1994	96107
G	81m S	Unspecified Tank	1983 - 1988	93680
G	93m SW	Tanks	1994	100308
G	94m SW	Tanks	1965 - 1988	103153
G	94m SW	Tanks	1960	99428
G	94m SW	Tanks	1970	102788
4	123m NW	Unspecified Tank	1912	80168
A	123m S	Tanks	1960 - 1965	88863
A	128m S	Unspecified Tank	1994	101933
A	128m S	Unspecified Tank	1970	98917
A	129m S	Unspecified Tank	1988	94390
A	129m S	Unspecified Tank	1983	95988
A	129m S	Unspecified Tank	1983	96108
A	129m S	Unspecified Tank	1979	98515
B	129m W	Tanks	1932	89916
B	130m W	Tanks	1960 - 1965	102542

ID	Location	Land use	Dates present	Group ID
B	132m W	Unspecified Tank	1960 - 1986	95451
B	136m W	Tanks	1932	86575
B	137m W	Tanks	1932	86576
B	138m W	Tanks	1932	92785
B	138m W	Tanks	1932	86570
B	139m W	Unspecified Tank	1932	80164
B	141m W	Unspecified Tank	1960 - 1965	88736
A	145m S	Unspecified Tank	1979 - 1988	91597
B	146m W	Unspecified Tank	1960 - 1965	88718
B	148m W	Tanks	1932	86578
B	150m W	Tanks	1932	86574
J	155m S	Tanks	1979 - 1980	91088
B	156m NW	Unspecified Tank	1960 - 1965	89472
B	156m NW	Unspecified Tank	1986	89368
J	161m S	Tanks	1960 - 1965	92304
I	165m SE	Unspecified Tank	1960 - 1965	103004
B	171m W	Tanks	1960 - 1965	101652
B	172m W	Tanks	1986	93140
B	172m NW	Tanks	1932	86588
B	177m W	Unspecified Tank	1932	80166
B	177m W	Tanks	1932	86573
A	183m S	Unspecified Tank	1960 - 1988	91577
B	186m NW	Tanks	1932	86589
I	200m SE	Tanks	1965	86571
I	201m SE	Unspecified Tank	1960	80291
I	205m SE	Unspecified Tank	1960	80290
M	209m S	Unspecified Tank	1960 - 1965	102661
K	226m N	Unspecified Tank	1979 - 1994	95705

ID	Location	Land use	Dates present	Group ID
N	235m SE	Tanks	1979 - 1980	100955
K	237m N	Unspecified Tank	1979 - 1994	91144
O	241m NW	Unspecified Tank	1912	80527
P	241m W	Unspecified Tank	1994	80167
O	244m NW	Unspecified Tank	1912	80528
O	250m NW	Unspecified Tank	1912	80529
N	256m S	Unspecified Tank	1960 - 1965	100206
M	264m S	Unspecified Tank	1970	80169
R	275m S	Unspecified Tank	1960 - 1979	94434
R	276m S	Unspecified Tank	1994	89580
R	277m S	Unspecified Tank	1970 - 1988	98470
M	278m S	Unspecified Tank	1979	91196
M	278m S	Tanks	1965	103455
M	279m S	Unspecified Tank	1960 - 1970	103861
M	279m S	Tanks	1979	100714
M	280m S	Tanks	1960 - 1970	103356
E	283m NW	Unspecified Tank	1912	80526
M	284m S	Unspecified Tank	1979	80161
T	295m SE	Tanks	1960 - 1965	89560
P	299m W	Tanks	1971 - 1994	98553
P	300m W	Tanks	1979	101461
P	300m W	Tanks	1994	92181
P	300m W	Tanks	1971	97363
U	303m SE	Tanks	1960 - 1980	88781
R	308m S	Tanks	1979 - 1988	91743
R	310m S	Tanks	1965	94446
R	310m S	Tanks	1960	99935
R	310m S	Tanks	1960 - 1970	95408

ID	Location	Land use	Dates present	Group ID
Q	311m SW	Gas Works	1912	88564
R	312m S	Unspecified Tank	1960 - 1965	100721
P	314m W	Tanks	1979 - 1994	94947
T	316m SE	Tanks	1980 - 1994	98695
V	324m S	Tanks	1970 - 1979	95715
T	327m SE	Unspecified Tank	1979	80292
T	328m SE	Tanks	1994	92131
R	329m S	Unspecified Tank	1979 - 1980	95275
H	339m S	Unspecified Tank	1970 - 1979	96836
T	344m SE	Unspecified Tank	1960	80293
T	344m SE	Tanks	1960 - 1965	93633
V	348m S	Tanks	1970	86540
S	349m W	Unspecified Tank	1982 - 1994	95462
V	360m S	Unspecified Tank	1960 - 1979	100528
V	362m S	Tanks	1970 - 1979	99768
X	363m NW	Tanks	1912	86592
X	366m NW	Tanks	1912	86590
X	368m NW	Tanks	1912	86591
Q	368m SW	Unspecified Tank	1939 - 1965	101464
Q	369m SW	Gasholder	1970	85832
Q	369m SW	Unspecified Tank	1960	90972
S	370m W	Unspecified Tank	1982 - 1994	88896
X	371m NW	Unspecified Tank	1912	80522
X	373m NW	Tanks	1912	86594
X	374m NW	Unspecified Tank	1912	80525
X	377m NW	Tanks	1912	86593
X	379m NW	Unspecified Tank	1912	80524
Q	380m SW	Unspecified Tank	1965	80163

ID	Location	Land use	Dates present	Group ID
Q	380m SW	Gasholder	1970	85831
Q	380m SW	Tanks	1960	103441
Q	388m SW	Gasometer	1912	77993
Q	388m SW	Tanks	1932 - 1939	97648
X	391m NW	Unspecified Tank	1912	80523
V	394m S	Tanks	1970 - 1979	91808
V	397m S	Tanks	1970 - 1979	99192
Y	398m NW	Tanks	1982 - 1994	100787
V	405m S	Tanks	1979	91825
V	405m S	Tanks	1970	91741
V	407m S	Tanks	1979	96724
V	408m S	Tanks	1979	98790
V	411m S	Tanks	1979	95165
V	415m S	Tanks	1979	103569
V	421m S	Tanks	1979	98801
V	425m S	Tanks	1979	97546
AB	449m SE	Unspecified Tank	1960 - 1980	99937
AB	453m SE	Tanks	1994	86569
AD	472m SE	Tanks	1960 - 1965	93872
AD	474m SE	Unspecified Tank	1960 - 1965	102763
AC	477m N	Unspecified Tank	1960	80521
AB	477m SE	Unspecified Tank	1979 - 1980	98472
AB	478m SE	Tanks	1994	86568
AB	484m SE	Tanks	1994	88592
AE	486m W	Tanks	1982 - 1994	90168
AB	488m SE	Tanks	1977	88586
AB	488m SE	Tanks	1994	93995
AB	489m SE	Tanks	1980	89956

ID	Location	Land use	Dates present	Group ID
AB	492m SE	Tanks	1977	95514
AD	493m SE	Tanks	1960 - 1965	90731
AE	494m W	Tanks	1994	86596

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**11**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
L	215m W	Electricity Substations	1970	46188
L	226m W	Electricity Substations	1970	46187
Q	309m SW	Gas High Pressure Farm	1979	46386
Q	311m SW	Gas Works	1912	46609
Q	369m SW	Gasholder	1970	46320
Q	380m SW	Gasholder	1970	46319
Q	388m SW	Gasometer	1912	46045
13	415m W	Electricity Substation	1969 - 1993	51217
AA	430m SW	Gas Works House	1979 - 1983	59073
AA	448m SW	Electricity Substation	1979 - 1994	53186
AA	448m SW	Electricity Substations	1970	46189

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	1

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
14	418m SW	Garage	1984 - 1993	18503

This data is sourced from Ordnance Survey / Groundsure.

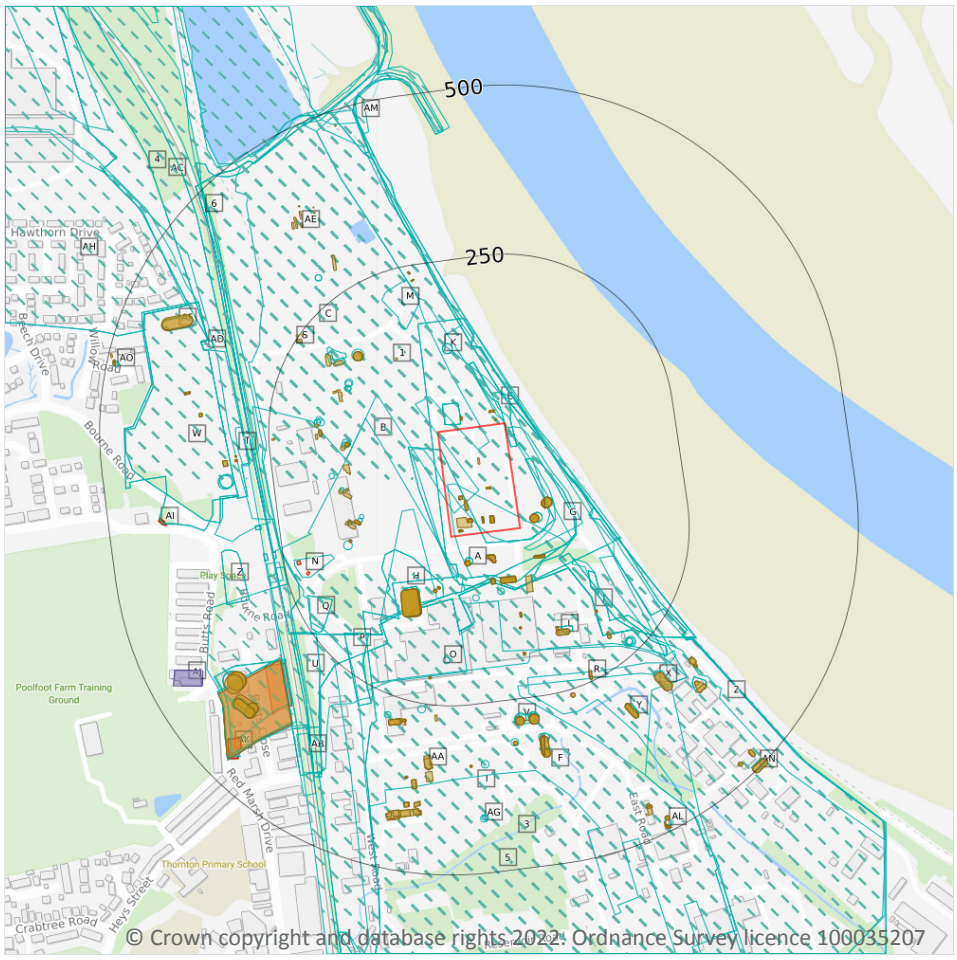
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	183

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 26**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Refuse Heap**	**1938**	**784740**
A	**On site**	**Unspecified Heap**	**1910**	**649453**
A	**On site**	**Refuse Heap**	**1930**	**784740**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Works**	**1967**	**716375**
A	**On site**	**Unspecified Works**	**1973**	**729518**
A	**On site**	**Refuse Heap**	**1951**	**699689**
B	**On site**	**Ammonia Soda Works**	**1938**	**757831**
B	**On site**	**Railway Sidings**	**1938**	**738290**
B	**On site**	**Ammonia Soda Works**	**1930**	**757831**
B	**On site**	**Railway Sidings**	**1930**	**775128**
C	**On site**	**Railway Sidings**	**1910**	**761098**
D	**On site**	**Ammonia Soda Works**	**1910**	**705524**
D	**On site**	**Railway Sidings**	**1967**	**698470**
D	**On site**	**Ammonia Soda Works**	**1951**	**694922**
D	**On site**	**Railway Sidings**	**1951**	**698470**
E	**On site**	**Unspecified Ground Workings**	**1992**	**785624**
E	**On site**	**Unspecified Ground Workings**	**1981**	**785624**
E	**On site**	**Unspecified Ground Workings**	**1973**	**711042**
F	**On site**	**Unspecified Works**	**1992**	**746126**
F	**On site**	**Unspecified Works**	**1981**	**729518**
G	4m E	Refuse Heap	1967	731548
E	7m N	Unspecified Pit	1992	753535
E	7m N	Unspecified Pit	1981	753535
E	7m N	Unspecified Pit	1973	753535
G	20m E	Unspecified Tank	1992	768627
G	20m E	Unspecified Tank	1981	768627
G	20m E	Unspecified Tank	1973	768627
A	34m S	Unspecified Tank	1992	762749
A	34m S	Unspecified Tank	1981	762749
A	34m S	Unspecified Tank	1973	762749
G	43m E	Unspecified Tank	1992	747403

ID	Location	Land Use	Date	Group ID
G	43m E	Unspecified Tank	1981	747403
G	43m E	Unspecified Tank	1973	747403
H	61m SW	Refuse Heap	1938	748771
H	61m SW	Refuse Heap	1930	748771
I	68m S	Chemical Works	1951	682676
J	73m SE	Unspecified Heap	1938	748322
J	73m SE	Unspecified Heap	1930	748322
A	84m S	Unspecified Tank	1951	673317
A	90m S	Unspecified Tank	1951	673319
H	90m SW	Unspecified Tanks	1992	712574
H	90m SW	Unspecified Tanks	1981	712574
H	90m SW	Unspecified Tanks	1967	712574
H	90m SW	Unspecified Tanks	1973	712574
J	91m SE	Unspecified Ground Workings	1973	734208
K	113m N	Unspecified Tank	1992	743907
K	113m N	Unspecified Tank	1981	743907
K	113m N	Unspecified Tank	1973	743907
J	119m SE	Unspecified Ground Workings	1992	777538
J	119m SE	Unspecified Ground Workings	1981	777538
D	124m W	Unspecified Tank	1951	696103
2	126m E	Railway Sidings	1973	714213
D	127m W	Unspecified Tank	1938	746395
D	127m W	Unspecified Tank	1930	746395
D	130m W	Unspecified Tank	1967	778377
D	132m W	Unspecified Tank	1951	778377
D	135m W	Unspecified Tank	1938	790938
D	135m W	Unspecified Tank	1930	790938
D	143m W	Unspecified Tank	1938	773777

ID	Location	Land Use	Date	Group ID
D	143m W	Unspecified Tank	1930	773777
D	143m NW	Unspecified Tank	1938	756437
D	143m NW	Unspecified Tank	1930	756437
D	145m NW	Chimney	1967	684450
D	145m NW	Unspecified Tanks	1951	666068
D	147m W	Chimney	1967	684452
D	148m W	Unspecified Tank	1938	715316
D	148m W	Unspecified Tank	1930	715316
D	155m NW	Unspecified Tank	1967	673323
L	157m S	Unspecified Tanks	1967	716149
L	157m S	Unspecified Tanks	1973	716149
M	159m N	Unspecified Pit	1910	688580
D	160m W	Unspecified Tank	1910	673322
D	168m W	Chimney	1967	684451
D	171m NW	Unspecified Tanks	1938	712046
D	171m NW	Unspecified Tanks	1930	712046
D	173m W	Unspecified Tank	1951	773330
D	174m W	Unspecified Tank	1938	742890
D	174m W	Unspecified Tank	1930	742890
D	175m NW	Unspecified Tanks	1951	738318
N	176m W	Unspecified Pit	1992	688582
O	178m S	Unspecified Tank	1967	673318
3	183m S	Railway Sidings	1973	697482
P	188m SW	Railway Sidings	1938	714212
P	188m SW	Railway Sidings	1931	714212
Q	199m SW	Cuttings	1938	781303
Q	199m SW	Cuttings	1930	781303
J	226m SE	Unspecified Tank	1967	767586

ID	Location	Land Use	Date	Group ID
J	227m SE	Unspecified Tank	1981	728267
J	227m SE	Unspecified Tank	1992	728267
J	229m SE	Unspecified Tank	1973	767586
U	245m SW	Railway Sidings	1938	714211
U	245m SW	Railway Sidings	1931	714211
N	251m W	Railway Station	1967	782144
N	251m W	Railway Station	1973	782144
O	253m S	Unspecified Tank	1951	673320
N	256m W	Railway Station	1951	718217
N	260m W	Railway Building	1938	790708
N	260m W	Railway Building	1930	790708
4	263m W	Railway Sidings	1973	697648
V	271m S	Unspecified Tank	1992	744362
V	271m S	Unspecified Tank	1981	744362
V	272m S	Unspecified Tank	1992	730697
V	272m S	Unspecified Tank	1981	730697
V	272m S	Unspecified Tank	1967	764137
N	273m W	Railway Building	1938	698844
N	273m W	Railway Building	1930	698844
V	274m S	Unspecified Tanks	1973	666069
O	275m S	Unspecified Tank	1951	673321
N	277m W	Railway Building	1938	756755
N	277m W	Railway Building	1930	756755
U	279m W	Unspecified Commercial/Industrial	1951	757009
W	282m W	Unspecified Works	1992	784843
W	282m W	Unspecified Works	1981	698946
T	283m W	Railway Buildings	1973	681526
C	284m NW	Unspecified Tank	1938	784135

ID	Location	Land Use	Date	Group ID
C	284m NW	Unspecified Tank	1930	784135
X	291m SE	Unspecified Tanks	1967	752240
X	291m SE	Unspecified Tanks	1973	752240
W	304m W	Unspecified Works	1967	772574
W	304m W	Unspecified Works	1973	772574
V	305m S	Unspecified Tank	1967	713686
V	305m S	Unspecified Tank	1973	713686
V	305m S	Unspecified Tank	1951	775226
U	306m SW	Gas Holders	1973	659878
U	306m SW	Unspecified Works	1967	678572
Y	308m SE	Unspecified Tanks	1992	789517
Y	308m SE	Unspecified Tanks	1981	789517
Y	308m SE	Unspecified Tanks	1967	789517
Y	308m SE	Unspecified Tanks	1973	789517
V	308m S	Unspecified Tank	1967	673314
T	308m W	Unspecified Tank	1992	790926
T	308m W	Unspecified Tank	1981	790926
U	308m SW	Unspecified Commercial/Industrial	1938	700836
U	308m SW	Unspecified Commercial/Industrial	1931	700836
U	308m SW	Gas Works	1910	648798
T	310m W	Unspecified Tank	1967	790926
T	310m W	Unspecified Tank	1973	790926
Z	312m W	Unspecified Pit	1967	758988
Z	312m W	Unspecified Pit	1973	758988
V	326m S	Unspecified Tank	1992	788469
V	326m S	Unspecified Tank	1981	788469
V	326m S	Unspecified Tank	1967	788469
V	326m S	Unspecified Tank	1973	788469

ID	Location	Land Use	Date	Group ID
I	334m S	Chimney	1967	684453
X	338m SE	Unspecified Tanks	1967	713245
X	338m SE	Unspecified Tanks	1973	713245
AB	342m SW	Cuttings	1938	763422
AB	342m SW	Cuttings	1931	763422
AC	346m NW	Railway Sidings	1992	697648
AC	346m NW	Railway Sidings	1981	697648
AB	349m SW	Railway Building	1951	669450
AB	351m SW	Cuttings	1910	694496
AD	354m W	Railway Building	1967	736024
AD	354m W	Railway Building	1973	736024
5	356m S	Railway Sidings	1981	697482
AB	360m SW	Cuttings	1951	707577
U	374m SW	Unspecified Tank	1967	742055
U	374m SW	Unspecified Tank	1973	742055
U	374m SW	Unspecified Tank	1951	742055
U	377m SW	Unspecified Tank	1973	747178
U	385m SW	Unspecified Tanks	1967	751283
U	385m SW	Unspecified Tanks	1951	751283
U	387m SW	Gasometer	1910	654968
U	387m SW	Unspecified Tank	1938	760558
U	387m SW	Unspecified Tank	1931	760558
U	393m SW	Unspecified Tank	1938	733311
U	393m SW	Unspecified Tank	1931	733311
AF	394m NW	Unspecified Tanks	1992	740619
AF	394m NW	Unspecified Tanks	1981	740619
AG	414m S	Unspecified Tank	1992	714437
AH	414m NW	Unspecified Works	1992	724453

ID	Location	Land Use	Date	Group ID
AH	414m NW	Unspecified Works	1981	724453
AG	414m S	Unspecified Tank	1967	695680
AG	415m S	Unspecified Tank	1973	695680
AM	454m N	Unspecified Pit	1992	688579
6	469m NW	Railway Building	1891	669475
AO	482m W	Unspecified Tank	1981	768670
AL	482m SE	Unspecified Tank	1973	771286
AL	482m SE	Unspecified Tank	1967	771286
AO	483m W	Unspecified Tank	1992	768670
AN	492m SE	Unspecified Tanks	1967	763973
AN	492m SE	Unspecified Tanks	1973	763973
AM	494m NW	Pipe	1846	655741

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**304**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 26**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Tank**	**1994**	**100190**
A	**On site**	**Tanks**	**1994**	**96405**
A	**On site**	**Unspecified Tank**	**1994**	**96671**
A	**On site**	**Unspecified Tank**	**1994**	**90128**
A	**On site**	**Unspecified Tank**	**1994**	**102176**
A	**On site**	**Tanks**	**1994**	**97930**
A	**On site**	**Unspecified Tank**	**1970**	**96671**
A	**On site**	**Tanks**	**1970**	**102406**

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Tank	1970	102176
A	On site	Tanks	1970	97930
A	On site	Unspecified Tank	1970	100190
A	On site	Unspecified Tank	1970	90128
A	On site	Unspecified Tank	1979	97713
A	On site	Tanks	1979	102406
A	On site	Unspecified Tank	1979	96671
A	On site	Unspecified Tank	1979	102247
A	On site	Tanks	1979	97930
A	On site	Unspecified Tank	1979	96963
A	On site	Unspecified Tank	1983	96963
A	On site	Unspecified Tank	1983	97713
A	On site	Tanks	1983	102406
A	On site	Unspecified Tank	1983	102247
A	On site	Tanks	1983	97930
A	On site	Unspecified Tank	1983	96671
A	On site	Unspecified Tank	1983	96963
A	On site	Unspecified Tank	1983	97713
A	On site	Tanks	1983	97930
A	On site	Unspecified Tank	1983	102247
A	On site	Tanks	1983	102406
A	On site	Unspecified Tank	1983	96671
A	On site	Unspecified Tank	1988	96671
A	On site	Tanks	1988	102406
A	On site	Unspecified Tank	1988	102247
A	On site	Tanks	1988	97930
A	On site	Unspecified Tank	1988	96963
A	On site	Unspecified Tank	1988	97713

ID	Location	Land Use	Date	Group ID
A	**On site**	**Tanks**	**1994**	**86577**
E	6m N	Unspecified Tank	1994	92574
E	7m N	Unspecified Tank	1979	104196
E	13m N	Unspecified Tank	1994	96431
E	13m N	Unspecified Tank	1971	96431
E	14m N	Unspecified Tank	1979	96431
G	17m E	Unspecified Tank	1994	103594
G	17m E	Unspecified Tank	1970	101668
G	17m E	Unspecified Tank	1979	101668
G	17m E	Unspecified Tank	1983	101668
G	17m E	Unspecified Tank	1983	101668
G	17m E	Unspecified Tank	1988	101668
E	18m N	Tanks	1994	93351
E	18m N	Tanks	1994	99215
E	19m N	Tanks	1979	101360
A	33m S	Tanks	1994	101062
A	34m S	Tanks	1970	96018
A	35m S	Tanks	1979	89771
A	35m S	Tanks	1983	89771
A	35m S	Tanks	1983	89771
A	35m S	Tanks	1988	89771
G	36m E	Unspecified Tank	1994	91036
G	36m E	Unspecified Tank	1979	91036
G	36m E	Unspecified Tank	1983	91036
G	36m E	Unspecified Tank	1983	91036
G	36m E	Unspecified Tank	1988	91036
G	37m E	Unspecified Tank	1970	90790
A	37m S	Unspecified Tank	1994	88636

ID	Location	Land Use	Date	Group ID
A	38m S	Unspecified Tank	1970	88636
A	39m S	Unspecified Tank	1979	88636
A	39m S	Unspecified Tank	1983	88636
A	39m S	Unspecified Tank	1983	88636
A	39m S	Unspecified Tank	1988	88636
G	40m E	Unspecified Tank	1994	91036
G	40m E	Unspecified Tank	1979	91036
G	40m E	Unspecified Tank	1980	91036
A	46m SE	Unspecified Tank	1994	102515
A	47m SE	Unspecified Tank	1970	103278
A	47m SE	Unspecified Tank	1979	102134
A	47m SE	Unspecified Tank	1983	102134
A	47m SE	Unspecified Tank	1983	102134
A	47m SE	Unspecified Tank	1988	102134
A	69m S	Tanks	1994	88909
A	69m S	Tanks	1994	100310
A	69m S	Tanks	1965	92526
A	69m S	Tanks	1960	92526
A	69m S	Tanks	1970	92526
A	70m S	Tanks	1970	90796
A	70m S	Tanks	1979	92526
A	70m S	Tanks	1983	92526
A	70m S	Tanks	1983	92526
A	70m S	Tanks	1988	92526
A	70m S	Tanks	1979	90796
A	70m S	Tanks	1983	90796
A	70m S	Tanks	1983	90796
A	70m S	Tanks	1988	90796

ID	Location	Land Use	Date	Group ID
A	72m S	Tanks	1970	86572
H	76m S	Unspecified Tank	1994	96107
H	76m S	Unspecified Tank	1979	96107
H	76m S	Unspecified Tank	1983	96107
H	76m S	Unspecified Tank	1983	96107
H	76m S	Unspecified Tank	1988	96107
H	81m S	Unspecified Tank	1983	93680
H	81m S	Unspecified Tank	1983	93680
H	81m S	Unspecified Tank	1988	93680
H	93m SW	Tanks	1994	100308
H	94m SW	Tanks	1979	103153
H	94m SW	Tanks	1983	103153
H	94m SW	Tanks	1983	103153
H	94m SW	Tanks	1988	103153
H	94m SW	Tanks	1960	99428
H	94m SW	Tanks	1970	102788
H	94m SW	Tanks	1965	103153
1	123m NW	Unspecified Tank	1912	80168
A	123m S	Tanks	1965	88863
A	124m S	Tanks	1960	88863
A	128m S	Unspecified Tank	1994	101933
A	128m S	Unspecified Tank	1970	98917
A	129m S	Unspecified Tank	1979	98515
A	129m S	Unspecified Tank	1983	96108
A	129m S	Unspecified Tank	1983	95988
A	129m S	Unspecified Tank	1988	94390
D	129m W	Tanks	1932	89916
D	130m W	Tanks	1960	102542

ID	Location	Land Use	Date	Group ID
D	130m W	Tanks	1965	102542
D	132m W	Unspecified Tank	1965	95451
D	132m W	Unspecified Tank	1960	95451
D	133m W	Unspecified Tank	1986	95451
D	136m W	Tanks	1932	86575
D	137m W	Tanks	1932	86576
D	138m W	Tanks	1932	92785
D	138m W	Tanks	1932	86570
D	139m W	Unspecified Tank	1932	80164
D	141m W	Unspecified Tank	1960	88736
D	142m W	Unspecified Tank	1965	88736
A	145m S	Unspecified Tank	1979	91597
A	145m S	Unspecified Tank	1983	91597
A	145m S	Unspecified Tank	1983	91597
A	145m S	Unspecified Tank	1988	91597
D	146m W	Unspecified Tank	1960	88718
D	146m W	Unspecified Tank	1965	88718
D	148m W	Tanks	1932	86578
D	150m W	Tanks	1932	86574
L	155m S	Tanks	1979	91088
L	155m S	Tanks	1980	91088
D	156m NW	Unspecified Tank	1960	89472
D	156m NW	Unspecified Tank	1965	89472
D	156m NW	Unspecified Tank	1986	89368
L	161m S	Tanks	1965	92304
L	161m S	Tanks	1960	92304
J	165m SE	Unspecified Tank	1965	103004
J	165m SE	Unspecified Tank	1960	103004

ID	Location	Land Use	Date	Group ID
D	171m W	Tanks	1965	101652
D	171m W	Tanks	1960	101652
D	172m W	Tanks	1986	93140
D	172m NW	Tanks	1932	86588
D	177m W	Unspecified Tank	1932	80166
D	177m W	Tanks	1932	86573
A	183m S	Unspecified Tank	1960	91577
A	183m S	Unspecified Tank	1970	91577
A	183m S	Unspecified Tank	1965	91577
A	183m S	Unspecified Tank	1979	91577
A	183m S	Unspecified Tank	1983	91577
A	183m S	Unspecified Tank	1983	91577
A	183m S	Unspecified Tank	1988	91577
D	186m NW	Tanks	1932	86589
J	200m SE	Tanks	1965	86571
J	201m SE	Unspecified Tank	1960	80291
J	205m SE	Unspecified Tank	1960	80290
O	209m S	Unspecified Tank	1965	102661
O	209m S	Unspecified Tank	1960	102661
M	226m N	Unspecified Tank	1979	95705
M	226m N	Unspecified Tank	1994	95705
R	235m SE	Tanks	1979	100955
R	235m SE	Tanks	1980	100955
M	237m N	Unspecified Tank	1979	91144
M	237m N	Unspecified Tank	1994	91144
S	241m NW	Unspecified Tank	1912	80527
T	241m W	Unspecified Tank	1994	80167
S	244m NW	Unspecified Tank	1912	80528

ID	Location	Land Use	Date	Group ID
S	250m NW	Unspecified Tank	1912	80529
R	256m S	Unspecified Tank	1965	100206
R	256m S	Unspecified Tank	1960	100206
O	264m S	Unspecified Tank	1970	80169
V	275m S	Unspecified Tank	1965	94434
V	275m S	Unspecified Tank	1979	94434
V	276m S	Unspecified Tank	1960	94434
V	276m S	Unspecified Tank	1970	94434
V	276m S	Unspecified Tank	1994	89580
V	277m S	Unspecified Tank	1970	98470
V	277m S	Unspecified Tank	1979	98470
V	277m S	Unspecified Tank	1983	98470
V	277m S	Unspecified Tank	1983	98470
V	277m S	Unspecified Tank	1988	98470
O	278m S	Unspecified Tank	1979	91196
O	278m S	Tanks	1965	103455
O	279m S	Unspecified Tank	1960	103861
O	279m S	Unspecified Tank	1970	103861
O	279m S	Tanks	1979	100714
O	280m S	Tanks	1960	103356
O	280m S	Tanks	1970	103356
C	283m NW	Unspecified Tank	1912	80526
O	284m S	Unspecified Tank	1979	80161
X	295m SE	Tanks	1960	89560
X	295m SE	Tanks	1965	89560
T	299m W	Tanks	1979	98553
T	300m W	Tanks	1979	101461
T	300m W	Tanks	1994	98553

ID	Location	Land Use	Date	Group ID
T	300m W	Tanks	1971	98553
T	300m W	Tanks	1994	92181
T	300m W	Tanks	1971	97363
Y	303m SE	Tanks	1979	88781
Y	303m SE	Tanks	1980	88781
Y	304m SE	Tanks	1965	88781
Y	304m SE	Tanks	1960	88781
V	308m S	Tanks	1979	91743
V	308m S	Tanks	1983	91743
V	308m S	Tanks	1983	91743
V	308m S	Tanks	1988	91743
V	310m S	Tanks	1965	94446
V	310m S	Tanks	1960	99935
V	310m S	Tanks	1960	95408
V	310m S	Tanks	1970	95408
U	311m SW	Gas Works	1912	88564
V	312m S	Unspecified Tank	1965	100721
V	312m S	Unspecified Tank	1960	100721
T	314m W	Tanks	1979	94947
T	314m W	Tanks	1994	94947
X	316m SE	Tanks	1994	98695
X	317m SE	Tanks	1980	98695
AA	324m S	Tanks	1979	95715
X	327m SE	Unspecified Tank	1979	80292
X	328m SE	Tanks	1994	92131
V	329m S	Unspecified Tank	1979	95275
V	329m S	Unspecified Tank	1980	95275
AA	329m S	Tanks	1970	95715

ID	Location	Land Use	Date	Group ID
I	339m S	Unspecified Tank	1979	96836
I	339m S	Unspecified Tank	1970	96836
X	344m SE	Unspecified Tank	1960	80293
X	344m SE	Tanks	1965	93633
AA	348m S	Tanks	1970	86540
W	349m W	Unspecified Tank	1994	95462
W	349m W	Unspecified Tank	1982	95462
X	354m SE	Tanks	1960	93633
AA	360m S	Unspecified Tank	1979	100528
AA	360m S	Unspecified Tank	1965	100528
AA	360m S	Unspecified Tank	1960	100528
AA	360m S	Unspecified Tank	1970	100528
AA	362m S	Tanks	1979	99768
AE	363m NW	Tanks	1912	86592
AA	363m S	Tanks	1970	99768
AE	366m NW	Tanks	1912	86590
AE	368m NW	Tanks	1912	86591
U	368m SW	Unspecified Tank	1965	101464
U	369m SW	Unspecified Tank	1960	90972
U	369m SW	Gasholder	1970	85832
W	370m W	Unspecified Tank	1994	88896
W	371m W	Unspecified Tank	1982	88896
AE	371m NW	Unspecified Tank	1912	80522
AE	373m NW	Tanks	1912	86594
AE	374m NW	Unspecified Tank	1912	80525
U	374m SW	Unspecified Tank	1939	101464
AE	377m NW	Tanks	1912	86593
AE	379m NW	Unspecified Tank	1912	80524

ID	Location	Land Use	Date	Group ID
U	380m SW	Unspecified Tank	1965	80163
U	380m SW	Tanks	1960	103441
U	380m SW	Gasholder	1970	85831
U	388m SW	Gasometer	1912	77993
U	388m SW	Tanks	1932	97648
U	388m SW	Tanks	1939	97648
AE	391m NW	Unspecified Tank	1912	80523
AA	394m S	Tanks	1979	91808
AA	394m S	Tanks	1970	91808
AA	397m S	Tanks	1979	99192
AF	398m NW	Tanks	1982	100787
AA	398m S	Tanks	1970	99192
AF	398m NW	Tanks	1994	100787
AA	405m S	Tanks	1979	91825
AA	405m S	Tanks	1970	91741
AA	407m S	Tanks	1979	96724
AA	408m S	Tanks	1979	98790
AA	411m S	Tanks	1979	95165
AA	415m S	Tanks	1979	103569
AA	421m S	Tanks	1979	98801
AA	425m S	Tanks	1979	97546
AL	449m SE	Unspecified Tank	1960	99937
AL	449m SE	Unspecified Tank	1965	99937
AL	453m SE	Tanks	1994	86569
AL	453m SE	Unspecified Tank	1980	99937
AN	472m SE	Tanks	1960	93872
AN	472m SE	Tanks	1965	93872
AN	474m SE	Unspecified Tank	1960	102763

ID	Location	Land Use	Date	Group ID
AN	475m SE	Unspecified Tank	1965	102763
AM	477m N	Unspecified Tank	1960	80521
AL	477m SE	Unspecified Tank	1979	98472
AL	477m SE	Unspecified Tank	1980	98472
AL	478m SE	Tanks	1994	86568
AL	484m SE	Tanks	1994	88592
AO	486m W	Tanks	1994	90168
AO	487m W	Tanks	1982	90168
AL	488m SE	Tanks	1977	88586
AL	488m SE	Tanks	1994	93995
AL	489m SE	Tanks	1980	89956
AL	489m SE	Tanks	1980	89956
AL	492m SE	Tanks	1977	95514
AN	493m SE	Tanks	1960	90731
AN	493m SE	Tanks	1965	90731
AO	494m W	Tanks	1994	86596

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**20**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 26**

ID	Location	Land Use	Date	Group ID
N	215m W	Electricity Substations	1970	46188
N	226m W	Electricity Substations	1970	46187
U	309m SW	Gas High Pressure Farm	1979	46386
U	311m SW	Gas Works	1912	46609

ID	Location	Land Use	Date	Group ID
U	369m SW	Gasholder	1970	46320
U	380m SW	Gasholder	1970	46319
U	388m SW	Gasometer	1912	46045
AI	415m W	Electricity Substation	1969	51217
AI	415m W	Electricity Substation	1993	51217
AI	415m W	Electricity Substation	1970	51217
AI	416m W	Electricity Substation	1984	51217
AK	430m SW	Gas Works House	1979	59073
AK	430m SW	Gas Works House	1983	59073
AK	430m SW	Gas Works House	1983	59073
AK	448m SW	Electricity Substation	1994	53186
AK	448m SW	Electricity Substations	1970	46189
AK	448m SW	Electricity Substation	1979	53186
AK	448m SW	Electricity Substation	1983	53186
AK	448m SW	Electricity Substation	1983	53186
AK	448m SW	Electricity Substation	1988	53186

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	2

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 26**

ID	Location	Land Use	Date	Group ID
AJ	418m SW	Garage	1993	18503
AJ	420m SW	Garage	1984	18503

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

Site Outline

Search buffers in metres (m)

Historical landfill (EA/NRW)

Historical waste sites

Licensed waste sites

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	1

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 47**

ID	Location	Details		
4	434m W	Site Address: Burn Naze, Bourne Road, Burn Naze, Thornton, Lancashire Licence Holder Address: -	Waste Licence: - Site Reference: K1/02/021 Waste Type: Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: Wyre Borough Council First Recorded 01/12/1950 Last Recorded: 31/12/1950

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	2

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 47**

ID	Location	Address	Further Details	Date
1	40m SE	Site Address: N/A	Type of Site: Refuse Pit Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1959

ID	Location	Address	Further Details	Date
A	449m S	Site Address: Hillhouse International Works, Fleetwood Road, North, Thornton Cleveleys, Lancashire, FY5 4QD	Type of Site: Thermal Treatment Plant Planning application reference: 15/00566/FUL Description: Scheme comprises construcition of a thermal treatment plant Data source: Historic Planning Application Data Type: Point	28/10/2015

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	**1**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 47**

ID	Location	Details		
3	417m SW	Site Name: Fylde Skip Hire Site Address: Butts Close, Redmarsh Industrial Est., Thornton Cleveleys, Lancashire, FY5 4HT Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FYL001 EPR reference: EA/EPR/BP3897CQ/S002 Operator: D Hutchinson & M Hutchinson Waste Management licence No: 54182 Annual Tonnage: 24500	Issue Date: 09/09/1994 Effective Date: - Modified: - Surrendered Date: Aug 31 2005 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m	**5**

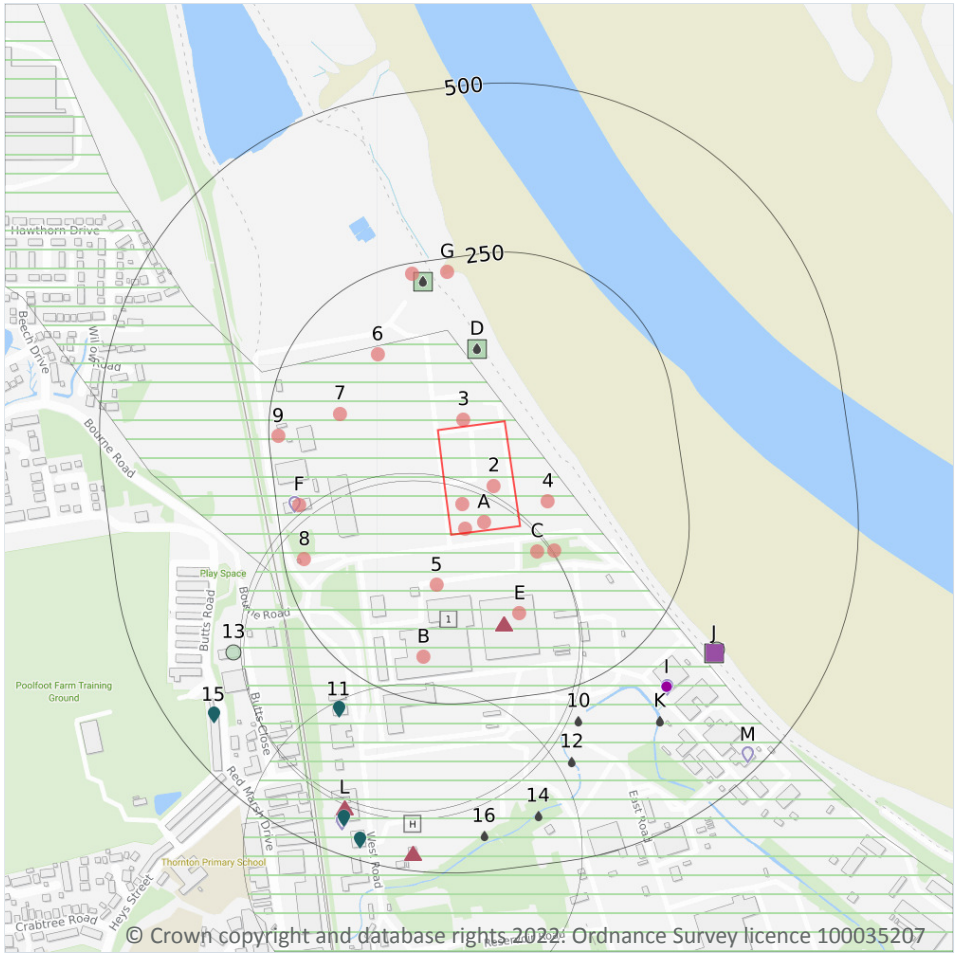
Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 47**

ID	Location	Site	Reference	Category	Sub-Category	Description
2	315m W	Hillhouse International, Fleetwood Road North, Thornton, FY5 4QD	WEX276985	Storing waste exemption	Not on a farm	Storage of sludge
A	474m S	HILLHOUSE BUSINESS PARK FLEETWOOD ROAD NORTH LANCASHIRE FY5 4QD	EPR/TH0778BR/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
A	474m S	Hillhouse International Site Fleetwood Road North THORNTON-CLEVELEYS Lancashire FY5 4QD	EPR/PF0135VT/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
A	475m S	Hillhouse International, Fleetwood Road North, Thornton, FY5 4QD	WEX137709	Storing waste exemption	Not on a farm	Storage of sludge
5	498m SW	-	WEX211527	Disposing of waste exemption	Not on a farm	Burning waste in the open

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



Site Outline

Search buffers in metres (m)

- Recent industrial land uses
- Control of Major Accident Hazards
- Hazardous substance storage/usage
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollutant release to surface waters
- List 1 Dangerous Substances
- List 2 Dangerous Substances
- Pollution Incidents (EA/NRW)
- Pollution inventory substances
- Pollution inventory waste transfers

4.1 Recent industrial land uses

Records within 250m	18

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Company	Address	Activity	Category
2	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
A	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
A	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**

ID	Location	Company	Address	Activity	Category
A	**On site**	**Tank**	**Lancashire, FY5**	**Tanks (Generic)**	**Industrial Features**
3	11m N	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
C	45m SE	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
4	46m E	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
C	62m SE	Gantry	Lancashire, FY5	Travelling Cranes and Gantries	Industrial Features
5	78m S	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
E	128m S	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
6	143m NW	Works	Lancashire, FY5	Unspecified Works Or Factories	Industrial Features
7	147m W	Hillhouse International Business Park	Lancashire, FY5	Business Parks and Industrial Estates	Industrial Features
B	185m S	Works	Lancashire, FY5	Unspecified Works Or Factories	Industrial Features
F	217m W	Addison Project Plc	Hillhouse International Works, Fleetwood Road North, Thornton Cleveleys, Lancashire, FY5 4QD	Industrial Engineers	Engineering Services
8	220m W	Electricity Sub Station	Lancashire, FY5	Electrical Features	Infrastructure and Facilities
G	230m N	Outfall	Lancashire, FY5	Waste Storage, Processing and Disposal	Infrastructure and Facilities
G	234m N	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features
9	236m W	Tank	Lancashire, FY5	Tanks (Generic)	Industrial Features

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	4

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Company	Address	Operational status	Tier
1	**On site**	**Victrex Manufacturing Limited**	**Victrex Manufacturing Limited, Thornton Cleveleys, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4QD**	**Current COMAH Site**	**COMAH Lower Tier Operator**

ID	Location	Company	Address	Operational status	Tier
B	**On site**	**AGC Chemicals Europe Limited**	**AGC Chemicals Europe Limited, Hillhouse, PO Box 4, York House, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4QD**	**Current COMAH Site**	**COMAH Lower Tier Operator**
B	**On site**	**Victrex Manufacturing Limited**	**Victrex Manufacturing Limited, Thornton Cleveleys, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4QD**	**Current COMAH Site**	**COMAH Lower Tier Operator**
H	224m S	Victrex Manufacturing Limited	Victrex Manufacturing Limited, Thornton Cleveleys, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4QD	Current COMAH Site	COMAH Lower Tier Operator

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	**4**

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Details	
E	140m S	Application reference number: 11/00338/HAZ Application status: Approved Application date: 09/05/2011 Address: Victrex Manufacturing Limited, Hillhouse Technology Centre, Thornton Cleveleys, Blackpool, Wyre Borough Council, England, FY5 4QD	Details: Application for Hazardous Substances Consent associated with the manufacture of Polyaryletherketone polymers Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

ID	Location	Details	
E	140m S	Application reference number: 13/00555/HAZ Application status: Historical Consent Application date: 26/07/2013 Address: Victrex Manufacturing Ltd, Hillhouse International, Fleetwood Road North, Thornton Cleveleys, Lancashire, FY5 4QD	Details: Hazardous Substances Consent application for removal of condition imposed on previous application 11/00338/HAZ associated with the manufacture of polyaryletherketone polymers Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
L	433m S	Application reference number: 06/00689/HAZ Application status: Approved Application date: 16/06/2006 Address: AGC Chemicals Europe Ltd, Hillhouse International, P.O. Box 4, Thornton, Cleveleys, Wyre Borough Council, England, FY5 4PF	Details: Application for Hazardous Substances Consent for storage and use of raw materials for the production of ETFE polymer Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
H	474m S	Application reference number: No Details Application status: Approved Application date: No Details Address: Zeneca Resins, Hillhouse Site, Thornton Cleveleys, Blackpool, Wyre Borough Council, England, FY5 4QD	Details: No Details Enforcement: No Details Date of enforcement: No Details Comment: No Details

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	**0**

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	**20**

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Details	
F	223m W	Operator: BOC LIMITED Installation Name: FLOURINE TECHNOLOGY SUPPORT FACILITY Process: INORGANIC CHEMICALS; USING HALOGENS ETC IF RELEASE TO AIR/WATER (UNLESS OTHERWISE PRESCRIBED) (UNLESS CHLORINATION OF WATER) Permit Number: SP3938UK Original Permit Number: SP3938UK	EPR Reference: - Issue Date: 20/08/2007 Effective Date: 20/08/2007 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
F	223m W	Operator: BOC LIMITED Installation Name: FLOURINE TECHNOLOGY SUPPORT FACILITY Process: ASSOCIATED PROCESS Permit Number: SP3938UK Original Permit Number: SP3938UK	EPR Reference: - Issue Date: 20/08/2007 Effective Date: 20/08/2007 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
F	223m W	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ASSOCIATED PROCESS Permit Number: NP3838NA Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 06/09/2013 Effective Date: 06/09/2013 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
F	223m W	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ASSOCIATED PROCESS Permit Number: HP3035GG Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 15/12/2008 Effective Date: 15/12/2008 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
F	223m W	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: HP3035GG Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 15/12/2008 Effective Date: 15/12/2008 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
F	223m W	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ASSOCIATED PROCESS Permit Number: UP3434ZY Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 17/01/2013 Effective Date: 17/01/2013 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
F	223m W	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: UP3434ZY Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 17/01/2013 Effective Date: 17/01/2013 Last date noted as effective: 01/01/2022 Status: SUPERCEDED

ID	Location	Details	
F	223m W	Operator: BOC LIMITED Installation Name: FLOURINE TECHNOLOGY SUPPORT FACILITY Process: INORGANIC CHEMICALS; USING HYDROGEN FLUORIDE/CHLORIDE ETC IF RELEASE TO AIR (OTHER THAN CHEMICALS MANUFACTURE ETC) Permit Number: SP3938UK Original Permit Number: SP3938UK	EPR Reference: - Issue Date: 20/08/2007 Effective Date: 20/08/2007 Last date noted as effective: 01/07/2010 Status: EFFECTIVE
F	223m W	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: NP3838NA Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 06/09/2013 Effective Date: 06/09/2013 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
I	321m SE	Operator: VICTREX MANUFACTURING LIMITED Installation Name: HILLHOUSE INTERNATIONAL-VICTREX MANUFACTURING LIMITED EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: QP3338DB Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 21/11/2016 Effective Date: 21/11/2016 Last date noted as effective: 01/01/2022 Status: EFFECTIVE
I	321m SE	Operator: VICTREX MANUFACTURING LIMITED Installation Name: HILLHOUSE INTERNATIONAL-VICTREX MANUFACTURING LIMITED EPR/BU5640IA Process: ASSOCIATED PROCESS Permit Number: QP3338DB Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 21/11/2016 Effective Date: 21/11/2016 Last date noted as effective: 01/01/2022 Status: EFFECTIVE
L	455m S	Operator: BOC LIMITED Installation Name: FLOURINE TECHNOLOGY SUPPORT FACILITY Process: INORGANIC CHEMICALS; USING HYDROGEN FLUORIDE/CHLORIDE ETC IF RELEASE TO AIR (OTHER THAN CHEMICALS MANUFACTURE ETC) Permit Number: YP3936TT Original Permit Number: SP3938UK	EPR Reference: - Issue Date: - Effective Date: 03/05/2011 Last date noted as effective: 01/01/2022 Status: SURRENDER EFFECTIVE
L	455m S	Operator: BOC LIMITED Installation Name: FLOURINE TECHNOLOGY SUPPORT FACILITY Process: ASSOCIATED PROCESS Permit Number: YP3936TT Original Permit Number: SP3938UK	EPR Reference: - Issue Date: - Effective Date: 03/05/2011 Last date noted as effective: 01/01/2022 Status: SURRENDER EFFECTIVE

ID	Location	Details	
L	455m S	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: NP3232RJ Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 09/02/2016 Effective Date: 09/02/2016 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
L	455m S	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ASSOCIATED PROCESS Permit Number: LP3034WB Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 07/11/2014 Effective Date: 07/11/2014 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
L	455m S	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ASSOCIATED PROCESS Permit Number: NP3232RJ Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 09/02/2016 Effective Date: 09/02/2016 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
L	455m S	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: LP3034WB Original Permit Number: BU5640IA	EPR Reference: - Issue Date: 07/11/2014 Effective Date: 07/11/2014 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
M	477m SE	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS Permit Number: BU5640IA Original Permit Number: BU5640IA	EPR Reference: EA/EPR/BU5640IA/V002 Issue Date: 03/11/2006 Effective Date: 03/11/2006 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
M	477m SE	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: BU5640IA Original Permit Number: BU5640IA	EPR Reference: EA/EPR/BU5640IA/V002 Issue Date: 03/11/2006 Effective Date: 03/11/2006 Last date noted as effective: 01/01/2022 Status: SUPERCEDED

ID	Location	Details	
M	477m SE	Operator: VICTREX MANUFACTURING LIMITED Installation Name: VICTREX POLYMER PRODUCTION HILLHOUSE EPR/BU5640IA Process: RECOVERY OF WASTE; BY DISTILLATION OF OIL/ORGANIC SOLVENT Permit Number: BU5640IA Original Permit Number: BU5640IA	EPR Reference: EA/EPR/BU5640IA/V002 Issue Date: 03/11/2006 Effective Date: 03/11/2006 Last date noted as effective: 01/01/2022 Status: SUPERCEDED

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m **4**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Address	Details	
11	307m SW	EVC Compounds Ltd, Hillhouse International, Thornton-Cleveleys, Lancashire, FY5 4QD	Process: Chemical & Acid Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
15	441m SW	NFC Autocare, Butts Road, Thornton, Cleveleys, FY5 4BL	Process: Waste Oil Burner 0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
L	448m S	Ashai Glass Fluropolymers UK Ltd, Hillhouse International, Po Box 4, Thornton-Cleveleys, Lancashire FY5 4QD	Process: Halogen Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
L	471m S	Zeneca Resins Ltd, Hillhouse International, Thornton Cleveleys, Lancashire, FY5 4ZR	Process: Chemical & Acid Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	44

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Address	Details	
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 1 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1980 Revocation Date: 31/12/1981
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 10 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/06/1996 Revocation Date: 02/09/1996
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 2 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1982 Revocation Date: 08/09/1983
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 3 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/09/1983 Revocation Date: 17/01/1988
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 4 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 18/01/1988 Revocation Date: 08/02/1993

ID	Location	Address	Details	
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 5 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1993 Revocation Date: 07/06/1993
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 6 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/06/1993 Revocation Date: 08/02/1994
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 7 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1994 Revocation Date: 26/06/1995
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 8 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 27/06/1995 Revocation Date: 06/03/1996
D	111m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 9 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/03/1996 Revocation Date: 06/06/1996
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 1 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1980 Revocation Date: 31/12/1981
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 10 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/06/1996 Revocation Date: 02/09/1996

ID	Location	Address	Details	
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 11 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 03/09/1996 Revocation Date: 20/01/1999
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 2 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1982 Revocation Date: 08/09/1983
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 3 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/09/1983 Revocation Date: 17/01/1988
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 4 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 18/01/1988 Revocation Date: 08/02/1993
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 5 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1993 Revocation Date: 07/06/1993
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 6 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/06/1993 Revocation Date: 08/02/1994
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 7 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1994 Revocation Date: 26/06/1995

ID	Location	Address	Details	
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 8 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 27/06/1995 Revocation Date: 06/03/1996
G	221m N	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 9 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/03/1996 Revocation Date: 06/06/1996
10	300m S	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 1 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1980 Revocation Date: 31/12/1981
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 10 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/06/1996 Revocation Date: 02/09/1996
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 11 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 03/09/1996 Revocation Date: 20/01/1999
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 2 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1982 Revocation Date: 08/09/1983

ID	Location	Address	Details	
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 3 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/09/1983 Revocation Date: 17/01/1988
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 4 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 18/01/1988 Revocation Date: 08/02/1993
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 5 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1993 Revocation Date: 07/06/1993
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 6 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/06/1993 Revocation Date: 08/02/1994
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 7 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1994 Revocation Date: 26/06/1995
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 8 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 27/06/1995 Revocation Date: 06/03/1996
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 9 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 07/03/1996 Revocation Date: 06/06/1996

ID	Location	Address	Details	
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 017290034 Permit Version: 1 Receiving Water: RIVER WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 18/08/1979 Revocation Date: 07/06/1993
J	342m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 017290034 Permit Version: 2 Receiving Water: RIVER WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 08/06/1993 Revocation Date: 03/08/1993
J	342m SE	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE & TRADE COMBINED - UNSPECIFIED Permit Number: 017290033 Permit Version: 12 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 21/01/1999 Effective Date: 21/01/1999 Revocation Date: 17/03/2004
J	342m SE	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 017290033 Permit Version: 12 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 21/01/1999 Effective Date: 21/01/1999 Revocation Date: 17/03/2004
J	342m SE	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE & TRADE COMBINED - UNSPECIFIED Permit Number: 017290033 Permit Version: 13 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 18/03/2004 Effective Date: 18/03/2004 Revocation Date: 30/07/2008
J	342m SE	HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE (CONTAM SURFACE WATER, NOT WASTE SIT Permit Number: 017290033 Permit Version: 14 Receiving Water: WYRE ESTUARY	Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/07/2008 Effective Date: 31/07/2008 Revocation Date: -
K	354m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 7 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 09/02/1994 Revocation Date: 26/06/1995

ID	Location	Address	Details	
K	354m SE	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 017290033 Permit Version: 8 Receiving Water: WYRE ESTUARY	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 27/06/1995 Revocation Date: 06/03/1996
12	356m S	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
14	428m S	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991
16	448m S	MAIN OUTFALL, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 017290099 Permit Version: 1 Receiving Water: ROYLES BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1983 Revocation Date: 22/03/1991

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m **4**

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Address	Details	
J	342m SE	THORNTON FACILITIES MANAGEMENT LTD, ICI HILLHOUSE, THORNTON, BLACKPOOL, LANCASHIRE	Permit Number: 017290033 Permit Version: 12 Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Sewage disposal works - other	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Catchment: - Approval Date: 1999-01-21T00:00:00.000Z

ID	Location	Address	Details	
J	342m SE	THORNTON FACILITIES MANAGEMENT LTD, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Permit Number: 017290033 Permit Version: 13 Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Basic Ind. Chemicals Inorganic	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Catchment: - Approval Date: 2004-03-18T00:00:00.000Z
J	342m SE	THORNTON FACILITIES MANAGEMENT LTD, ICI HILLHOUSE, THORNTON, BLACKPOOL, LANCASHIRE	Permit Number: 017290033 Permit Version: 12 Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Sewage disposal works - other	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Catchment: - Approval Date: 1999-01-21T00:00:00.000Z
J	342m SE	THORNTON FACILITIES MANAGEMENT LTD, HILLHOUSE INT. BUSINESS CENTRE, THORNTON CLEVELEYS, LANCASHIRE, FY5 4QD	Permit Number: 017290033 Permit Version: 13 Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Basic Ind. Chemicals Organic	Effluent Type: SEWAGE & TRADE COMBINED - UNSPECIFIED Catchment: - Approval Date: 2004-03-18T00:00:00.000Z

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	6

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Name	Status	Receiving Water	Authorised Substances
G	221m N	Ici Hillhouse North Outfall	Active	-	-
G	221m N	Ici Hillhouse North Outfall	Active	-	-
G	221m N	Ici Hillhouse North Outfall	Active	Wyre Estuary	1,2-dichloroethane

ID	Location	Name	Status	Receiving Water	Authorised Substances
J	343m SE	Ici Hillhouse Main Outfall	Active	-	-
J	343m SE	Ici Hillhouse Main Outfall	Active	-	-
J	343m SE	Ici Hillhouse Main Outfall	Not Active	Wyre Estuary	Mercury (other)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m **4**

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Name	Status	Receiving Water	Authorised Substances
D	111m N	Ici Chemicals & Polymers, Hillhouse North	Not Active	Wyre Estuary	Chromium
G	221m N	Ici Chemicals & Polymers, Hillhouse Lagoon	Not Active	Wyre Estuary	Copper
J	343m SE	I.c.i. Chemicals & Polymers Ltd, Hillhouse Sewage/trade	Active	Wyre Estuary	Copper
J	343m SE	Ici Chemicals & Polymers, Hillhouse Main Outfall	Active	Wyre Estuary	Copper

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m **2**

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Details	
J	344m SE	Incident Date: 14/09/2003 Incident Identification: 189693 Pollutant: Contaminated Water Pollutant Description: Chemically Contaminated Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

ID	Location	Details	
13	365m SW	Incident Date: 07/01/2003 Incident Identification: 130917 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	**5**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 51**

ID: I, Location: 322m SE, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Sulphur oxides (SO2 and SO3) as SO2	100000kg	Below Reporting Threshold
Controlled Waters	Cadmium	1kg	Below Reporting Threshold
Wastewater	Total organic carbon (TOC)	50000kg	Below Reporting Threshold
Air	Carbon monoxide	100000kg	Below Reporting Threshold
Air	Nitrogen oxides (NO and NO2) as NO2	100000kg	Below Reporting Threshold
Air	Fluorine and inorganic fluorine compounds - as HF	1000kg	Below Reporting Threshold
Air	Non-methane volatile organic compounds (NMVOCs)	10000kg	Below Reporting Threshold
Air	Particulate matter - PM10	1000kg	Below Reporting Threshold
Controlled Waters	Phosphorus - as total P	5000kg	Below Reporting Threshold
Air	Particulate matter - PM2.5	1000kg	Below Reporting Threshold
Air	Particulate matter - total	10000kg	Below Reporting Threshold

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Controlled Waters	Mercury	0.1kg	Below Reporting Threshold

ID: I, Location: 322m SE, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Wastewater	Fluorides - as F	2000kg	226800kg

ID: I, Location: 322m SE, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Controlled Waters	Total organic carbon (TOC)	50000kg	50500kg

ID: I, Location: 322m SE, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Controlled Waters	Fluorides - as F	2000kg	156700kg

ID: I, Location: 322m SE, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals

Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Carbon dioxide	10000000kg	15900000kg

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	**1**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 51**

ID: I, Location: 322m SE, Permit: BU5640IA
Operator: Victrex Manufacturing Limited
Activity: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS
Address: Victrex Technology Centre Hillhouse Industrial Site Fleetwood Road North Lancashire FY5 4QD
Sector Chemicals, Sub-sector: Chemicals
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D10	Incineration on Land	0.4	Absolute Value	07 02 04	other organic solvents, washing liquids and mother liquors	1
D10	Incineration on Land	268.8	Absolute Value	07 02 08	other still bottoms and reaction residues	1
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	12.9	Absolute Value	07 02 12	sludges from on-site effluent treatment other than those mentioned in 07 02 11	0
D10	Incineration on Land	76.9	Absolute Value	07 02 13	waste plastic	0

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	29.5	Absolute Value	07 02 13	waste plastic	0
D10	Incineration on Land	16.7	Absolute Value	13 03 08	synthetic insulating and heat transmission oils	1
R9	Oil e-refining or other reuses of oil	0	Absolute Value	13 03 08	synthetic insulating and heat transmission oils	1
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0	Absolute Value	13 05 03	interceptor sludges	1
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0	Absolute Value	13 05 07	oily water from oil/water separators	1
R3	Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes)	26.1	Absolute Value	15 01 01	paper and cardboard packaging	0
D10	Incineration on Land	1.8	Absolute Value	15 02 02	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	1
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	9.7	Absolute Value	15 01 06	mixed packaging	0
D10	Incineration on Land	20.3	Absolute Value	15 01 10	packaging containing residues of or contaminated by dangerous substances	1

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0	Absolute Value	15 01 10	packaging containing residues of or contaminated by dangerous substances	1
D10	Incineration on Land	10.7	Absolute Value	16 03 03	inorganic wastes containing dangerous substances	1
D10	Incineration on Land	8	Absolute Value	16 03 05	organic wastes containing dangerous substances	1
D10	Incineration on Land	13.2	Absolute Value	16 05 07	discarded inorganic chemicals consisting of or containing dangerous substances	1
D10	Incineration on Land	58	Absolute Value	16 05 08	discarded organic chemicals consisting of or containing dangerous substances	1
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	678	Absolute Value	16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01	0
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	20.5	Absolute Value	17 06 04	insulation materials other than those mentioned in 17 06 01 and 17 06 03	0
R3	Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes)	164.3	Absolute Value	20 01 38	wood other than that mentioned in 20 01 37	0
R4	Recycling/reclamation of metals and metal compounds	11.9	Absolute Value	20 01 40	metals	0
R4	Recycling/reclamation of metals and metal compounds	1.2	Absolute Value	20 01 35	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components (6)	1

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R13	Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	30	Absolute Value	20 03 01	mixed municipal waste	0
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	20	Absolute Value	20 03 04	septic tank sludge	0
R1	Use principally as a fuel or other means to generate energy	-	Below Reporting Threshold	15 01 01	paper and cardboard packaging	0
D10	Incineration on Land	-	Below Reporting Threshold	16 03 06	organic wastes other than those mentioned in 16 03 05	0
D10	Incineration on Land	-	Below Reporting Threshold	16 05 09	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08	0

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

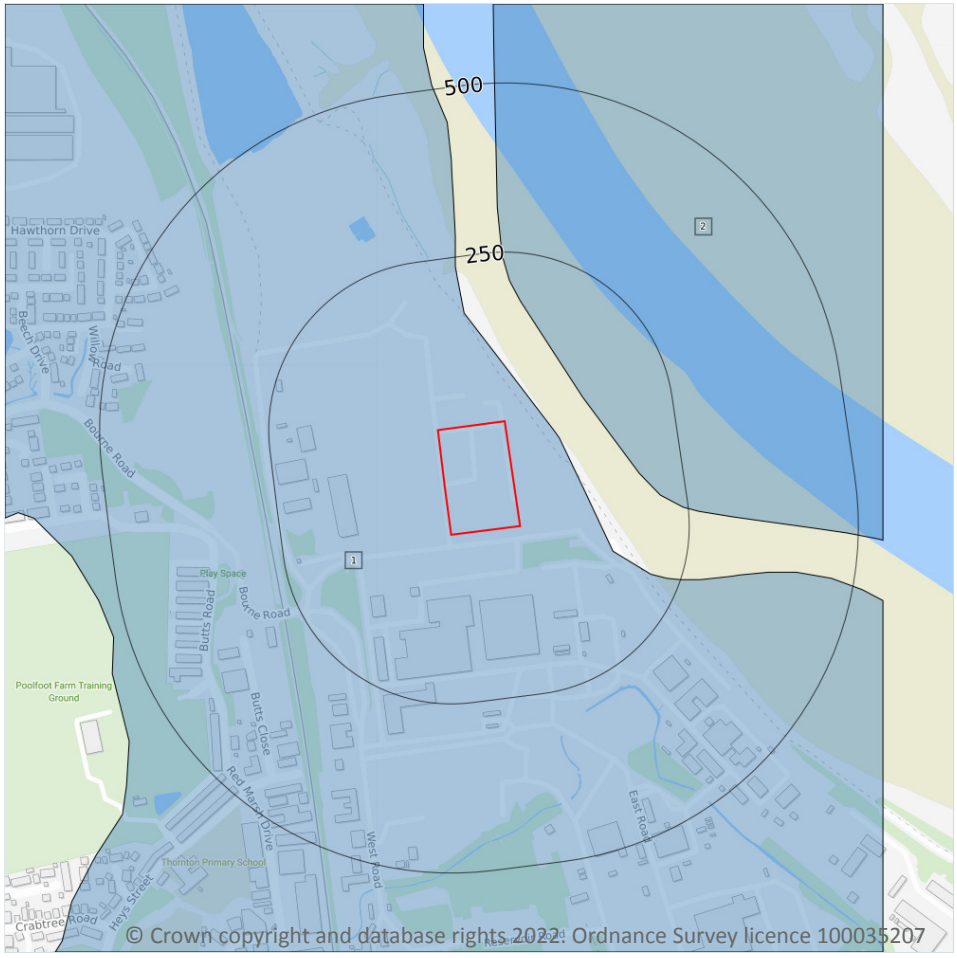
4.21 Pollution inventory radioactive waste

Records within 500m	**0**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	2

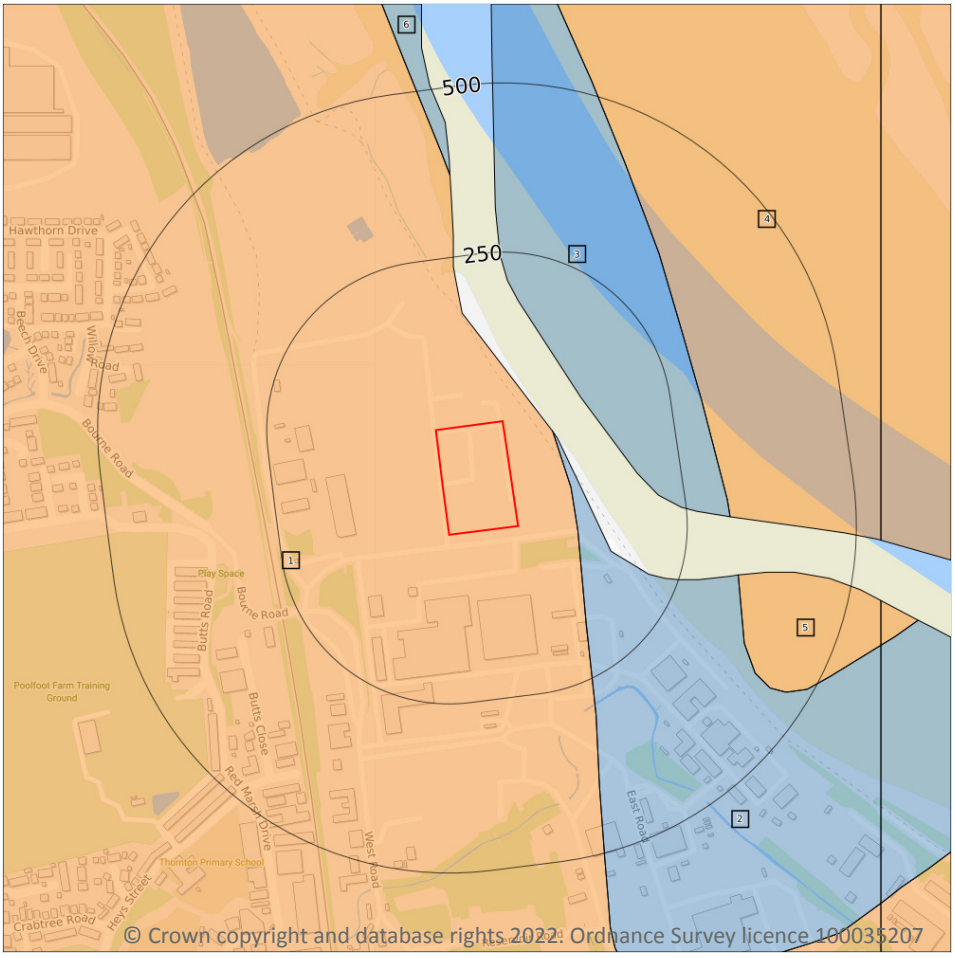
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 75**

ID	Location	Designation	Description
1	**On site**	**Unproductive**	**These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow**
2	116m NE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	6

Aquifer status of groundwater held within bedrock geology.

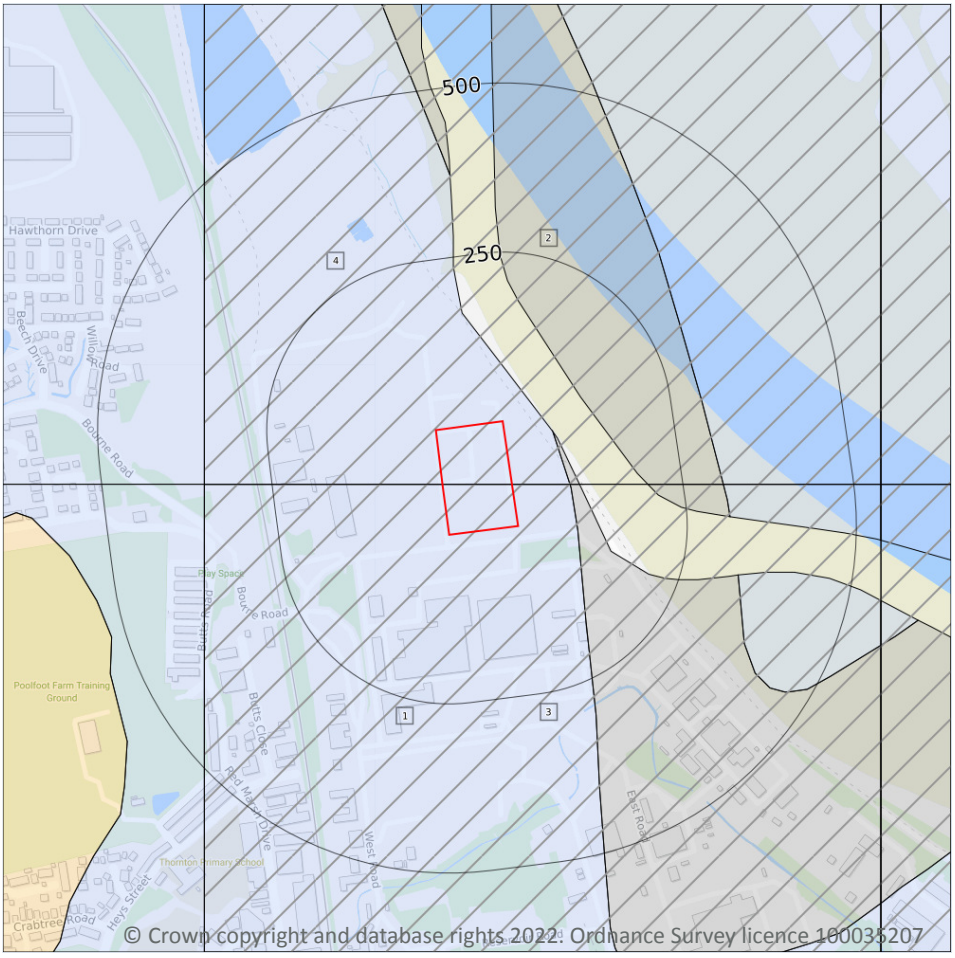
Features are displayed on the Bedrock aquifer map on **page 76**

ID	Location	Designation	Description
1	**On site**	**Secondary B**	**Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers**
2	71m E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

ID	Location	Designation	Description
3	116m NE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	291m E	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
5	333m E	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
6	371m N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 78**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
4	On site	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: >10m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	2

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
2	Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.	65.0%
3	Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.	28.999999999999996%

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones

5.6 Groundwater abstractions

Records within 2000m	0

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	0

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	**3**

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 83**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	227m N	Tidal river or stream.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
A	227m N	Marsh. An area that is predominantly waterlogged by freshwater.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	228m N	Tidal river or stream.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**0**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 83**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	**On site**	**River**	**Hillylaid Pool - Main Dyke**	**GB112072066160**	**Fleetwood Peninsula Trib**	**Wyre**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	**2**

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is

detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 83**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
4	59m NE	Transi	WYRE	GB531207212200	Poor	Fail	Poor	2019
6	287m SE	River	Hillylaid Pool - Main Dyke	GB112072066160	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	**1**

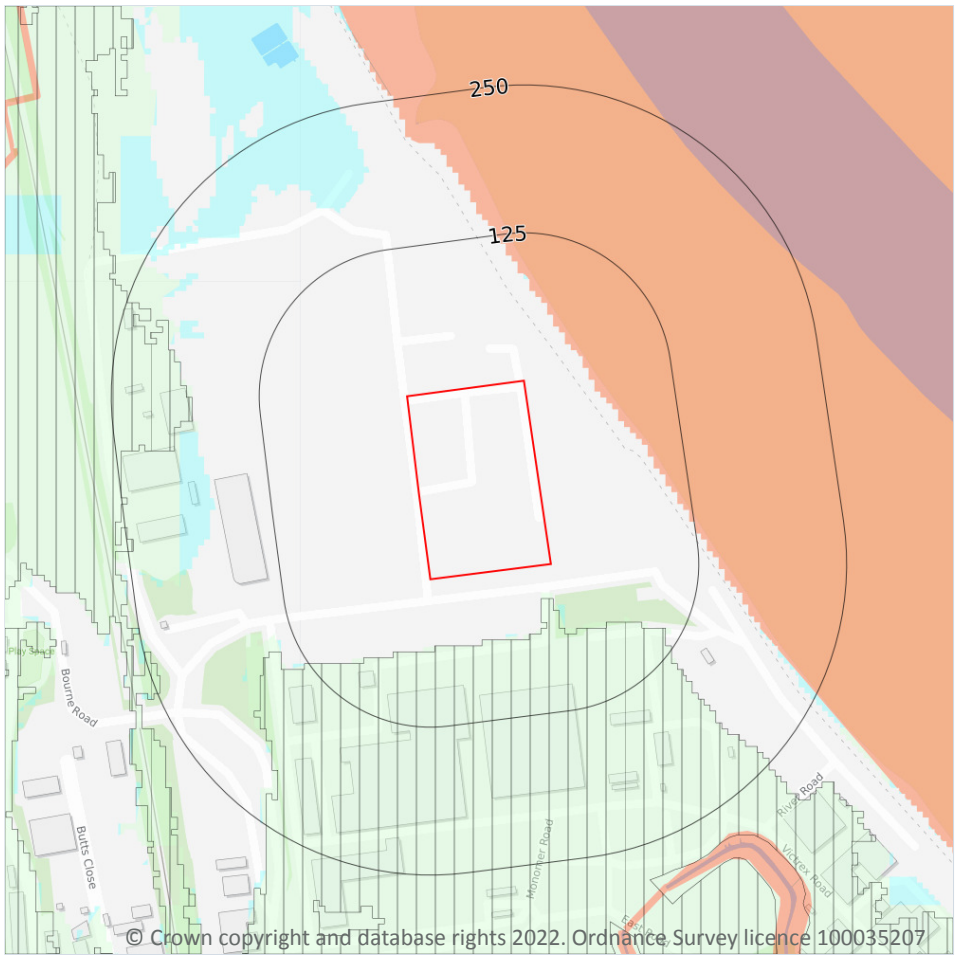
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 83**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	**On site**	**West Lancashire Quaternary Sand and Gravel Aquifers**	**GB41202G912700**	**Good**	**Good**	**Good**	**2019**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

River and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

7.1 Risk of flooding from rivers and the sea

Records within 50m	3

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on **page 86**

Distance	Flood risk category
On site	**N/A**
0 - 50m	High

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	**1**

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 86**

ID	Location	
A	28m S	Area benefiting from flood defences

This data is sourced from the Environment Agency and Natural Resources Wales.

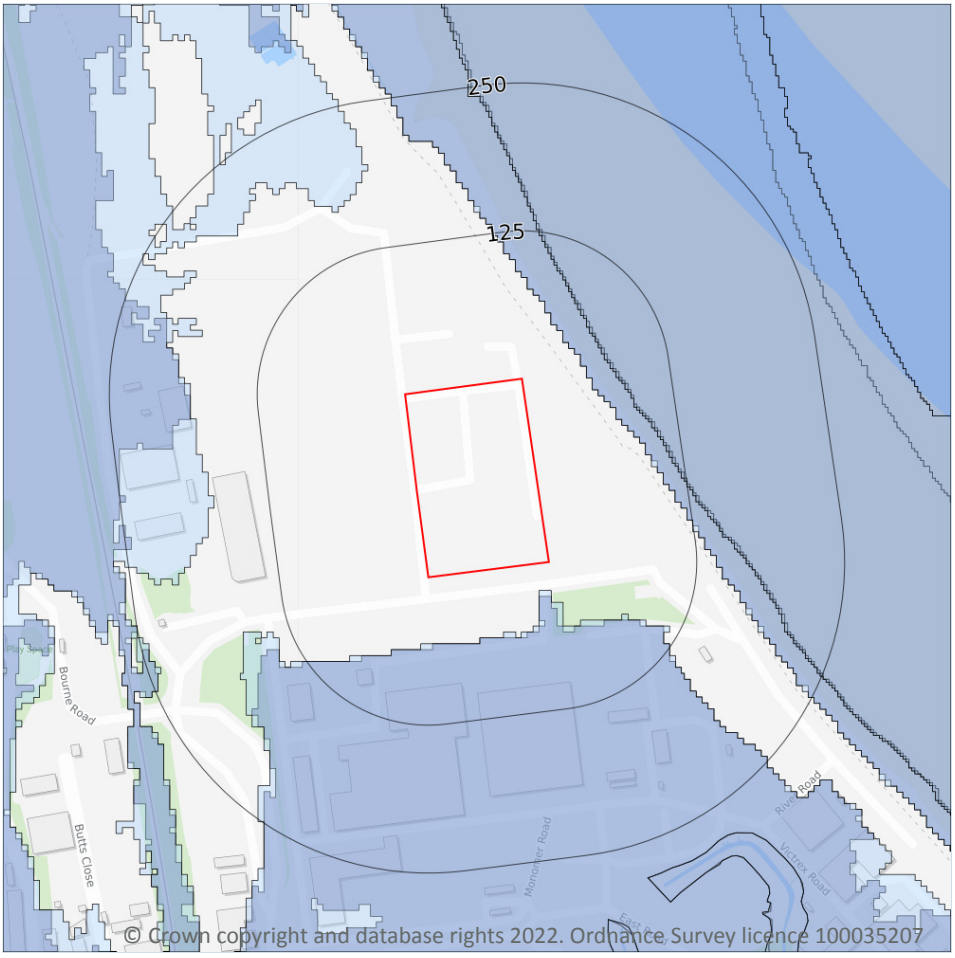
7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

Features are displayed on the River and coastal flooding map on **page 86**

Location	Type
23m S	Zone 2 - (Fluvial /Tidal Models)

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	1

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 86**

Location	Type
28m S	Zone 3 - (Fluvial Models)

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding

Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 100 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 100 year, 0.1m - 0.3m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 91**

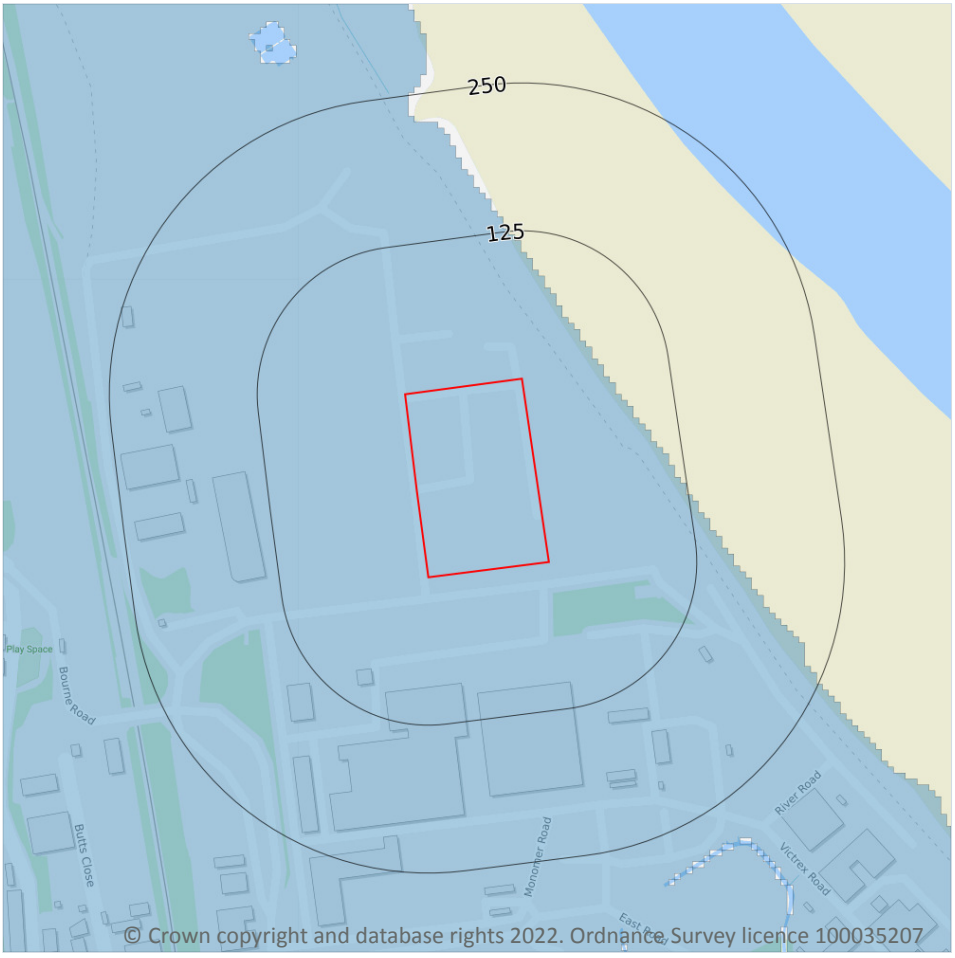
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
1 in 250 year	Between 0.1m and 0.3m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

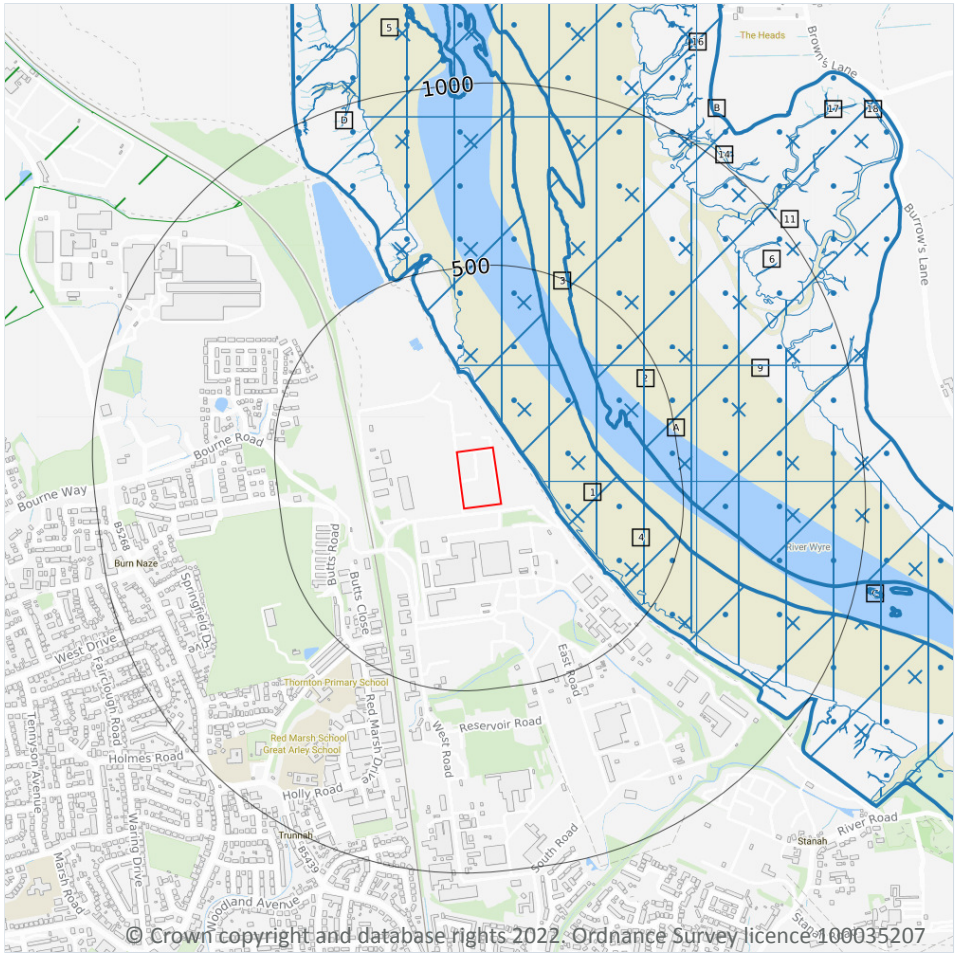
Highest risk on site	**Negligible**
Highest risk within 50m	**Negligible**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 93**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

- Sites of Special Scientific Interest (SSSI)
- Conserved wetland sites (Ramsar sites)
- Special Protection Areas (SPA)
- Marine Conservation Zones
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	5

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 94**

ID	Location	Name	Data source
2	57m NE	Wyre Estuary	Natural England

ID	Location	Name	Data source
B	323m E	Wyre Estuary	Natural England
C	1034m E	Wyre Estuary	Natural England
C	1096m E	Wyre Estuary	Natural England
C	1110m E	Wyre Estuary	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	**5**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

Features are displayed on the Environmental designations map on **page 94**

ID	Location	Site	Details
A	56m NE	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.

ID	Location	Site	Details
6	323m E	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
C	1034m E	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.
C	1095m E	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.

ID	Location	Site	Details
C	1109m E	Name: Morecambe Bay Site status: Listed Data source: Natural England	Overview: Morecambe Bay lies between the coasts of South Cumbria and Lancashire, and represents the largest continuous intertidal area in Britain. Morecambe Bay comprises the estuaries of five rivers and the accretion of mudflats behind Walney Island. The area is of intertidal mud and sandflats, with associated saltmarshes, shingle beaches and other coastal habitats. It is a component in the chain of west coast estuaries of outstanding importance for passage and overwintering waterfowl (supporting the third-largest number of wintering waterfowl in Britain), and breeding waterfowl, gulls and terns. Ramsar criteria: Ramsar criterion 4 The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover Charadrius hiaticula.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	**10**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

Features are displayed on the Environmental designations map on **page 94**

ID	Location	Name	Species of interest	Habitat description	Data source
1	57m NE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
5	225m N	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
A	323m E	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
7	349m NE	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England

ID	Location	Name	Species of interest	Habitat description	Data source
8	536m E	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
10	554m E	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
11	603m E	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
C	1034m E	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England

ID	Location	Name	Species of interest	Habitat description	Data source
C	1096m E	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England
C	1110m E	Morecambe Bay and Duddon Estuary	Little egret; Whooper swan; Pink-footed goose; Common shelduck; Northern pintail; Eurasian oystercatcher; Ringed plover; European golden plover; Grey plover; Red knot; Sanderling; Ruff; Bar-tailed godwit; Eurasian curlew; Common redshank; Ruddy turnstone; Mediterranean gull; Lesser black-backed gull; Lesser black-backed gull; Herring gull; Sandwich tern; Common tern; Little tern; Black-tailed godwit; Dunlin	Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins); Salt marshes, Salt pastures, Salt steppes; Coastal sand dunes, Sand beaches, Machair; Shingle, Sea cliffs, Islets; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	32

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

Features are displayed on the Environmental designations map on **page 94**

ID	Location	Name	Status
3	61m NE	Wyre-Lune	Designated
4	124m E	Wyre-Lune	Designated
C	536m E	Wyre-Lune	Designated
9	540m E	Wyre-Lune	Designated

ID	Location	Name	Status
13	907m N	Wyre-Lune	Designated
D	951m N	Wyre-Lune	Designated
D	966m NW	Wyre-Lune	Designated
14	1003m NE	Wyre-Lune	Designated
D	1009m NW	Wyre-Lune	Designated
B	1034m NE	Wyre-Lune	Designated
D	1063m N	Wyre-Lune	Designated
B	1108m NE	Wyre-Lune	Designated
D	1132m N	Wyre-Lune	Designated
D	1162m N	Wyre-Lune	Designated
15	1207m N	Wyre-Lune	Designated
16	1245m NE	Wyre-Lune	Designated
17	1270m NE	Wyre-Lune	Designated
18	1392m NE	Wyre-Lune	Designated
-	1408m NE	Wyre-Lune	Designated
-	1590m E	Wyre-Lune	Designated
-	1621m NE	Wyre-Lune	Designated
-	1725m N	Wyre-Lune	Designated
-	1761m N	Wyre-Lune	Designated
-	1820m SE	Wyre-Lune	Designated
-	1823m N	Wyre-Lune	Designated
-	1841m N	Wyre-Lune	Designated
-	1858m N	Wyre-Lune	Designated
-	1907m N	Wyre-Lune	Designated
-	1912m N	Wyre-Lune	Designated
-	1963m N	Wyre-Lune	Designated
-	1964m N	Wyre-Lune	Designated
-	1979m N	Wyre-Lune	Designated

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	2

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 94**

ID	Location	Name	Local Authority name
12	900m NW	Blackpool	Wyre
-	1909m SW	Blackpool	Wyre

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or ‘classified’) under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

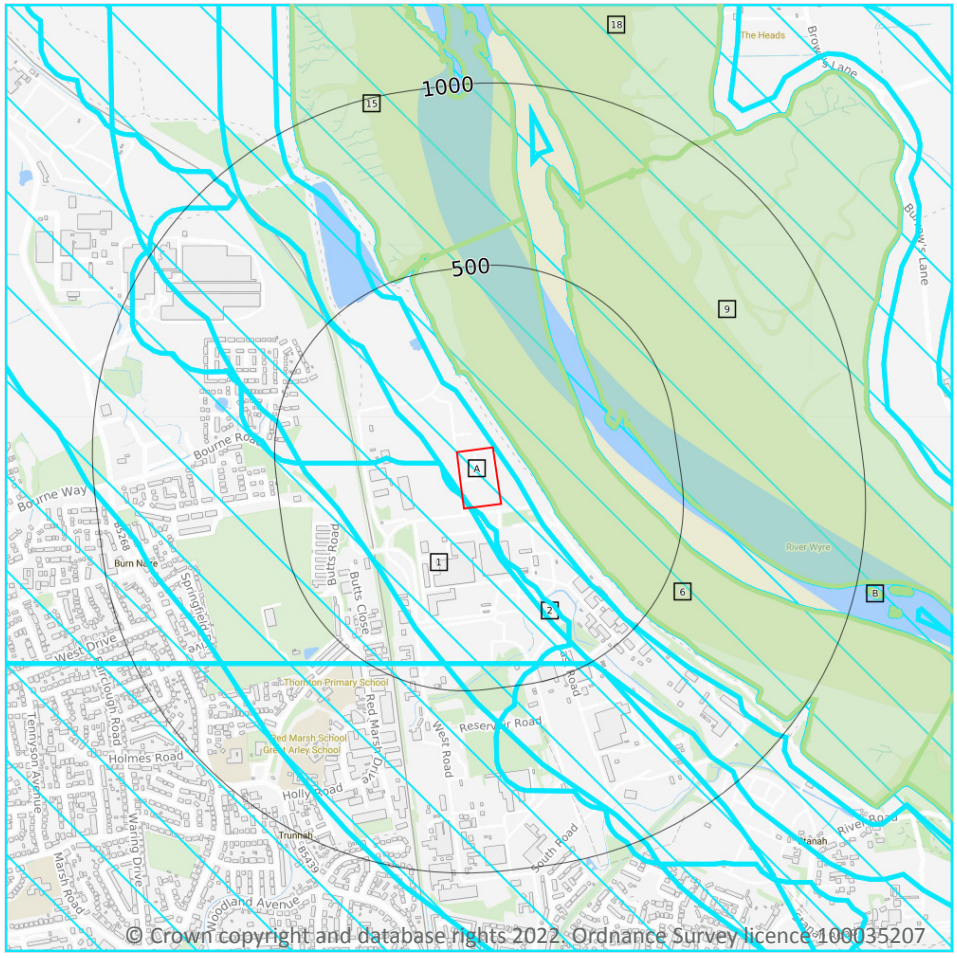
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

Not recorded

Favourable

Unfavourable - Recovering

Unfavourable - No change

Unfavourable - Declining

Partially destroyed

Destroyed

10.17 SSSI Impact Risk Zones

Records on site	3

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 105**

ID	Location	Type of developments requiring consultation
1	On site	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 10 units or more. Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units. Air pollution - Any development that could cause air pollution (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: New residential developments in this area should consider recreational disturbance impacts on the coastal designated sites. please consider this issue in the hra screening.**
2	On site	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 10 units or more. Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units. Air pollution - Any development that could cause air pollution or dust either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Notes: New residential developments in this area should consider recreational disturbance impacts on the coastal designated sites. please consider this issue in the hra screening.**

ID	Location	Type of developments requiring consultation
A	**On site**	**All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures. Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 10 units or more. Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units. Air pollution - Any development that could cause air pollution or dust either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream. Notes: New residential developments in this area should consider recreational disturbance impacts on the coastal designated sites. please consider this issue in the hra screening.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**11**

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 105**

ID:	6
Location:	57m NE
SSSI name:	Wyre Estuary
Unit name:	Hill House International Frontage
Broad habitat:	Littoral Sediment
Condition:	Favourable
Reportable features:	

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: 9
Location: 323m E
SSSI name: Wyre Estuary
Unit name: Burrows Marsh Sssi
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: 15
Location: 499m N
SSSI name: Wyre Estuary
Unit name: Jameson Road Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: 18
Location: 739m N
SSSI name: Wyre Estuary
Unit name: The Heads
Broad habitat: Littoral Sediment
Condition: Favourable

Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900
Sand dune; strandline, embryo and mobile dunes (SD1-6)	Not Recorded	01/01/1900

ID: B
Location: 1034m E
SSSI name: Wyre Estuary
Unit name: Skippool Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: B
Location: 1096m E
SSSI name: Wyre Estuary
Unit name: Skippool Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: B
Location: 1110m E
SSSI name: Wyre Estuary
Unit name: Skippool Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: 27
Location: 1338m SE
SSSI name: Wyre Estuary
Unit name: Stanah Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: -
Location: 1387m E
SSSI name: Wyre Estuary
Unit name: Wardleys Marsh
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: -
Location: 1419m N
SSSI name: Wyre Estuary
Unit name: Barnaby Sands Sssi
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

ID: -
Location: 1456m N
SSSI name: Wyre Estuary
Unit name: Kirk Scar
Broad habitat: Littoral Sediment
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Estuaries	Not Recorded	01/01/1900
Littoral sediment	Not Recorded	01/01/1900
SM4-28 - Saltmarsh	Not Recorded	01/01/1900

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

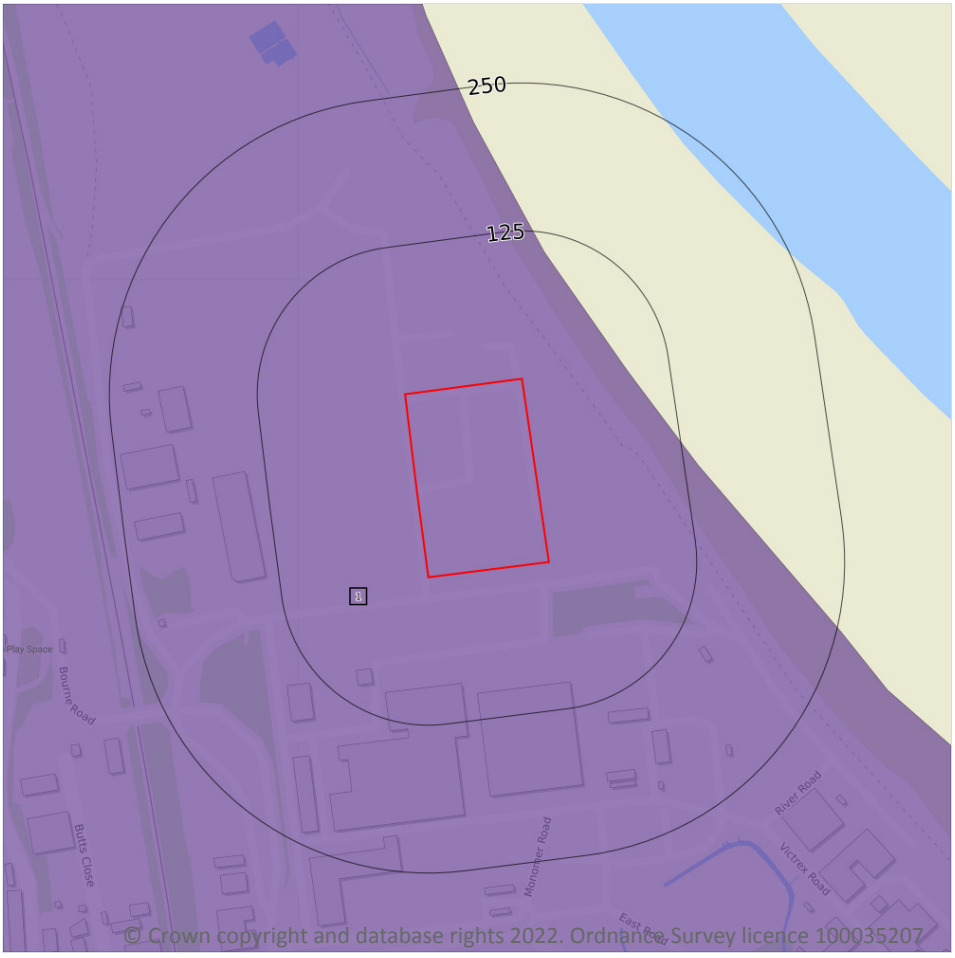
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 114**

ID	Location	Classification	Description
1	**On site**	**Urban**	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

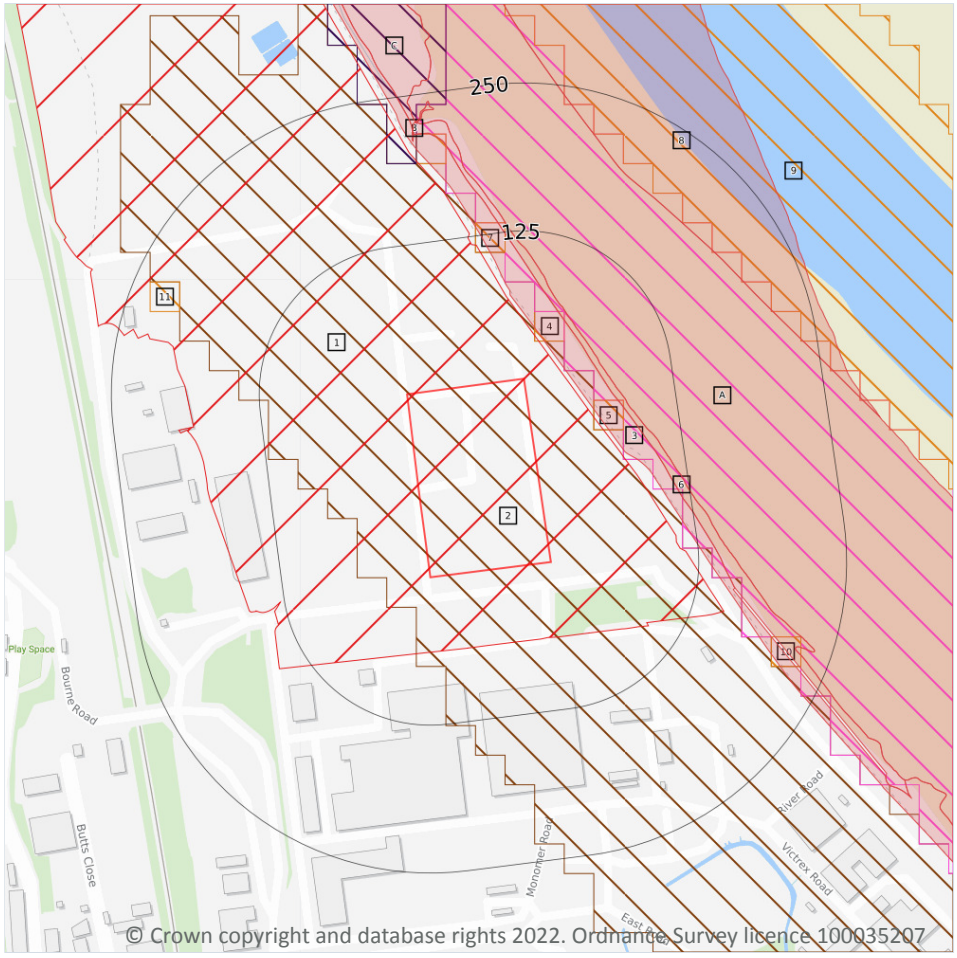
12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks
Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	**7**

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 116**

ID	Location	Main Habitat	Other habitats
3	33m NE	No main habitat but additional habitats present	Additional: SALTM (INV 50%)
6	57m NE	No main habitat but additional habitats present	Additional: SALTM (INV 50%, ENSIS L2)

ID	Location	Main Habitat	Other habitats
A	61m NE	Mudflats	Main habitat: MUDFL (INV > 50%); Additional: SALTM (ENSIS L2)
8	187m NE	No main habitat but additional habitats present	Additional: SALTM (ENSIS L2)
B	217m N	Coastal saltmarsh	Main habitat: SALTM (INV > 50%)
C	217m N	Coastal saltmarsh	Main habitat: SALTM (INV > 50%)
B	227m N	No main habitat but additional habitats present	Additional: SALTM (ENSIS L2)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**10**

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on **page 116**

ID	Location	Type	Habitat
2	**On site**	**Network Enhancement Zone 2**	**Not specified**
4	33m N	Network Enhancement Zone 1	Not specified
A	35m E	Associated Habitats	Other associated habitats
5	52m E	Network Enhancement Zone 1	Not specified
7	108m N	Network Enhancement Zone 1	Not specified
9	188m NE	Network Enhancement Zone 1	Not specified
B	189m N	Network Enhancement Zone 1	Not specified
C	192m N	Primary Habitat	Saltmarsh
10	197m E	Network Enhancement Zone 1	Not specified
11	205m W	Network Enhancement Zone 1	Not specified

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	1

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

Features are displayed on the Habitat designations map on **page 116**

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
1	**On site**	**-**	**Low**	**UK Perspectives Aerial Photography**	**-**	**-**

This data is sourced from Natural England.

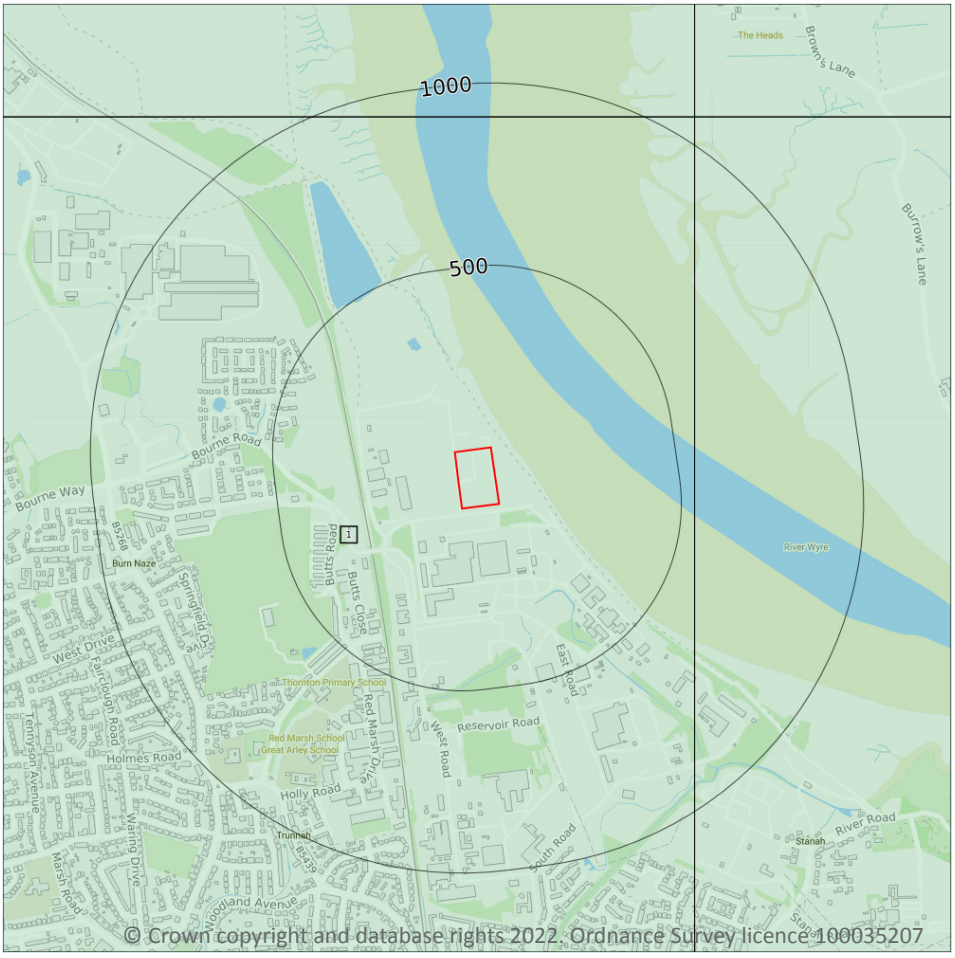
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	1

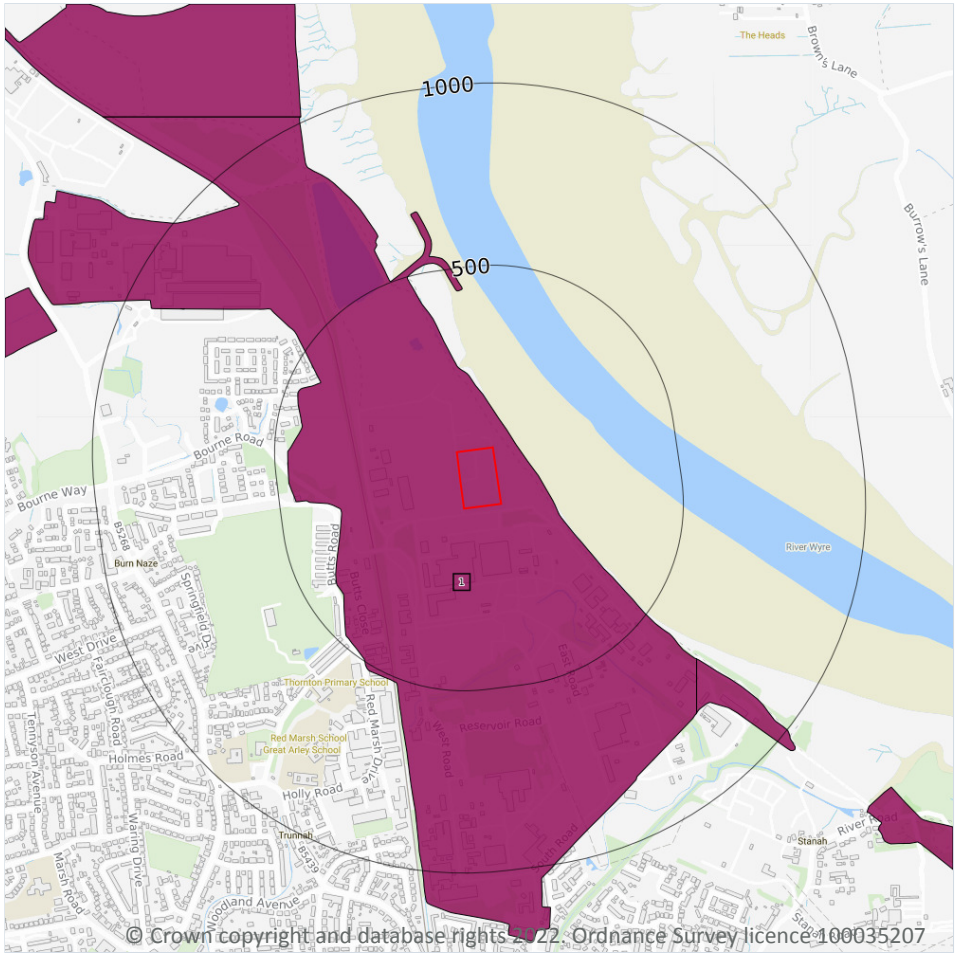
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 119**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SD34SW**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m	1

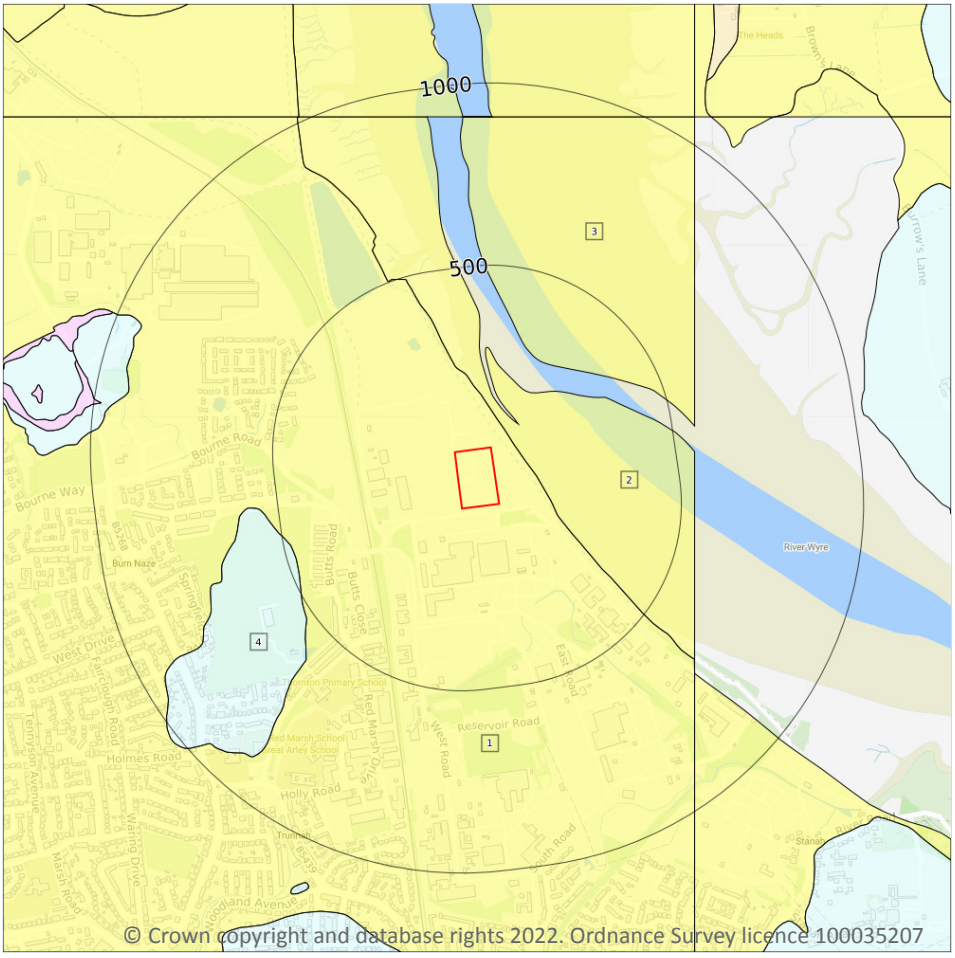
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 120**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m **4**

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 121**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TFD1-XCZ**	**Tidal Flat Deposits, 1 - Clay And Silt**	**Clay And Silt**
2	58m NE	TFD-XCZ	Tidal Flat Deposits - Clay And Silt	Clay And Silt
3	273m NE	TFD-XCZ	Tidal Flat Deposits - Clay And Silt	Clay And Silt
4	475m W	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton

This data is sourced from the British Geological Survey.

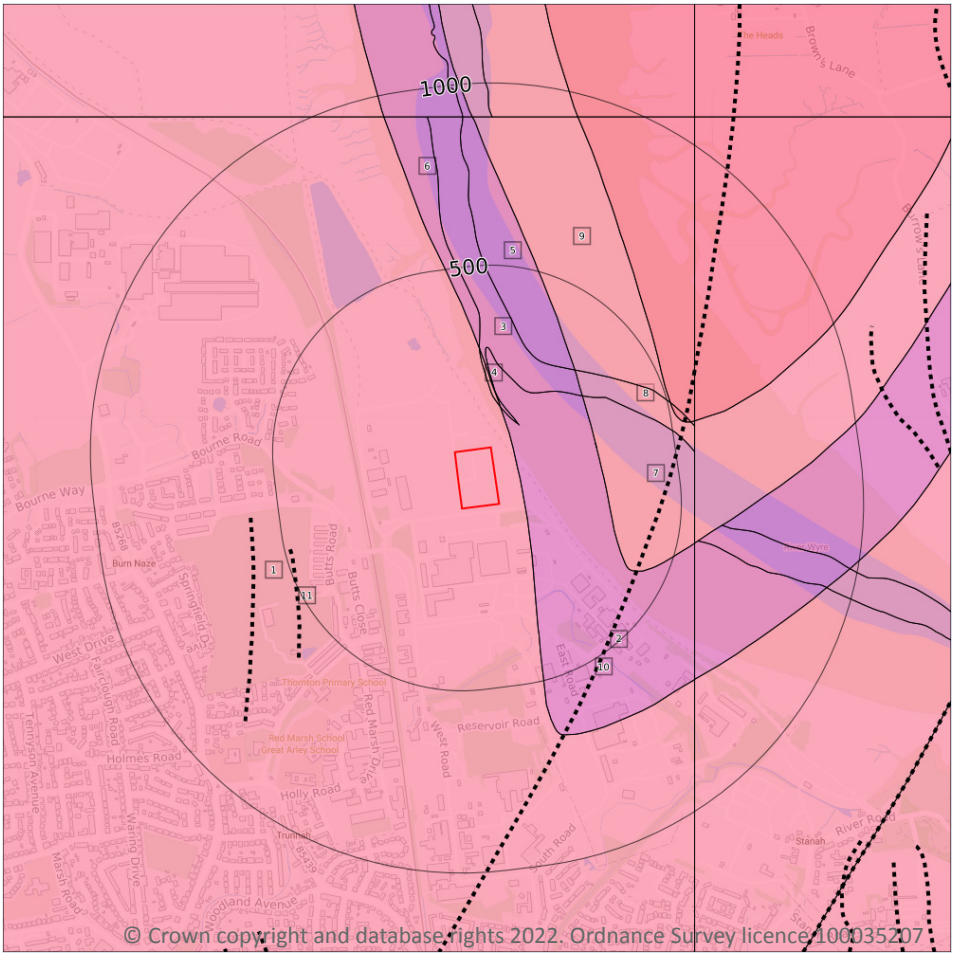
14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m **9**

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 123**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**KRM-MDST**	**Kirkham Mudstone Member - Mudstone**	**Ladinian Age - Anisian Age**
2	59m E	PRSA-MDHA	Preesall Halite Member - Mudstone And Halite-stone	Ladinian Age - Anisian Age
3	97m NE	PRSA-MDHA	Preesall Halite Member - Mudstone And Halite-stone	Ladinian Age - Anisian Age
4	114m N	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age

ID	Location	LEX Code	Description	Rock age
5	273m NE	PRSA-MDHA	Preesall Halite Member - Mudstone And Halite-stone	Ladinian Age - Anisian Age
6	273m N	PRSA-MDHA	Preesall Halite Member - Mudstone And Halite-stone	Ladinian Age - Anisian Age
7	281m E	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age
8	288m NE	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age
9	314m NE	KRM-MDST	Kirkham Mudstone Member - Mudstone	Ladinian Age - Anisian Age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**2**

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 123**

ID	Location	Category	Description
10	418m E	FOLD_AXIS	Axial plane trace of major syncline
11	484m W	LANDFORM	Drumlin, form-line at base of mound

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability

Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

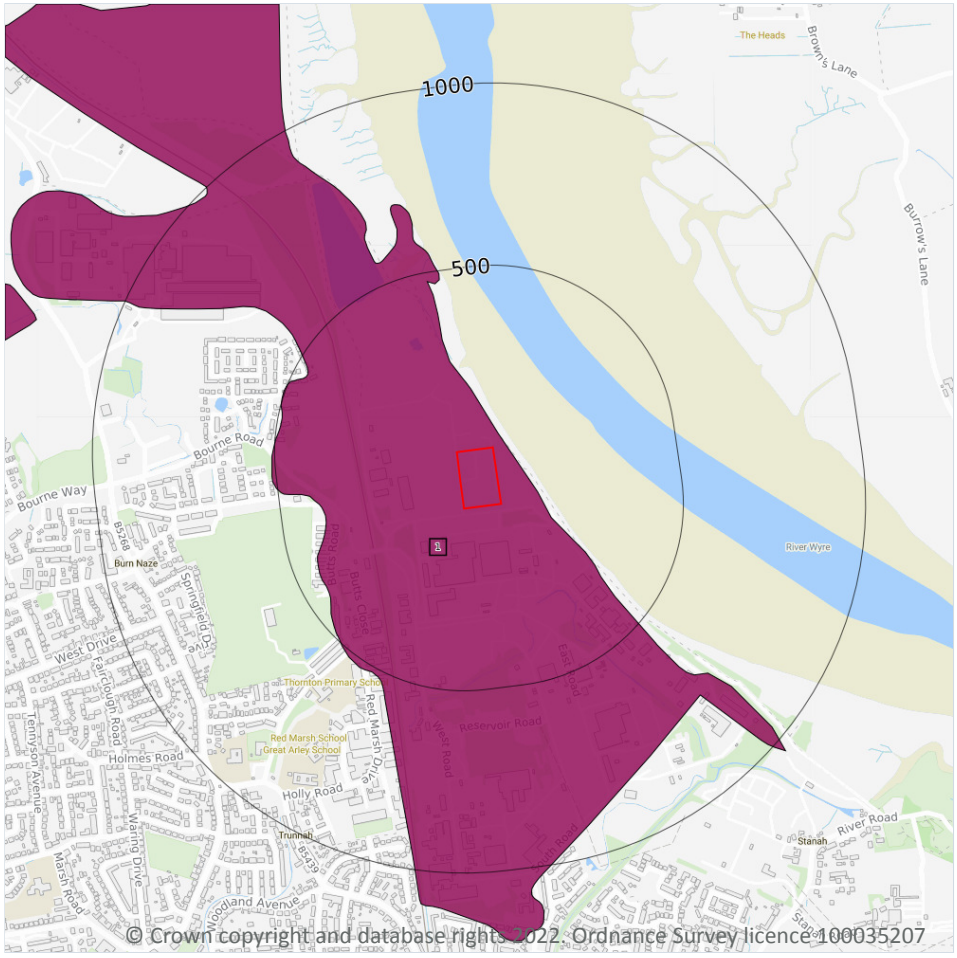
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 125**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**EW066_blackpool_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	1

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 126**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**MGR-ARTDP**	**MADE GROUND (UNDIVIDED)**	**ARTIFICIAL DEPOSIT**

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

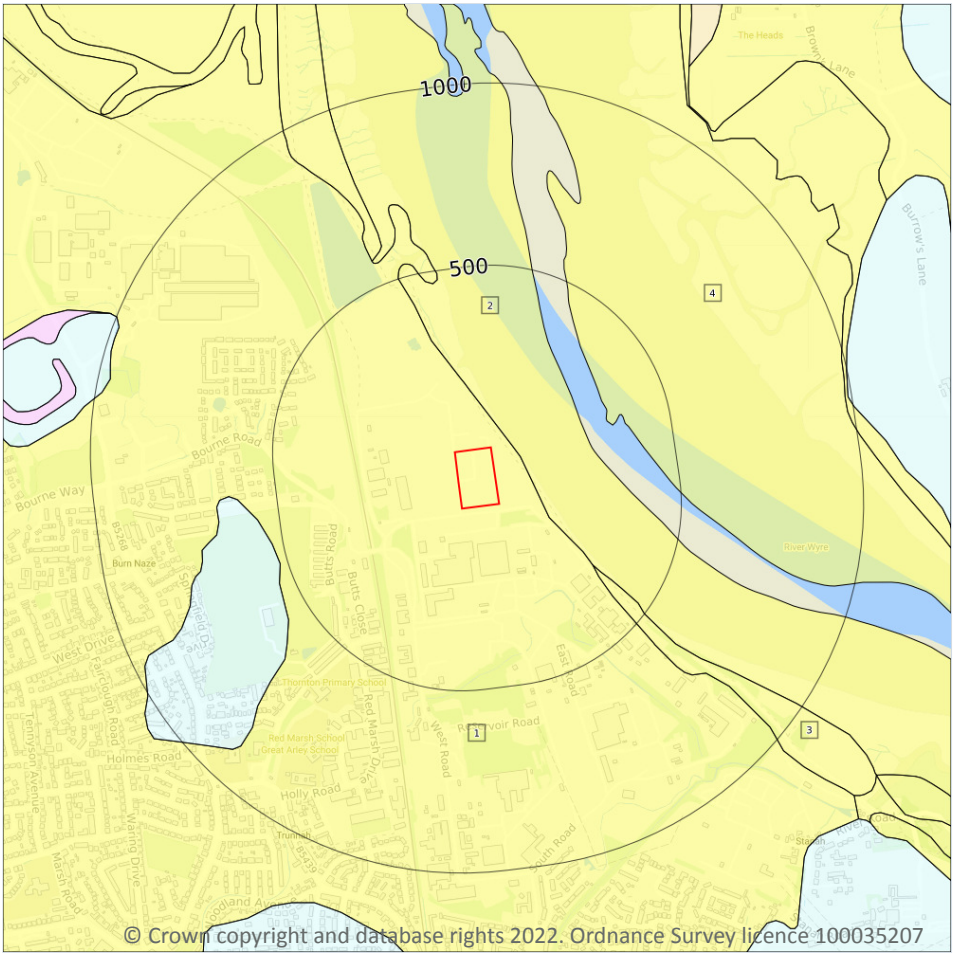
Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Very High**	**Low**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m **4**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 128**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TFD1-XCZ**	**TIDAL FLAT DEPOSITS, 1**	**CLAY AND SILT**
2	50m NE	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT
3	307m SE	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT
4	326m E	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Low**	**Very Low**
50m N	Intergranular	Low	Very Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock

Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m **6**

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 130**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**KRM-MDST**	**KIRKHAM MUDSTONE MEMBER - MUDSTONE**	**ANISIAN**
2	62m NE	PRSA-MDHA	PREESALL HALITE MEMBER - MUDSTONE AND HALITE-STONE	ANISIAN
3	256m E	PRSA-MDHA	PREESALL HALITE MEMBER - MUDSTONE AND HALITE-STONE	ANISIAN

ID	Location	LEX Code	Description	Rock age
4	291m E	SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE	OLENEKIAN
5	305m E	SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE	OLENEKIAN
6	326m E	SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE	OLENEKIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Low**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	**1**

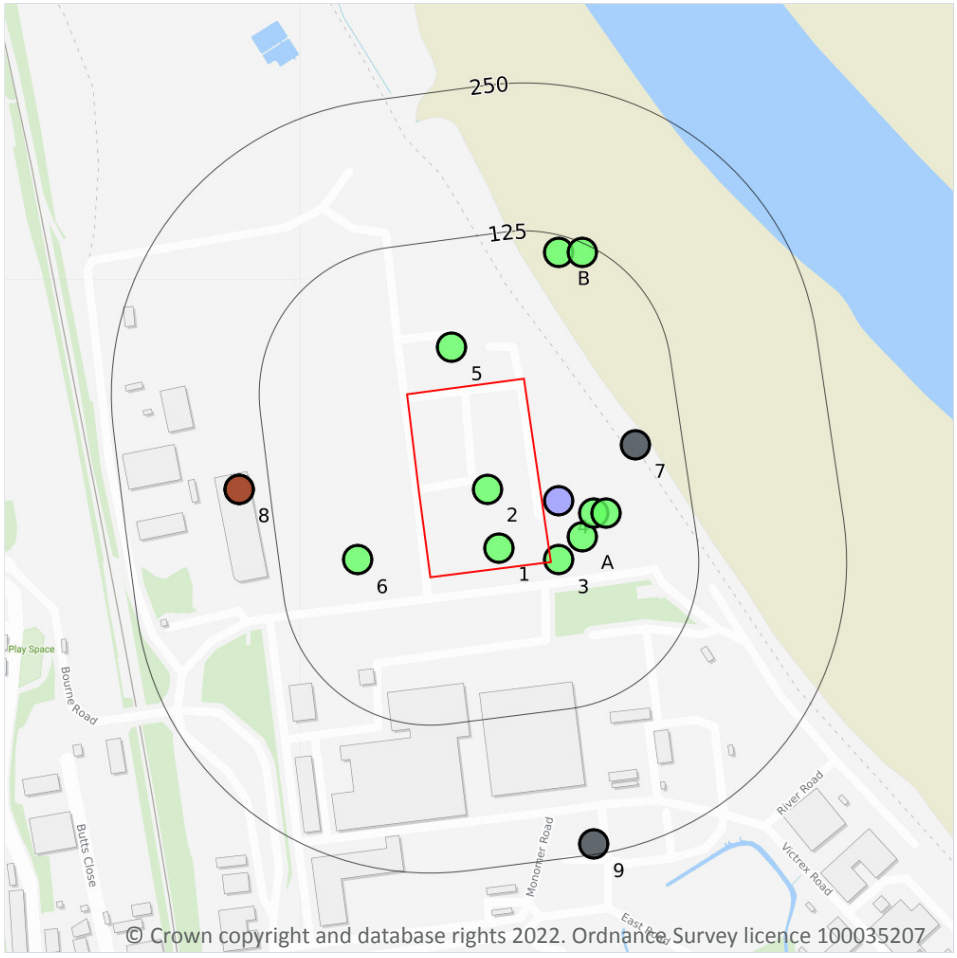
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 130**

ID	Location	Category	Description
7	469m E	FOLD_AXIS	Axial plane trace of major syncline

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	14

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

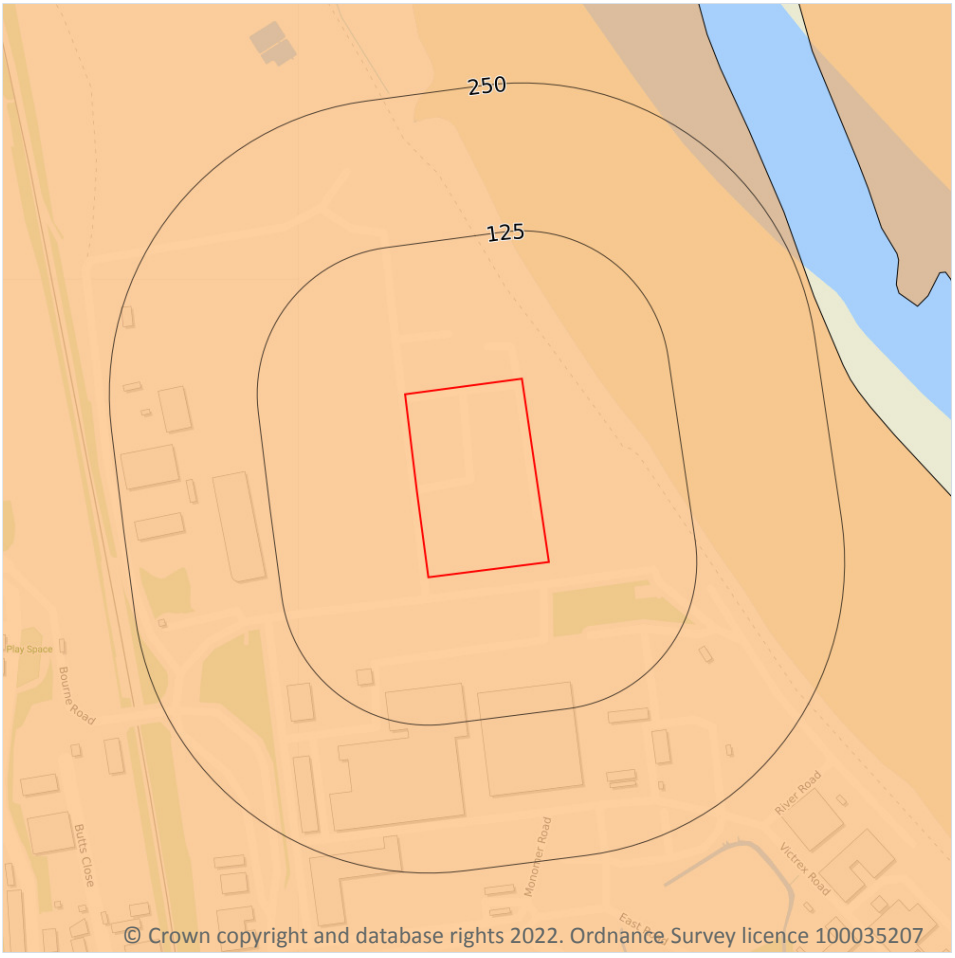
Features are displayed on the Boreholes map on **page 132**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	**On site**	**334420 443950**	**HILLHOUSE WRKS 2**	**27.43**	**N**	**3000**
2	**On site**	**334410 444000**	**HILLHOUSE WRKS 1**	**15.24**	**N**	**2999**
3	7m E	334470 443940	ICI HILLHOUSE WORKS THORNTON 599	12.8	N	3087

ID	Location	Grid reference	Name	Length	Confidential	Web link
4	14m E	334470 443990	ICI HILLHOUSE WORKS THORNTON 577	6.86	N	3082
A	29m E	334490 443960	HILLHOUSE WRKS 4	19.81	N	3002
5	35m N	334380 444120	HILLHOUSE WRKS 3	23.16	N	3001
A	42m E	334500 443980	ICI HILLHOUSE WORKS THORNTON 596	12.8	N	3083
A	52m E	334510 443980	ICI HILLHOUSE WORKS THORNTON 596A	11.6	N	3084
6	59m W	334300 443940	HILLHOUSE WRKS 5	14.33	N	3003
7	85m E	334535 444037	THORNTON CLEVELEYS FLOOD & TIDAL DEFENCES ASSESMENT 2	-	Y	N/A
B	111m N	334470 444200	ICI HILLHOUSE WORKS THORNTON 598	12.5	N	3086
B	118m NE	334490 444200	ICI HILLHOUSE WORKS THORNTON 597	12.5	N	3085
8	151m W	334200 444000	PREESALL & STALMINE	-1.0	N	3102
9	241m S	334500 443700	RIVER WYRE BARRAGE 1	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

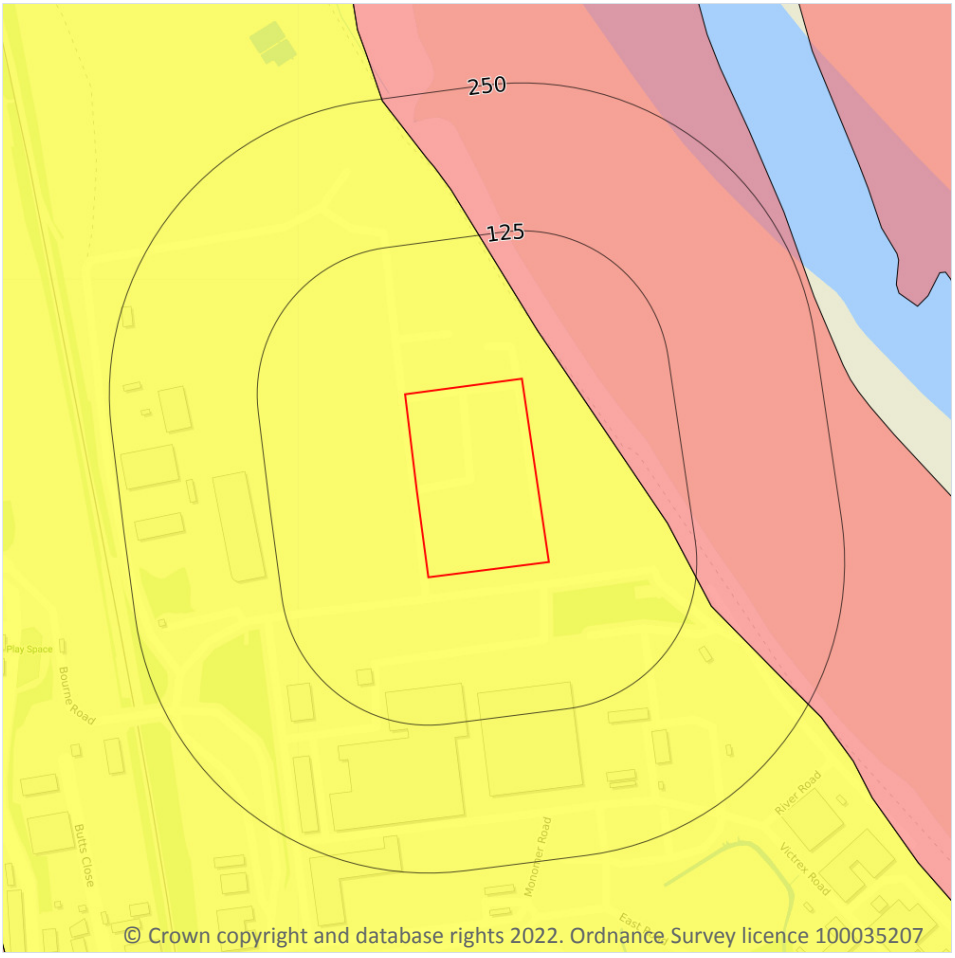
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 134**

Location	Hazard rating	Details
On site	**Low**	**Ground conditions predominantly medium plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

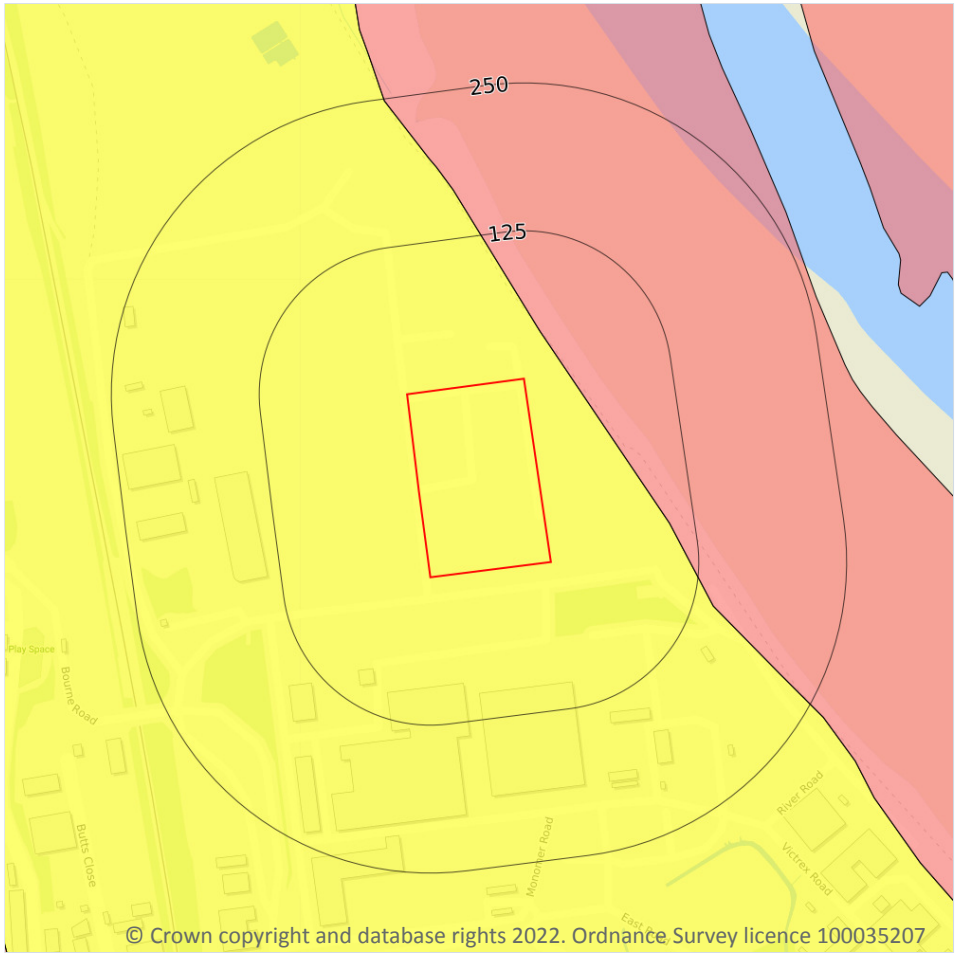
Features are displayed on the Natural ground subsidence - Running sands map on **page 135**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

Location	Hazard rating	Details
34m NE	Moderate	Running sand conditions are probably present. Constraints may apply to land uses involving excavation or the addition or removal of water.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	2

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

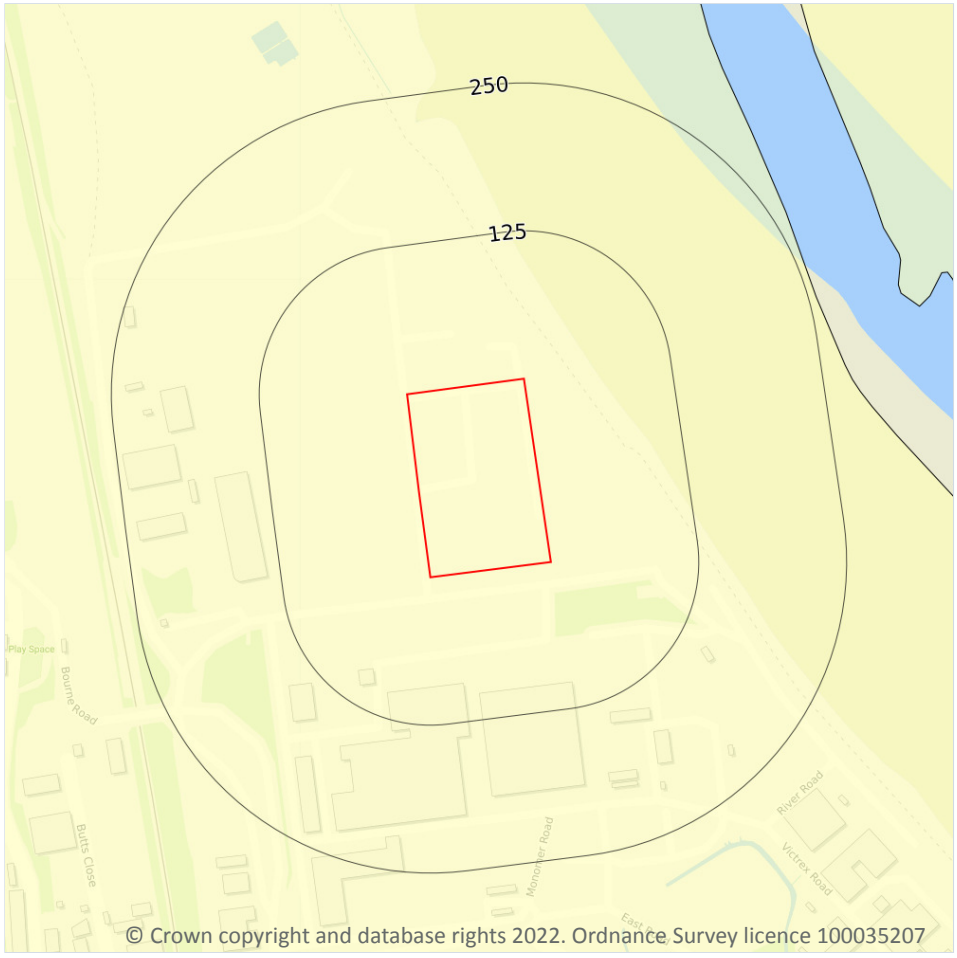
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 137**

Location	Hazard rating	Details
On site	**Very low**	**Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.**

Location	Hazard rating	Details
34m NE	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

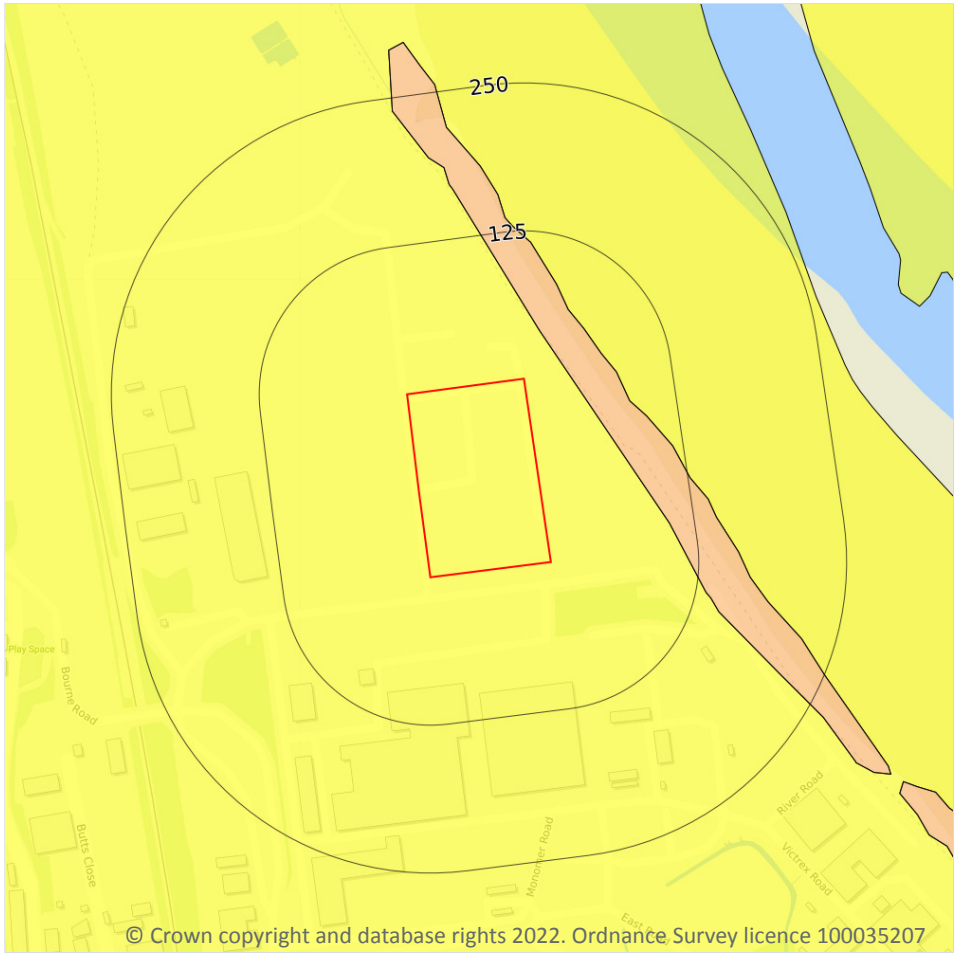
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 139**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

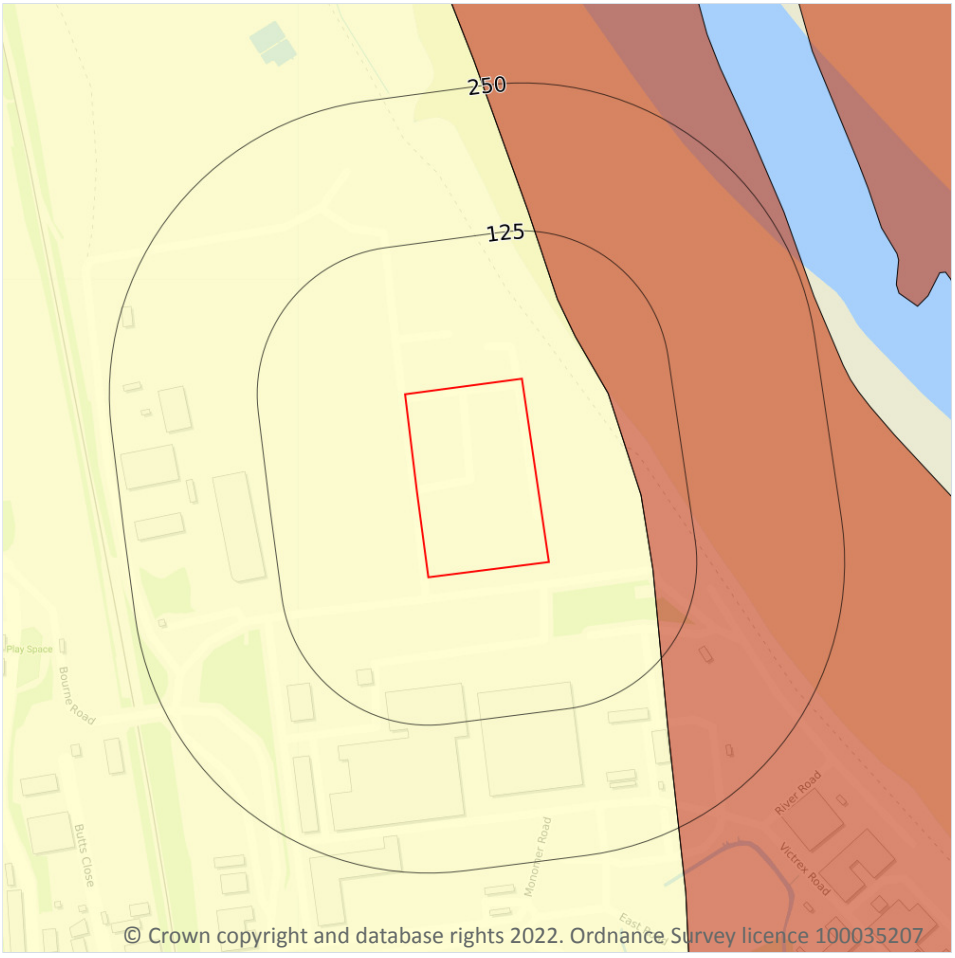
Features are displayed on the Natural ground subsidence - Landslides map on **page 140**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

Location	Hazard rating	Details
34m NE	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

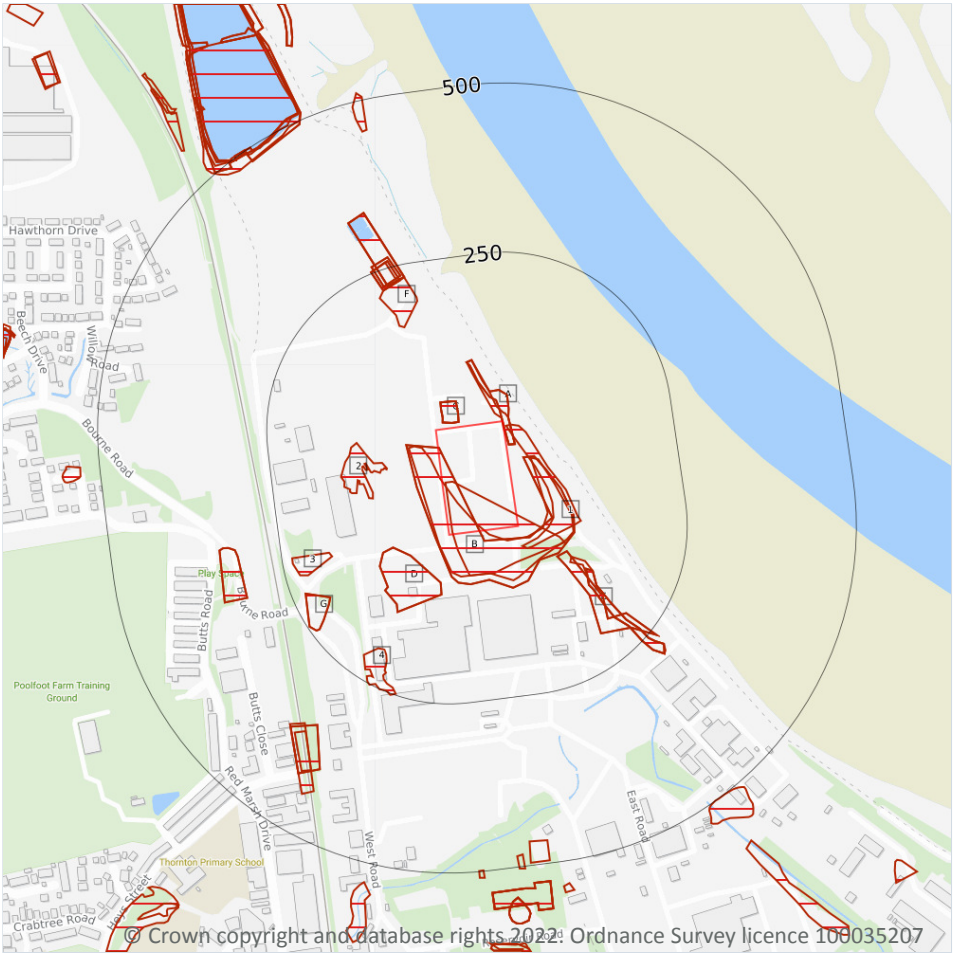
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 142**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	32

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 144**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Unspecified Ground Workings**	**1992**	**1:10000**
A	**On site**	**Unspecified Ground Workings**	**1981**	**1:10000**
A	**On site**	**Unspecified Ground Workings**	**1973**	**1:10000**
B	**On site**	**Refuse Heap**	**1951**	**1:10560**
B	**On site**	**Refuse Heap**	**1938**	**1:10560**
B	**On site**	**Unspecified Heap**	**1910**	**1:10560**
B	**On site**	**Refuse Heap**	**1930**	**1:10560**
1	4m E	Refuse Heap	1967	1:10560
C	7m N	Unspecified Pit	1992	1:10000
C	7m N	Unspecified Pit	1981	1:10000
C	7m N	Unspecified Pit	1973	1:10000
D	61m SW	Refuse Heap	1938	1:10560
D	61m SW	Refuse Heap	1930	1:10560
E	73m SE	Unspecified Heap	1938	1:10560
E	73m SE	Unspecified Heap	1930	1:10560
2	79m W	Pond	1910	1:10560
E	91m SE	Unspecified Ground Workings	1973	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
E	119m SE	Unspecified Ground Workings	1992	1:10000
E	119m SE	Unspecified Ground Workings	1981	1:10000
F	159m N	Unspecified Pit	1910	1:10560
3	176m W	Unspecified Pit	1992	1:10000
4	195m SW	Ponds	1891	1:10560
G	199m SW	Cuttings	1938	1:10560
G	199m SW	Cuttings	1930	1:10560
F	221m N	Pond	1938	1:10560
F	221m N	Pond	1930	1:10560
F	221m N	Pond	1910	1:10560
F	224m N	Water Body	1992	1:10000
F	224m N	Water Bodies	1981	1:10000
F	224m N	Water Body	1973	1:10000
F	226m N	Pond	1967	1:10560
F	226m N	Pond	1951	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	**0**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

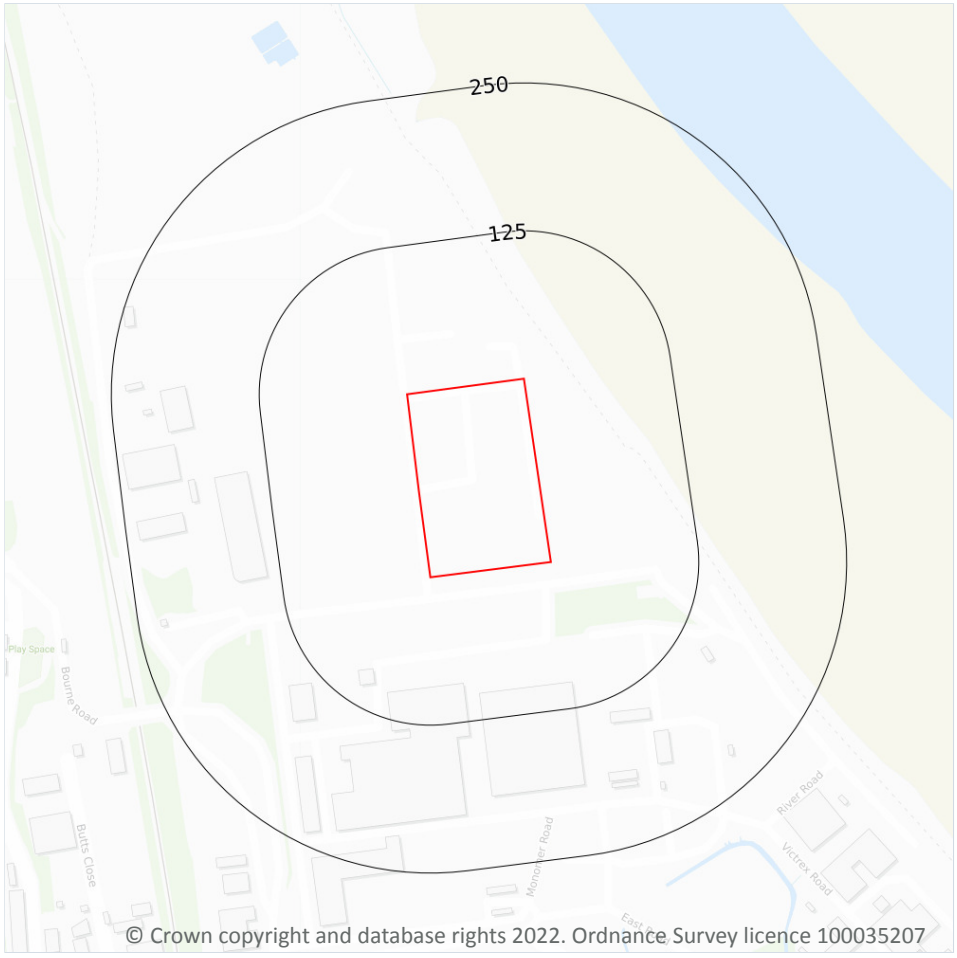
18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 149**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	4

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
36m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
45m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

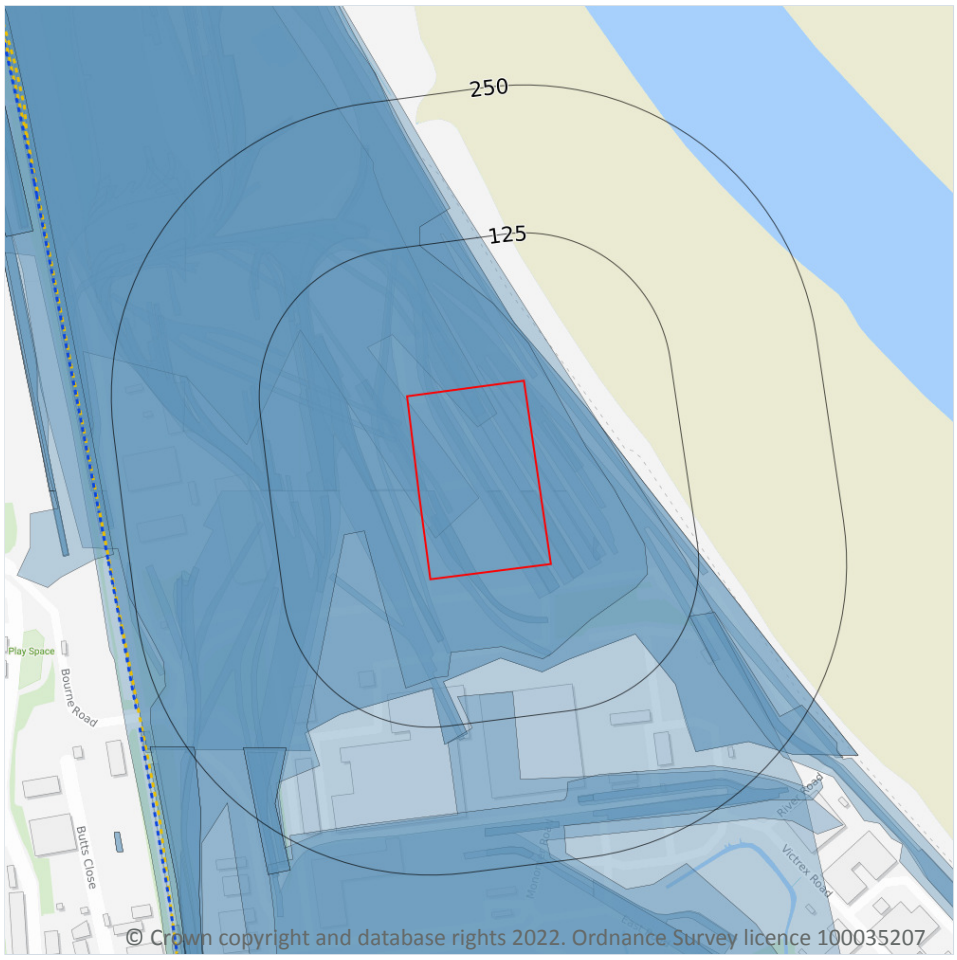
20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



Site Outline
Search buffers in metres (m)
Crossrail 1 Stations
Crossrail 1 Route
Crossrail 2 Stations
Crossrail 2 Route
Crossrail 2 Worksites
Crossrail 2 Safeguarding
Crossrail 2 Headhouses
Railway stations
Active railways
Active tunnels
Abandoned railways
Historic railways
Historic tunnels
Underground stations
Underground Lines
Royal Mail tunnels
HS2 optimised route
HS2 Stations
HS2 Depots
HS2 Surface Safeguarding
HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	43

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 151**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1960**	**1250**
On site	**Railway Sidings**	**1965**	**2500**
On site	**Railway Sidings**	**1986**	**2500**
On site	**Railway Sidings**	**1912**	**2500**
On site	**Railway Sidings**	**1932**	**2500**
On site	**Railway Sidings**	**1938**	**10560**
On site	**Railway Sidings**	**1930**	**10560**
On site	**Railway Sidings**	**1910**	**10560**
On site	**Railway Sidings**	**1967**	**10560**
On site	**Railway Sidings**	**1951**	**10560**
7m W	Railway Sidings	1994	1250
11m E	Railway Sidings	1965	2500
13m W	Railway Sidings	1960	1250
14m SW	Railway Sidings	1965	2500
36m W	Railway Sidings	1986	2500
37m E	Railway Sidings	1960	1250
66m W	Railway Sidings	1965	2500

Location	Land Use	Year of mapping	Mapping scale
76m W	Railway Sidings	1960	1250
126m E	Railway Sidings	1973	10000
128m W	Railway Sidings	1960	1250
141m E	Railway Sidings	1960	1250
183m S	Railway Sidings	1973	10000
188m SW	Railway Sidings	1938	10560
188m SW	Railway Sidings	1931	10560
188m W	Railway Sidings	1932	2500
193m W	Railway Sidings	1960	1250
195m SW	Railway Sidings	1932	2500
196m SW	Railway Sidings	1939	2500
198m S	Railway Sidings	1960	1250
198m S	Railway Sidings	1960	1250
198m S	Railway Sidings	1970	1250
208m W	Railway Sidings	1932	2500
211m NW	Railway Sidings	1912	2500
215m S	Railway Sidings	1960	1250
215m S	Railway Sidings	1970	1250
217m W	Railway Sidings	1932	2500
233m S	Railway Sidings	1970	1250
233m S	Railway Sidings	1960	1250
238m W	Railway Sidings	1932	2500
245m SW	Railway Sidings	1938	10560
245m SW	Railway Sidings	1931	10560
245m NW	Railway Sidings	1932	2500
248m SW	Railway Sidings	1932	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

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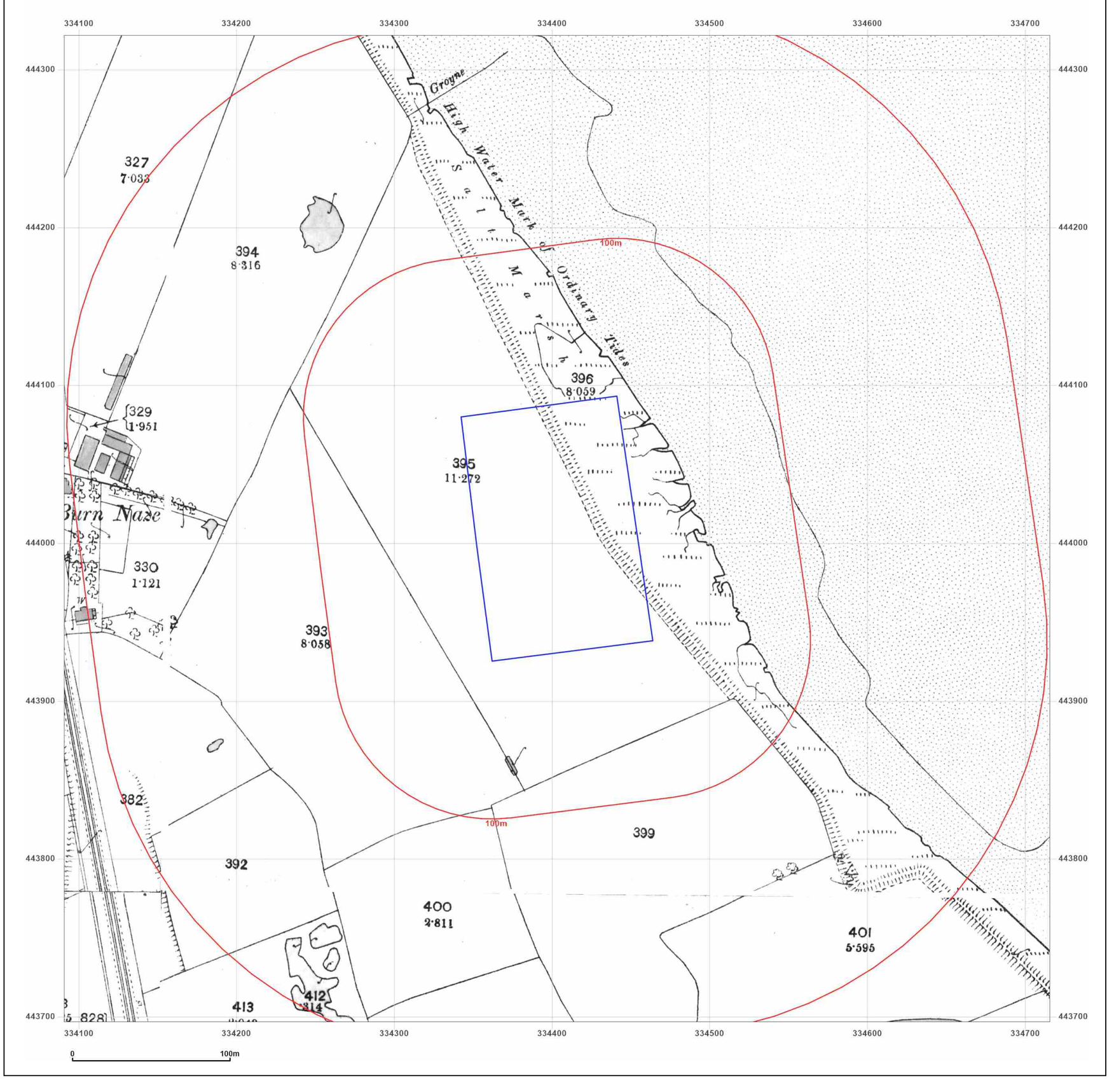

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Site Details:

HILLHOUSE INTERNATIONAL
WORKS, FLEETWOOD ROAD
NORTH, THORNTON
CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: County Series

Map date: **1890**

Scale: 1:2,500

Printed at: 1:2,500

N
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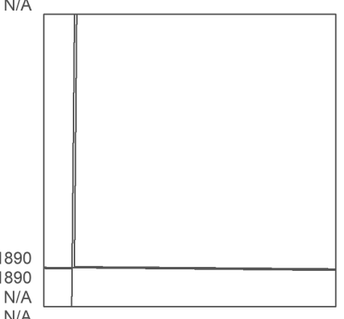
Surveyed 1890
Revised 1890
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1890
Revised 1890
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1890
Revised 1890
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1890
Revised 1890
Edition N/A
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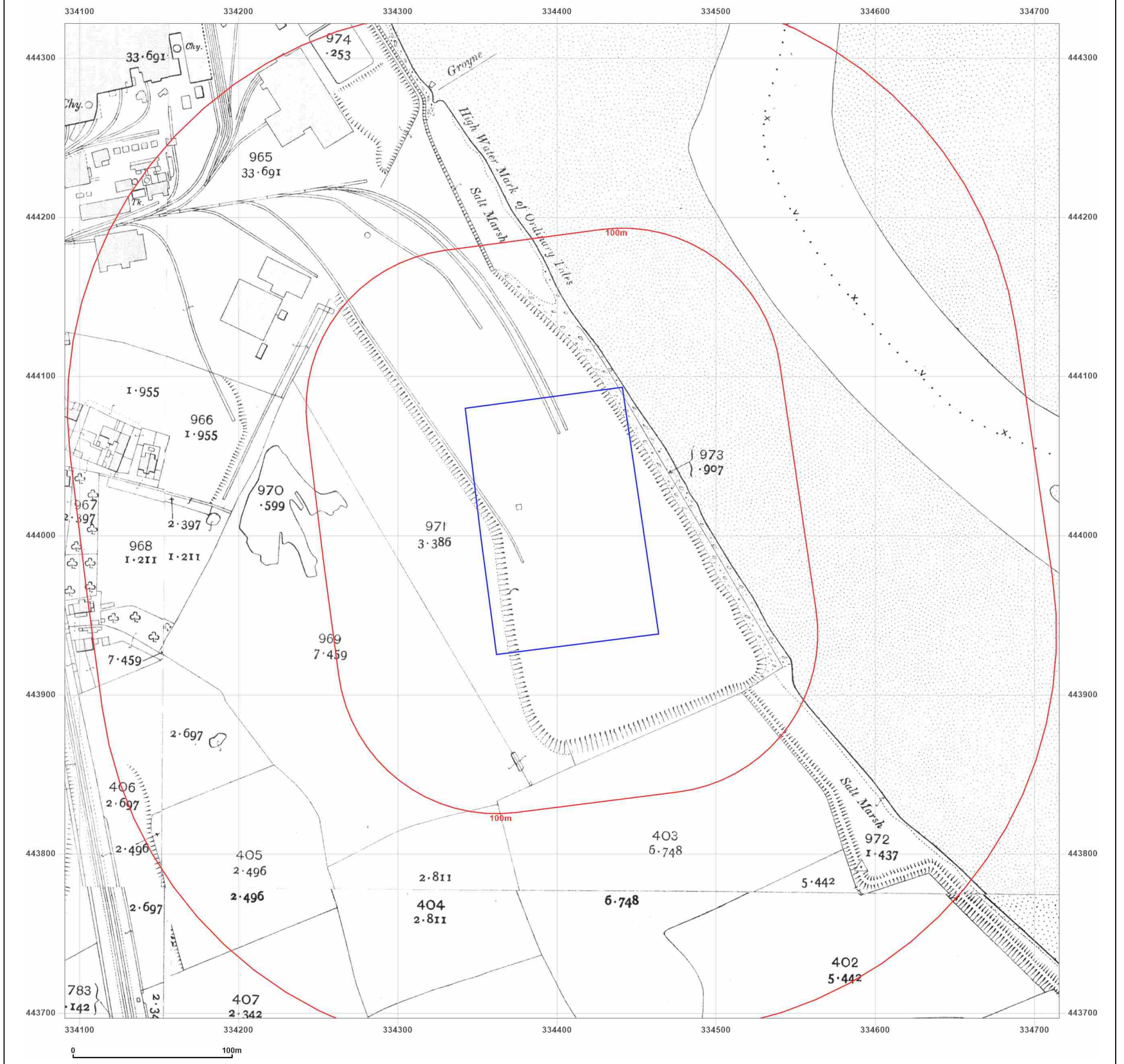

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Site Details:

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NORTH, THORNTON
CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: County Series

Map date: **1912**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

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Edition N/A
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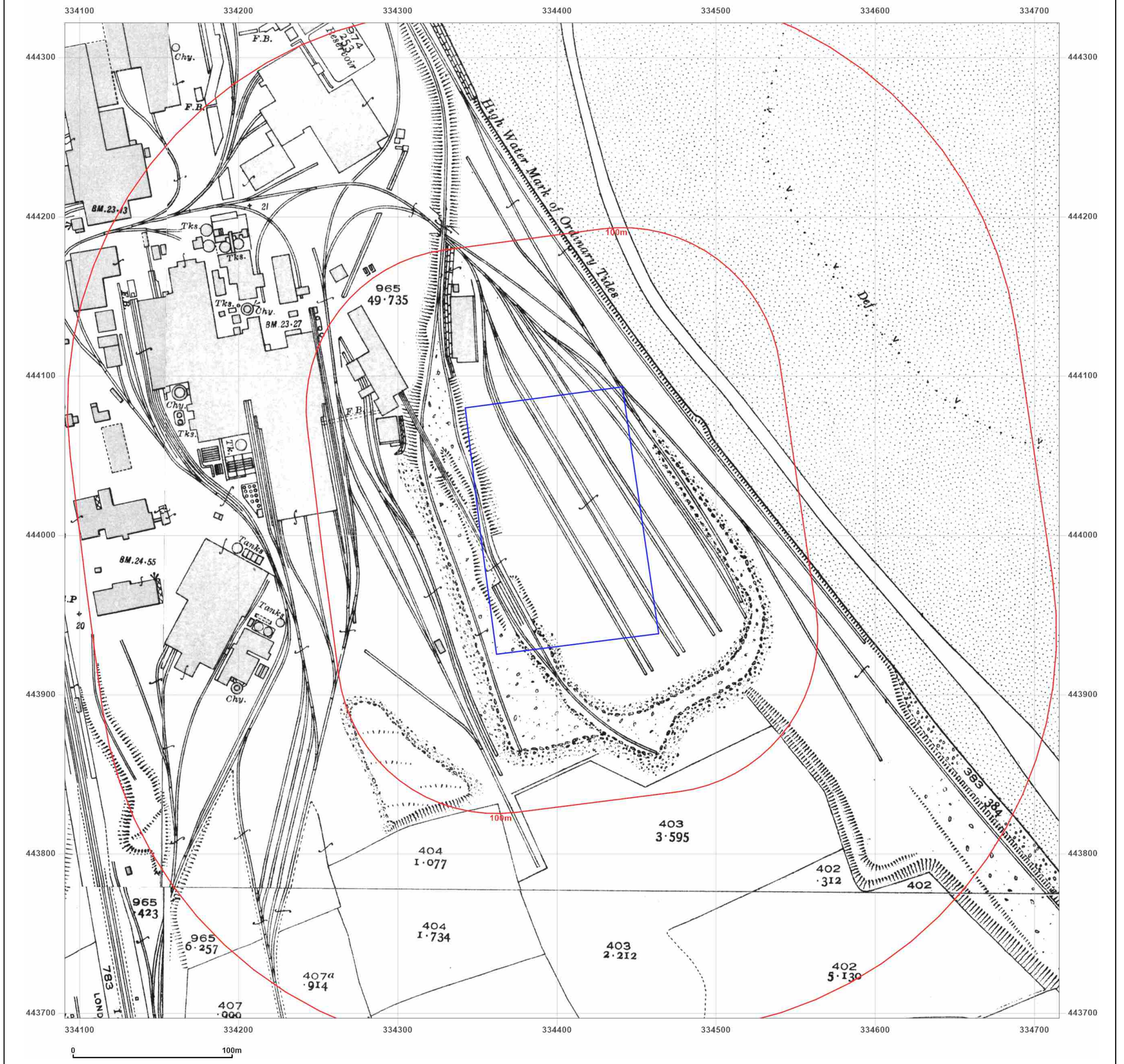

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Site Details:

HILLHOUSE INTERNATIONAL
WORKS, FLEETWOOD ROAD
NORTH, THORNTON
CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1932
Revised 1932
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Edition N/A
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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1960**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1931

Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1939

Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1931

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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1965
Revised 1965
Edition N/A
Copyright 1967
Levelled 1960

Surveyed 1965
Revised 1965
Edition N/A
Copyright 1967
Levelled 1960

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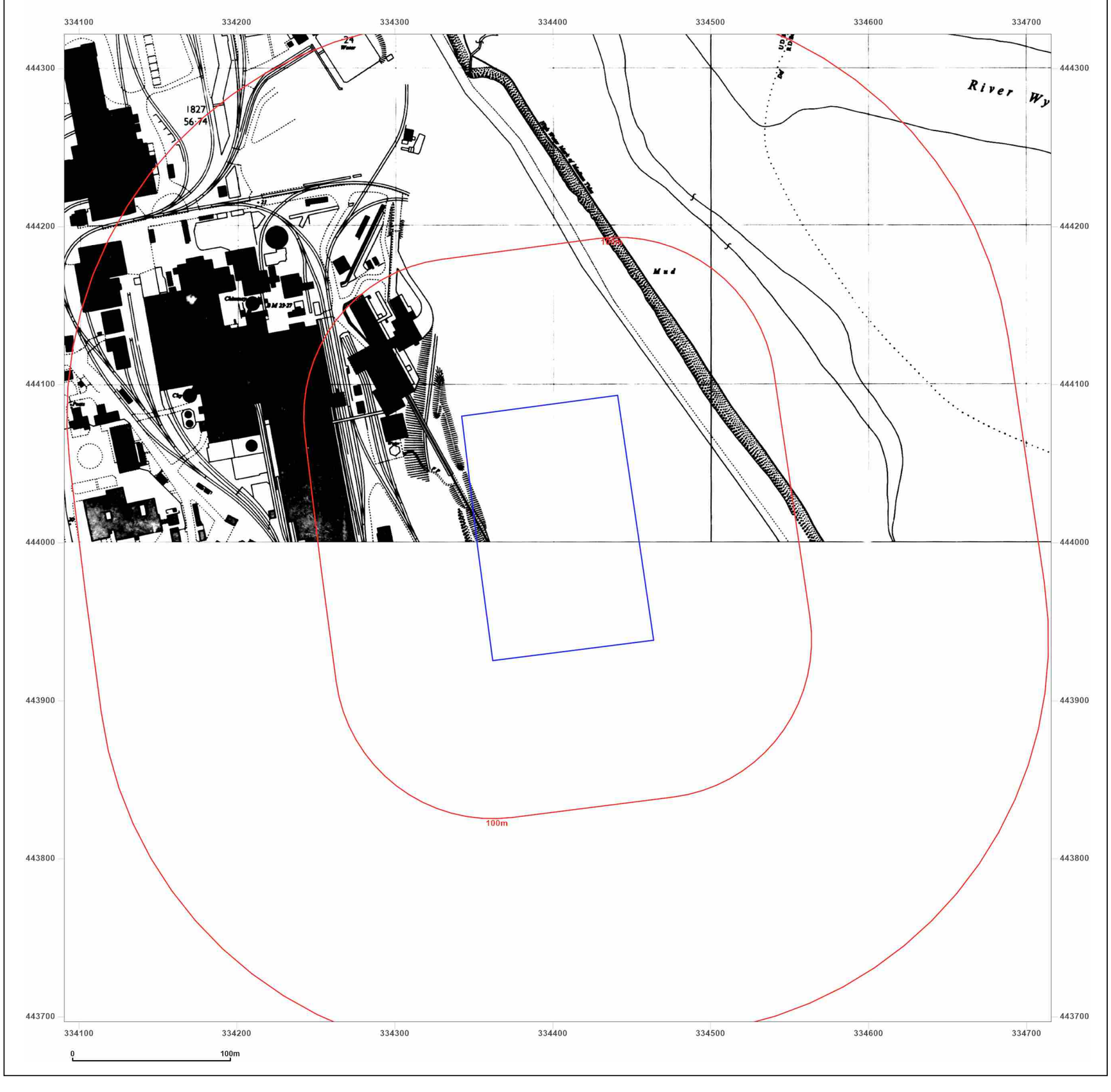

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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1970-1971**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1959
Revised 1970
Edition N/A
Copyright 1971
Levelled 1960

Surveyed 1959
Revised 1970
Edition N/A
Copyright 1971
Levelled 1960

Surveyed 1959
Revised 1970
Edition N/A
Copyright 1970
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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1976**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1976
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid
Map date: **1979**
Scale: 1:1,250
Printed at: 1:2,000

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1979
Levelled 1960

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1979
Levelled 1960

Surveyed N/A
Revised N/A
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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1983**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1983
Levelled 1960

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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1980-1983**

Scale: 1:1,250

Printed at: 1:2,000

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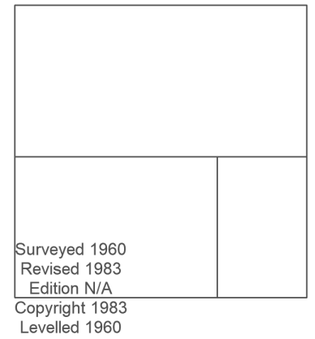

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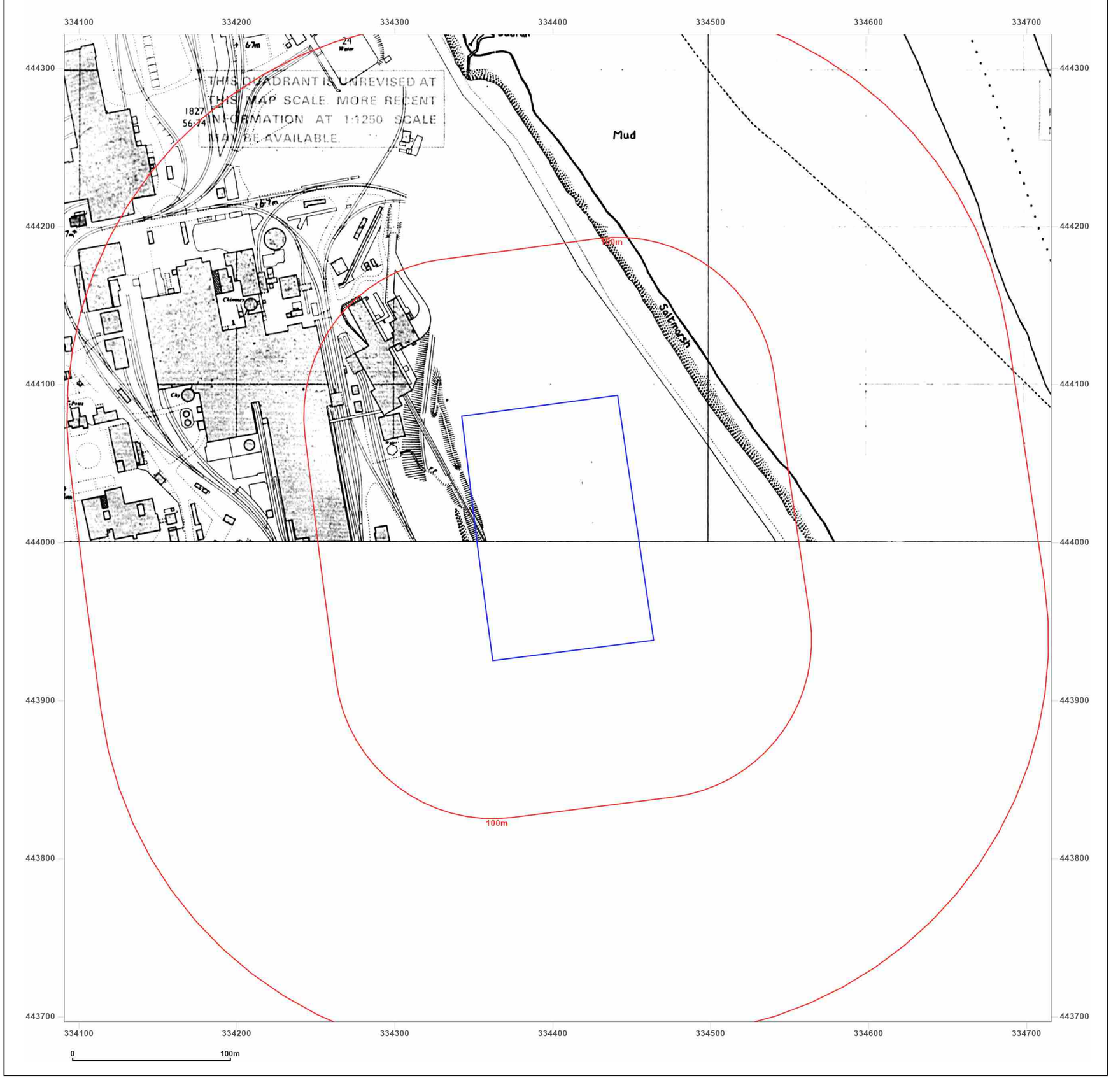

Groundsure INSIGHTS

Site Details:

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WORKS, FLEETWOOD ROAD
NORTH, THORNTON
CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1986**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1960
Revised 1986
Edition N/A
Copyright 1986
Levelled 1960

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CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid
Map date: **1988-1993**
Scale: 1:1,250
Printed at: 1:2,000

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Surveyed 1993 Revised N/A Edition N/A Copyright 1993 Levelled N/A	Surveyed 1993 Revised 1993 Edition N/A Copyright N/A Levelled N/A
Surveyed 1960 Revised 1988 Edition N/A Copyright 1988 Levelled 1960	Surveyed 1993 Revised N/A Edition N/A Copyright 1993 Levelled N/A

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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid
Map date: **1993-1994**
Scale: 1:1,250
Printed at: 1:2,000

N
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Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1994
Revised N/A
Edition N/A
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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid
Map date: **1994**
Scale: 1:1,250
Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed 1994
Revised 1994
Edition N/A
Copyright 1994
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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

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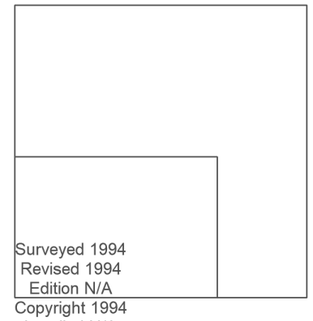

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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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2003

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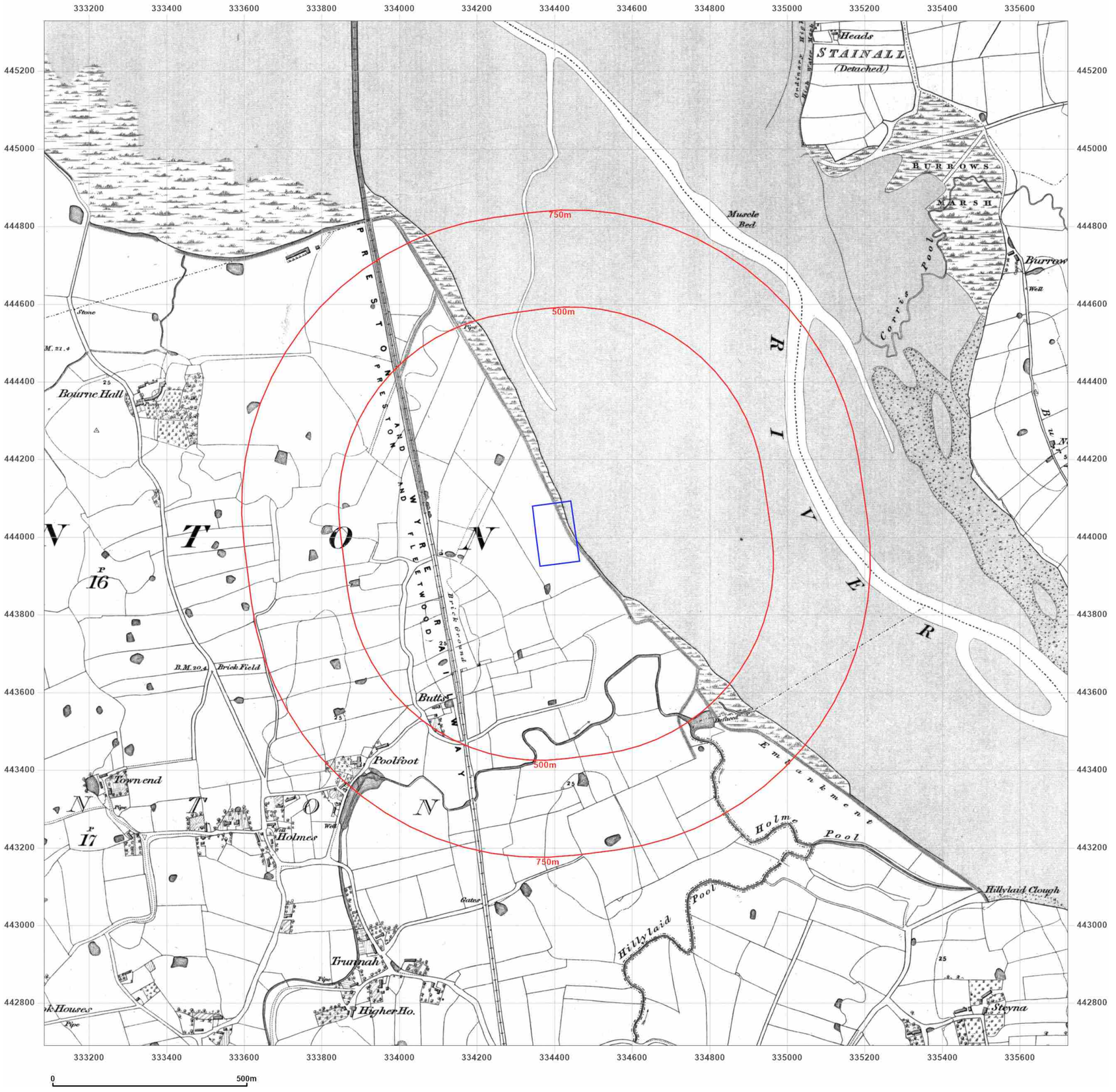

Groundsure INSIGHTS

Site Details:

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WORKS, FLEETWOOD ROAD
NORTH, THORNTON
CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: County Series

Map date: **1848**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised N/A
Edition 1848
Copyright N/A
Levelled N/A

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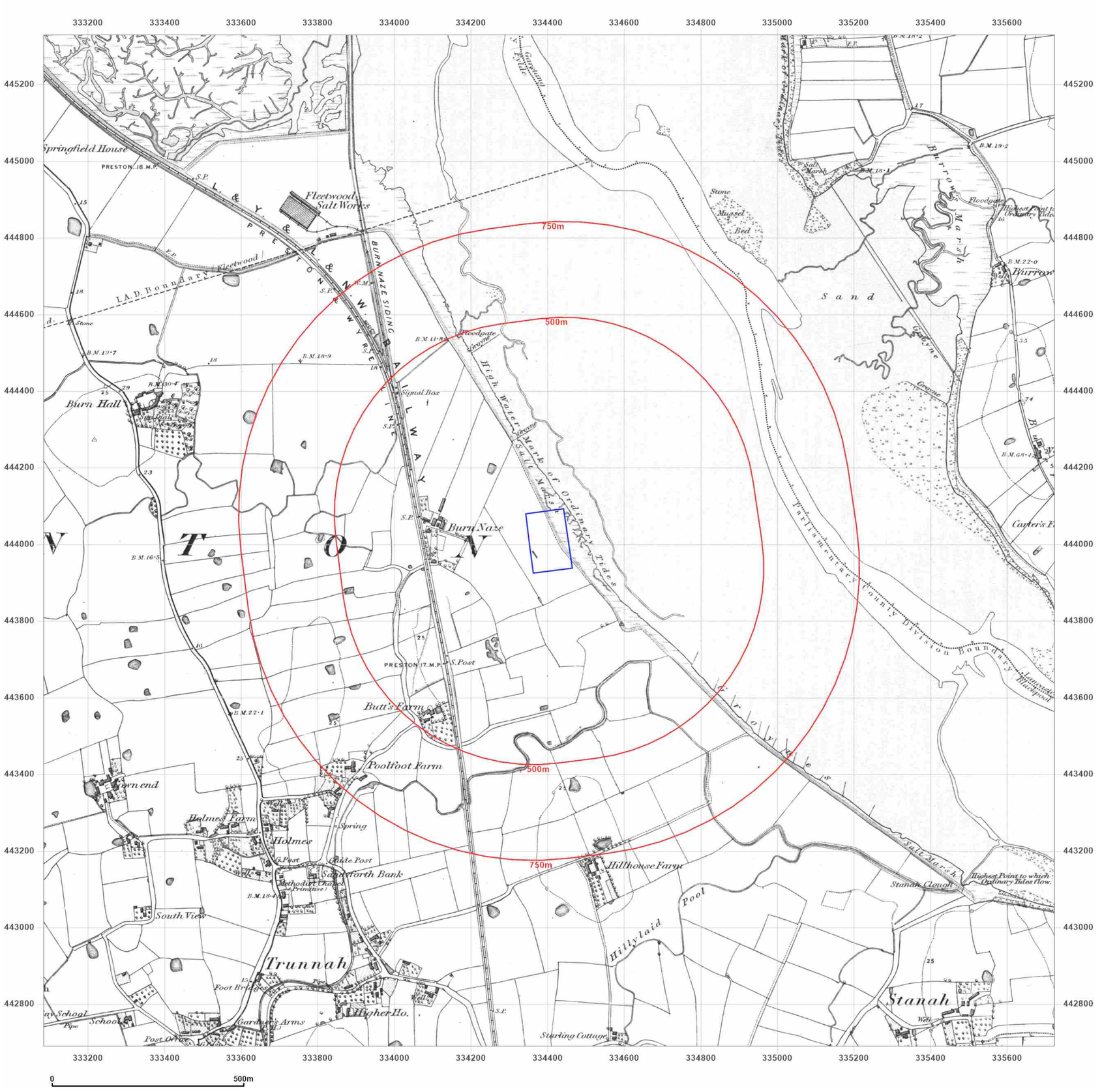

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Site Details:

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WORKS, FLEETWOOD ROAD
NORTH, THORNTON
CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: County Series

Map date: **1891**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

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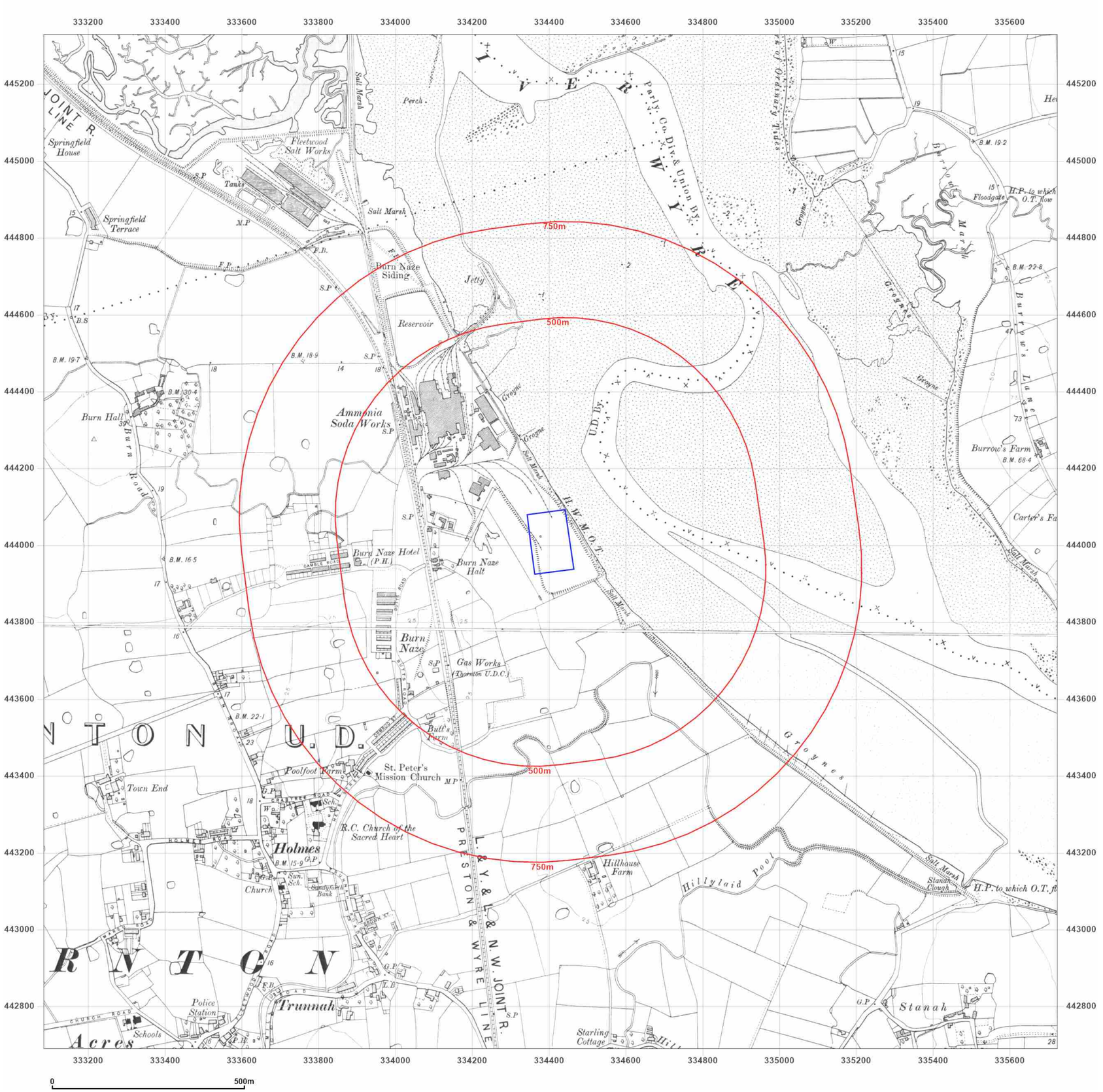

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Site Details:

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WORKS, FLEETWOOD ROAD
NORTH, THORNTON
CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: County Series

Map date: **1910**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1845
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

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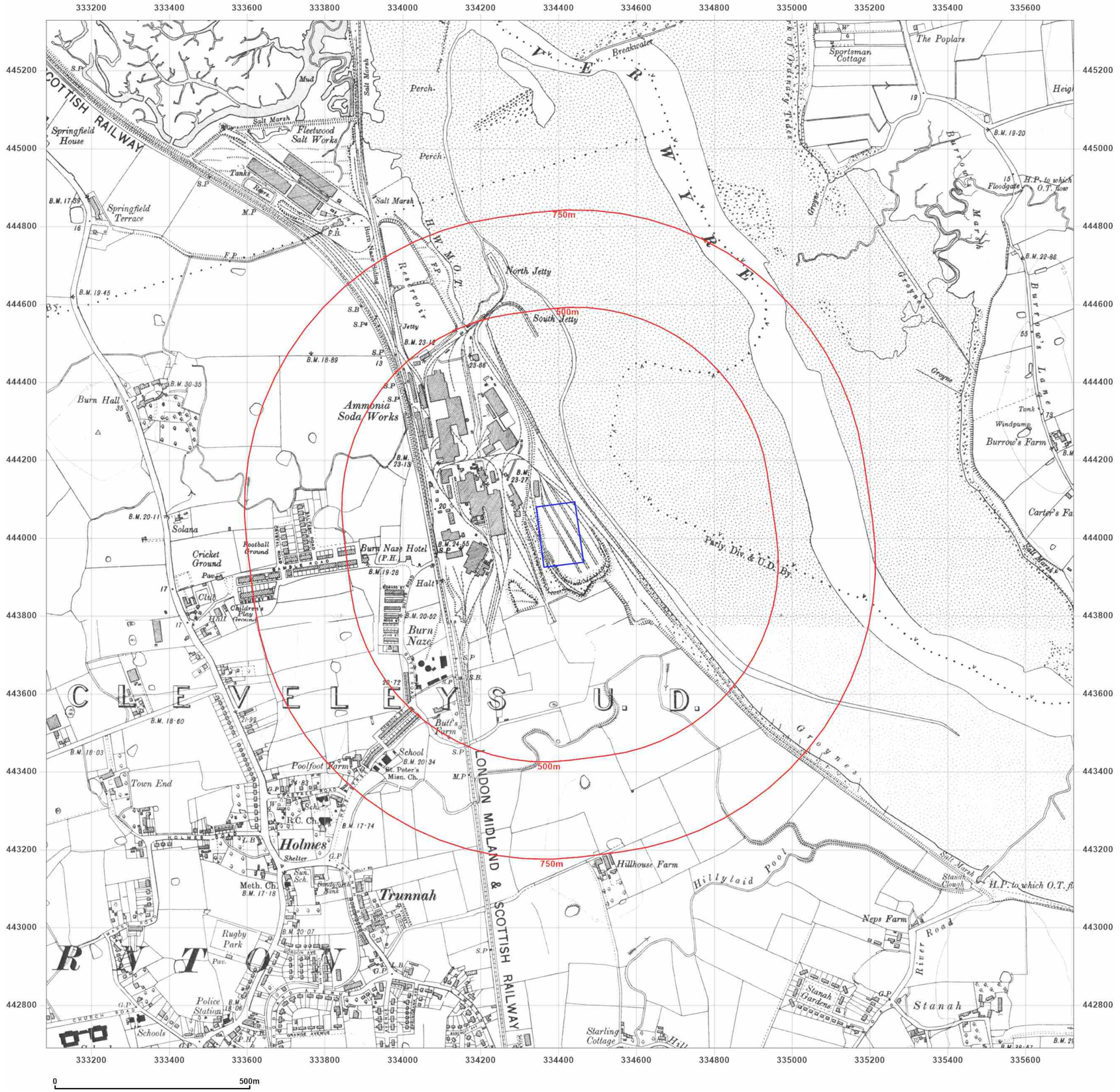

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CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: County Series

Map date: **1930-1931**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1845
Revised 1930
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

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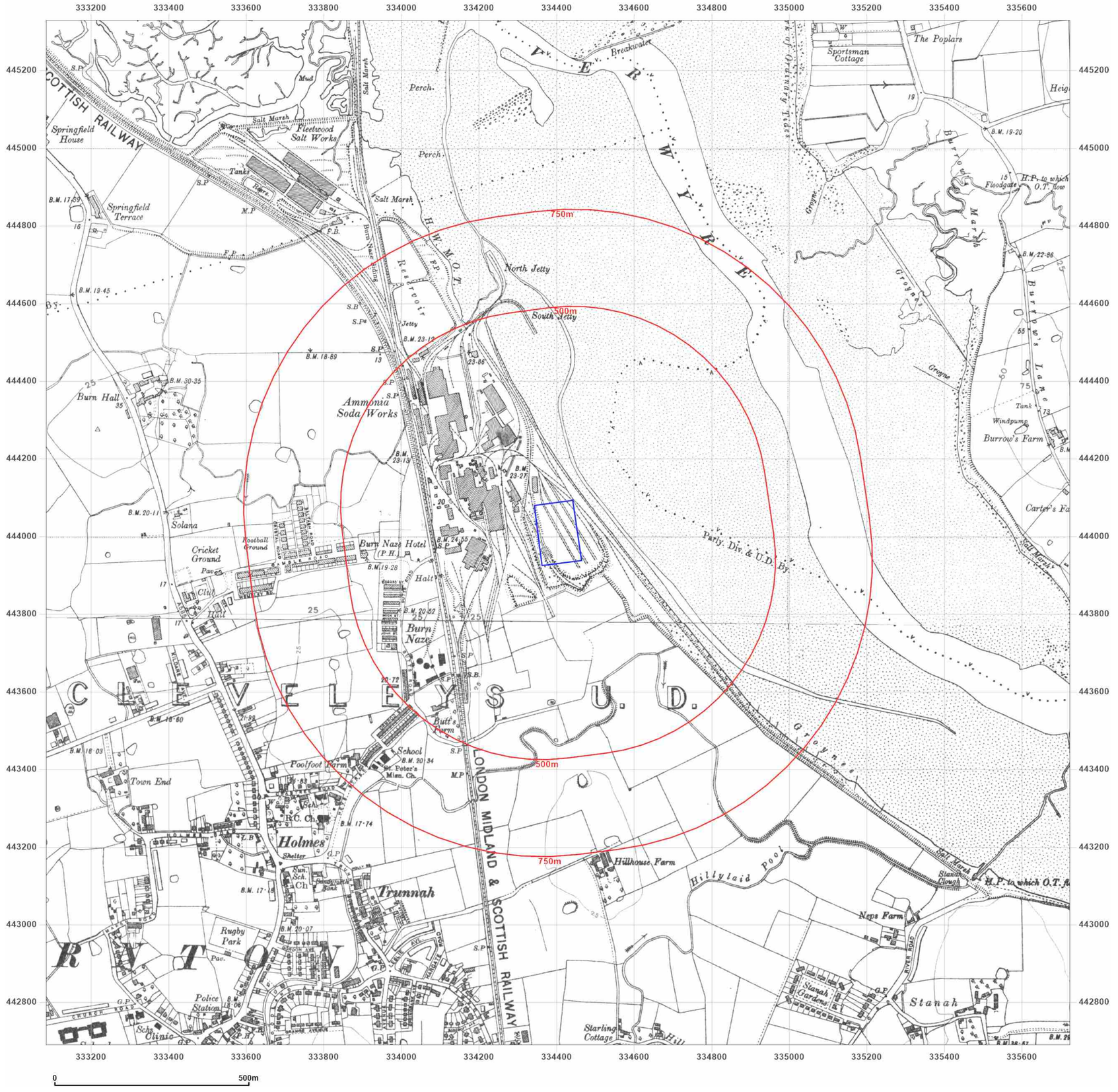

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Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1845
Revised 1938
Edition N/A
Copyright N/A
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Surveyed 1844
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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: Provisional

Map date: **1951**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
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Client Ref: TE1674_-_2140
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Grid Ref: 334403, 444009

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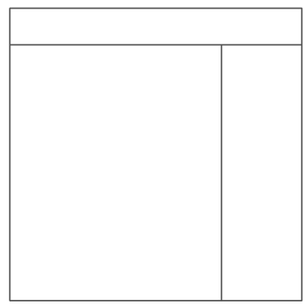

Surveyed 1967
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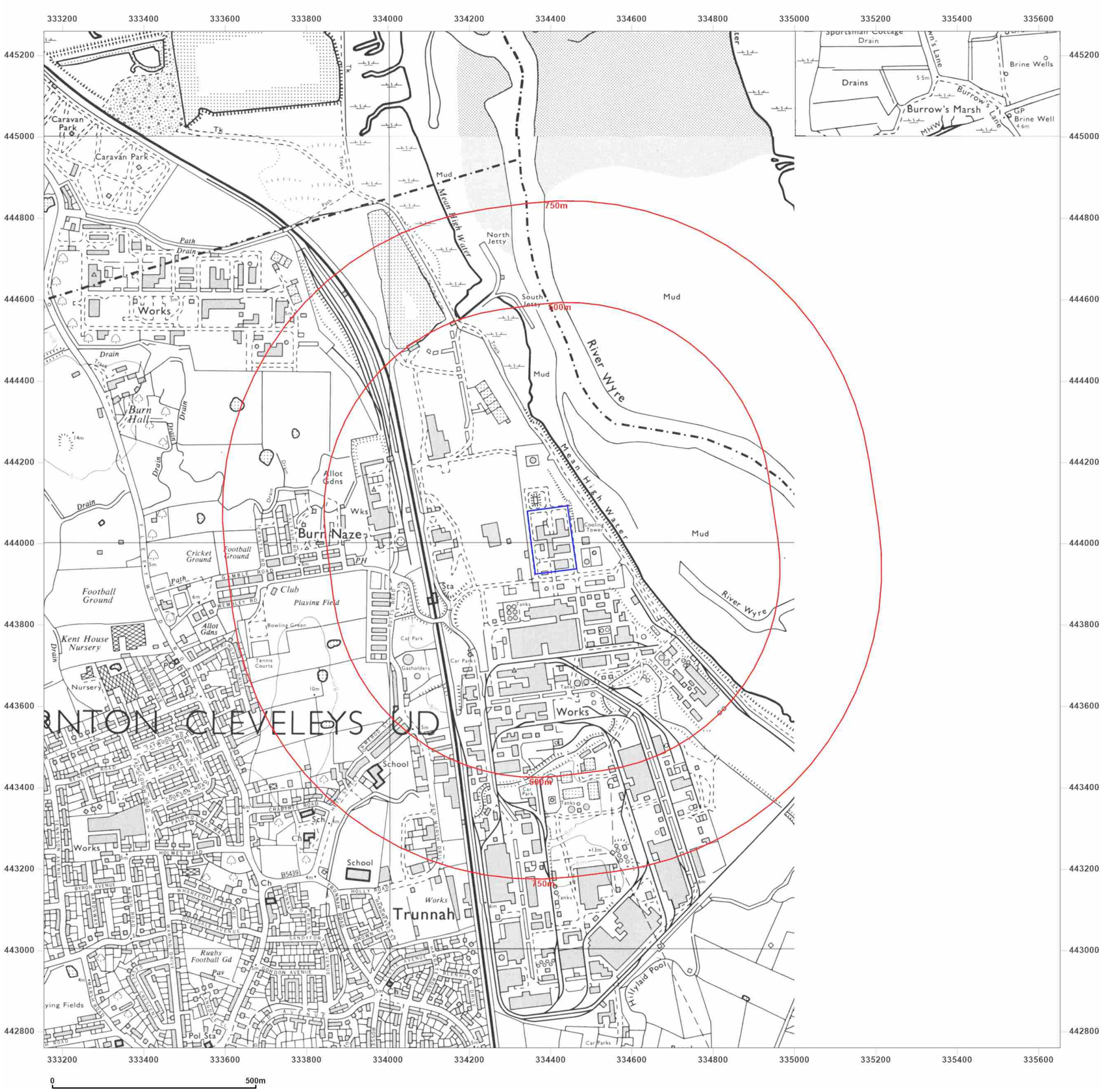

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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1969-1973**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1973
Revised 1973
Edition N/A
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Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1981-1985**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1977
Revised 1981
Edition N/A
Copyright N/A
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Surveyed 1983
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Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

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Edition N/A
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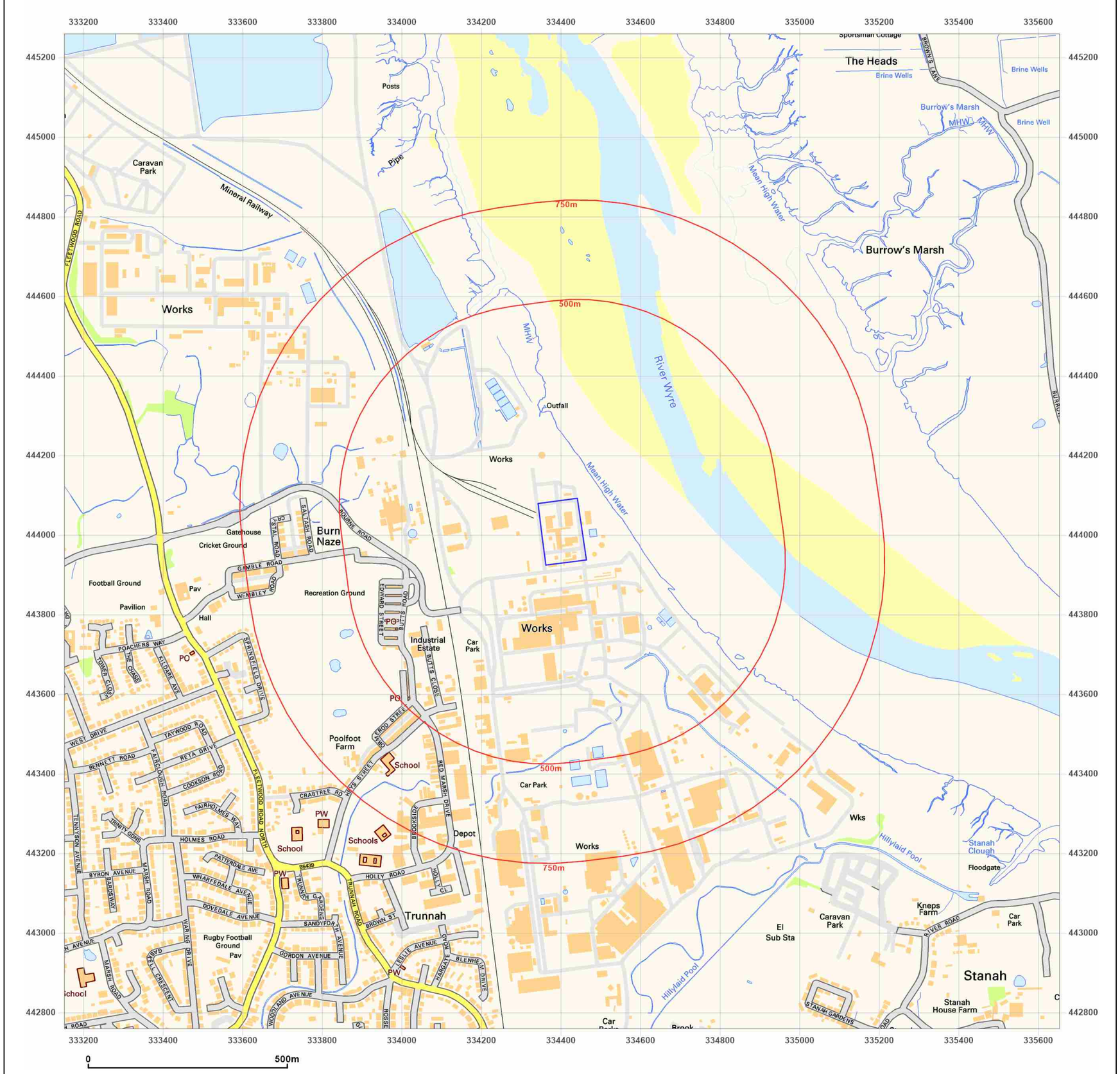

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Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid
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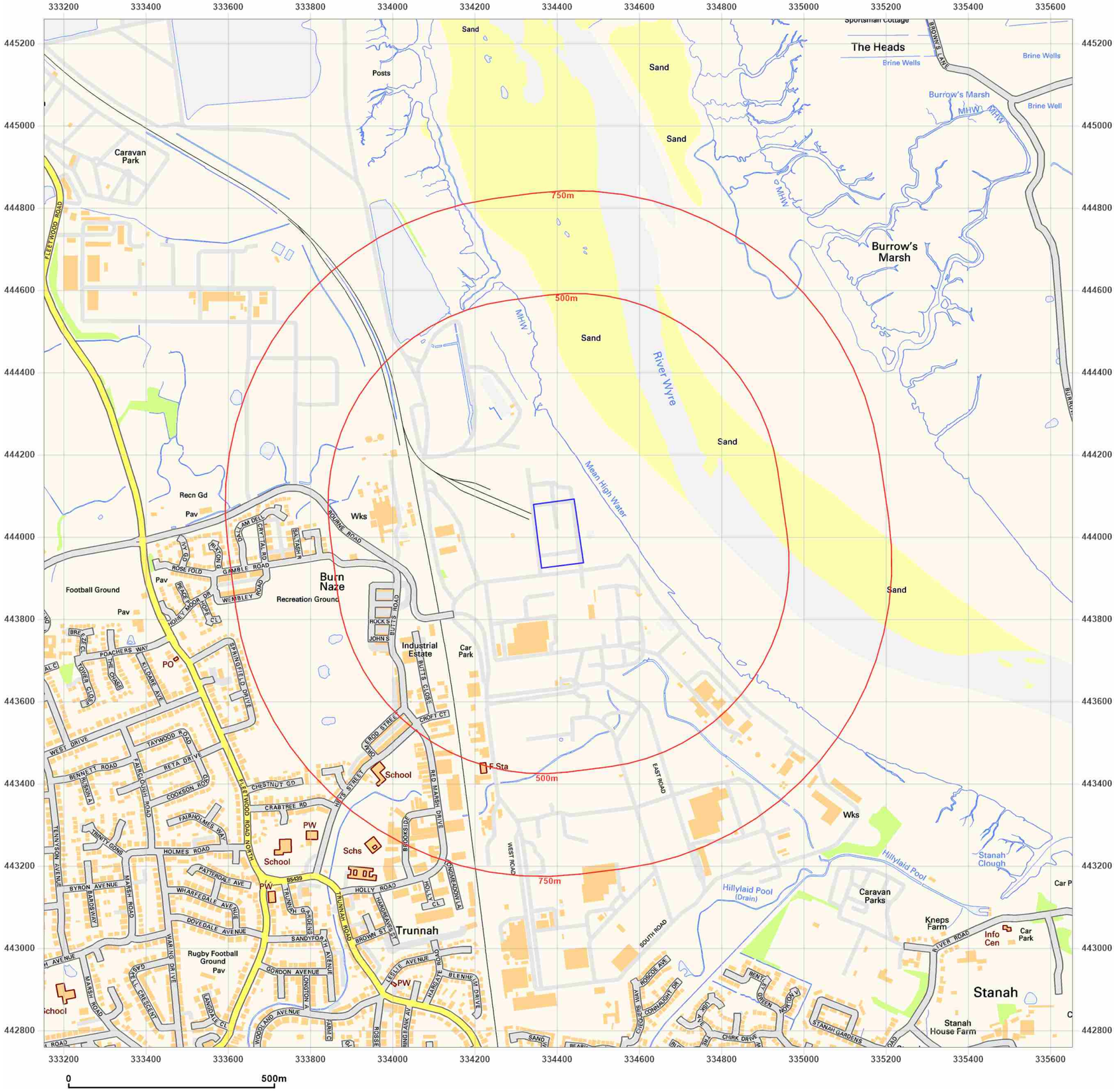

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CLEVELEYS, FY5 4QA

Client Ref: TE1674_-_2140
Report Ref: GS-8932630
Grid Ref: 334403, 444009

Map Name: National Grid
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Scale: 1:10,000
Printed at: 1:10,000

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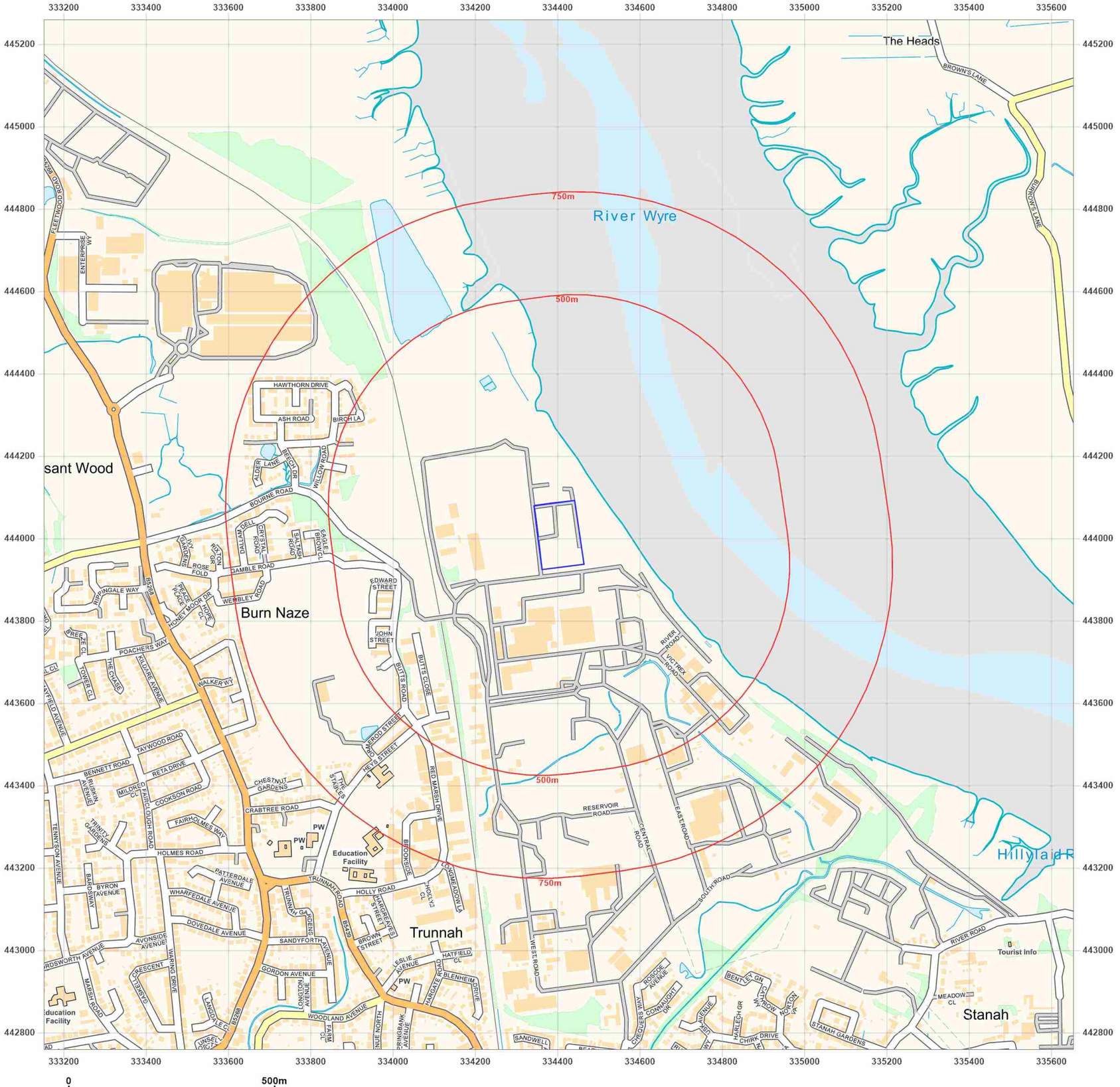

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Map Name: National Grid

Map date: **2022**

Scale: 1:10,000

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APPENDIX C - DEFINITIONS OF TERMS USED IN QUALITATIVE AND QUANTITATIVE RISK ASSESSMENTS

CIRIA C552 Terminology

For the qualitative and quantitative assessment of risks posed by potential pollutant linkages have been undertaken using the risk matrix adapted from CIRIA C552 and outlined in the table below.

	Category	Definition
Potential severity	Severe	Acute (short term) risk to human health, Major pollution of sensitive controlled waters, ecosystems or habitat. Catastrophic damage to buildings or property or crops.
	Medium	Chronic (Medium / long term) risk to human health Pollution of sensitive controlled waters, ecosystems or species, Significant damage to crops, buildings or structures
	Mild	Easily preventable permanent health effects on humans. Pollution of non-sensitive controlled waters. Minor damage to buildings or structures.
	Minor	Easily preventable non-permanent health effects on humans, or no effects. Minor, low level and localised contamination of on-site soil. Easily repairable damage to buildings or structures.
Probability of risk	High Likelihood	Pollutant linkage may be present, and the risk is almost certain to occur , or there is evidence of harm already occurring.
	Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
	Low Likelihood	Pollutant linkages may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
	Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur are improbable.

		Potential Severity			
		Severe	**Medium**	**Mild**	**Minor**
Probability of risk	**High Likelihood**	Very high risk	High risk	Moderate risk	Moderate / low risk
	Likely	High risk	Moderate risk	Moderate / low risk	Low risk
	Low Likelihood	Moderate risk	Moderate / low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	very low risk	Very low risk

APPENDIX D - CONTROLLED WATERS RISK ASSESSMENT

CURRENT GUIDANCE FOR CONTROLLED WATERS RISK ASSESSMENT

Regulatory Context

Government policy is based upon a "suitable for use approach," which is relevant to both the current use of land and also to any proposed future use. When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health, controlled waters or the wider environment given the current use and circumstances of the land. Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

> *"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:*
>
> *(a) Significant harm is being caused or there is a significant possibility of such harm being caused; or*
>
> *(b) Pollution of controlled waters is being, or is likely to be, caused."*

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

> *"the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter"*

Controlled Waters are defined Section 104 of the Water Resources Act 1991. In summary, the comprise relevant territorial waters which extend seaward for three miles from the low-tide limit from which the territorial sea adjacent to England and Wales is measured.

The Environment Agency has powers under Part 7 of The Water Resources Act (1991) to take action to prevent or remedy the pollution of controlled waters, including circumstances where the pollution arises from contamination in the land. This is reinforced in The Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, 2012) which came into force in early April 2012.

Part IIA introduces the concept of a contaminant linkage; where for potential harm to exist there must be a connection between the source of the hazard and the receptor via a pathway. Risk assessment in contaminated land is therefore directed towards identifying the contaminants, pathways and receptors that can provide contaminant linkages. This is known as the contaminant-pathway-receptor link (CPR or contaminant linkage).

Part IIA places contaminated land responsibility as a part of the planning and redevelopment process, rather than Local Authority or Environment Agency directly, except in cases of very high pollution risk or where harm is occurring. In the planning process, guidance is provided by National Planning Policy Framework (NPPF) of March 2012. The NPPF requires that a site which has been developed shall not be capable of being determined "contaminated land" under Part IIA. Therefore, appropriate risk-based investigation is required to identify the contaminant linkages that can then be assessed, and then mitigated using methods that can be agreed with the planners.

Source Protection Zones

Source Protection Zones (SPZs) are defined by the Environment Agency (for England and Wales), SEPA (Scotland) and the Environment and Heritage Service (Northern Ireland) for groundwater sources such as wells, boreholes and springs that are used for public drinking water supply. The zones show the risk of contamination from activities that might cause groundwater pollution in the area. The size and shape of a zone depends upon subsurface conditions, how the groundwater is removed, and other environmental factors.

SPZs are classified into four categories:

- **Zone 1 (Inner protection zone).** Any pollution that can travel to the abstraction point within 50 days from any point within the zone is classified as being inside Zone 1. This applies at and below the groundwater table. This zone also has a minimum 50 m protection radius around the abstraction point. These criteria are designed to protect against the transmission of toxic chemicals and water-borne disease.
- **Zone 2 (Outer protection zone).** The outer zone covers pollution that takes up to 400 days to travel to the abstraction point, or 25% of the total catchment area, whichever area is the largest. This travel time is the minimum period over which the Environment Agency considers that pollutants need to be diluted, reduced in strength or delayed by the time they reach the abstraction point.
- **Zone 3 (Total catchment).** This is the total area needed to support removal of water from the abstraction point, and to support any discharge from this.
- **Zone of special interest.** This may occasionally be defined as a special case. This is usually where local conditions mean that industrial sites and other potential sources of contamination could affect the groundwater source, even though they are outside the normal catchment area.

Groundwater Vulnerability Assessments

From 1 April 2010 The Environment Agency Groundwater Protection Policy began to use aquifer designations which are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems.

The aquifer designation data is based on geological mapping provided by the British Geological Survey. It is updated regularly to reflect their ongoing programme of improvements to these maps. The maps are split into two different type of aquifer designation:

- Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels.
- Bedrock -solid permeable formations e.g. sandstone, chalk and limestone.

The maps display the following aquifer designations:

Table 1. Aquifer Classification ("Geological Classification").

Classification	Definition
Principal Aquifers (Highly Permeable)	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
Secondary A Aquifers	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
Secondary B Aquifers	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
Secondary Undifferentiated Aquifers	This has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Environment Agency Guidance

The Environment Agency's stance on groundwater resources is:

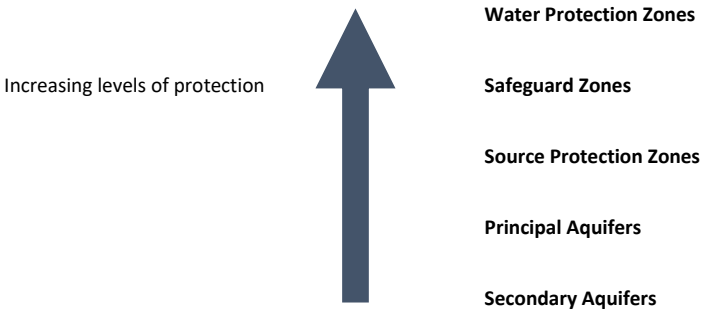
> *"to protect and manage groundwater resources for present and future generations in ways that are appropriate for the risks we identify"* (Groundwater Protection: Policy and Practice GP3, 2012).

At present, the legislation and guidance pertaining to the protection of controlled waters in the UK is complex; however, the core objectives seek to enforce the position given above.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document introduced areas of focus for developments such as Source Protection Zones (SPZs) and Groundwater Vulnerability Maps. The Policy was revised in 1998, since which there have been substantial changes in legislation, driven by key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991 as amended by the Water Act 2003. Gaps in the 1998 PPPG that emerged as the result of further legislative changes were addressed in the Environment Agency Policy document Groundwater Protection: Policy and Practice (GP3), Version 1 of November 2012. The three main parts of GP3 were:

- Groundwater principals;
- Position statements and legislation; and
- Technical information.

The Environment Agency has a tiered risk based approach to drinking water protection as summarised below:



APPENDIX E - COMPLYING WITH CONTROL OF ASBESTOS REGULATIONS 2012

Complying with Control of Asbestos Regulations (CAR): Risk Assessments, Licensing and Training

This appendix outlines CAR risk assessments and where they should be applied in relation to assessing and remediating brownfield sites. The information below details the different classifications of work with asbestos under CAR, summarises the legal requirements for asbestos awareness training for all involved in the investigation and management of asbestos containing soil (ACS), and details the potential requirements for suitable proficiency training relating specifically to ACS.

CAR RISK ASSESSMENTS

A CAR Risk Assessment is required for any work which may expose employees to asbestos. It is recommended that a precautionary approach is adopted if there is any doubt about risks associated with asbestos.

There are three main activities for potential asbestos exposure during work on brownfield sites:

- Site reconnaissance visits;
- Site investigation works; and
- Site remediation.

CAR risk assessments are needed at each stage but may be incorporated during the site investigation stage into the overarching health and safety risk assessments.

The CAR risk assessment must:

- Identify the type of asbestos to which employees are liable to be exposed, where possible, or assume it is present in different forms;
- Determine the type and extent of exposures to asbestos that may occur during the work
- Identify the steps to be taken to prevent exposure or reduce it to the lowest level reasonably practicable; and,
- Consider the effects of control measures that have been or will be taken.

The CAR risk assessment should include any information used to inform the risk assessment such as asbestos reports or desk study information. In the event that this information is not available, the assessor should be assumed that all forms of asbestos may be present on Site.

For all investigation and remediation of ACSs, a detailed written work plan should he produced and followed as detailed on the HSE website and in the CAR.

The CAR risk assessments for specific investigations or remediation projects, will determine whether or not work is 'licensable work' (LW)**,** notifiable non-licensable work' (NNLW) or 'non-licensed work' (NLW). In addition, training requirements are also defined by the CAR risk assessment.

Some examples of control measures that apply during site reconnaissance, site investigation works, and site remediation are given below and should be applied depending on the asbestos risks identified for the Site at each stage of investigation:

- Avoiding stirring up dust;
- Cleaning footwear after site works;
- Removing and bagging any overalls for disposal/laundering;
- Respirators and hygiene facilities for high risk sites;
- Segregated welfare units;
- Wetting ground
- Minimising soil disturbances;
- Implementation or retention of capping/break layers;
- Implementation of awareness training;
- Air monitoring;
- Managing stockpiles;
- Area segregation;
- Wheel washing
- Road washing/cleaning

It is important to note that during Site reconnaissance visits, Site investigation works and Site remediation that asbestos should not be considered in isolation and control measures are likely to form part of a wider health and safety precautions.

Respiratory protective equipment (RPE)

RPE is the last line of defence and its requirement would be defined by the CAR risk assessment. HSE (2013b) advises that RPE should have an assigned protection factor of 20 or more for all work with asbestos. In certain instances, full face-piece, positive pressure respirators with a protection factor of 40 are necessary (to EN 12942:1998, TM3).

Suitable types of RPE for most ***short*** duration non-licensed asbestos work:

- Disposable respirator to standards EN149 (type FFP3) or EN1827 (type FMP3)
- Half mask respirator (to standard EN140) with P3 filter
- Semi-disposable respirator (to EN405) with P3 filter

These filters are not suitable for people with beards/stubble or for long or continuous use.

LICENSING

CAR defined certain types of activities involving asbestos as 'licensable work' (LW) or as 'notifiable non-licensable work' (NNLW). All other work would be 'non-licensable work' (NLW).

LW is defined as:

- work where exposure is not 'sporadic and low intensity'
- work where the risk assessment cannot demonstrate that the control limits (four hour and 10 minute limits) will not be exceeded
- work on asbestos coating
- work on AIB or insulation where risk assessment is either of first two points above or not of short duration (where short duration is defined for any work liable to disturb asbestos as taking less than two hours per week (including ancillary work) and no one person carries out that work for more than one hour').

NNLW includes work with:

- AIB or asbestos insulation of short duration that is not licensable
- fire-damaged asbestos cement or asbestos cement damaged so as to create significant dust and debris
- asbestos ropes, yarns, woven cloths in poor condition or handling cutting or breaking up the materials
- asbestos papers, felts and cardboard in poor condition, unencapsulated or not bound into another material.

Work with weathered asbestos cement, air monitoring and collecting samples of ACM in buildings would not normally be notifiable.

It is impossible to specify definitively what activities will and will not be licensable. This decision should be made as part of the CAR risk assessment. CAR is not primarily aimed at work with ACSs and there is little published information on airborne asbestos concentrations during work with ACSs. Nevertheless, CAR will require some remediation projects, and occasionally site investigations, to be LW. Investigations on other sites may involve NNLW. The decision as to whether work is LW or NNLW should be made during the CAR risk assessment by those in charge of the brownfield site investigations and remediation projects.

TRAINING REQUIREMENTS

Asbestos health and safety courses are offered by a number of providers in the UK. Training courses that include the problem of identifying ACMs in soil should be undertaken at regular intervals by those involved in the investigation, assessment and management of sites where ACs are known or suspected. It is the role of the employer to identify the level of training required for an employee based on their role, experience and duties. Reference to Regulation 10 of CAR should be referred to for more information on training requirements.

Recognising asbestos within soils is challenging due to the heterogeneity of such soils and the discolouration of asbestos by smeared soil. Specific training for ground workers should include understanding fibre release potential, potential control measures in the field, how to take representative ACSs safely, sample labelling and what analytical tests are available and when the y should be implemented.

Health and safety training required under CAR includes asbestos awareness, non-licensable work (including notifiable non-licensable work) and licensable work with asbestos.

In addition to health and safety training, some staff involved in the technical identification on site of ACMs, sampling and analysis may require technical proficiency training (competency training).

Training vs. Competence

HSE (2005) identifies that ‘training alone does not make people competent. Training must be consolidated by practical experience so that the person becomes confident, skilful and knowledgeable in practice on the job.’ It is critical that ACS surveyors demonstrate competency with details of relevant field experience alongside training and examples of previous works/references.

GROUND INVESTIGATION REPORT FOR HILLHOUSE BUSINESS PARK, THORNTON CLEVELEYS

TE1674-TE-00-XX-RP-GE-002-V02

VERSION 2.0

25 NOVEMBER 2022

FINAL

Prepared for:

Sesona Ltd

Prepared by: Eve Rowland

Tier Environmental Ltd

DOCUMENT CONTROL

Report No. :	TE1674-TE-00-XX-RP-GE-002-V02
Report Status:	FINAL
Version No.:	2.0
Project Engineer:	Eve Rowland
Date of Issue:	25/11/2022

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Version No.	Description of Issue / Revision	Date of Issue	Author	Reviewed By	Approved By
1.0	DRAFT – Awaiting final ground gas monitoring and laboratory geotechnical results.	05/10/2022	Eve Rowland	Andrew Harrison	Sean Lee
2.0	Final – Updated with final gas monitoring results and text added relating to dissolution risk associated with Preesall Halite Member	25/11/2022	Eve Rowland & Stuart Milne	Andrew Harrison	Sean Lee

CONTENTS

TABLES

FIGURES

APPENDICES

EXECUTIVE SUMMARY

Introduction	Tier Environmental was commissioned by Sesona Ltd to undertake a Ground Investigation of Hillhouse Business Park. The purpose of the investigation was to determine the nature and extent of soil and groundwater beneath the Site for the purposes of environmental and geotechnical assessment.
Proposed land use	It is proposed that the site will be developed as The Thornton Energy Recovery Centre (TERC), an energy-from-waste (EFW) facility.
Site location and surrounding land uses	The site is located at Hillhouse Business Park, off Bourne Road, Thronton Cleveleys, FY5 4QD. The surrounding land uses are predominantly commercial/industrial.
Site history	The Site was undeveloped until 1932 when railway lines were shown on maps. As of 1969, buildings associated with a chemical works (VC4 - vinylidene chloride) are shown on site along with multiple associated tanks, water storage facilities, yards and chimneys. These buildings are no longer shown on maps as of 2010, however; information provided to Tier details the plant being decommissioned in 2000. It is understood that the main vinylidene chloride storage tanks were bunded and located immediately to the east of the study site. The surrounding land use is commercial/industrial with multiple off-site developments. An Ammonia Soda Works is shown approx. 40m north and 120m west of the site which extends northwards in the west approx. 500m to a reservoir; this is no longer shown on mapping from 1969.
Previous investigations	A Preliminary Risk Assessment report was prepared by Tier Environmental prior to the commencement of Site works; report reference: TE1674-TE-00-XX-RP-GE-001-V01 dated 29th July 2022.
Fieldwork	Fieldwork was undertaken between the 8th and 11th of August 2022, supervised by a suitably qualified geoenvironmental engineer and comprised: • Advancement of 10 No. hand dug pits to 1.20m bgl in all borehole locations for service clearance purposes. • Advancement of 3 No. cable percussive boreholes to depths between 14.80m bgl and 15.10m bgl. • Advancement of 7 No. window sample boreholes to depths of 5.45m bgl. • Excavation of 7 No. machine excavated trial pits to depths between 0.40m bgl and 3.60m bgl. • Completion of 4 No. plate bearing tests in selected trial pit locations.
Laboratory testing	Samples of soil and groundwater were submitted for analysis of a range of metal, non-metallic compounds, hydrocarbons and asbestos. Geotechnical testing was scheduled on selected samples. All testing was undertaken at accredited laboratories.
Ground conditions	Made Ground was encountered in all locations at depths from ground level to between 2.60m bgl and 3.60m bgl comprising both cohesive and granular materials. Underlaying the Made Ground were tidal flat deposits, encountered as both cohesive and granular deposits. The tidal flat deposits were encountered to maximum depths between 6.10m bgl and 8.60m bgl. Till was encountered beneath the tidal flat deposits comprising cohesive clay; the base of this stratum was not encountered.
Ground stability	Ground conditions of Site were stable however, the tidal flat deposits were identified as soft in some exploratory hole locations. The GroundSure report obtained prior to the Site investigation works outlines that 65% of the 1km grid which encompasses the Site, "Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow". However this risk is associated with the Preesall Halite Member which is mapped 59m to the east of Site. Therefore the risk of ground dissolution has been identified in the GroundSure as "negligible".
Foundations and floor slabs	It is recommended that the appropriate foundation solution to accommodate the ground conditions and the anticipated loads associated with the proposed structure on site would be a piled solution. It may be possible for vibro-stone columns to be adopted in areas of the development with lighter loads. If a piled solution is adopted at the site, piles will need to be driven to bedrock and therefore it is recommended that further ground investigation; likely cable percussive with rotary follow on based on the anticipated bedrock depth obtained from publicly available boreholes in the area. also may be necessary for a geogrid to be implemented to reduce to possibility and impacts of differential settlement of the structure. Based on the results of laboratory and in situ geotechnical tests, field observations and the low strength of the Made Ground and tidal flat deposit soils underneath the area of the proposed facility, it is proposed that floor slabs are ground bearing, but that the Made Ground beneath the floors is removed in order to prevent excessive cracking or differential settlements. The piles will have to advance through the variable tidal flat deposits for the ground bearing floor slab to sit on, to reduce the risk of any unacceptable differential settlements. If a ground bearing floor slab is incorporated into the design, a capping layer should be included which would then proof rolled to the desired specification.
Sulphate class	It is considered that a Design Sulphate Class of DS-2 and ACEC Class AC-2 is appropriate for buried concrete within Made Ground and DS-1 and ACEC Class AC-1 for natural soils at the Site.

Contamination – Human Health	Elevated concentrations of concentrations of PAHs (Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Dibenzo(ah)anthracene and Benzo(b)fluoranthene), TPHs (>EC16-EC21 and >EC21-EC35) and VOCs (vinyl chloride, 1-2 Dichloroethane and 1-2-4 trimethylbenzene) have been reported in excess of the GAC protective of human health for a commercial/industrial land use. These exceedances have been recorded in WS03 and WS01 within the Made Ground (MG1). Measured concentrations of VOCs (vinyl chloride and 1-2 dichloroethane) have been reported in excess of the GAC protective of human health for a commercial/industrial land use. In total, 1 No. exceedance of 1-2 dichloroethane was recorded in WS02 at 0.90m bgl, within the Made Ground. An exceedance of vinyl chloride and 1-2 dichloroethane was also recorded in CP03 at 4.80m bgl in the tidal flat deposits.
Contamination – Controlled Waters	The tidal flat deposits and the Till are undifferentiated aquifers with a very low to low permeability and mixed flow type whereas the Kirkham Mudstone member is a Secondary A Aquifer with a low permeability with a fracture flow type. Groundwater flow direction beneath the Site is likely to be north-eastwards towards the River Wyre (59m northeast). There are no recorded Source Protection Zones within 250m of the Site. Groundwater strikes were encountered in both the superficial deposits and the bedrock. The Site is set within an area of significant wider historical and present commercial/industrial land use. On this basis the controlled waters sensitivity for the undifferentiated aquifers is moderate and Secondary A Aquifers is low. The zinc, naphthalene, phenol and TPH exceedances are by either the same order of magnitude or one order of magnitude. Given the marginal nature of these exceedances, the potential for significant dilution between the Site and the River Wyre located 59m northeast, the historical commercial / industrial heritage of the wider area surrounding the Site, low/moderate sensitivity of the controlled waters environment as described in Section 11.2 above, the fact that the Site will incorporate buildings / hardstanding and a dedicated drainage system that shall reduce infiltration rates through the soils and the protection offered to the underlying Secondary A aquifer by the Low permeability tidal flat and till undifferentiated aquifers. Measured dissolved phase groundwater concentrations of phenanthrene, anthracene, benzo(a)pyrene, benzo(ghi)perylene, benzo(b)fluoranthene, benzo(k)fluoranthene and total phenols have been reported in excess of the respective WQS protective of the controlled waters environment by between 2 No. orders of magnitude and 5 No. orders of magnitude. Further measured concentrations of PAHs, VOCs, SVOCs, and phthalates without publicly available GACs have also been identified. It is therefore considered that measured dissolved phase concentrations maybe presenting an unacceptable risk to the controlled waters environment and further works are recommended.
Gas protection	The results of 6 No. ground gas monitoring visits have given a Gas Screening value of 0.0112 l/hr – Characteristic Situation 1, very low risk scenario. However, as some measured levels of carbon dioxide and methane are above 5% v/v and given the presence of elevated measured concentrations of carbon monoxide (above the WHO short and long term exposure limit) consideration should be given to raising the Site to a **Characteristic Situation 2 – Low Risk** scenario for which ground gas protection measures are required. The elevated concentrations of contaminants measured which produce vapours (such as naphthalene) mean a vapour protection system should also be incorporated into the gas protection measures.
Radon Requirements	Basic radon protection measures are not currently required for the proposed development on this Site.
Waste Soils Classification	Basic waste characterisation has determined that Made Ground soils are Basic waste characterisation has demonstrated that 10 No. of the samples of the materials tested have been classified as hazardous waste: • CP02 at 2.00m bgl (MG1). • CP03 at 0.70m bgl (MG1). • CP03 at 2.50m bgl (MG1). • TP01 at 0.20m bgl (MG1). • TP05 at 1.10m bgl (MG2). • WS01 at 2.40m bgl (MG1). • WS02 at 0.90m bgl (MG1). • WS03 at 0.50m bgl (MG1). • WS04 at 1.80m bgl (MG1). • WS06 at 1.30m bgl (MG1). Basic waste characterisation has demonstrated that 12 No. of the samples of the material tested have been classified as non-hazardous waste: • CP01 at 2.80m bgl (MG1). • CP202 at 7.00m bgl (DD2). • CP03 at 7.10m bgl (DD2). • TP01 at 2.00m bgl (MG1). • TP02 at 0.30m bgl (MG1). • TP03 at 1.00m bgl (MG1).

	• TP04 at 0.80m bgl (MG1). • TP07 at 1.20m bgl (MG1). • TP07 at 3.10m bgl (DD1). • WS01 at 0.50m bgl (MG1). • WS07 at 3.30m bgl (DD1). Samples that were deemed 'potentially hazardous' in each case it is either due to hazard property 'HP 3(i): Flammable liquid waste' or hazard property 'HP 3(iv): Flammable gaseous waste' and as no free phase product was observed and the waste is not gaseous, it is not considered that these hazard properties are relevant for the soil waste. On this basis, it is considered that in each of these cases the materials can be considered non-hazardous. Natural soils are likely to be suitable for disposal to an inert waste landfill.

1. INTRODUCTION

Tier Environmental were commissioned by Sesona Ltd (the Client) to undertake a Land Contamination Risk Management (LCRM) ground investigation for an area of land referred to as Hillhouse Business Park, located off Bourne Road, Thornton Cleveleys FY5 4QD (the "Site").

The title of this report is in accordance with that described in the Land Contamination Risk Management guidance (available at https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm) which has superseded CLR 11:

Stage 1:

- LCRM Tier 1 Preliminary Risk Assessment Report
- LCRM Tier 2 Generic Quantitative Risk Assessment Report
- LCRM Tier 3 Detailed Quantitative Risk Assessment Report

1.1. Proposed Development

The Client is looking to developed the Site as a new energy-from-waste (EFW) facility, known as the Thornton Energy Recovery Centre (TERC). A proposed Site Layout Plan is presented in Appendix B. As such, in accordance with the 'Updated technical background to the CLEA model' (Environment Agency, 2009) and 'Suitable 4 Use Levels' (LQM / CIEH 2015) the proposed generic land use for this development commercial/industrial.

1.2. Previous Reports

A previous contamination risk assessment has been undertaken by Tier Environmental and the findings summarised within a Preliminary Risk Assessment that should be read in conjunction with this report and is referenced as:

- Tier Environmental Ltd – 'Preliminary Risk Assessment for Hillhouse Business Park, Thornton Cleveleys' (Report reference: TE1674-TE-00-XX-RP-GE-001-V01 Dated July 20220.

1.3. Objectives

Taking into account the proposed Site development , the objectives of this appraisal are:

- To determine current ground and groundwater conditions.
- To determine the potential risks to human health and the wider environment.
- To provide a preliminary waste soils classification.
- To determine potential risks posed to the Site from hazardous ground gases and / or vapours.
- To provide preliminary geotechnical parameters to inform floor slab and foundation recommendations.

1.4. Assumptions

The following assumptions are made within this report:

- It is assumed that ground levels will not change significantly from those described in this report or a shown on proposed development drawings. If this is not the case, then amendments to the recommendations made in this report may be required.
- The ground investigation has been designed with due consideration of known or suspected constraints (including underground services and access constraints).
- Any references to observations of suspected asbestos-containing materials are for information only and should be verified by a suitably qualified asbestos specialist and/or confirmed by laboratory analysis.
- The use of the term 'Topsoil' within this report is based on a visual identification only and that these materials have not been classified in accordance with BS3882:2015.
- The use of the terms ‘shallow’ and ‘deep’ within this report (from a geotechnical perspective) assume *typically* between ground level to circa 3.00m below ground level (bgl) for ‘shallow’ and greater than 3.00m bgl regarded as ‘deep;’
- The comments and opinions presented in this report are based on the findings of the desk study and ground conditions encountered during intrusive investigation works performed by Tier Environmental and the results of tests carried out within one or more laboratories. There may be other conditions prevailing on the Site which have not been revealed by this investigation and which have not been taken into account by this report.
- Responsibility cannot be accepted for any conditions not revealed by this investigation. Any diagram or opinion on the possible configuration of the findings is conjectural and given for guidance only. Confirmation of intermediate ground conditions should be undertaken if deemed necessary.

This report has been prepared for the sole use of Sesona Ltd. No other third party may rely upon or reproduce the contents of this report without the written approval of Tier Environmental. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and the authors do not owe them any Duty of Care or Skill.

2. SITE DETAILS AND DESCRIPTION

Table 2.1 Current Site Overview.

Site name	Hillhouse Business Park
Site address	Off Bourne Road, Thornton Cleveleys, FY5 4QD. A Site location plan is included as Drawing No. TE1674-TE-00-XX-DR-GE-001-V01 within **Error! Reference source not found.**.
National Grid Reference (NGR)	E:334400, N:443970
Approximate Site area	1.01 ha
Site shape	The Site is rectangular in shape.
Current land use on the Site	The site is currently vacant after demolition of former buildings/infrastructure.
Surrounding land uses	The surrounding Site uses are predominantly commercial/industrial.
General topography and ground levels	The surrounding Site uses are predominantly commercial/industrial.

An aerial photograph (from the Groundsure report) of the Site and site boundary is shown below. Relevant Site photographs are presented in **Error! Reference source not found.**.

Figure 2.1 Recent Aerial Photograph from Groundsure

3. PRELIMINARY RISK ASSESSMENT SUMMARY

Tier Environmental produced a Preliminary Risk Assessment for the Site, a summary of the findings is presented below.

Table 3.1 Report Review Summary

Introduction	The purpose of the Preliminary Risk Assessment was to establish the current land use, historical and environmental Site setting and develop a preliminary conceptual site model with due consideration to potential soil and groundwater contamination, hazardous ground gases and mining.
Proposed land use	The proposed Thornton Energy Recovery Centre (TERC) will act as a waste (EFW) facility that will comprise a main steel frame unit measuring roughly 50m x 90m and 18m height. The proposed construction will also include associated twin chimney stacks, up to 60m height, and air cooled condenser (ACC) measuring 40m x 25m and roughly 12m height. The main building will contain a waste reception hall, bunker, boiler hall, turbines, a flue gas treatment facility, silos, control room, office and welfare space.
Site location and surrounding land uses	The site is located at Hillhouse Business Park, off Bourne Road, Thronton Cleveleys, FY5 4QD. The surrounding land uses are predominantly commercial/industrial.
Site history	The Site was undeveloped until 1932 when railway lines were shown on maps. As of 1969, buildings associated with a chemical works (VC4 - vinylidene chloride) are shown on site along with multiple associated tanks, water storage facilities, yards and chimneys. These buildings are no longer shown on maps as of 2010, however information provided to Tier details the plant being decommissioned in 2000. It is understood that the main vinylidene chloride storage tanks were bunded and located immediately to the east of the study site. The surrounding land use is commercial/industrial with multiple off-site developments. An Ammonia Soda Works is shown approx. 40m north and 120m west of the site which extends northwards in the west approx. 500m to a reservoir; this is no longer shown on mapping from 1969.
Geology, Hydrogeology and Hydrology	The published British Geological Survey (BGS) map, Sheet 66, "Blackpool", dated 1975 indicates a siteweide Made Ground cover. Historic BGS borehole records located on-site indicate that Made Ground depths increase from approximately 2.5m in the north to 5.5m in the south. The Made Ground was likely to be associated with the previous chemical works and may include Site generated waste. The Made Ground is shown to be underlain by Tidal Flat Deposits comprising firm clays and soft organic silts to depths of between 6m and 11m, again deepening in a southerly direction. The BGS Lexicon website (www.webapps.bgs.ac.uk), generally describes these deposits as 'normally a consolidated soft silty clay, with layers of peat, sand and a basal gravel. Underlying these deposits is stiff and very stiff Till, which is generally described by the BGS Lexicon as 'unsorted and unstratified drift, generally overconsolidated', comprising 'clay, sand, gravel, and boulders varying widely in size and shape'. The solid geology beneath the site is shown to be mudstone strata belonging to the Kirkham Mudstone. Mudstone and Halite strata associated with the Preesall Halite Member is shown subcropping immediately to the east of the site. It is understood that the halite from this unit was a resource for the former saline works. The GroundSure report obtained prior to the Site investigation works outlines that 65% of the 1km grid which encompasses the Site, "Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow". However this risk is associated with the Preesall Halite Member which is mapped 59m to the east of Site. Therefore the risk of ground dissolution has been identified in the GroundSure as "negligible". Shallow groundwater is anticipated to be perched at the Made Ground/Tidal Flat Deposit boundary and within granular pockets and horizons within the Till Deposits. There is potential for perched groundwater within the Made Ground to be in hydraulic continuity with the River Wyre. Perched groundwater within the Till is likely to be confined to long buried granular pockets or discontinuous horizons. The perched water is anticipated to be brackish in nature. Groundwater is anticipated to occur at depth within the fractured Kirkham Mudstone bedrock. The Made Ground is shown to have low to very high permeability with a mixed flow type. The superficial Tidal Flat and Till deposits are shown to be Unproductive Aquifers with a very low to low permeability with a mixed flow type. The Kirkham Mudstone bedrock is shown to be a Secondary B Aquifer with a low permeability with a fracture flow type. The River Wyre is situated 59m northeast of the Site. The site is located within a Flood Zone 1 with low probability of flooding from fluvial sources. However, there is a high risk associated with groundwater and surface water. A Flood zone 3 is located approximately 50m east and 170m west.
Ground Gases	Potential sources of hazardous ground gases include: • Made Ground on site.

	• Volatile organic compounds, notably vinylidene chloride, from historic spillages/leaks. • Organic soils within the Tidal Flat Deposits. • A refuse pit shown in 1959 located 43m east of the site.
Radon Requirements	Basic radon protection measures are not currently required for the proposed development on this Site.
Ecological Sensitivity	The Site is not located within an ecologically sensitive area, however there is a SSSI, conserved wetland area, special protection area, and a marine conservation zone all associated with the River Wyre. The site does lie within a SSSI risk impact zone.
Potential contaminative features	Multiple tanks were shown previously on Site and within the close vicinity of site from the previous uses of the site and immediate surrounding area as a chemical works. It is understood that the main vinylidene chloride storage tanks were above ground and to the immediate east of the site. There is also the potential for contamination associated with Made Ground from previous developments on Site.
Mining and mineral extraction	The Site is not located within a coal mining area.. Historical surface ground workings are present across the southern part of the site and immediately to the east, which are likely to be associated with halite extraction from the Preesall Halite Member.
Previous investigations	Tier Environmental are not aware of any previous intrusive investigation works having been undertaken at the Site.
Unexploded Ordnance	Zetica's online UXO risk map shows the area to be a low bomb risk, however it is highlighted that there was industry on Site and that a UXO has been found approx. 600m to the southwest.
Waste Soils Classification	Based on the history of the Site and the anticipated potential contaminants of concern, it is considered possible that hazardous waste soil materials may be present beneath some areas of the Site. This, however, will be subject to confirmatory investigation, sampling, laboratory analysis and waste classification in accordance with the Guidance on the Classification and Assessment of Waste (WM3).
Materials re-use	Subject to volumetric fill requirements and a future assessment of suitability of re-use (both chemically and geotechnically), some materials may be considered for potential re-use in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP). Please note that any previously landfilled or mining waste materials may not be appropriately subject to consideration under DoWCoP and may not be re-used under DoWCoP unless sufficient lines of evidence and agreement with the local Environment Agency Waste Team can be sought beforehand. In addition, Section **Error! Reference source not found.** of this report includes statements with respect to re-use of excavated and stockpiled clean naturally occurring soils within the Site and re-use on other Sites. These statements are designed to provide a clear intention to reuse any clean, naturally occurring soils derived from future excavations at this Site (which may also include temporary future stockpiling these materials).

4. PRELIMINARY CONCEPTUAL SITE MODEL

A Preliminary Conceptual Site Model is presented within the Preliminary Risk Assessment report. The model summarises the understanding of surface and sub-surface features, the potential contaminant sources, transport pathways and receptors. In assessing the likely contaminants of concern present at the Site, reference has also been made to Defra and Environment Agency supporting documentation. A preliminary qualitative risk assessment has also been made of the likelihood of the linkage operating and its potential significance in accordance with CIRIA C552.

The preliminary conceptual model is reproduced in schematic form in **Error! Reference source not found.**, of the Preliminary Risk Assessment report. The potential pollutant linkages identified from the Preliminary Risk Assessment and the qualitative risk assessment for these are reproduced in Table 4.1 below. The terms used in the preliminary qualitative risk assessment are defined in Appendix H.

4.1. Uncertainties

The following uncertainties exist in the preliminary conceptual model:

- The presence of any features unrecorded by the historic maps.
- Any unrecorded geological features.
- Any unrecorded pollution events during the Site's history.

Table 4.1 Preliminary Assessment of Potential Pollutant Linkages.

Justification / Comments	Source	Potential Contaminants of Concern	Pathway	Receptor	Consequence	Probability	Qualitative Risk Assessment
Moderate risk • The Site is situated off Bourne Road, Thornton Cleveleys, FY5 4QD. The site is currently derelict after previous commercial/industrial developments on Site were demolished to slab level; • The Site was undeveloped until 1932 when railway sidings were shown on maps. As of 1969, buildings associated with a chemical works (VC4 - vinylidene chloride) are shown on site along with multiple associated tanks, water storage facilities, yards and chimneys. These buildings are no longer shown on maps as of 2010, however information provided to Tier details the plant being decommissioned in 2000. It is understood that the main vinylidene chloride storage tanks were bunded and located immediately to the east of the study site. The surrounding land use is commercial/industrial with multiple off-site developments. An Ammonia Soda Works is shown approx. 40m north and 120m west of the site which extends northwards in the west approx. 500m to a reservoir; this is no longer shown on mapping from 1969. • Published geology indicates Made Ground to a maximum depth of 5.50m. Historic boreholes within the site suggest that the depth of Made Ground increases from approximately 2.50m in the north to 5.50m in the south. The Made Ground was likely to have been placed during the enabling works for the previous chemical works and may include site generated waste. The Made Ground is shown to be underlain by Tidal Flat Deposits comprising firm clays and soft organic silts to depths of between 6.00m and 11.000m, again deepening in a southerly direction. These are in turn shown to be underlain by stiff and very stiff clays of Glacial Till. The solid geology beneath the site is shown to be the Kirkham Mudstone Member – Mudstone. The Preesall Halite Member – Mudstone and Halite-stone is shown to subcrop immediately to the east of the site. It is understood that the halite from this unit was a resource for the former saline works. The Made Ground is shown to have low to very high permeability with a mixed flow type. The superficial deposits are shown to be an Unproductive Aquifer with a very low to low permeability with a mixed flow type. The bedrock is shown to be a Secondary Aquifer with a low permeability with a fracture flow type. • The nearest surface water feature is located 59m northeast of site - the River Wyre. there are no other recorded surface water features within 250m of the Site. The River Wyre, 59m northeast is a Water Framework Directive surface water body. It has an overall rating of poor, a failed chemical rating and an ecological rating of poor. There are no licensed surface water abstractions recorded within 250m of the Site. the nature and extent of surface water run-off and site drainage systems is unknown at this point • There is 1 No. historical waste site located 40m east of site. The name of the site is unknown but it appears as a refuse tips on mapping in 1959. Less than 1% of the properties on the Site area are above the Radon Action level meaning no Radon protection measures are required. • Potential Made Ground on site, possibly to a significant depth based on previous industrial uses of the Site, volatile organic carbons (notable vinylidene Chloride) from potential former spills on site, off site refuse tip and organic rich clays and silts of the tidal flat deposits present a hazardous ground gas generation risk. • The Site is not located within an ecologically sensitive area, however there is a SSSI, conserved wetland area, special protection area, and a marine conservation zone all associated with the River Wyre. The site does lie within a SSSI risk impact zone.	Anticipated Widespread Made Ground associated with former developments on site, especially associated with former tanks and chemical works.	Metals, PAHs, Phenols, TPH and pH, Asbestos, VOCs and SVOCs, PCBs, Hexavalent Chromium and Coal Tar	Direct contact, ingestion and inhalation of dust	Site End-users and Construction Workers.	Human Health Effects [Medium]	Likely	Moderate risk
			Ingestion and inhalation of dust	Off site users.	Human Health Effects [Medium]	Likely	Moderate risk
			Vertical migration through soil profile.	Groundwater within the Tidal Flat Deposits/Kirkham Mudstone bedrock.	Unproductive Strata/Secondary B Aquifer [Mild]	Likely	Moderate risk/ Low risk
			Horizontal migration in/on groundwater.	River Wyre	Sensitive Water Course [Medium]	Likely	Moderate risk
			Direct Contact	Building and Services	Tainted water supplies [Minor]	Likely	Low risk
	Anticipated widespread Made Ground, potential VOCs, off Site refuse tip and potentially organic rich Tidal Flat Deposits	Hazardous ground gas and hydrocarbon vapours	Inhalation	Site end users and construction workers.	Human Health Effects [Severe]	Potential for contamination in Made Ground and natural soils to produce ground gas and vapours. [Low Likelihood]	Moderate risk
			Migration, ingress and accumulation				Moderate risk
			Migration, ingress and accumulation	Buildings and services	Risk of structural damage from explosions caused by build-up of ground gas. [Mild]	Potential for contamination in Made Ground and natural soils to produce ground gas and vapours. [Likely]	Moderate risk/Low risk

For definition of the terms used in the qualitative risk assessment, please see Appendix H.

5. FIELDWORK

The information contained within this report is limited to areas of land accessible during the intrusive investigation works within the Site boundary, as indicated on the Site plan, presented in **Error! Reference source not found.** as Drawing No. TE1674-TE-00-XX-DR-GE-001-V01.

Tier Environmental scoped the intrusive ground investigation using guidance presented in:

- BS 10175:2011+A2:2017;
- Land Contamination Risk Management (LCRM) - https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm;
- BS 5930:2015+A1:2020;
- BS EN 1997:2004 and 2007.

Tier Environmental's standard strata description criteria are compliant with the above guidance.

5.1. Scope of Ground Investigation

The ground investigation was conducted between 8th and 11th August 2022 and was supervised by a suitably qualified Tier Environmental engineer. Table 5.1 below provides a summary of the exploratory holes completed and rationale. Exploratory hole locations are presented on Drawing No. TE1674-TE-00-XX-DR-GE-002-V01.

Table 5.1 Scope of Ground Investigation and Rationale

Exploratory Hole Type	Exploratory Hole Reference	Exploratory Hole Depths (m bgl)	Rationale
Trial pits	TP01 to TP07	0.40m bgl to 3.60m bgl	To provide a quick method for observing greater soil volumes whilst confirming shallow ground conditions across the Site, groundwater presence and excavation. Trial pits also allow soil sampling for logging purposes and laboratory geotechnical testing and chemical analysis.
Windowless sample boreholes	WS01 to WS07	5.45m bgl	To confirm the shallow and deep ground conditions across the Site, conduct *in situ* soil strength measurements using Standard Penetration Tests (SPT) apparatus and facilitating collecting soil samplings for logging purposes and geotechnical testing and chemical analysis. Windowless sample boreholes also allow installing combined groundwater and ground gas monitoring standpipes.
Cable percussion boreholes	CP01 to CP03	14.80m bgl to 15.10m bgl	To confirm the shallow and deep ground conditions across the Site, conduct *in situ* soil strength measurements using Standard Penetration Test (SPT) apparatus and facilitating collecting soil samples for geotechnical testing and chemical analysis. Boreholes also facilitate installing combined groundwater and ground gas monitoring standpipes.
Plate Bearing Tests (PBTs)	TP01 to TP05	N/A	To determine California Bearing Ratios (CBRs) for the existing Made Ground.

The following constraints were identified during the ground investigation works:

- A significant stockpile covered the southern and some of the eastern parts of the Site, meaning exploratory holes in these locations were not possible.
- The remaining concrete slabs on site from former facilities were very strong. The hydraulic breaker on the machine was unable to break through in certain locations therefore locations had to be abandoned due to the time constraints of the investigation works.

Table 5.2 Scope of Monitoring Installations

Exploratory Hole Location	Strata Targeted	Slotted Response Zone (m bgl)	Rationale
CP01	Tidal Flat Deposits and Till	5.00m bgl to 12.00m bgl	Targeting groundwater and potential ground gas within the Tidal Flat Deposits.
CP02	Tidal Flat Deposits and Till	4.50m bgl to 7.50m bgl	
CP03	Tidal Flat Deposits and Till	4.00m bgl to 10.00m bgl	
WS01	Made Ground	1.00m bgl to 3.00m bgl	Targeting shallow groundwater and potential ground gas within the Made Ground.
WS03	Made Ground	1.00m bgl to 3.00m bgl	
WS04	Made Ground	1.00m bgl to 3.00m bgl	
WS05	Made Ground	1.00m bgl to 3.00m bgl	

Depths and accurate descriptions of strata and groundwater observations made during investigation works, together with details of the samples recovered, are presented on the Engineer's exploratory hole records in Appendix B.

5.2. Geoenvironmental Testing

Sampling and QA/QC protocols are presented in Appendix L. Tier Environmental's schedule of chemical laboratory testing is presented in Table 5.3.and Table 5.4. The testing was carried out by Element Materials Technology, a UKAS and MCerts (where appropriate for soils analysis) accredited laboratory.

Human Health and Preliminary Waste Classification Laboratory Testing

Based upon the conclusions of the preliminary risk assessment, Tier Environmental scheduled chemical laboratory testing on selected soil samples. The purpose of the testing was to:

- Determine the concentration and spatial distribution of potential contaminants of concern in the Made Ground.
- Determine the chemical composition and properties of the shallow natural soils.
- Determine the nature and extent of any contamination impacts associated with the former use of the Site as a chemical works.
- Undertake a *preliminary* soils waste classification.

Table 5.3 Schedule of Chemical Testing for Human Health Risk Assessment and Preliminary Waste Soils Assessment.

Laboratory analysis	Made Ground POPULATION 1	Made Ground POPULATION 2	Natural Soils (Tidal Flat Deposits)	Natural Soils (Till)
Tier Environmental soil suite*	9	1	2	
Asbestos screen	9	1	2	
Speciated TPH / BTEX / MTBE	9	1	2	-
VOCs / SVOCs	14	2	2	
pH	21	1	4	3
Dioxins and Furans	3	-	-	-
BRE SD1	6	-	2	-

*For definition of Tier Environmental analytical suites, please see Appendix L. NA - not applicable.

Controlled Waters Laboratory Testing

Based upon the conclusions of the preliminary risk assessment, Tier Environmental scheduled chemical laboratory testing on selected groundwater samples. The purpose of the testing was to:

- Determine the dissolved phase concentrations of potential contaminants of concern within groundwater beneath the Site;
- Determine the nature and extent of dissolved phase potential contaminants of concern within groundwater associated with the former use of the Site as a chemical works.

Table 5.4 Schedule of Chemical Testing for Controlled Waters Risk Assessment.

Laboratory analysis	Groundwater
Tier Environmental groundwater suite*	3
Speciated TPH / BTEX / MTBE	3
VOCs / SVOCs	3

*For definition of Tier Environmental analytical suites, please see Appendix L. NA - not applicable.

5.3. Geotechnical Testing

Geotechnical laboratory testing was scheduled by Tier Environmental on selected samples as presented in Table 5.5. The testing was performed by Murray Rix, a UKAS and MCerts (where appropriate for soils analysis) accredited laboratory. Testing for pH and Sulphate was undertaken by Element Materials Technology. Test certificates including details of appropriate testing standards are presented in Appendix F and discussed in Section **Error! Reference source not found.**, below.

Table 5.5 Geotechnical Laboratory Testing Schedule.

Test	Stratum type	Number of tests	Rationale
1. General			
Moisture content	Made Ground, Tidal Flat Deposits and Till	13	a) Assist with the determination of consistency of soil with depth. b) Assess desiccation of soils. c) Suitability of materials for reuse within earthworks.
2. Classification			
Atterberg limit	Made Ground, Tidal Flat Deposits and Till	8	a) Volume change potential. b) Plasticity assessment (comply with Eurocode 7 description) c) Consistency Index. d) Determine soil type (e.g., clay/silt). e) Use as an empirical guide to soil shear strength
Particle size distribution (wet/dry sieve)	Made Ground and Tidal Flat Deposits	5	a) Classify soils for earthworks purposes. b) Establish type of soil (comply with Eurocode 7 description).

Test	Stratum type	Number of tests	Rationale
3. Compaction			
2.5 kg rammer dry density/moisture content relationship test	Made Ground and Tidal Flat Deposits	5	Establish maximum dry density and optimum moisture content of materials to assess suitability for reuse within earthworks
Particle density	Made Ground	5	Used to calculate 0%, 5% and 10% air voids lines on dry density moisture content relationship plots.
4. Shear strength (total stress)			
Unconsolidated undrained triaxial ("quick undrained triaxial")	Tidal Flat Deposits and Till	6	Quantitative means of determining undrained shear strength of soils for: a) use in bearing capacity calculations; b) modelling the short term behaviour of slopes and retaining structures; c) pile design; d) determining suitability of cohesive materials for vibro-replacement ground improvement techniques.
6. Chemical Testing			
Calorific Value	Made Ground	5	To measure the amount of energy produced from the sample when it is combusted in oxygen. This test is conducted to determine the likelihood of spontaneous combustion within a soil sample.

6. GROUND CONDITIONS

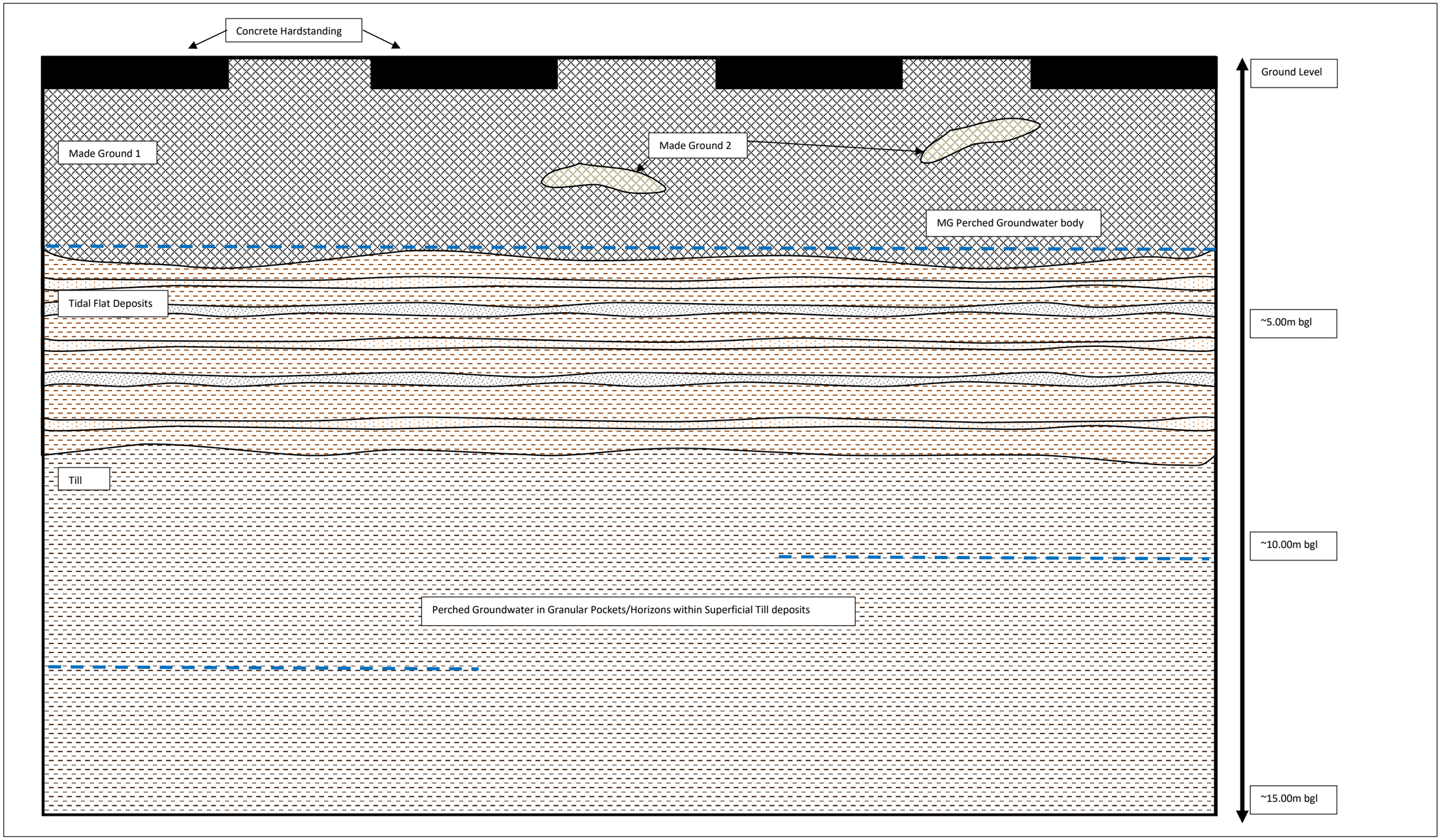
The following section provides a summary of the ground conditions encountered during the ground investigation including strata profile, obstructions and visual / olfactory evidence of contamination. Exploratory hole logs are provided in Appendix B.

Photographs of ground investigation works are provided in **Error! Reference source not found.**.

6.1. Strata Profile

Figure 6.1 presented below provide a schematic summary of the ground conditions beneath the Site. The distinct populations of strata identified have been numbered and correspond with the more detailed descriptions below.

Figure 6.1 Schematic Drawing of Ground Conditions



6.2. Strata Descriptions

Artificial Ground – Hardstanding

Concrete **Grey reinforced Concrete**	
Locations encountered	CP03, TP02, TP03, TP06, WS01, WS03 andWS04,
Depths encountered from top of stratum (range)	Ground Level
Depths encountered to base of stratum (range)	0.16m to 0.65m
Thickness (range)	0.16m to 0.65m
Spatial location on site	Discontinuously across Site – historic concrete slabs associated with former infrastructure on Site.

Granular Made Ground – MG1

Locations encountered **Granular Made Ground**	Sitewide.
Depths encountered from top of soil layer (range)	Ground level to 0.65m bgl.
Depths encountered to base of soil layer (range)	2.55m to 3.60m bgl.
Thickness (range)	2.55m bgl to 3.60m bgl
Spatial location on site	Widespread across Site
General description	Dark brown to blackish brown, slightly clayey, slightly sandy to sandy fine to coarse Gravel including brick, concrete, clinker, slag and mixed natural lithologies. Frequent to abundant cobbles of brick and concrete, and slightly to very ashy.

Clay Rich Made Ground – MG2

Locations encountered **Clay Rich Made Ground**	CP01 and TP05
Depths encountered from top of stratum (range)	0.95
Depths encountered to base of stratum (range)	1.80
Thickness (range)	0.85m
Spatial location on site	Discontinuous pockets or horizons across the Site
General description	Soft to firm white and dark brown, slightly gravelly, slightly sandy and silty CLAY. Sand is fine to mediumIncluding limestone, mudstone, brick, concrete, metal and glass fragments and cobbles. Occasional pockets of white clayey, silty fine to coarse sand.

Clay Rich Tidal Flat Deposits – DD1

Tidal Flat Deposits **Clay, silt and sand**	
Locations encountered	CP01, CP03, WS01 to WS07and TP07
Depths encountered from top of deposit layer (range)	2.55m bgl to 3.60m bgl
Depths encountered to base of deposit layer (range)	6.10m bgl to 8.60m bgl
Thickness (range)	3.00m to 4.50m
Spatial location on site	Widespread across Site.
General description	Soft to firm and occasionally stiff, brown to greyish brown and dark grey slightly gravelly, slightly sandy to sandy, silty Clay. Gravel is fine to coarse, angular to subrounded of mudstone, sandstone, siltstone and quartz.

Granular Tidal Flat Deposits – DD2

Till **Slightly gravelly sand**	
Locations encountered	CP02
Depths encountered from top of stratum (range)	3.40m bgl
Depths encountered to base of stratum (range)	6.8m bgl
Thickness (range)	3.40m
Spatial location on site	Localised towards base of deposits.
General description	Medium dense, brown, slightly gravelly, silty, fine to medium sand. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone.

Till Deposits – DD2

Till **Clay**	
Locations encountered	CP01 to CP03
Depths encountered from top of deposit layer (range)	6.10m bgl to 8.60m bgl
Depths encountered to base of deposit layer (range)	Base not encountered
Thickness (range)	6.20m to 8.80m – the base of these deposits was not encountered; observed thicknesses to the maximum depth of the boreholes
Spatial location on site	Widespread across Site and including discontinuos granular pockets/horizons.
General description	Firm to hard, dark brown with occasional yellowish grey mottling, slightly gravelly, slightly sandy Clay. Gravel is fine to coarse of mudstone, sandstone, siltstone and quartz.

Bedrock - Kirkham Mudstone

The underlying Kirkham Mudstone bedrock was not encountered during the intrusive investigation works.

6.3. Visual and Olfactory Evidence of Contamination

A summary of visual and/or olfactory evidence of contamination noted during Tier Environmental investigations is summarised in the Table 6.1 below:

Table 6.1 Visual and/or Olfactory Evidence of Contamination Summary

Exploratory Hole Location	Depth Range (m bgl) Encountered From	Depth Range (m bgl) Encountered To	Location on Site	Description
WS01	2.30	3.25	Central east	Strong hydrocarbon odour and sheen.
WS03	2.50	2.90	Central west	Moderate hydrocarbon odour.
WS04	1.70	2.40	Central northeast	Moderate hydrocarbon odour.

6.4. Groundwater Observations During Fieldwork

Table 6.2 below provides a summary of the groundwater observations during the fieldworks. Further information of groundwater observed is presented in the exploratory hole logs in Appendix B.

Table 6.2 Field Observations of Groundwater.

Exploratory hole	Strike (m bgl)	Rise in groundwater after 20 mins. (m bgl)	Formation	Observations
CP01	2.70	2.40	Made Ground	Discontinuous perched groundwater body towards Made Ground/Tidal Flat Deposits boundary.
	11.00	7.00	Till	Potentially sub-artesian perched groundwater body within granular pocket/horizons in Till.
CP02	3.70	3.20	Made Ground	Discontinuous perched groundwater body at Made Ground/Tidal Flat Deposits boundary.
	8.50	8.0	Till	Potentially sub-artesian perched groundwater body within granular pocket/horizons in Till.
	11.7	11.0	Till	
CP03	2.70	2.40	Made Ground	Discontinuous perched groundwater body at Made Ground/Tidal Flat Deposits boundary.
	11.00	7.00	Till	Potentially sub-artesian perched groundwater body within granular pocket/horizons in Till.
TP01	2.45	No Rise	Made Ground	Discontinuous perched groundwater body within Made Ground and at or above the Made Ground/Tidal Flat Deposits boundary.
TP02	3.05	No Rise	Made Ground	
TP04	2.40	No Rise	Made Ground	
WS01	2.45	No Rise	Made Ground	Discontinuous perched groundwater body within the Made ground towards/at the Made Ground/Tidal Flat Deposits boundary.
WS02	2.10	No Rise	Made Ground	
WS03	3.00	No Rise	Made Ground	
WS04	3.20	No Rise	Made Ground	
WS05	2.20	No Rise	Made Ground	
WS06	3.10	No Rise	Made Ground	

6.5. Groundwater Monitoring

Table 6.3 below provides a summary of the groundwater monitoring results conducted to date. In total, 2 No. visits have been carried out between 22 August and 30 August 2022 and is ongoing.

Table 6.3 Groundwater Monitoring Results Summary

Exploratory hole	Response Zone	Depth range (m bgl)	Formation	Observations
CP01	5.00m bgl to 12.00m bgl	2.45 to 2.46	Till	Confined sub-artesian perched groundwater within granular pockets/horizons in the Till.
CP02	4.50m bgl to 7.50m bgl	2.42 to 2.43	Till	
CP03	4.00m bgl to 10.00m bgl	2.25 to 2.27	Till	
WS01	1.00m bgl to 3.00m bgl	2.41 to 2.42	Made Ground	Discontinuous perched groundwater body within the Made Ground towards/at the Made Ground/Tidal Flat Deposits boundary.
WS03	1.00m bgl to 3.00m bgl	2.70	Made Ground	
WS04	1.00m bgl to 3.00m bgl	2.24 to 2.25	Made Ground	
WS05	1.00m bgl to 3.00m bgl	2.24 to 2.25	Made Ground	

7. GEOTECHNICAL PARAMETERS

Geotechnical test results are included in Appendix F.

Soil Classification

7.1. Natural Moisture Content

Natural Moisture Content determinations were undertaken on 8 No Made Ground and clay rich Tidal Flat Deposit samples between 1.70m and 5.00m depth.

For 2 No. Made Ground samples, taken from TP02 and TP05 at 1.70m and 3.00m depth, the returned moisture contents were 25% and 28%.

From windowless sample boreholes WS05 and WS07, at 3.00m depth, the samples taken correspond with the clay rich Tidal Flat Deposits on the logs, which are described as soft and firm to stiff dark grey slightly clayey silt and silty clay. However, the laboratory description is for black brown silty sand & gravel, which is more consistent with the overlying Made Ground. It is anticipated that the samples represent Made Ground material that has become mixed into the underlying Tidal Flat Deposits during drilling. The measured Natural Moisture Contents for these samples were 29% and 52%.

For 4 No. Tidal Flat Deposit samples, between 3.00m and 5.00m depth (WS01, WS02, WS06 and CP03), the Natural Moisture Content results ranged from 20% to 28%.

7.2. Atterberg Limits

The same Made Ground and Tidal Flat Deposit samples were subjected to Atterberg Limits tests to determine the Liquid Limit, Plastic Limit and Plasticity Index for these materials.

A single clay rich Made Ground sample (TP05 at 1.70m depth) returned a Liquid Limit at 34%, Plastic Limit at 14% and Plasticity Index at 20% with some oversized particles being retained giving a Modified Plasticity Index at 16%. The modified Plasticity Index returned indicating a low volume change potential for this material in accordance with NHBC guidance.

No results were returned for the second Made Ground sample and the 2 No. Made Ground/Tidal Flat Deposit samples indicating that these materials are non-plastic.

Returned Atterberg Limit results on the 4 No. clay rich Tidal Flat Deposit samples gave Liquid Limits from 32% to 34%, Plastic Limits from 12% to 13% and Plasticity Indexes from 20% to 22%. Oversized particles were recorded for the samples tested giving a Modified Plasticity Index from 17% to 19%. The results indicating a low to medium volume change potential in accordance with the NHBC guidance.

7.3. Particle Size Distribution

Particle Size Distribution measurements were undertaken on 5 No Made Ground and clay rich Tidal Flat Deposit samples between 1.70m and 4.00m depth.

Tests conducted on a single clay rich Made Ground sample, taken from TP05 at 1.70m depth, showed this material to comprise 78% fines (clay plus silt), 11% sand and 11% gravel, indicating that it can be classed as a uniformly or evenly graded sandy gravelly silty clay.

For a single granular Made Ground sample, taken from TP03 at 2.10m depth, the results showed this material to comprise 29% fines (clay plus silt), 12% sand and 59% gravel, indicating that it can be classed as a well to evenly graded sandy silty clayey gravel.

Tests undertaken on 3 No. clay rich Tidal Flat Deposit samples, taken from CP01 and CP03 between 3.880m and 4.00m depth, indicated that these deposits comprise 94% to 97% fines (clay plus silt), 1% to 3% sand and 1% to 5% gravel. The results indicating that the clay rich Tidal Flat Deposits can be classed as uniformly to evenly graded slightly sandy slightly gravelly silty clay.

7.4. Compaction Tests

Light compaction tests using a 2.5 kg hammer were undertaken on 6No. Made Ground and Tidal Flat Deposit samples at between 1.50m and 3.90m depth.

A single clay rich Made Ground sample, taken from TP05 at 1.70m depth, returned an Optimum Moisture Content equal to 17%, which varied slightly from the Natural Moisture Content at 27.9%, and a maximum Dry Density of 1.44 Mg/m^3.

For a single granular Made Ground sample, taken from TP04 at 1.50m depth, the returned Optimum Moisture Content was equal to 18%, which is close to the Natural Moisture Content at 18%, and a maximum Dry Density of 1.27 Mg/m^3.

Compaction test results on 4No. clay rich Tidal Flat Deposit samples, taken from CP01 to CP03 and TP07 between 3.60m and 3.90m depth, returned Optimum Moisture Contents from 13% to 17%, which are close to the Natural Moisture Contents at 17% to 25%, and maximum Dry Densities from 1.63 Mg/m^3 to 1.71 Mg/m^3.

7.5. Bulk Density and Particle Density Measurements

Bulk density measurements were undertaken on 2 No. clay rich Tidal Flat Deposit and 4 No. Till samples, taken from boreholes CP01 to CP03, using Triaxial compression apparatus. For the clay rich Tidal Flat Deposit samples, taken from CP01 and CP03 at 4.30m and 7.50m depth, Bulk Densities equal to 2.14 Mg/m^3 and 2.15 Mg/m^3 were recorded. Till samples taken from CP01 to CP03, between 7.00m and 11.50m depth, recorded Bulk Densities from 2.25 Mg/m^3 to 2.29 Mg/m^3.

Particle Density measurements were undertaken on during the compaction tests on 6No. Made Ground and Tidal Flat Deposit samples. A single clay rich Made Ground Sample (TP05 at 1.70m depth) and granular Made Ground sample (TP04 at 1.50m depth), returned Particle Densities at 2.40 Mg/m^3 and 2.06 Mg/m^3, respectively. Returned Particle Densities for the clay rich Tidal Flat Deposits, taken from CP01 to CP03 and TP07 between 3.60m and 3.90m depth, were 2.60 Mg/m^3.

Direct measurements for Particle Density were also undertaken on 2 No. granular Made Ground, a single clay rich Tidal Flat Deposit and 2 No. Till samples. Returned Particle Densities for the granular Made Ground, taken from TP03 and TP04 at 1.50m and 2.10m depth, were 2.03 Mg/m^3 and 2.06 Mg/m^3. For the single clay rich Tidal Flat Deposit sample (CP01 at 4.00m depth) the returned Particle Density was 2.66 Mg/m^3 and for the Till (CP02 and CP03 at 6.20m and 7.50m depth) the measured Particle Densities were 2.62 Mg/m^3 to 2.66 Mg/m^3.

7.6. In-situ California Bearing Ratio Tests

In-situ California Bearing Ratio (CBR) Tests (PBT01 to PBT05) were undertaken in proposed pavement, hardstanding and floor slab areas using plate bearing apparatus, between the surface and 0.50m depth in trial pits TP01 to TP05, within the granular Made Ground. Measured equivalent CBR values for the granular Made Ground were very variable and ranged from 13.9% to 54.8% with maximum deflections between 1.6mm and 3.3mm.

Soil Shear Strength

7.7. Standard Penetration Tests

In-situ Standard Penetration Tests (SPTs) were undertaken at roughly 1.00m to 1.50m intervals in all the windowless sample and cable percussion boreholes, at between 1.20m and 14.70m depth, within the Granular Made Ground, clay rich and granular Tidal Flat Deposits and the underlying Till.

For the granular Made Ground, undertaken in all boreholes between 1.20m and 2.30m depth, returned N values varied widely between 2 and 43 indicating a granular soil with highly varied relative density from very loose to very dense. The results showing no particular trend with depth.

Returned SPT results within the clay rich Tidal Flat Deposits, between 3.00m and 5.40m depth, gave wide ranging N values from 2 to 28 which corresponds with a clay rich soil with a varied very soft to stiff consistency. The results generally agreeing with what was recorded in hand specimen and showing no particular trend with depth.

The granular Tidal Flat Deposits recorded in CP02, between 4.50m and 5.40m depth, recorded N values of 15 and 24, which corresponds to a granular soil with a relative density of medium dense.

Within the underlying clay rich Till Deposits, between 6.50m and 14.70m depth, the recorded N values increased with depth from 22 to 39 with many results exceeding 50. The results generally showing that these deposits correspond to a clay rich soil with a stiff to very stiff, or hard, consistency which generally agree with what was encountered in hand specimen.

For clay rich soils such as the clay rich Tidal Flat Deposits, an equivalent undrained shear strength to a 100mm diameter triaxial compression test can be determined using industry standard's, such as Stroud's method. The equivalent undrained shear strength (Cu) can be calculated using the average Plasticity Index, to determine a conversion factor (f1), SPT N values and the following formula:

$$Cu = f1N \text{ (Tomlinson 2001)}$$

The average plasticity index for the clay rich Tidal Flat Deposits is 19% and the corresponding f1 value 5.56.

Therefore, the equivalent undrained shear strengths estimated for the clay rich Tidal Flat Deposits range from 11 kPa to 156 kPa, indicating a very low to very high soil strength.

7.8. Undrained Triaxial Compression Tests

Laboratory soil shear strength tests using triaxial compression equipment were carried out on 2No. clay rich Tidal Flat Deposit and 4 No Till samples from boreholes CP01 to CP03 without measurements of pore water pressures.

The recorded undrained shear strengths for the clay rich Tidal Flat Deposit samples, taken from CP01 and CP03 at 4.30m and 7.50m depth, were 39 kPa and 72 kPa, indicating a low to medium soil strength. This generally agrees with what was recorded in hand specimen and the results of in-situ tests.

For the Till Deposits, taken from CP01 to CP03 between 7.00m and 11.50m depth, recorded undrained shear strengths increased from 34 kPa at 7.00m depth to 146 kPa at 11.50m depth, indicating a clay soil strength increasing from low to high with depth. The results generally agree with what was recorded in hand specimen and the results of in-situ tests.

7.9. Determination of pH and Water-Soluble Sulphate

Made Ground and Tidal Flat Deposit samples were subjected the Water-Soluble Sulphate and pH testing along with 3 No groundwater samples. Measured Water Soluble Sulphate concentrations for 10No. Made Ground samples ranged from 5.6 mg/l to 1,117 mg/l with pH values between 8.18 and 12.75. For 2No. Tidal Flat Deposit samples, the measured Water-Soluble Sulphate concentrations were 240 mg/l to 391 mg/l with pH values of 8.21 and 8.80. Within the groundwater samples, measured water soluble sulphate concentrations ranged from 666 mg/l to 1,414 mg/l and pH values varied between 6.99 and 7.56. Given the proximity to the River Wyre and the Preesall Halite Member bedrock, saline groundwater conditions are anticipated in this area.

The recorded pH and water-soluble sulphate results for each exploratory hole are summarised in the Table 7.1 below.

Table 7.1 Results of Soil pH Testing and Water-Soluble Sulphate Determination.

Exploratory Hole Location	Depth (m bgl)	pH	Water-soluble sulphate (mg/l)	Design sulphate class	ACEC sulphate class
MADE GROUND					
CP01	1.10	8.88	469	DS-2	AC-2
CP02	2.00	11.66	724		
TP01	0.20	8.37	147		
TP05	1.10	12.72	1117		
WS01	2.40	7.94	146		
WS02	0.90	12.75	20		
WS03	2.50	11.22	295		
WS04	1.80	8.18	214		
WS06	0.10	8.63	241		
WS06	1.30	12.71	5.6		
TIDAL FLAT DEPOSITS					
CP03	4.80	8.21	391	DS-1	AC-1
WS05	3.00	8.80	242		
GROUNDWATER					
CP01	2.46	7.46	827	DS-2	AC-2
WS01	2.41	6.99	1414		
WS05	2.24	7.56	666		

ACEC - Aggressive Chemical Environment for Concrete (see BRE, 2005).

For the Made Ground, the characteristic water-soluble sulphate value is 900 mg/l based on the mean highest 20% results rounded to nearest 100mg/l and the corresponding characteristic pH is 8.06 based on the mean lowest 20% results, in accordance with BRE SD1(2005).

For the Tidal Flat Deposits, the characteristic water-soluble sulphate value is 400 mg/l based on the highest measured concentration rounded to nearest 100mg/l and the corresponding characteristic pH is 8.21 based on the lowest measured value, in accordance with BRE SD1(2005).

Groundwater water soluble sulphate values varied between 666 mg/l and 1,414 mg/l and pH from 6.99 to 7.56. It should be noted that the groundwater in this location has potential to be brackish in nature, which may account for the high sulphate values recorded and should be taken into account during the concrete design.

Total Potential Sulphate was not tested as pyrite not anticipated

It is also noted that there is evidence of localised hydrocarbon contamination at the Site and as such, a concrete specialist should review the TPH results and ground conditions summary within this report to ensure appropriate concrete design against retardation / degradation due to hydrocarbons.

8. GEOTECHNICAL ASSESSMENT

8.1. Introduction

The following advice and recommendations are based on constructing the proposed TERC EFW facility. A proposed development layout plan is included in Appendix A. From assessment of the nature of the ground conditions and the type of proposed structures, it is considered that the situation falls within EC7 Geotechnical Category 2.

Should the nature of the development be changed then the results of this investigation would need to be reviewed and reassessed.

8.2. Excavations

Deep sitewide granular Made Ground and perched groundwater, within the Made Ground, are present that will make excavations prone to sidewall collapse without temporary support to remain open.

All excavations requiring man entry should be battered back to a safe angle, supported by an appropriate proprietary trench support system or adequately shored to provide safe working conditions. Shoring to all excavations requiring man entry must be designed by a suitably qualified and experienced engineer. All support systems will require regular inspection as detailed in published guidelines to ensure the excavation support is adequate and appropriate for the ground conditions present.

It should be possible to progress excavations using conventional equipment; however, employing hydraulic breaking equipment will be required for progressing excavations through existing floor slabs and hardstanding.

Shallow perched groundwater is present at roughly 2.24m to 2.70m depth and associated with the granular Made Ground. Limited pumping from sumps or bailing out may be required to deal with slight seepages or surface water ingress during periods of inclement weather. Should more specific groundwater control be required, this should be designed and operated to minimise the loss of fines from the soil matrix as this could adversely affect settlement.

The Third-Party Wall Act is not likely to apply to the proposed development.

8.3. Ground Stability

The site is relatively flat and no significant changes in level as part of the proposed development are anticipated. Therefore, it is considered that slope stability is unlikely to be a concern at this site. The GroundSure report obtained prior to the Site investigation works outlines that 65% of the 1km grid which encompasses the Site, “Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow”. However this risk is associated with the Preesall Halite Member which is mapped 59m to the east of Site. Therefore the risk of ground dissolution has been identified in the GroundSure as “negligible”.

8.4. Concrete Design

The results for pH and sulphate testing indicate that aggressive ground conditions are present at this site, associated with the Made Ground, it being classed as brownfield. Therefore, a Design Sulphate Class of DS-2 and Aggressive Chemical Environment for Concrete (ACEC) Class of AC-2 is considered appropriate for the Made Ground and DS-1 / AC-1 for the underlying Tidal Flat Deposits. Given the proximity to the River Wyre and the Preesall Halite Member, the groundwater regime is anticipated to be mobile and brackish, which should be taken into account within the sulphate design.

8.5. Drainage Design

Infiltration tests for drainage design were outside the scope of these investigation works.

8.6. Pavement Construction

Deep granular Made Ground is present site wide and therefore, it is recommended that a preliminary design California Bearing Ratio (CBR) of less than 2% is assumed at this stage.

Existing floor slabs from historical structures currently cover the site that along with existing buried structures, i.e. foundations, will require removal prior to construction. Increased road pavement construction thickness should be anticipated where paved areas cross over ground disturbed by the removal of the existing structures. Once these and other oversized obstructions has been removed and the Made Ground turned over it should be recompacted to achieve a minimum CBR of 5%.

All unsuitable soils, such as topsoil or desiccated soils, should be removed from beneath proposed paved areas. The exposed sub-grade formation should then be proof rolled to reveal any excessively soft or compressible zones and any such features identified also removed by excavation. Where unsuitable materials are removed, the resultant voids should be filled in layers with appropriately compacted suitable granular fill. To reduce the loss of granular construction materials into the sub-grade, consideration should be given to utilising a geotextile starter layer across the formation level.

8.7. Preliminary Foundation Recommendations

The proposed structure will include a main steel frame building (50m x 90m x 18m height) containing a waste reception hall, bunker, boiler hall, turbines, a flue gas treatment facility, silos, control room, office and welfare space and associated 60m high twin chimney stacks and an air cooled condenser building.

The encountered ground conditions include a deep granular and clay rich variable Made Ground cover, to between 2.10m and 3.60m depth, overlying predominantly clay rich soft to firm and occasionally stiff Tidal Flat deposits, recorded to between 6.10m and 8.10m depth. A medium dense Granular Tidal Flat Deposit pocket/horizon was recorded in a single borehole (CP02) at 4.60m to 6.80m depth. Underlying the Tidal Flat Deposits are firm to stiff and very stiff/hard Till Deposits that were recorded to the maximum investigation depth at 15.10m. These deposits also contain occasional granular pockets and horizons. The underlying Kirkham mudstone bedrock was not encountered during the investigation works. Shallow, perched groundwater is present within the Made Ground, between roughly 2.24m to 2.70m depth, at or towards the boundary with the underlying Tidal Flat Deposits. Confined sub-artesian water was recorded within the Till, between 8.50m and 11.00m depth, which is expected to be associated with granular pockets or horizons within these deposits.

Due to their variable nature and strength, the Made Ground and superficial Tidal Flat Deposits are not considered to present suitable bearing strata. Due to this combined with ground disturbance once existing structures have been removed and shallow perched groundwater, it is considered that

the site is not suitable for traditional shallow foundations. Working loads from the proposed structure will need to be transferred below the Made Ground and Tidal Flat Deposits to found within the underlying Till deposits or bedrock depending on the final design loads. Therefore, it is considered that a deep foundation solution employing ground improvement or piles will be required for the proposed development.

Portions of the Site are covered by former or existing facilities on the site, e.g., hard standing, floor slabs and foundations. This material is unsuitable for foundations and relict foundations and floor slabs should be broken out to avoid the formation of hard spots.

Floor Slabs

Due to the Made Ground depths across the site, it is recommended that following removal of exiting floor slabs and buried foundations and structures, the Made Ground should be turned over to form a suitable base upon which to place a floor slab. All oversized obstructions should be removed, and the Made Ground turned over, placed and compacted to meet a minimum engineered CBR of 5%. Consideration should be given to including a geogrid beneath the floor slab to reduce the potential for differential settlements affecting the structure.

The final floor slab should be designed and constructed in accordance with the final design loads determined for each structure and their proposed use.

With reference to Sections 3.1 and 11 the floor construction will not have to incorporate radon protection measures. However, results of the gas monitoring regime indicates basic ground gas protection measures will need to be employed upgraded to a volatile resistant membrane,

Ground Improvement

Deep Made Ground and Tidal Flat Deposits that are variable in nature and strength combined with ground disturbance and shallow perched groundwater will necessitate employing a deep foundation solution at the site.

It should be possible to improve the ground using vibro-replacement stone or concrete columns in combination with shallow reinforced footings, i.e. pad foundations. Discussions with specialist contractors should be held to confirm that this technique is suitable for the ground conditions at the site.

Piles

Deep Made Ground and Tidal Flat Deposits that are variable in nature and strength combined with ground disturbance and shallow perched groundwater will necessitate employing a deep foundation solution such as piles.

Deep granular Made Ground and perched shallow groundwater are likely to make traditional bored piles difficult to construct unless they are cased through to the underlying clay rich Till deposits/Kirkham Mudstone bedrock depending on the design loads for the proposed structures. Continuous Flight Auger (CFA) piling techniques will avoid the use of casing and may be the best method to construct cast in-situ piles. Or alternatively driven pre-cast concrete piles would be a viable option.

For pile design purposes, it is recommended that skin friction from the Made Ground is ignored and that working loads are calculated from a combination of skin friction and end bearing within the underlying Till deposits/Kirkham Mudstone bedrock. Pile depths, dimensions and working loads will depend on the design loads for each individual proposed structure making up the TERC EFW facility.

It is recommended that consultation with a specialist piling contractor is undertaken in order to evaluate likely pile loads, diameter and depths based upon the ground conditions revealed within the context of the specified technical requirements of the chosen piling method. In any event, positive contractual assurances should be sought from the piling contractor in respect of the performance of their proprietary system.

8.8. Recommendations for Further Intrusive Ground Investigation Works

Once design loads and the proposed layout has been finalised and in order to confirm deeper ground conditions, i.e. depth to the Kirkham Mudstone bedrock, for pile design further ground investigation comprising deep cable percussive and potentially rotary boreholes is recommended. It is suggested that the number and depths of boreholes required is agreed with the specialist piling contractor once the design working loads are agreed. Monitoring wells should be included in the boreholes and at least one post site-work monitoring visit should be undertaken to record groundwater levels. In-situ Standard Penetration Tests should be conducted during forwarding of the boreholes and collected soil samples submitted for appropriate geotechnical laboratory testing.

In-situ CPT tests specifically targeted at each structure location will aid with determining pile lengths once the design loads have been finalised.

Once the granular Made Ground has been turned, placed and recompacted, plate bearing tests should be undertaken to confirm that the required CBR value (minimum 5%) has been achieved.

9. HUMAN HEALTH RISK ASSESSMENT

9.1. Data Interpretation Approach

The analytical data obtained were reviewed for completeness and consistency. The data for each sample type was then compiled, screened against the Generic Assessment Criteria (GACs) for a commercial/industrial land use and those potential contaminants of concern which were found to exceed the GACs were then subjected to detailed analysis as described below.

Previously, it was possible for results from soil (and leachate) samples to be subject to statistical assessment in accordance with a 2008 guidance document (CL:AIRE / CIEH Guidance on Comparing Soil Contamination Data with a Critical Concentration). This guidance has now been withdrawn and replaced with the following document:

- Professional Guidance: Comparing Soil Contamination Data with a Critical Concentration (CL:AIRE 2020)

The purpose behind statistical assessment is ultimately to determine whether concentrations of contaminants are at levels that present potential risk to the future site users (and the wider environment if the statistical assessment is conducted on leachate test results).

The new guidance places even greater emphasis and reliance on the desk study being carried out first, appropriately detailed sampling strategies, collection and testing of samples for contamination and use of appropriate screening criteria.

The guidance requires an increased number of criteria to be met before a robust statistical assessment can be conducted and introduces the principle of the Central Limit Theorem (CLT); a key tool of statistics that is used in the comparison of confidence intervals with the critical concentration. A common 'rule of thumb' is that the CLT will apply provided your sample size is between 20 and 50.

On this basis, Tier Environmental considers that statistical assessment in accordance with the CL:AIRE 2020 guidance may not be applied in this instance given that the number of samples obtained is below 20 No. for any given identified soil population.

Due consideration of the ground conditions, distinct identifiable populations of soil and proposed development layout has been undertaken and, where appropriate, laboratory results associated with discrete populations or 'hotspots' have been assessed separately.

9.2. Selection of Generic Assessment Criteria (GAC)

In short, for the majority of the contaminants of concern, LQM/CIEH Suitable 4 Use Levels (S4ULs) published in 2015 have been adopted as GACs for a commercial/industrial land use; however, further details on the hierarchal approach for the selection of the GACs used as screening criteria for this assessment is provided in Appendix I.

These values are considered as appropriate screening criteria as they incorporate updated assumption exposures derived for the production of C4SLs but within the context of deriving screening criteria above which assessment of the risks or remedial action may be needed (i.e. within the context of the planning regime rather than Part 2A context for which C4SLs were derived).

For those potential contaminants of concern where the selected GAC is dependent on Soil Organic Matter content (SOM), an assumed SOM of 1% has been selected based on the reported Total Organic Carbon (TOC) concentrations (which have been converted to SOM by dividing by a conversion factor of 0.58). It should be noted; however, that for any soil samples where the TOC may be artificially driven by the presence of petroleum

hydrocarbons, that these TOC results have been removed from the data set when determining an appropriate characteristic SOM. For this purpose, Tier Environmental have notionally considered that any TOC results from soil samples where the measured total TPH concentration exceeds 500mg/kg should be removed.

9.3. Human Health Risk Assessment

Measured concentrations of the following contaminants of concern have been reported in excess of the respective GACs:

Table 9.1 Measured Concentrations of Potential Contaminants of Concern Reported in Excess of the Respective GACs

Contaminant of Concern	Exploratory Hole Location	Depth (m bgl)	Soil Population	Units	Measured Concentration	GAC	Comments
PAHs							
Naphthalene	WS03	2.50	MG1	mg/kg	568.92	190	These chemicals occur as crystalline solids, liquids or vapours typically derived the combustion and/or incomplete combustion of organic matter. Used in laboratories and for manufacturing dyes, plasticizers, insecticides and other pharmaceutical products. Harmful if ingested, inhaled and/or via direct contact. Can cause cancer, and other genetic health issues. Boreholes where these compounds have been recorded in Made Ground samples are located centrally on the eastern and western edges to the proposed building layout. The proposed development will include covering ground surfaces with hardstanding and buildings that will help inhibit the potential for end-users coming into contact with contaminants in Made Ground. Incorporating vapour resistant membranes and ensuring enclosed spaces are well ventilated will help to reduce potential impacts from vapour ingress and accumulation.
Benzo(a)anthracene	WS03	2.50	MG1	mg/kg	210.32	170	
	WS01	2.40	MG1	mg/kg	205.12		
Benzo(a)pyrene	WS03	2.50	MG1	mg/kg	156.33	35	
	WS01	2.40	MG1	mg/kg	76.87		
Dibenzo(ah)anthracene	WS01	2.40	MG1	mg/kg	8.42	3.5	
Benzo(b)fluoranthene	WS03	2.50	MG1	mg/kg	103.95	44	
	WS01	2.40	MG1	mg/kg	93.51		
TPH / BTEX							
>EC16-EC21	WS03	2.50	MG1	mg/kg	34373	28000	Medium to dense phase aromatic hydrocarbon chains found in diesel fuel, fuel oils and lube
>EC21-EC35	WS03	2.50	MG1	mg/kg	40964	28000	

Contaminant of Concern	Exploratory Hole Location	Depth (m bgl)	Soil Population	Units	Measured Concentration	GAC	Comments
	WS01	2.40	MG1	mg/kg	32654		oil/motor oil and grease. Typically perceived as having low mobility, reactivity or volatility. Harmful if ingested, inhaled or via direct contact. Boreholes where these compounds have been recorded in Made Ground samples are located centrally on the eastern and western edges to the proposed building layout. The proposed development will include covering ground surfaces with hardstanding and buildings that will help inhibit the potential for end-users coming into contact with contaminants in Made Ground. Incorporating vapour resistant membranes and ensuring enclosed spaces are well ventilated will help to reduce potential impacts from vapour ingress and accumulation.
VOCs / SVOCs							
Vinyl Chloride	WS03	2.50	MG1	µg/kg	1632	59	These chemicals occur as flammable liquids and vapours generally used in polyvinyl chloride production. Harmful if ingested or inhaled are carcinogenic and have explosive potential. Boreholes where these compounds have been recorded in Made Ground samples are located centrally on the eastern and western edges to the proposed building layout. The proposed development will include covering ground surfaces with hardstanding and buildings that will help inhibit the potential for end-users coming into contact with contaminants in Made Ground. Incorporating vapour resistant membranes and ensuring enclosed spaces are well ventilated will help to reduce potential impacts from vapour ingress and accumulation.
	CP03	4.80	DD1	µg/kg	460		
	WS01	2.40	MG1	µg/kg	830		
1-2 Dichloroethane	WS03	2.50	MG1	µg/kg	11305	670	
	CP03	4.80	DD1	µg/kg	2270		
	WS01	2.40	MG1	µg/kg	13769		
	WS02	0.90	MG1	µg/kg	3308		
1-2-4 Trimethylbenzene	WS03	2.50	MG1	µg/kg	54622	42000	

Localised Impacts

Measured concentrations of PAHs (Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Dibenzo(ah)anthracene and Benzo(b)fluoranthene), TPHs (>EC16-EC21 and >EC21-EC35) and VOCs (vinyl chloride, 1-2 Dichloroethane and 1-2-4 trimethylbenzene) have been reported in excess of the GAC protective of human health for a commercial/industrial land use. These exceedances have been recorded in WS03 and WS01 within the Made Ground (MG1).

Measured concentrations of VOCs (vinyl chloride and 1-2 dichloroethane) have been reported in excess of the GAC protective of human health for a commercial/industrial land use. In total, 1 No. exceedance of 1-2 dichloroethane was recorded in WS02 at 0.90m bgl, within the Made Ground. An exceedance of vinyl chloride and 1-2 dichloroethane was also recorded in CP03 at 4.80m bgl in the tidal flat deposits.

The locations where concentrations of the compounds have been recorded (boreholes WS01, WS03 and CP03), are centrally on the eastern and western edge of the proposed building footprint. The proposed development will generally cover the site with hardstanding and buildings

Measured Potential Contaminant of Concern Concentrations without Publicly Available GACs

Table 9.2 summarises the measured concentrations of potential contaminants of concern have been reported in excess of the laboratory method detection limit for which there are no current publicly available GACs and provides qualitative commentary / discussion as to whether they may represent a potential risk to human health with due consideration of the Conceptual Site Model.

Table 9.2 Measured Concentrations of Potential Contaminants of Concern Reported in Excess of the Laboratory Method Detection Limit

Contaminant of Concern	Exploratory Hole Location	Depth (m bgl)	Soil Population	Units	Measured Concentration	Comments
VOCs/SVOCs						
1-3-5 trimethylbenzene	WS03	2.50	MG1	µg/kg	5855	These chemicals are naturally occurring / benzene derivatives that occur as colourless, flammable liquids/oily liquids and vapours. Generally used as a laboratory chemical or in the electronics industry and are hazardous if swallowed, inhaled or via direct contact. Boreholes where these compounds have been recorded in Made Ground samples are located centrally on the eastern and western edges to the proposed building layout. The proposed development will include covering ground surfaces with hardstanding and buildings that will help inhibit the potential for end-users coming into contact with contaminants in Made Ground. Incorporating vapour resistant membranes and ensuring enclosed spaces are well ventilated will help to reduce potential impacts from vapour ingress and accumulation.
	CP02	2.00	MG1	µg/kg	14	
	WS01	2.40	MG1	µg/kg	84	
Sec-butylbenzene	WS03	2.50	MG1	µg/kg	465	
4-isopropyltoulene	WS03	2.50	MG1	µg/kg	2634	
	CP02	2.00	MG1	µg/kg	88	
	WS01	2.40	MG1	µg/kg	64	
Butylbenzene	WS03	2.50	MG1	µg/kg	2895	
	WS01	2.40	MG1	µg/kg	75	
OTHERS						
PAH – Chloronapthalene	WS03	2.50	MG1	µg/kg	868924	Chloronapthalene occurs as two isomers 1-Chloronaphthalene, which is a colourless, oily liquid, and 2-Chloronaphthalene, which is a combustible, off-white odourless solid, practically insoluble in water. Both are derived from the chlorination of naphthalene. Boreholes where these compounds have been recorded in Made Ground samples are located centrally on the eastern and western edges to the proposed building layout. The proposed development will include covering ground surfaces with hardstanding and buildings that will help inhibit the potential for end-users coming into contact with contaminants in Made Ground.
	WS01	1.80	MG1	µg/kg	8412	
	CP01	1.10	MG1	µg/kg	201	
	CP02	2.00	MG1	µg/kg	1904	
	WS01	2.40	MG1	µg/kg	119808	

Asbestos

Asbestos can be present in soil as fragments of bulk Asbestos Containing Materials (ACMs) (e.g. asbestos cement sheeting) and also as discrete asbestos fibres within the soil matrix. This investigation has carried out assessments to determine whether both bulk fragments and / or fibres are present in the soil at the site. The asbestos assessment commenced on site with inspection of the Made Ground by our suitably qualified supervising engineer for the presence of bulk ACMs.

During the fieldwork no suspected ACMs were identified.

Of the 13 No. of Made Ground samples submitted for asbestos screening, 1 No. was reported to contain asbestos. Those positive identifications are summarised in Table 9.3, below.

Table 9.3 Summary of Asbestos Assessment

Exploratory Hole Location	Depth (m bgl)	Location on Site Description	Soil Population	Asbestos Type	Quantification (% w/w)
Asbestos in Soil Samples					
CP01	1.10	Centre north	MG1	Chrysotile and amosite fibre bundles	<0.001

9.4. Utilities

Elevated PAH and TPH concentrations have been recorded in Made Ground samples taken from WS01 and WS03 on the western and eastern edge to the proposed building layout, respectively that could impact on buried services.

The presence of hydrocarbons can denature and permeate plastic services, which is a particular concern for water supply pipes. This could lead to both the taste and quality of drinking water supplies being compromised. This associated risk can be easily managed through the use of hydrocarbon resistant pipes, for example plastic 'barrier' pipes incorporating an aluminium foil layer or metal pipes. It should be noted that the water pipe specification should always be confirmed with the local water supply company as they may insist on such protective pipes regardless of the level of contamination or remediation.

It is recommended that the results of the chemical testing are provided to the appropriate utility companies to determine the necessity for service protection.

9.5. Construction and Maintenance Workers

Contamination may pose a short-term (acute) or long-term (chronic) risk to workers during construction and maintenance. The potential risks must be specifically assessed as part of the health and safety evaluation for the works to be performed in accordance with prevailing legislation. Site practices must conform to the specific legislative requirements and follow appropriate guidance (e.g., HSE, 1991; CIRIA, 1996).

On the basis of the results obtained, the following potential exposure risks to construction and maintenance workers have been highlighted:

- Exceedances of PAHs, VOCs, SVOCs and TPH above the GACs protective of human health for a commercial/industrial land use.

Whilst asbestos has been reported during the ground investigation works, the measured concentrations have been reported <0.001% w/w i.e. at 'trace' levels which are unlikely to trigger requirements during earthworks / construction works in accordance Control of Asbestos Regulations 2012. However, in the event that previously unidentified asbestos is identified during future earthworks / construction works at concentrations above 0.001% w/w (i.e. above 'trace' levels), the Control of Asbestos Regulations 2012 should be adhered to. A summary of complying with CAR: risk assessments, licensing and training is therefore provided in Appendix M.

10.CONTROLLED WATERS RISK ASSESSMENT

10.1. Introduction

In order to assess whether there is a potentially unacceptable risk of pollution of controlled waters, 3 No. groundwater samples were submitted for laboratory chemical analysis as per the summary presented in Table 5.4 within this report. Analytical data from groundwater sample testing undertaken by Tier Environmental have been evaluated against Water Quality Standard (WQS) values appropriate to the Conceptual Site Model.

In accordance with Part 2A of the Environmental Protection Act 1990, Tier Environmental has made regard to all of the WQS values that are relevant to the Site and a judgment has been made against the most stringent of those relevant standards. Further details are provided, along with the approach for selection of TPH / BTEX WQS values, in Appendix J.

In some instances, the laboratory method detection limit is greater than the appropriate WQS value. In these instances, only measured concentrations in excess of the laboratory method detection limit have been considered likely to potentially represent a possible significant risk to controlled waters.

For those potential contaminants of concern for which the WQS values are dependent on hardness (e.g. cadmium EQS values), a hardness of ≥200 mg CaCO3/l has been selected based on the reported values in the groundwater beneath the Site.

10.2. Controlled Waters Environment Conceptual Site Model Summary

From a conceptual site model perspective, the Tidal Flat Deposits and Till are Unproductive Aquifers with a very low to low permeability and mixed flow type whereas the Kirkham Mudstone member is a Secondary B Aquifer with a low permeability with a fracture flow type. Perched groundwater has been observed within Made Ground and close to the boundary with the Tidal Flat Deposits that is likely to flow north-eastwards towards the River Wyre (59m northeast), with which it is also likely to be in hydraulic conductivity. Confined perched groundwater was also recorded within the Till at between 8.50m and 11.00m depth, which is considered likely to be associated with granular pockets and horizons within these deposits. Groundwater within the Kirkham Mudstone bedrock is anticipated to be confined beneath the Till and occur at depth. No recorded Source Protection Zones or groundwater/surface water abstraction licenses or discharge consents are given within 250m of the Site. The Site is set within an area of significant wider historical and present commercial/industrial land use. On this basis the controlled waters sensitivity for perched water within the Made Ground and Tidal Flat Deposits/Till (Unproductive Aquifer) is considered moderate and within the Kirkham Mudstone bedrock (Secondary B Aquifer) is low.

10.3. Groundwater Analysis

Table 10.1 below summarises the measured concentrations of contaminants of concern from groundwater samples at the Site that have been reported in excess of the respective WQS values.

Table 10.1 Summary of Measured Concentrations of Dissolved Phase Groundwater Potential Contaminants of Concern in Excess of WQS Values

Potential Contaminant of Concern	Units	LoD*	WQS	Maximum Concentration	No. samples >WQS	Monitoring Well Location
Mercury	µg/l	0.5	0.07	0.5	3 of 3	CP01, WS01 and WS05
Nickel	µg/l	0.2	4	18.9	3 of 3	CP01, WS01 and WS05
Zinc	µg/l	1.5	6.8	16.2	1 of 3	CP01
Naphthalene	µg/l	0.1	2	11.1	1 of 3	WS01

Potential Contaminant of Concern	Units	LoD*	WQS	Maximum Concentration	No. samples >WQS	Monitoring Well Location
Anthracene	µg/l	0.005	0.1	410.151	3 of 3	CP01, WS01 and WS05
Fluoranthene	µg/l	0.005	0.0063	286.764	3 of 3	CP01, WS01 and WS05
Benzo(a)pyrene	µg/l	0.005	0.00017	89.01	3 of 3	CP01, WS01 and WS05
Vinyl Chloride	µg/l	0.1	0.5	1,200.5	2 of 3	WS01 and WS05
1,1-Dichloroethane	µg/l	3	10	60	2 of 3	CP01 and WS01
Chloroform	µg/l	2	2.5	142	2 of 3	WS01 and WS05
1,2-Dichloroethane	µg/l	2	10	2,115	3 of 3	CP01, WS01 and WS05
Benzene	µg/l	0.5	10	10.4	1 of 3	WS01
SUM Trichloroethene (TCE) plus Tetrachloroethene (PCE)	µg/l	3	10	98	2 of 3	WS01 and WS05
Phenol	µg/l	1	7.7	120	1 of 3	WS01
>EC10-EC12	µg/l	5	100	141	1 of 3	WS01
>EC12-EC16	µg/l	10	100	810	1 of 3	WS01
>EC16-EC21	µg/l	10	90	440	1 of 3	WS01
Sulphate as SO4	mg/l	0.5	400	1,414.1	3 of 3	CP01, WS01 and WS05
Total Ammonia as N	mg/l	0.03	0.6	7.29	2 of 3	CP01 and WS01
Electrical Conductivity @25C	µS/cm	2	2,500	16,825	3 of 3	CP01, WS01 and WS05

* LOD= Laboratory Method Limit of Detection

Measured chemical concentrations in groundwater for heavy metals (mercury, nickel and zinc), non-metallic compounds (phenols, sulphate as SO4 and total ammonia as N), PAH (naphthalene, anthracene, fluoranthene and benzo(a)pyrene), TPH (aromatic fractions EC10 to EC12, EC12 to EC16 and EC16 to EC21), and VOCs (vinyl chloride, 1,1-dichloroethane, chloroform, 1,2-dichloroethane, benzene, and sum of trichloroethene (TCE) plus tetrachloroethene (PCE)) have been reported in excess of the WQS protective of the controlled waters environment.

The recorded concentration exceedances for the heavy metals, non-metallic compounds and TPH identified in groundwater are either in the same or a single to 2 No. orders of magnitude above the respective controlled water WQS. The site is situated within a historically commercial/industrial area and the proposed design will include covering ground surfaces with buildings and hardstanding. The underlying superficial deposits are clay rich in nature with generally low permeability and represent unproductive strata. This in combination with the proposed development design will help to inhibit the vertical downward migration of contaminants from surface in percolating water. Given the above and the marginal exceedances, recorded for these potential contaminants, it is considered that they present a relatively low risk to the controlled waters environment.

Measured dissolved PAH concentrations for naphthalene, anthracene, fluoranthene and benzo(a)pyrene in groundwater are between a single and 5 No. orders of magnitude above the controlled waters environment WQS. Further measured PAH concentrations without publicly available GACs have also been identified, including:

- Acenaphthylene.
- Acenaphthene.
- Fluorene.
- Phenanthrene.
- Pyrene.
- Benzo(a)anthracene.
- Chrysene.
- Benzo(b)fluoranthene

- Benzo(k)fluoranthene
- Indeno(123cd)pyrene.
- Dibenzo(ah)anthracene.
- Benzo(ghi)perylene.

Measured dissolved phase VOC concentrations for vinyl chloride, 1,1-dichloroethane, chloroform, 1,2-dichloroethane, benzene, and sum of trichloroethene (TCE) plus tetrachloroethene (PCE) in groundwater are the same to 4 No. orders of magnitude above the controlled waters environment WQS. Further measured VOC concentrations without publicly available GACs have also been identified, including:

- 1,1-Dichloroethene (1,1 DCE).
- trans-1-2-Dichloroethene.
- cis-1-2-Dichloroethene.
- 1,1,2-Trichloroethane.
- 1,4-Dichlorobenzene.

The site and immediate surrounding area to the east and south have an industrial history associated with railway sidings, Vinylidene Chloride (VC4) plant, an ammonia soda works and chemical works with associated tanks and structures. It is considered likely that such works account for the chemical concentrations measured in Made Ground and groundwater beneath the site.

Measured concentrations are notably higher in WS01 than CP01 and WS05. The groundwater samples in WS01 and WS05 correspond to the Made Ground encountered in these two boreholes. The response zone in CP01 is much deeper and the groundwater sample retrieved is probably more representative of that for a confined water body within the Till. It is understood that a tank was historically located adjacent to the location where WS01 was sunk, which could potentially account for the elevated hydrocarbon concentrations returned. However, at this stage it is uncertain whether the PAH and VOCs recorded in groundwater samples result from within the Made Ground on-site or come from an off-site source or a combination of both. What is also not clear is whether the perched groundwater at the Made Ground/Tidal Flat Deposits boundary occurs as one continuous body or occurs as interconnected or isolated perched water bodies. Potentially the perched groundwater in the Made Ground is in hydraulic conductivity with the River Wyre. However, a pathway between these the perched groundwater and the river, particularly in the vicinity of WS01, has yet to be confirmed.

Therefore, at this stage it is considered that measured dissolved phase PAH and VOC concentrations recorded present an unacceptable risk to the controlled waters environment. Further works are recommended in order to better understand the ground conditions across the site, whether the perched groundwater is one or several bodies, establish whether there is a pathway between the Made Ground and the river and whether the contamination recorded around WS01 is present as a hotspot or more widespread. Further works could include sinking additional wells, monitoring and chemical groundwater analysis, plus undertaking a DQRA and liaising with the local environmental authority.

11.GROUND GAS RISK ASSESSMENT

11.1. Introduction

The ground gas risk assessment has been undertaken in accordance with the following guidance:

- BS 8485:2015+A1:2019;
- CIRIA C665, 2007;
- Guidance on Evaluation of Development Proposals on Sites Where Methane and Carbon Dioxide Are Present, NHBC, 2007;
- A Pragmatic Approach to Ground Gas Risk Assessment RB17. CL:AIRE, 2012; and,
- Ground Gas Monitoring and 'Worst-Case' Conditions TB17, CL:AIRE, 2018

The ground gas risk assessment has been conducted with full consideration of the viable sources, pathways and receptors included within the Preliminary Conceptual Site Model presented in Section 4.

Ground gas monitoring visits have been completed on 6 No. occasions, between 22nd August and 22nd November 2022, and are ongoing. The monitoring well locations and construction were designed with due consideration of the proposed development layout and preliminary conceptual site model. Further information pertaining to monitoring wells is provided in Table 5.2.

11.2. Ground Gas Monitoring Results

The ground gas monitoring results are presented in Appendix G and summarised in Table 10.1 below:

Table 11.1 Ground Gas Monitoring Results Summary – 6 No. Visits of Proposed Monitoring Programme of 6 No. Visits

Strata targeted by response zone	Monitoring well reference	Maximum peak CH_4 (%v/v)	Maximum steady state CH_4 (%v/v)	Maximum peak CO_2 (%v/v)	Maximum steady state CO_2 (%v/v)	Lowest O_2 recorded (%v/v)	Maximum peak gas flow rate (l/h)	Maximum steady state gas flow (l/h)
Tidal Flat Deposits and Till	CP01	**8.7**	**8.7**	9.9	9.8	0.5	4.1	0.1
Tidal Flat Deposits and Till	CP02	0.1	ND	9.6	0.3	0.9	**0.1**	0.1
Tidal Flat Deposits and Till	CP03	0.7	0.4	1.2	0.8	1.5	0.1	ND
Made Ground	WS01	0.2	0.2	**11.2**	**11.2**	2.1	ND	ND
Made Ground	WS03	0.1	ND	1.0	0.3	**0.1**	**0.1**	**0.1**
Made Ground	WS04	0.2	0.1	8.3	7.9	3.6	**0.1**	**0.1**
Made Ground	WS05	0.2	0.1	7.7	6.2	3.5	ND	ND

Bold = maximum value reported across all visits.

11.3. Ground Gas Risk Assessment

Table 11.2 and Table 11.3 demonstrate how, in accordance with CIRIA C665, the periods and frequency of monitoring have been selected for the Site.

Table 11.2 From Table 5.5a CIRIA C665 - Typical/idealised periods of monitoring (after Wilson et al, 2005)

	2	Generation Potential of the Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of development	Low (commercial)	1 month	2 months	3 months	6 months	12 months
	Moderate (flats)	2 months	3 months	6 months	12 months	24 months
	High (residential with gardens)	3 months[1]	6 months	6 months	12 months[1]	24 months

Notes:

1 NHBC guidance also recommends this period of monitoring (Boyle and Witherington, 2007).

2 There is no industry consent over "high", "medium" or "low" generation potential of source.

Table 11.3 From Table 5.5b CIRIA C665 - Typical/idealised frequency of monitoring (after Wilson et al, 2005)

	2	Generation Potential of the Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of development	Low (commercial)	4	6	6	12	12
	Moderate (flats)	6	6	9	12	24
	High (residential with gardens)	6[1]	9	12	24[1]	24

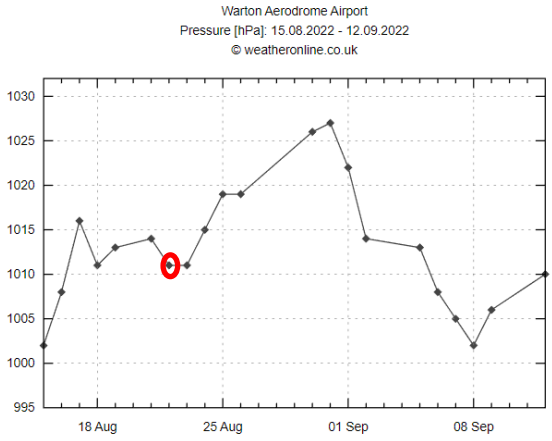
Notes:

1 NHBC guidance also recommends this period of monitoring (Boyle and Witherington, 2007).

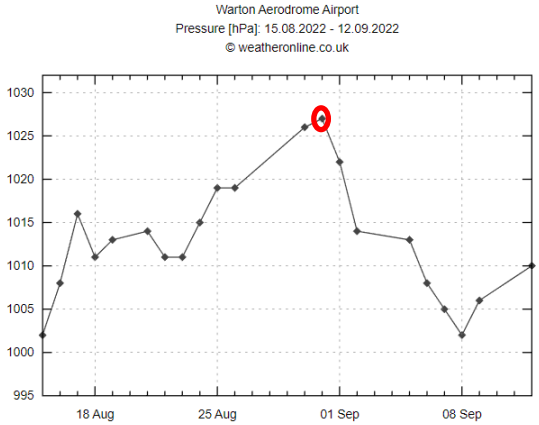
2 There is no industry consent over "high", "medium" or "low" generation potential of source.

The total atmospheric pressure range of the ground gas monitoring data included in this report was between 1012 mbar and 1029 mbar. This range covers moderate (1000 mbar to 1015mbar) and high (>1015 mbar) atmospheric pressures. Monitoring events included periods of stable and rising pressure trends.

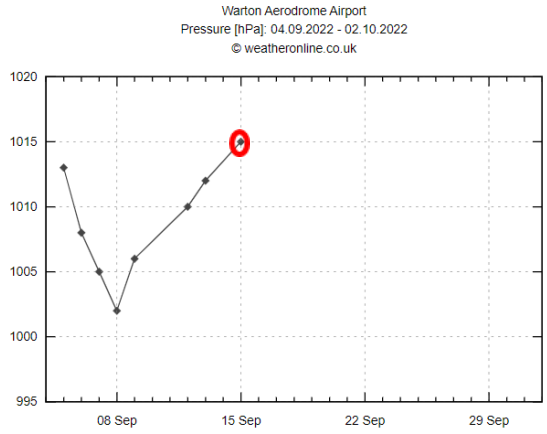
Visit 1 – 22.08.2022



Visit 2 – 30.08.2022



Visit 3 – 15.09.2022



There is no data available from nearby weather stations to determine pressure conditions for the 4th, 5th or 6th monitoring visits.

Consideration of Groundwater Effects

An assessment has been made to determine whether groundwater levels beneath the Site lie at a shallow depth at, or above, the plain section of the monitoring well or within cohesive strata. In those instances where shallow groundwater is located within the plain section of the monitoring well pipe or within cohesive strata this can result in 'groundwater pumping' or a 'piston effect'. That is the reported measured peak (and in some cases steady) flow rates are significantly (and artificially) influenced by the pressures formed in the void above the groundwater table in the plain pipe section, or within the pipework installed within cohesive strata, as opposed to , truly representing ground gas flow rates. In such instances, this scenario can create 'artificial' negative and /or relatively high peak positive readings depending on whether the groundwater levels have increased or decreased in between monitoring events or since the monitoring wells were installed.

The ground gas monitoring results recorded during the 6 No. visits indicate that there have been no instances of artificial groundwater pumping.

The ground gas monitoring results from 6 No. visits have been assessed in accordance with the criteria specified for this Site, which were derived as described in Appendix K.

Initial 'Worst-Case' GSV Calculation – Carbon Dioxide and Methane

An initial conservative assessment has been made by calculating a 'worst-case' Gas Screening Value (GSV) for the Site by using:

- the maximum reported methane or carbon dioxide concentration (whichever is highest) from any monitoring well and during any ground gas monitoring visit; and,
- the remaining maximum peak positive flow rate (after any negative flow rates or 'artificially' high flow rates have been discounted as described above) from any monitoring well and during any ground gas monitoring visit

Table 11.4 Initial Worst-Case GSV Calculation

Ground Gas	Maximum Reported Peak Concentration (% v/v)		Selected Concentration used in GSV Calculation (% v/v)		Maximum Appropriately Selected Gas Flow Rate (l/hr)		'Worst case' GSV (l/hr)
Methane (CH_4)	8.7		11.2	X	0.1	=	0.0112
Carbon dioxide (CO_2)	11.2						

CIRIA C665 provides two separate methods to 'characterise' a site that firstly requires the assessor to distinguish between two fundamental development 'situations':

- **Situation A** - Any development other than Situation B (e.g. factories, shops, commercial, warehouses, schools, cinemas, sports centres, stadiums, high rise housing, housing with basements, etc) for which the **Modified Wilson and Card 'Characteristic Situation' classification system** is applied; and,

- **Situation B** - Low rise building with minimum ventilated under floor void (min 150 mm) for which the **NHBC Traffic light classification system** is applied

In this instance, as the Site is due to be developed as The Thornton Energy Recovery Centre (TERC), an energy-from-waste (EFW) facility, it shall be regarded as a 'Situation A' scenario for the purposes of the ground gas risk assessment.

Table 11.4 demonstrates that the Site is placed in a Characteristic Situation 1 – Very Low Risk scenario on the basis of the 'worst case' GSV alone.

CIRIA C665 indicates that in the event that the reported methane concentrations are *'typically'* >1% v/v and/or the reported carbon dioxide concentrations are *'typically'* >5% then consideration should be made to increase the determination of the Site to a Characteristic Situation 2 – Low Risk scenario.

As the maximum reported carbon dioxide concentration exceeds the 5% threshold, Tier Environmental will conduct further consideration of whether the Site should be classified as a Characteristic Situation 2 – Low Risk scenario once the ongoing ground gas monitoring program has been completed.

Carbon Monoxide and Hydrogen Sulphide

There is no current UK risk assessment guidance available for carbon monoxide and hydrogen sulphide derived from ground gases.

A maximum peak carbon monoxide concentration of >1000 ppm has been reported, which exceeds the workplace long term exposure limit (30ppm) and the workplace short term exposure limit (200ppm) published by the Health and Safety Executive (EH40/2005 Workplace Exposure Limits) and the WHO long term (24 hours) indoor exposure guideline value (5.68 ppm).

A maximum peak hydrogen sulphide concentration of 3ppm has been reported which is below the workplace long term exposure limit (5ppm) and the workplace short term exposure limit (10ppm) published by the Health and Safety Executive (EH40/2005 Workplace Exposure Limits).

Based on the above site classification as a Characteristic Situation 2 – low risk scenario for which ground gas protection measures are required, due to elevated levels of carbon dioxide and methane, ground gas protection measures associated with a CS2 will also offer protection from the elevated levels of carbon monoxide.

Hydrocarbon Vapours

Measurements for hydrocarbon vapours were undertaken during the site works using a Phot-Ionisation Detector (PID), for samples collected from the exploratory holes within the Made Ground and Tidal Flat Deposits. No readings were recorded for exploratory holes CP01 and TP06 in either the Made Ground or the Tidal Flat Deposits.

For exploratory holes CP02, CP03, TP01 to TP04, TP07 and WS01 to WS07 PID readings within the Made Ground, between 0.50m and 3.50m depth ranged from <0.1 ppm to 20ppm.

Within the Tidal Flat Deposits (WS01 to WS05 and WS07), between 3.00m and 5.00m depth PID readings were typically between <0.1 ppm and 20ppm. In windowless sample borehole WS01 at 3.00m depth a high PID reading at 102 ppm was recorded, which exceeds above the accepted threshold of 50 ppm. This sample was taken very close to the boundary between the overlying Made Ground and Tidal Flat Deposits on the eastern edge to the proposed EFW building. Elevated PAH, TPH and VOC concentrations were also recorded in a soil (Made Ground) sample, at 2.40m depth, and groundwater sample from this borehole. The hydrocarbon source is unknown. Therefore, it is considered that where CS2 gas protection measures are employed consideration should also be given to ensuring that they will protect from migrating hydrocarbon vapours.

Considerations for Construction and Maintenance Workers

During engineering and construction activities, the ground gas data indicate that the following aspects are to be considered during the preparation of relevant site H&S plans, method statements and related documents, and appropriate working methods adopted:

- **Carbon dioxide concentrations in ground gas:** The measured CO2 concentrations in ground gas reported are elevated relative to background levels and could present an asphyxiation risk in excavations and other confined spaces. The Health & Safety Executive has published information defining safe occupational exposure levels for CO2 and the latest guidance must be consulted to determine whether the ground gas regime necessitates specific precautions during site works.
- **Methane concentrations in ground gas:** The measured methane concentrations in ground gas reported are elevated relative to background levels and could give rise to explosive mixtures in confined spaces. Safe working methods should be adopted to mitigate this risk

11.4. Radon Gas

The Site lies within an area where less than 1% of the properties are above the radon action level and therefore no radon protection measures are required.

11.5. Ground Gas Protection Measure Requirements

The due process to select ground gas protection measures is summarised in Table 11.5, below.

Table 11.5 Ground Gas Protection Measure Requirements

<table>
<tr><th>Ground Gas Characteristic Situation</th><th>Vapour Membrane Required?</th><th>Building Type (in accordance with BS8485)</th><th>Gas Protection Score by Characteristic Situation and Type of Building</th><th>Proposed Ground Gas Protection Measures</th></tr>
<tr>
<td>Characteristic Situation 2 – Low Risk Scenario</td>
<td>Based on the results of the human health risk assessment; measured concentrations of VOCs and naphthalene have been reported in excess of the respective GACs and therefore it is recommended a precautionary vapour membrane should be incorporated into the design.</td>
<td>The proposed building type is considered to be Type C/ Type D in accordance with the BS8485 description:
Type C building: commercial building with central building management control of any alterations to the building or its uses and central building management control of the maintenance of the building, including the gas protection measures. Single occupancy of ground floor and basement areas. Small to large size rooms with active ventilation or good passive ventilation of all rooms and other internal spaces throughout ground floor and basement areas. Probably civil engineering construction. Examples include offices, some retail premises, and parts of some public buildings (such as schools, hospitals, leisure centres and parts of hotels).
Type D building: industrial style building having large volume internal space(s) that are well ventilated. Corporate ownership with building management controls on alterations to the ground floor and basement areas of the building and on maintenance of ground gas protective measures. Probably civil engineering construction. Examples are retail park sales buildings, factory shop floor areas, warehouses. (Small rooms within these style buildings should be separately categorized as Type B or Type C).</td>
<td>The red ellipse below has been added to show the appropriate point score, based on the Characteristic Situation that has been determined for the Site and Building type in accordance with BS8485.

From Table 4 in BS 8485:2015+A1:2019 – Gas Protection Score by CS and Type of Building
<table>
<tr><th rowspan="2">CS</th><th colspan="4">Minimum gas protection score (points)</th></tr>
<tr><th colspan="2">High risk</th><th>Medium risk</th><th>Low risk</th></tr>
<tr><th>Type A Building</th><th>Type B Building</th><th>Type C Building</th><th>Type D Building</th></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>2</td><td>3.5</td><td>3.5</td><td>2.5</td><td>1.5</td></tr>
<tr><td>3</td><td>4.5</td><td>4</td><td>3</td><td>2.5</td></tr>
<tr><td>4</td><td>6.5[A)]</td><td>5.5[A)]</td><td>4.5</td><td>3.5</td></tr>
<tr><td>5</td><td>-[B)]</td><td>6[A)]</td><td>5.5</td><td>4.5</td></tr>
<tr><td>6</td><td>-[B)]</td><td>-[B)]</td><td>-[B)]</td><td>6</td></tr>
</table>
A) Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.
B) The gas hazard is too high for this empirical method to be used to define the gas protection measures.</td>
<td>Selection of appropriate ground gas protection measures has been conducted in accordance with Section 7.2 of BS8485 that states that the gas protection measures should form at least two separate elements.
All office areas and ancillary rooms (toilets etc) would be classified as Building Type C for which 2.5 points are needed which may be obtained thusly:
• Gas resistant membrane which satisfies specification of Table 7 of BS8485, lapped and sealed – 2 points and;
• Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement)– 0.5 points
The remainder of the building would be classified as Building Type D only 1.5 points required:
• Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement)– 0.5 points
• Good performance passive sub floor dispersal layer (formed by a geocomposite void former blanket or strips terminating in a gravel trench external to the building) – 1.5 points
The membrane should be upgraded to offer vapour protection.</td>
</tr>
</table>

12.REVISED CONCEPTUAL MODEL AND GENERIC QUANTITATIVE RISK ASSESSMENT OF POLLUTANT LINKAGES

The preliminary combined conceptual site model and conceptual exposure model, developed from the desk study information and presented in Section 4, has been revised in light of the ground investigation and the chemical analysis results presented above in Table 12.1, below.

A revised qualitative risk assessment has also been made of the likelihood of the linkage operating and its potential significance in accordance with CIRIA C552.

Table 12.1 Revised Assessment of Pollutant Linkages.

Justification / Comments	Source	Potential Contaminants of Concern	Pathway	Receptor	Consequence	Probability	Qualitative Risk Assessment
• The site investigation works identified widespread Made Ground covering the Site to maximum depths between 2.55m bgl and 6.60m bgl. Underlaying the Made Ground were superficial tidal flat deposits comprising mostly clay; however bands of sand and silt were also recorded. The tidal flat deposits were encountered to maximum depths between 6.10m bgl and 8.60m bgl. The tidal flat deposits overlaid the superficial Till which was encountered as a firm to very stiff clay. The base of this stratum was not encountered. The solid geology beneath the site is shown to be the Kirkham Mudstone Member – Mudstone (not encountered). The Preesall Halite Member – Mudstone and Halite-stone (not encountered) is shown to subcrop immediately to the east of the site, published geological boreholes show that the till was encountered on Site to a depth of approx. 23m bgl, and therefore bedrock is considered to be at depth. It is understood that the halite from this unit was a resource for a former saline works. The Made Ground is shown to have low to very high permeability with a mixed flow type. The superficial deposits are shown to be an Unproductive Aquifer with a very low to low permeability with a mixed flow type. The bedrock is shown to be a Secondary Aquifer with a low permeability with a fracture flow type. • Made Ground was encountered across the whole Site. Elevated concentrations of PAHs (Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Dibenzo(ah)anthracene and Benzo(b)fluoranthene), TPHs (>EC16-EC21 and >EC21-EC35) and VOCs (vinyl chloride, 1-2 Dichloroethane and 1-2-4 trimethylbenzene) have been identified above the respective GACs. Elevated concentrations of 1-3-5 trimethylbenzene, Sec-butylbenzene, 4-isopropyltoulene, Butylbenzene and Chloronapthalene have also been identified for which there are no publicly available GACs. • Measured groundwater concentrations of zinc, naphthalene, phenanthrene, anthracene, benzo(a)pyrene, benzo(ghi)perylene, benzo(b)fluoranthene, benzo(k)fluoranthene, phenol, total phenols and TPH >EC10-EC12, >EC12-EC16 and >EC16-EC21 have been reported in excess of the WQS protective of the controlled waters environment. The zinc, naphthalene, phenol and TPH exceedances are by either the same order of magnitude or one order of magnitude. Given the marginal nature of these exceedances, the potential for significant dilution between the Site and the River Wyre located 59m northeast, the historical commercial / industrial heritage of the wider area surrounding the Site, low/moderate sensitivity of the controlled waters environment, the fact that the Site will incorporate buildings / hardstanding and a dedicated drainage system that shall reduce infiltration rates through the soils and the protection offered to the underlying Secondary B aquifer by the Low permeability tidal flat and till undifferentiated aquifers, these exceedances are not considered to pose a risk to the controlled waters environment. • Measured dissolved phase groundwater concentrations for PAH (naphthalene, anthracene, fluoranthene and benzo(a)pyrene and VOCs (vinyl chloride, 1,1-dichloroethane, chloroform, 1,2-dichloroethane, benzene, and sum of trichloroethene (TCE) plus tetrachloroethene (PCE) have been reported in excess of the respective WQS protective of the controlled waters environment by the same to 5 No. orders of magnitude which are considered to present a risk to the controlled waters environment due to the order of magnitude of their concentrations above the GAC. • 1 No. positive asbestos identification was noted in CP01 at 1.10m bgl, comprising chrysotile and amosite fibre bundles. Quantification concluded the asbestos percentage present to be <0.001%. • The results of 6 No. ground gas monitoring visits have given a Gas Screening value of 0.0112 l/hr – Characteristic Situation 1, very low risk scenario. However, as measured levels of carbon dioxide and methane are above 5% v/v and given the presence of elevated concentrations of carbon monoxide (above the WHO short and long term exposure limit) consideration should be given to raising the Site to a **Characteristic Situation 2 – low risk** scenario for which ground gas protection measures are required. The elevated concentrations of contaminants measured which produce vapours (such as naphthalene) and a high PID reading (WS01) mean a vapour protection system should be incorporated to the gas protection membrane.	Made Ground associated with the historical site use.	Metals, PAHs, Phenols, TPH and pH, Asbestos, VOCs and SVOCs	Direct contact, ingestion and inhalation of dust	Site End-users and Construction Workers.	Human Health Effects [Medium]	Proposed development will include covering site with buildings/hardstanding. Use of good hygiene practice and PPE. [Unlikely]	Low risk
			Ingestion and inhalation of dust	Off site users.	Human Health Effects [Medium]	Proposed development will include covering site with buildings/hardstanding [Unlikely]	Low risk
			Vertical migration through soil profile.	Groundwater within the Tidal Flat Deposits/Kirkham Mudstone bedrock.	Unproductive Strata/Secondary B Aquifer [Mild]	Non-sensitive controlled water bodies and vertical migration to Secondary B Aquifer will be inhibited due to impermeable Till deposits. [Unlikely]	Very low risk
			Horizontal migration in/on groundwater.	River Wyre	Sensitive Water Course [Medium]	[Likely]	Moderate risk
			Direct Contact	Buildings and services.	Tainted Water supplies [Minor]	[Likely]	Low risk
	Sitewide Made Ground and Tidal Flat Deposits.	Ground gas and hydrocarbon vapours.	Inhalation	Site end users and construction workers.	Human Health Effects [Severe]	Potential for contamination in Made Ground and natural soils to produce ground gas and vapours. [Likely]	Moderate risk
			Migration, ingress and accumulation				
			Migration, ingress and accumulation	Buildings and services	Risk of structural damage from explosions caused by build-up of ground gas. [Mild]	Potential for contamination in Made Ground and natural soils to produce ground gas and vapours. [Likely]	Moderate/Low risk

For definition of the terms used in the qualitative risk assessment, please see Appendix H.

13.PRELIMINARY WASTE SOILS CLASSIFICATION

13.1. Waste Classification

If the Site is to be redeveloped and materials are disposed off Site, the material exported from the Site to Landfill should be hauled by a register waste carrier in accordance with Duty of Care Regulations 1991 and the Hazardous Waste Regulations 2005.

It will be necessary to register the Site in advance of the intended reclamation works with the Environment Agency before disposal to landfill can take place. There will be requirement for the waste producer to provide appropriate Waste Acceptance Criteria (WAC) testing of the Soils for disposal to ensure that the soils are appropriately classified and that the landfill is licensed to receive such soils. A consignment note shall be completed, signed and retained by all parties involved. The consignment note shall state the volume of waste, a physical description of the material and statement of its chemical composition. The waste consignment notes shall be kept by the contractor for a period of at least two years.

Tier Environmental have assessed the chemical results in terms of basic characterisation of soils for waste. This provides a preliminary assessment of whether a material is potentially inert/non-hazardous or hazardous waste.

Basic waste characterisation has demonstrated that 10 No. of the samples of the materials tested have been classified as hazardous waste:

- CP02 at 2.00m bgl (MG1).
- CP03 at 0.70m bgl (MG1).
- CP03 at 2.50m bgl (MG1).
- TP01 at 0.20m bgl (MG1).
- TP05 at 1.10m bgl (MG2).
- WS01 at 2.40m bgl (MG1).
- WS02 at 0.90m bgl (MG1).
- WS03 at 0.50m bgl (MG1).
- WS04 at 1.80m bgl (MG1).
- WS06 at 1.30m bgl (MG1).

Basic waste characterisation has determined that 4 No. of the samples of the materials tested have been classified as potentially hazardous waste:

- CP01 at 1.10m bgl (MG1).
- CP03 at 4.80m bgl (DD1).
- WS05 at 3.00m bgl (MG1).
- WS06 at 0.10m bgl (MG1).

Basic waste characterisation has demonstrated that 12 No. of the samples of the material tested have been classified as non-hazardous waste:

- CP01 at 2.80m bgl (MG1).
- CP202 at 7.00m bgl (DD2).
- CP03 at 7.10m bgl (DD2).
- TP01 at 2.00m bgl (MG1).
- TP02 at 0.30m bgl (MG1).

- TP03 at 1.00m bgl (MG1).
- TP04 at 0.80m bgl (MG1).
- TP07 at 1.20m bgl (MG1).
- TP07 at 3.10m bgl (DD1).
- WS01 at 0.50m bgl (MG1).
- WS07 at 3.30m bgl (DD1).

Samples that were deemed 'potentially hazardous' in each case it is either due to hazard property *'HP 3(i): Flammable liquid waste'* or hazard property *'HP 3(iv): Flammable gaseous waste'* and as no free phase product was observed and the waste is not gaseous, it is not considered that these hazard properties are relevant for the soil waste. On this basis, it is considered that in each of these cases the materials can be considered non-hazardous.

Natural soils are likely to be suitable for disposal to an inert waste landfill.

13.2. Materials Re-Use

Subject to volumetric fill requirements and a future assessment of suitability of re-use (both chemically and geotechnically), some materials may be considered for potential re-use in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP). Please note that any previously landfilled or mining waste materials may not be appropriately subject to consideration under DoWCoP and may not be re-used under DoWCoP unless sufficient lines of evidence and agreement with the local Environment Agency Waste Team can be sought beforehand.

Re-Use of Excavated and Stockpiled Clean Naturally Occurring Soils on Other Sites

In addition, Tier Environmental are aware that CL:AIRE is classing stockpiled clean, naturally occurring soils as waste, unless their final destination is identified in a Materials Management Plan, before they are excavated. However, Tier Environmental consider that any clean naturally occurring soils arising from enabling works, earthworks or construction activities would be regarded as an asset and the default assumption for this Site (prior to excavation and stockpiling) is not the intention to discard these materials where they may be reasonably re-used on this, or another, development site. Stockpiling is a recognised, recommended means of safely storing soils. Whilst there may be advantages to leaving soils in-situ, stripping topsoil and subsoil prior to earthworks is a routine construction activity. Tier Environmental consider that it is not unreasonable to state that in the event that the developer owns another site where the construction phase is ongoing, soils can be transferred between their sites as an owned product and never become waste.

The above paragraph above is therefore considered a clear intention to reuse any clean, naturally occurring soils derived from excavations at this Site (which may also include temporary stockpiling these materials). It is considered; however, that in addition to this the following must be adhered to:

- Reuse does need to occur within a 'reasonable' timeframe (12 No. months); and,
- If soils are transferred to a third party (another developer), there needs to be some contractual agreement in place, as in this situation it is important to have something in place confirming that surplus soils are required by the third party.

Re-Use of Excavated and Stockpiled Clean Naturally Occurring Soils Within The Site They Are Excavated From

Further to the above, where soils are naturally occurring, uncontaminated and re-used on the site they are excavated from, they fall outside of the Waste Framework Directive (WFD) i.e. they will not be classified as a waste Currently the CL:AIRE Definition of Waste Code of Practice states the following which appears to support this position: *"If the material is waste an Environmental Permit will be required to lawfully deposit or re-use it unless the material is "uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated", which is excluded from waste regulation by the Waste Framework Directive (2008)."*

14.CONCLUSIONS AND RECOMMENDATIONS

14.1. Conclusions

- The Site is covered by widespread mainly granular Made Ground to maximum depths between 2.55m bgl and 6.60m bgl. Underlaying the Made Ground are superficial Tidal Flat Deposits comprising mostly clay; however bands of sand and silt were also recorded. The Tidal Flat Deposits were encountered to depths between 6.10m bgl and 8.60m bgl and overlie superficial Till, which was encountered as a firm to very stiff clay to the full investigation depth at 15.10m bgl. Neither the base of the Till deposits or the underlying Kirkham Mudstone bedrock were encountered during the investigation works.
- Elevated concentrations of PAHs (Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Dibenzo(ah)anthracene and Benzo(b)fluoranthene), TPHs (>EC16-EC21 and >EC21-EC35) and VOCs (vinyl chloride, 1-2 Dichloroethane and 1-2-4 trimethylbenzene) have been identified in the Made Ground above the respective GACs. Elevated concentrations of 1-3-5 trimethylbenzene, Sec-butylbenzene, 4-isopropyltoulene, Butylbenzene and Chloronapthalene have also been identified for which there are no publicly available GACs.
- Measured chemical concentrations in groundwater for heavy metals (mercury, nickel and zinc), non-metallic compounds (phenols, sulphate as SO4 and total ammonia as N), PAH (naphthalene, anthracene, fluoranthene and benzo(a)pyrene), TPH (aromatic fractions EC10 to EC12, EC12 to EC16 and EC16 to EC21), and VOCs (vinyl chloride, 1,1-dichloroethane, chloroform, 1,2-dichloroethane, benzene, and sum of trichloroethene (TCE) plus tetrachloroethene (PCE)) have been reported in excess of the WQS protective of the controlled waters environment. The recorded concentration exceedances for the heavy metals, non-metallic compounds and TPH identified in groundwater are either in the same or a single to 2 No. orders of magnitude above the respective controlled water WQS. The site is situated within a historically commercial/industrial area and the proposed design will include covering ground surfaces with buildings and hardstanding. The underlying superficial deposits are clay rich in nature with generally low permeability and represent unproductive strata. This in combination with the proposed development design will help to inhibit the vertical downward migration of contaminants from surface in percolating water. Given the above and the marginal exceedances, recorded for these potential contaminants, it is considered that they present a relatively low risk to the controlled waters environment.
- Measured dissolved PAH concentrations for naphthalene, anthracene, fluoranthene and benzo(a)pyrene in groundwater are between a single and 5 No. orders of magnitude above the controlled waters environment WQS and dissolved phase VOC concentrations for vinyl chloride, 1,1-dichloroethane, chloroform, 1,2-dichloroethane, benzene, and sum of trichloroethene (TCE) plus tetrachloroethene (PCE) in groundwater are the same to 4 No. orders of magnitude above.
- 1 No. positive asbestos identification was noted in CP01 at 1.10m bgl, comprising chrysotile and amosite fibre bundles. Quantification concluded the asbestos percentage present to be <0.001%.
- The results of 6 No. ground gas monitoring visits have given a Gas Screening value of 0.0.0112 l/hr – Characteristic Situation 1, very low risk scenario. However, as some measured levels of carbon dioxide and methane are above 5% v/v and given the presence of elevated measured concentrations of carbon monoxide (above the WHO short and long term exposure limit) consideration should be given to raising the Site to a Characteristic Situation 2 – Low Risk scenario for which ground gas protection measures *are* required. The elevated concentrations of contaminants measured which produce vapours (such as naphthalene) mean a vapour protection system should also be incorporated into the gas protection measures.
- Due to the variable nature and strength of the underlying Made Ground and superficial Tidal Flat combined with ground disturbance from removing existing structures and shallow perched groundwater, it is considered that a deep foundation solution employing ground improvement or piles will be required for the proposed development.
- Due to the Made Ground depths across the site, it is recommended that following removal of exiting floor slabs and buried foundations and structures, the Made Ground should be turned over to form a suitable base upon which to place a floor slab. All oversized obstructions

should be removed, and the Made Ground turned over, placed and compacted to meet a minimum engineered CBR of 5%. Consideration should be given to including a geogrid beneath the floor slab to reduce the potential for differential settlements affecting the structure. The final floor slab should be designed and constructed in accordance with the final design loads determined for each structure and their proposed use.

14.2. Recommendations

- Once design loads and the proposed layout has been finalised and in order to confirm deeper ground conditions, i.e. Kirkham Mudstone bedrock, for pile design further ground investigation comprising deep cable percussive and potentially rotary boreholes is recommended. It is suggested that the number and depths of boreholes required is agreed with the specialist piling contractor once the design working loads are agreed. Monitoring wells should be included in the boreholes and at least one post site-work monitoring visit should be undertaken to record groundwater levels. In-situ Standard Penetration Tests should be conducted during forwarding of the boreholes and collected soil samples submitted for appropriate geotechnical laboratory testing.
- In-situ CPT tests specifically targeted at each structure location will aid with determining pile lengths once the design loads have been finalised.
- Once the granular Made Ground has been turned, placed and recompacted, plate bearing tests should be undertaken to confirm that the required CBR value (minimum 5%) has been achieved.
- It is considered that measured dissolved phase PAH and VOC concentrations recorded present an unacceptable risk to the controlled waters environment and further works, i.e. additional wells, monitoring and chemical groundwater analysis, undertaking a DQRA and liaising with the local environmental authority are recommended..

15.REGULATORY APPROVALS

The conclusions and recommendations presented above are considered reasonable based on the findings of the site investigation. However, these cannot be guaranteed to gain regulatory approval and, therefore, the report should be passed to the appropriate regulatory authorities and/or other organisations for their comment and approval prior to undertaking any works on site.

It is recommended that conditions placed on any planning permission are discharged prior to commencement of site works.

16.REFERENCES

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17.GLOSSARY OF TERMS

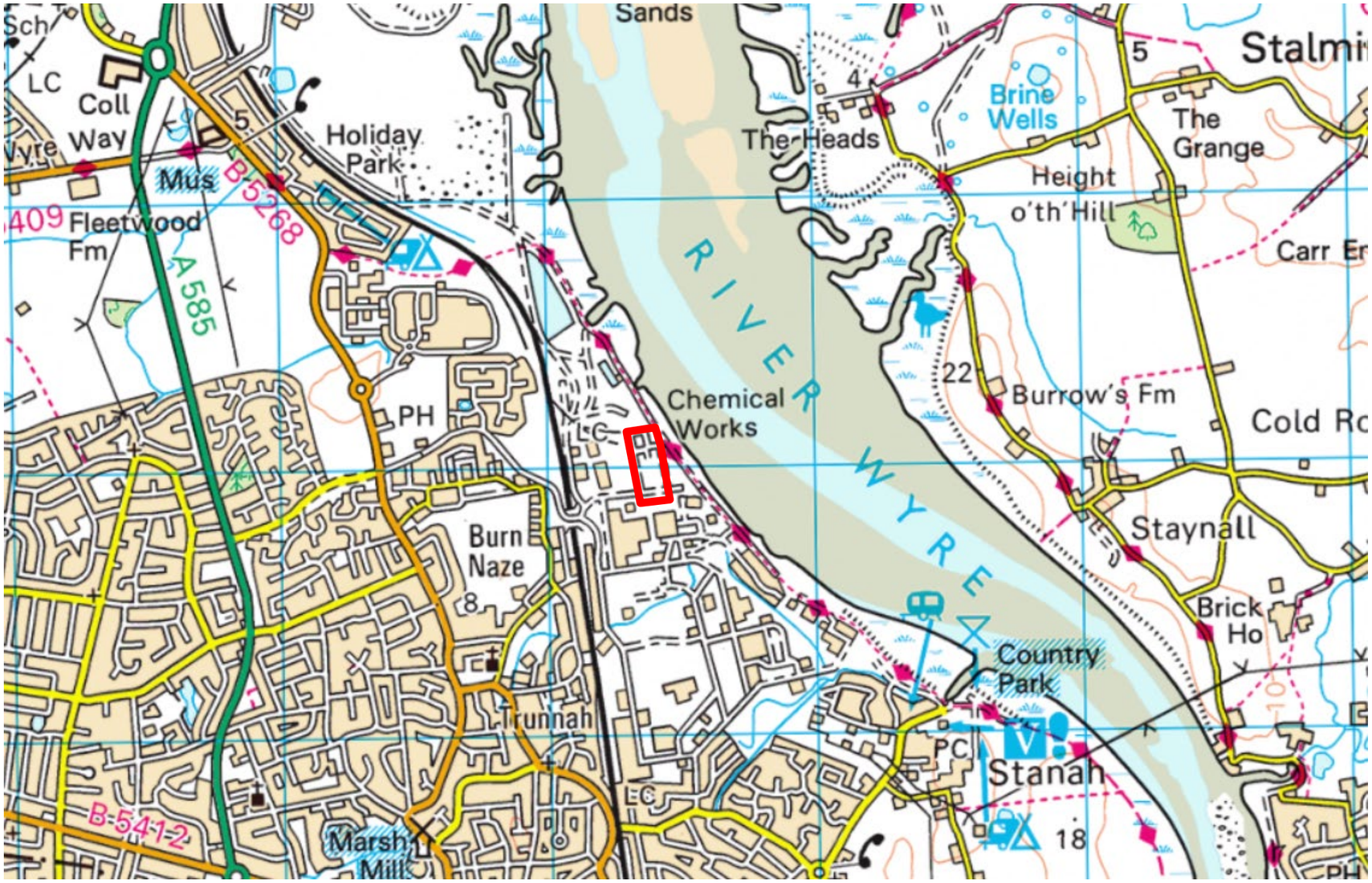
ACEC	Aggressive Chemical Environment for Concrete (classification)
aOD	Above Ordnance Datum
bgl	Below ground level
BGS	British Geological Survey
BRE	Building Research Establishment
CBR	California Bearing Ratio (test)
COMAH	Control of Major Accident Hazards (regulations)
Designated location	Site (and the ecosystem on that site) protected under national of international legislation. A potential ecological receptor to be considered as part of the assessment of land contamination. Example designated locations include SSSIs (q.v.), SACs (q.v.), national nature reserves, Ramsar sites and bird special protection areas.
DQA	Data Quality Assessment
DQO	Data Quality Objective
DQRA	Detailed Quantitative Risk Assessment
DWS	Drinking Water Standard
EQS	Environmental Quality Standard
GAC	Generic Assessment Criterion
GQA	General Quality Assessment (Environment Agency)
GSV	Gas Screening Value
HCV	Health Criteria Value
IPPC	Integrated Pollution Prevention and Control (regulations)
K_{ow}	Octanol-water partition coefficient
LEL	Lower Explosive Limit
LL	Liquid Limit
LoD	Limit of Detection (analytical)
LoQ	Limit of Quantification (analytical)
Mean Value Test	Statistical test (described in the CIEH Guidance) to estimate the mean value of a normally distributed population of data at a given level of confidence. Normally for contaminated land assessment, the 95th percentile (referred to as the 95%UCL or US95) is applied as a reasonable but conservative estimate of the mean concentration for comparison with the relevant assessment criteria.
Maximum Value Test	Statistical test (described in the CIEH Guidance) to identify whether an elevated concentration within a normally distributed data set forms part of the underlying population from which it has been sampled or whether it is an outlier (such as a localised area of contamination) that merits further consideration.
MC	Moisture Content
NGR	National Grid Reference
NIHHS	Notification of Installations Handling Hazardous Substances (regulations)
OS	Ordnance Survey
PI	Plasticity Index
PID	Photoionisation Detector
PL	Plastic Limit
ppm	Parts per million
ppmv	Parts per million by volume
QA	Quality Assurance
QC	Quality Control
SAC	Special Area of Conservation
SOM	Soil Organic Matter

SPT	Standard Penetration Test
SPZ	Source Protection Zone (see Appendix J)
SSAC	Site-Specific Assessment Criterion
SSSI	Site of Special Scientific Interest
SVOC	Semi-Volatile Organic Compound
TEF	Toxicity Equivalent Factor
TPH	Total Petroleum Hydrocarbons
TWA	Time Weighted Average
US95	95th percentile estimate of the true mean value of a data population (also known as 95%UCL).
VOC	Volatile Organic Compound

APPENDIX A - DRAWINGS

Contract Number	TE1674
Contract	Hillhouse Business Park, off Bourne Road, Thorton Cleveleys FY5 4QD
Client	Sesona Ltd

Site Location Plan



0 km 1

Approximate Scale

Scale	NTS		
Drawn by	AH	Approved	SL
Drawing Number	TE1674-TE-00-XX-DR-GE-001-V01		

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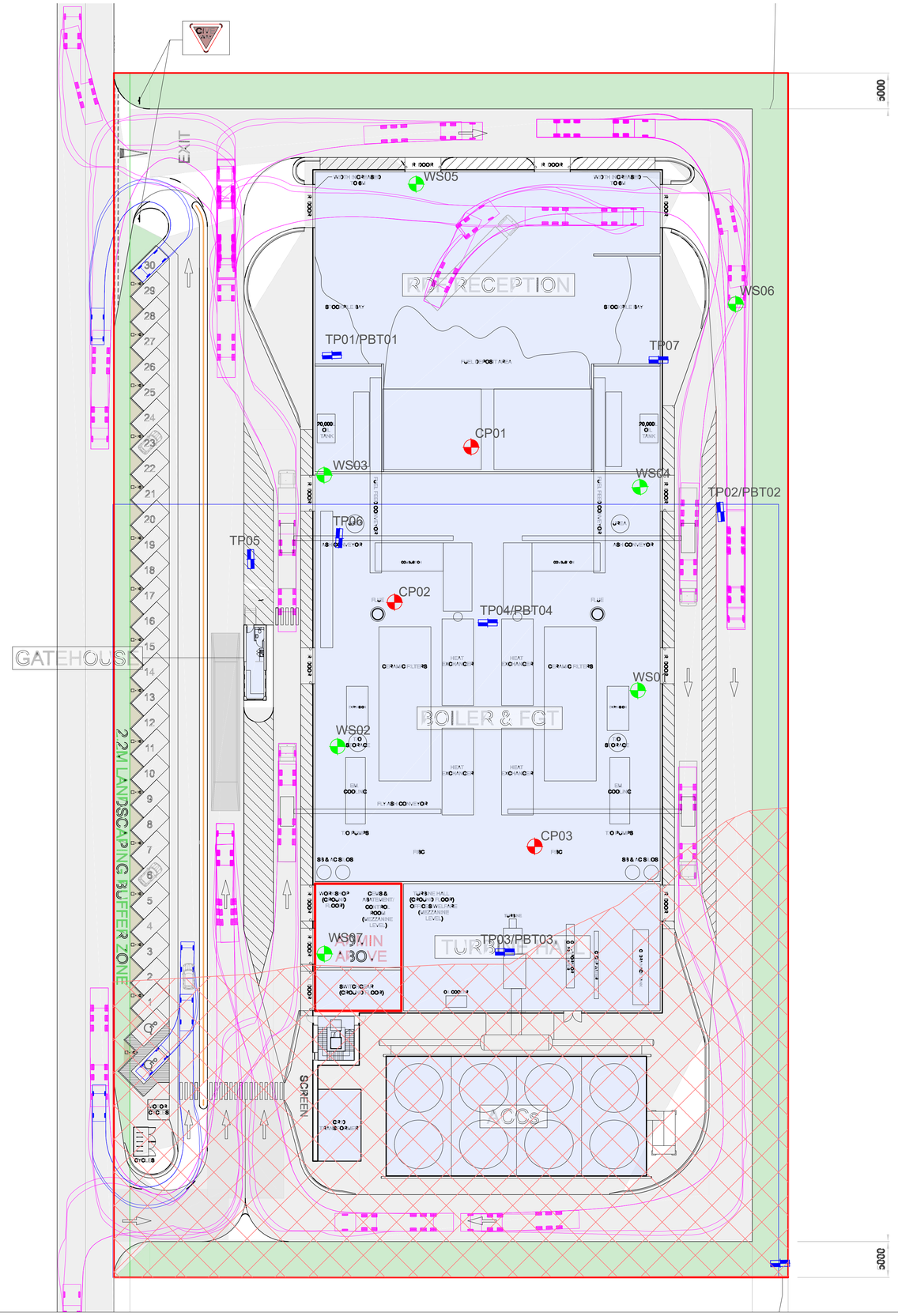


A1

Notes

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS TOGETHER WITH THE APPROPRIATE SPECIFICATIONS.
- IT IS THE CONTRACTORS RESPONSIBILITY TO CHECK ALL DIMENSIONS ON SITE. DIMENSIONS MUST NOT BE SCALED FROM THIS DRAWING. ANY DISCREPANCIES TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT IN WRITING.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL LEVELS ARE IN METRES, UNLESS NOTED OTHERWISE

Cable Percussive Borehole

Window Sample Borehole

Trial Pit Location (4 No. also Plate Bearing Test locations)

Area of Site inaccessible due to large stockpile on Site

Rev	Date	By	Description	Appd
1	18.08.22	ER	EHLP	AH

Revisions

Status

FINAL

Tier Environmental Ltd.
Chadwick House
Warrington Road
Birchwood
Warrington | WA3 6AE
t: 01925 818388

Client

SESONA_LTD

Project

HILLHOUSE_BUSINESS_PARK

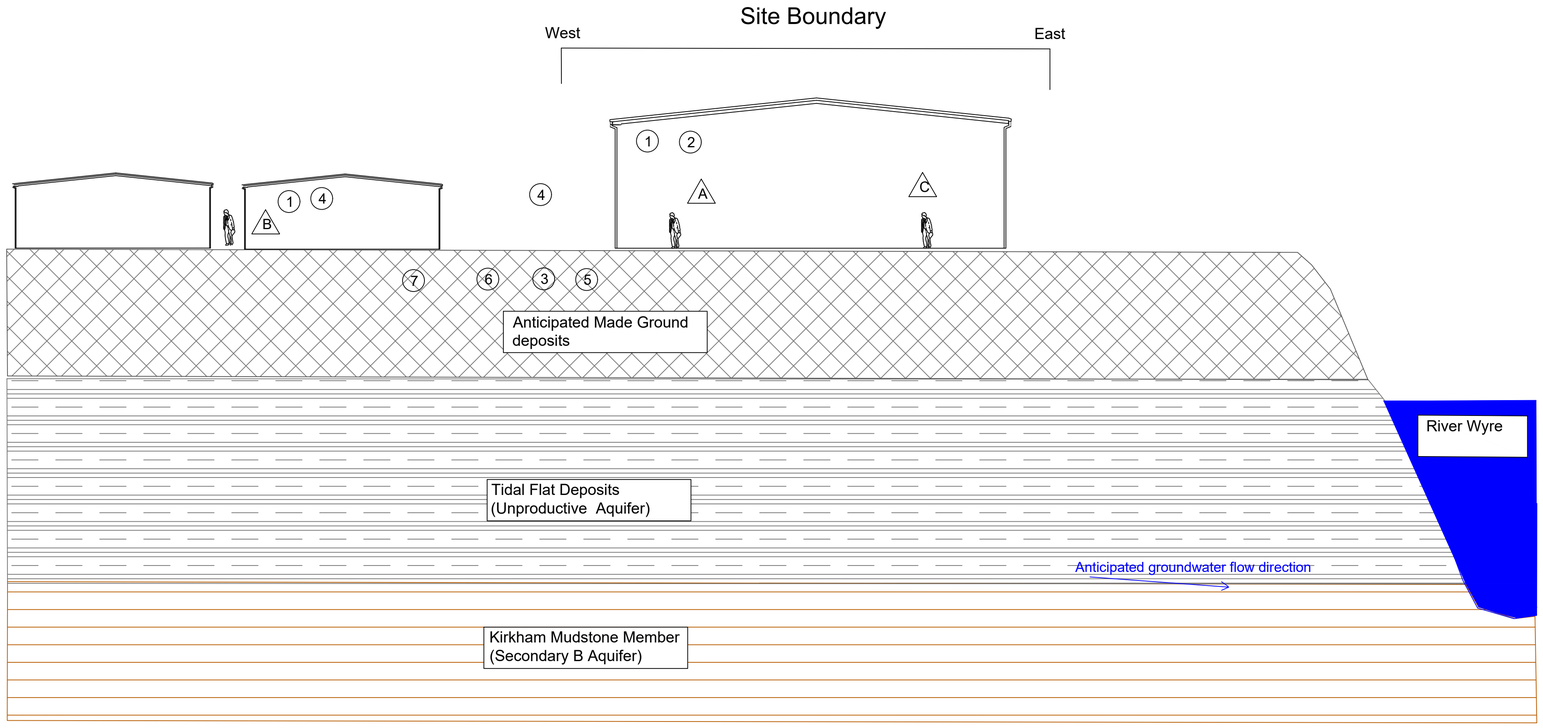
Title

EXPLORATORY_HOLE_LOCATION_PLAN

Scale	Drawn	Revision
DNS	ER	1
Date	Checked	
18.08.22	AH	

Drawing Ref : TE1674-TE-00-XX-DR-GE-002-V01

TE1674 002



A Future site users

B Adjacent site users

C Construction, site investigation, demolition and future maintenance workers

1 Inhalation of indoor and outdoor gas

2 Direct contact

3 Migration of ground gas through permeable Made Ground

4 Dust migration and inhalation/ingestion

5 Migration of mobile contaminants

6 Migration of mobile contaminants from Made Ground soils to adjacent sites along services and conduits

7 Migration of mobile contaminants through water pipes

Notes

This drawing is purely schematic and is a representation of the ground conditions and process, based upon information derived from the preliminary risk assessment.

Please refer to the table in the PRA Report for the identified potential pollutant linkages and associated qualitative risk assessment.

This model should be revised, following the site investigation and any additional information to ensure its relevance to actual conditions.

Rev	Date	By	Description	Appd
V01	27/07/22	ER	Preliminary CSM	SL

Revisions

Status

FINAL

Tier Environmental Ltd.
Chadwick House
Warrington Road
Birchwood
Warrington | Wa3 6AE
t: 01925 818388

Client

SESONA_LTD

Project

HILLHOUSE_BUSINESS_PARK

Title

PRELIMINARY_CSM

Scale	Drawn	Revision
DNS	ER	01
Date	Checked	
27/07/22	SL	

Drawing Ref : TE1674-TE-00-XX-DR-GE-003-V01

TE1674 003

APPENDIX B - EXPLORATORY HOLE LOGS

Borehole Log

Borehole No. **CP01**

Sheet 1 of 2

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type CP
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 08/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D	PID=0				MADE GROUND: Soft (with pockets of firm), dark brown, slightly sandy, gravelly CLAY, with a medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular and subangular of concrete, brick, limestone and mudstone, with rare metal and glass fragments. Cobbles are angular of brick, concrete and limestone. Frequent rootlets.
		0.50	ES					
		0.80	D	PID=0	0.70			
		1.10	ES	PID=0				MADE GROUND: Very loose to medium dense, black, slightly sandy, clayey, fine to coarse, angular and subangular GRAVEL of brick, concrete, mudstone, limestone and clinker.
		1.20		N=6 (1,2/1,2,2,1)				
				PID=0				
				PID=0				
	▼	2.30		N=3 (1,0/1,0,1,1)				
	▽	2.80	ES					
		3.40		N=18 (1,2/2,5,5,6)				
				PID=1	3.60			
		3.70	ES					Firm to stiff, brown, slightly gravelly, slightly sandy, silty CLAY. Gravel is fine to coarse, angular to rounded of mudstone, quartz and rare siltstone. Frequent lenses of soft, sandy, silty clay. TIDAL FLAT DEPOSITS
		4.00 - 4.30	B	PID=0				
		4.50		N=15 (2,3/3,4,4,4)				
				PID=0				
				PID=0				
		5.40		N=12 (2,2/3,3,3,3)				
		5.50	ES					
				PID=0				
				PID=0				
		6.20		N=13 (2,2/3,3,3,4)	6.20			Firm, dark brown, slightly sandy, slightly gravelly, silty CLAY. Sand is fine. Gravel is fine to coarse, angular to subrounded of siltstone, sandstone and mudstone. TIDAL FLAT DEPOSITS
				PID=0				
	▼	6.80 - 7.10	B					
				PID=0				
		7.30	ES					
				PID=0				
		7.50 - 7.95	U					
		8.00	D					
				PID=0	8.10			
		8.20 - 8.50	B					Firm to stiff becoming very stiff/ hard, dark brown, occasionally mottled yellowish grey, slightly sandy, slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to coarse, angular to rounded of mudstone, siltstone, sandstone and rare quartz. TILL
				PID=0				
		9.00		N=22 (2,4/5,5,6,6)				
				PID=0				
				PID=0				
		10.00	ES					

Continued on next sheet

Remarks

1) Hand dug pit to 1.20m bgl for service clearance. 2) Installation of 5.00m plain and 7.00m slotted pipe, with geosock. 3) Groundwater strike at 2.7m rising to 2.4m after 10 minutes. Water strike at 11.0m rising to 7.0m after 10 minutes. 4) Terminated at target depth. 5) Cased to 13.00m bgl.

Borehole Log

Borehole No. **CP01**
Sheet 2 of 2

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type CP
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 08/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=0				
				PID=0				
		10.50 - 10.95	U					
		11.00	D					
				PID=0				
				PID=0				
				PID=0				
		12.10		N=39 (4,8/9,10,10,10)				
				PID=0				
				PID=0				
		13.30		N=50 (10,11/50 for 265mm)				
				PID=0				
				PID=0				
		14.60		PID=0 50 (9,12/50 for 295mm)	14.80			End of borehole at 14.80 m

11 12 13 14 15 16 17 18 19 20

Remarks
1) Hand dug pit to 1.20m bgl for service clearance. 2) Installation of 5.00m plain and 7.00m slotted pipe, with geosock. 3) Groundwater strike at 2.7m rising to 2.4m after 10 minutes. Water strike at 11.0m rising to 7.0m after 10 minutes. 4) Terminated at target depth. 5) Cased to 13.00m bgl.

Borehole Log

Borehole No. **CP02**

Sheet 1 of 2

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type CP
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 08/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D	PID=1				MADE GROUND: Medium dense to dense, black, sandy, fine to coarse, angular to subangular GRAVEL of clinker, brick, sandstone, concrete and white lime. Occasional lenses of white, silty sand.
		1.00	D	PID=1				
		1.20		N=28 (2,3/4,6,8,10) PID=1				
				PID=1				
		2.20		N=43 (7,9/10,11,11,11) PID=0				
				PID=3				
	▽	3.40		N=12 (2,2/3,3,3,3) PID=0	3.40			Firm brown and grey, slightly sandy, slightly gravelly, silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of mudstone, sandstone and rare quartz. TIDAL FLAT DEPOSITS
		3.90 - 4.20	B	PID=0				
		4.50		N=15 (3,3/3,4,4,4) PID=0	4.60			Medium dense, brown, silty, slightly gravelly, fine to medium SAND. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone. TIDAL FLAT DEPOSITS
				PID=0				
		5.00 - 5.30	B					
		5.40		N=24 (2,3/5,6,6,7) PID=0				
				PID=0				
				PID=0				
				PID=0	6.80			Firm, slightly gravelly CLAY. Gravel is fine to medium, angular to subrounded of mudstone, sandstone, quartz and siltstone. TILL
		7.00 - 7.45	U		7.30			
		7.50	D	PID=0				Stiff, becoming very stiff/hard, brown, slightly gravelly CLAY. Gravel is fine to medium of siltstone and mudstone, with rare lenses of fine to medium sand. TILL
	▽	7.50 - 7.80	B	PID=0				
		8.50		N=24 (4,5/5,6,6,7) PID=0				
				PID=0				
				PID=0				
		10.00		N=31 (4,5/7,7,8,9)				

Continued on next sheet

Remarks

1) Hand dug pit to 1.20m bgl for service clearance. 2) Installation of 4.5m plain and 3.00m slotted pipe. 3) Groundwater strike at 3.7m rising to 3.20m, at 8.5m rising to 8.0 and 11.7m rising to 11.0m. 4) Terminated at refusal. 5) Cased to 12.00m bgl.

Borehole Log

Borehole No. **CP02**
Sheet 2 of 2

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type CP
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 08/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=0				*Becoming high strength and very stiff.*
				PID=0				
		10.50 - 10.80	B					
	▼			PID=0				
				PID=0				
	▽	11.50 - 11.95	U					
		12.00	D					
				PID=0				
				PID=0				
				PID=0				
		13.20		50 (8,12/50 for 255mm)				
				PID=0				
				PID=0				
				PID=0				
		14.70		50 (9,10/50 for 305mm)				
					15.10			End of borehole at 15.10 m

11 12 13 14 15 16 17 18 19 20

Remarks
1) Hand dug pit to 1.20m bgl for service clearance. 2) Installation of 4.5m plain and 3.00m slotted pipe. 3) Groundwater strike at 3.7m rising to 3.20m, at 8.5m rising to 8.0 and 11.7m rising to 11.0m. 4) Terminated at refusal. 5) Cased to 12.00m bgl.

Borehole Log

Borehole No. **CP03**

Sheet 1 of 2

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type CP
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 10/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D	PID=0	0.32			MADE GROUND: Strong, grey CONCRETE with 75% aggregate of fine to coarse, angular GRAVEL of mixed natural lithologies. Occasional 10mm rebar throughout.
		0.70	ES	PID=1				MADE GROUND: Medium dense to dense, brownish black, slightly clayey, sandy, fine to coarse, angular to subangular GRAVEL of clinker, brick, mudstone and possible white lime with a low cobble content and high proportion of ash. Cobbles are angular of brick and clinker. Occasional wood fragments.
		1.00	D	PID=1				
		1.20	SPTL					
		1.20	S	N=41 (4,5/5,12,12,12) PID=1				
				PID=0				
		2.20	SPTL					
		2.20	S	N=12 (2,3/3,3,3,3)				
		2.50	ES	PID=1				
	▽			PID=2	3.10			
		3.30	SPTL					Firm, greyish brown, slightly gravelly, silty CLAY with rare lenses of very soft, organic black silt. Gravel is fine to coarse, angular to subrounded of mudstone, siltstone and quartz. TIDAL FLAT DEPOSITS
		3.30	S	N=9 (1,2/2,2,2,3) PID=0				
		3.80 - 4.10	B	PID=0				
		4.30 - 4.75	U	PID=0				
		4.80	D					
		4.80	ES	PID=0				
		5.30	SPTL					
		5.30	S	N=9 (2,2/2,2,2,3) PID=0				
				PID=0	6.10			
		6.20 - 6.50	B					Stiff, dark brown with occasional grey mottling, slightly gravelly CLAY. Gravel is fine to coarse, angular to subrounded of mudstone, siltstone and quartz. TILL
		6.50	SPTL					
		6.50	S	N=23 (3,4/5,5,6,7) PID=0				
				PID=0				
				PID=0				
		8.10	SPTL					
		8.10	S	N=25 (2,4/5,6,6,8) PID=0				
	▽			PID=0				
				PID=0				
		9.50 - 9.95	U					
		10.00	D					

Continued on next sheet

Remarks

1) Hand dug pit to 1.20m bgl for service clearance. 2) Groundwater strike at 3.1m rising to 2.8m and at 9.1m rising to 8.8m. 3) Terminated at target depth. 4) Install: 4.00m plain pipe, 6.00m slotted pipe with geosock. 5) Cased to 10.00m bgl.

Borehole Log

Borehole No. **CP03** Sheet 2 of 2

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type CP
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 10/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=0				
				PID=0				
				PID=0	11.00			
		11.30	SPTL					Very stiff/hard, brown, slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone. TILL
		11.30	S	50 (6,10/50 for 190mm)				
				PID=0				
		11.70 - 12.00	B					
				PID=0				
				PID=0				
		12.90	SPTL					
		12.90	S	50 (10,12/50 for 170mm)				
				PID=0				
				PID=0				
				PID=0				
		14.40	D					
		14.50	SPTL					
		14.50	S	50 (9,8/50 for 225mm)				
				PID=0	14.90			End of borehole at 14.90 m
				PID=0				

11 12 13 14 15 16 17 18 19 20

Remarks

1) Hand dug pit to 1.20m bgl for service clearance. 2) Groundwater strike at 3.1m rising to 2.8m and at 9.1m rising to 8.8m. 3) Terminated at target depth. 4) Install: 4.00m plain pipe, 6.00m slotted pipe with geosock. 5) Cased to 10.00m bgl.

Trial Pit Log

Trialpit No **TP01**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: - Level:	Date 09/08/2022
Location: Thornton Cleveleys		Dimensions (m): 2.1 × 0.7, Depth 3.60	Scale 1:25
Client: Sesona Ltd			Logged ER

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES	PID=1	0.40			MADE GROUND: Brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of brick, sandstone, concrete and clinker. Frequent cobbles of angular brick and very ashy.
			PID=1				MADE GROUND: Dark greyish brown, sandy, fine to coarse, angular to subangular GRAVEL of brick, concrete, clinker and very ashy. abundant cobbles of angular brick and concrete.
			PID=2	1.30			MADE GROUND: Black, sandy, fine to coarse, angular GRAVEL of clinker, brick, slag, possible white lime, with occasional fragments of metal and very ashy.
▼	2.00	ES	PID=1				
			PID=1				
			PID=1				
			PID=1	3.60			End of pit at 3.60 m

Remarks: 1) Trial pit conducted for geoenvironmental purposes. 2) Steady groundwater ingress from strike at at 2.45m bgl. 3) Terminated at maximum reach of machine.

Stability: Semi-stable. Sides collapsing from 2.45m bgl.

Trial Pit Log

Trialpit No **TP02**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: - Level:	Date 09/08/2022
Location: Thornton Cleveleys		Dimensions (m): 2 × 0.7, Depth 3.20	Scale 1:25
Client: Sesona Ltd			Logged ER

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.19			MADE GROUND: Strong, grey reinforced CONCRETE.
	0.30	ES		0.19			MADE GROUND: Blue visqueen.
				0.35			MADE GROUND: Yellowish brown, sandy, fine to coarse, angular GRAVEL of limestone.
			PID=0				MADE GROUND: Blackish brown, sandy, fine to coarse, angular to subrounded GRAVEL of clinker, brick, concrete, mixed natural lithologies and white lime and slightly ashy. Frequent cobbles of angular brick and occasional lime.
			PID=2				
			PID=1				
	1.70	ES					
			PID=2				
			PID=1				
▼	3.00	B	PID=1				
				3.20			End of pit at 3.20 m

1 2 3 4 5

Remarks: 1) Trial pit conducted for geoenvironmental purposes. 2) Rapid groundwater ingress encountered at 3.05m bgl. 3) Terminated due to pit collapse.

Stability: Semi-stable. Collapsing below 3.05m bgl where groundwater entry was recorded.

Trial Pit Log

Trialpit No **TP03**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: - Level:	Date 09/08/2022
Location: Thornton Cleveleys		Dimensions (m): Depth 2.20 — 2 × 0.6	Scale 1:25
Client: Sesona Ltd			Logged ER

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			MADE GROUND: Strong, grey reinforced CONCRETE.
			PID=0				MADE GROUND: Blackish brown, sandy, fine to coarse, angular to subrounded GRAVEL of clinker, brick, concrete, mixed natural lithologies, white lime and slightly ashy. Frequent cobbles.
	1.00	ES	PID=1				
			PID=0				
			PID=0				
	2.10	B	PID=0	2.20			End of pit at 2.20 m

Remarks: 1) Trial pit conducted for geoenvironmental purposes. 2) No groundwater ingress encountered. 3) Terminated due to very hard digging at 2.20m bgl.

Stability: Stable.

Trial Pit Log

Trialpit No **TP04**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: - Level:	Date 09/08/2022
Location: Thornton Cleveleys		Dimensions (m): Depth 2.40 — 2 × 0.6	Scale 1:25
Client: Sesona Ltd			Logged ER

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
			PID=2				MADE GROUND: Dark greyish brown, sandy, fine to coarse, angular to subangular GRAVEL of brick, concrete, clinker and very ashy. Abundant cobbles of angular brick and concrete.
	0.80	ES					
			PID=1				
	1.50	B					
			PID=1				
				1.75			MADE GROUND: Yellowish brown, slightly gravelly, fine to medium SAND. Gravel is fine to coarse of sandstone and mudstone.
			PID=0				
▼			PID=0	2.40			End of pit at 2.40 m

1 2 3 4 5

Remarks: 1) Trial pit conducted for geoenvironmental purposes. 2) Slight groundwater ingress from strike at base of pit. 3) Potential pipe at 0.90m bgl in north wall, running east to west. 4) Terminated at target depth.

Stability: Stable.

Trial Pit Log

Trialpit No **TP05**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: - Level:	Date 09/08/2022
Location: Thornton Cleveleys		Dimensions (m): 1.9 × 0.6, Depth 2.10	Scale 1:25
Client: Sesona Ltd			Logged ER

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
			PID=0				MADE GROUND: Dark greyish brown, sandy, fine to coarse, angular to subangular GRAVEL of brick, concrete, clinker and very ashy. Abundant cobbles of angular brick and concrete.
			PID=0	0.95			MADE GROUND: Soft, white, slightly gravelly, slightly sandy, silty CLAY. Sand is fine to medium. Gravel is fine to coarse, subangular to rounded of limestone. Occasional pockets of white, clayey, silty, fine to coarse sand.
	1.10	ES					
			PID=0				
	1.70	B					
			PID=0	1.80			MADE GROUND: Black, fine to coarse, angular GRAVEL of clinker, limestone and brick with pockets of white silty clay and slightly ashy.
				2.10			End of pit at 2.10 m

Remarks: 1) Trial pit conducted for geoenvironmental purposes. 2) No groundwater ingress encountered. 3) Terminated on concrete slab at 2.10m bgl.

Stability: Stable.

Trial Pit Log

Trialpit No **TP06**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: - Level:	Date 09/08/2022
Location: Thornton Cleveleys		Dimensions (m): 1 x 1, Depth 0.40	Scale 1:25
Client: Sesona Ltd			Logged ER

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			MADE GROUND: Very strong, grey CONCRETE with 70% aggregate of fine to coarse, angular gravel of mixed natural lithologies with 30mm rebar.
							End of pit at 0.40 m

1 2 3 4 5

Remarks: 1) Trial pit conducted for historic pile/column investigation. 2) No groundwater ingress encountered. 3) Terminated after 30 minutes trying to break through surface concrete slab.

Stability: Stable.

Trial Pit Log

Trialpit No **TP07**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: - Level:	Date 09/08/2022
Location: Thornton Cleveleys		Dimensions (m): 2.1 × 0.7, Depth 3.60	Scale 1:25
Client: Sesona Ltd			Logged ER

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
			PID=2				MADE GROUND: Grass over blackish brown, sandy, fine to coarse, angular to subrounded GRAVEL of clinker, brick, concrete, mixed natural lithologies and white lime, and slightly ashy. Frequent cobbles.
			PID=4				
	1.20	ES					
			PID=1				
			PID=1				
			PID=1				
			PID=0	2.90			Light brown, slightly clayey, silty, fine to medium SAND. TIDAL FLAT DEPOSITS
	3.10	ES					
	3.40	B					
			PID=0	3.60			End of pit at 3.60 m

1 2 3 4 5

Remarks: 1) Trial pit conducted for geoenvironmental purposes. 2) Groundwater seepage from strike at 2.90m bgl. 3) Terminated at target depth.

Stability: Stable.

Borehole Log

Borehole No. **WS01**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type WS
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 11/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.16			MADE GROUND: Grey reinforced CONCRETE.
		0.50	ES	PID=8				MADE GROUND: Medium, dense, dark brown, slightly clayey, sandy, fine to coarse, angular and subangular GRAVEL of clinker, brick, mudstone, sandstone and possible white lime and ash.
				PID=7				
		1.20	SPTL					
		1.20	S	N=3 (1,0/0,0,1,2) PID=9				
		2.00	SPTL					
		2.00	S	N=5 (1,2/1,2,1,1) PID=10	2.25			
	▼	2.40	ES	PID=15				MADE GROUND: Loose black, sandy, fine to coarse, angular GRAVEL of clinker, brick, slag, mudstone and sandstone with fragments of metal. Sand is fine to coarse.
					2.90			
		3.00	SPTL					Soft, greyish brown, slightly gravelly, silty to very silty CLAY. Gravel is fine to medium, angular to subrounded of mudstone and quartz. TIDAL FLAT DEPOSITS
		3.00	S	N=6 (1,1/1,1,1,3) PID=16				
				PID=102				
		3.80	ES					
		4.00	SPTL					
		4.00	S	N=2 (1,0/1,1,0,0) PID=9				
				PID=4				
		5.00	SPTL					
		5.00	S	N=2 (1,0/1,0,1,0) PID=4				
					5.45			End of borehole at 5.45 m

1 2 3 4 5 6 7 8 9 10

Remarks

1) Hand dug pit to 1.20m bgl for surface clearance. 2) Groundwater strike at 2.45m bgl. 3) Strong hydrocarbon odour and sheen between 2.30m bgl and 3.25m bgl. 4) Terminated at target depth. 5) Cased to 3.00m bgl. 6) Install: 1.00m plain pipe. 2.00m slotted pipe.

Borehole Log

Borehole No. **WS02**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type WS
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 11/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=5				MADE GROUND: Dark grey, sandy, fine to coarse, angular to subangular GRAVEL of brick, concrete, limestone, clinker, mudstone and possible white lime. Medium proportion of ash.
		0.90	ES					*Becoming clayey from 0.80m bgl.*
				PID=6				
		1.20	SPTL					
		1.20	S	N=20 (8,7/6,5,4,5)				
				PID=4				
					1.87			
	▼	2.00	ES					MADE GROUND: Medium dense, blackish brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of clinker, sandstone, mudstone and rare brick. Low proportion of ash,
		2.00	SPTL					
		2.00	S	N=9 (2,1/1,2,3,3)				
				PID=5				
				PID=2	2.55			
		2.50 - 3.00	B					Loose, medium dense, greyish brown, slightly gravelly, clayey SILT. Gravel is fine to medium, subangular to rounded of mudstone. TIDAL FLAT DEPOSITS
		3.00	SPTL					
		3.00	S	N=14 (3,3/3,4,3,4)				
				PID=0				
				PID=1				
		3.70	ES					
		4.00	SPTL					
		4.00	S	N=2 (1,0/1,0,1,0)				
				PID=1				
				PID=1				
		5.00	SPTL					
		5.00	S	N=10 (2,2/3,2,2,3)				
				PID=1				
					5.45			End of borehole at 5.45 m

Remarks

1) Hand dug pit to 1.20m bgl for surface clearance. 2) Groundwater strike at 2.10m bgl. 3) Terminated at target depth. 4) Cased to 3.00m bgl.

Borehole Log

Borehole No. **WS03**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type WS
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 11/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=1	0.65			MADE GROUND: Grey, reinforced CONCRETE.
				PID=1				MADE GROUND: Medium dense, blackish brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of clinker, sandstone, mudstone and rare brick. Low proportion of ash,
		1.20	SPTL					
		1.20	S	N=4 (1,1/1,1,1,1)				
				PID=1				
		2.00	SPTL					
		2.00	S	N=9 (1,2/2,2,2,3)				
				PID=2				
		2.50	ES					*Band of tar like substance with strong hydrocarbon odour encountered at 2.50m bgl.*
				PID=20				
	▼				2.90			Soft to firm, and stiff, greyish brown, silty CLAY. TIDAL FLAT DEPOSITS
		3.00	SPTL					
		3.00	S	N=7 (1,1/2,2,1,2)				
				PID=4				
				PID=2				
		4.00	SPTL					
		4.00	S	N=15 (3,3/3,3,4,5)				
				PID=2				
		4.10	ES					
				PID=1				
		5.00	SPTL					
		5.00	S	N=8 (2,2/2,2,2,2)				
				PID=1				
					5.45			End of borehole at 5.45 m

Remarks

1) Hand dug pit to 1.20m bgl for surface clearance. 2) Groundwater strike at 3.00m bgl. 3) Hydrocarbon odour at 2.50m bgl. 4) Terminated at target depth. 5) Cased to 3.00m bgl. 6) Install: 1.00m plain pipe. 2.00m slotted pipe.

Borehole Log

Borehole No. **WS04**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type WS
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 11/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES	PID=2	0.20			MADE GROUND: Grey reinforced CONCRETE
				PID=1				MADE GROUND: Loose, medium dense, blackish brown, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of clinker, sandstone, mudstone and rare brick. Low proportion of ash,
		1.20	SPTL					
		1.20	S	N=2 (1,2/0,1,0,1) PID=2				
		1.80	ES					
		2.00	SPTL					
		2.00	S	N=2 (1,1/0,0,0,2) PID=5				
				PID=2				
	▼	3.00	SPTL		2.80			Soft and firm, slightly gravelly, silty CLAY. Gravel is fine to medium, angular to rounded of mudstone, quartz and rare sandstone. TIDAL FLAT DEPOSITS
	▼	3.00	S	N=4 (1,0/1,0,1,2) PID=2				*Frequent interbeds of silt encountered between 2.80m bgl and 5.45m bgl.*
				PID=2				
		4.00	SPTL					
		4.00	S	N=13 (3,3/3,2,3,5) PID=1				
		4.30	ES	PID=1				
		5.00	SPTL					
		5.00	S	N=3 (1,1/0,1,1,1) PID=1				
					5.45			End of borehole at 5.45 m

1 2 3 4 5 6 7 8 9 10

Remarks

1) Hand dug pit to 1.20m bgl for surface clearance. 2) Groundwater strike at 3.20m bgl. 3) Hydrocarbon odour between 1.70m bgl and 2.40m bgl. 4) Terminated at target depth. 5) Cased to 3.00m bgl. 6) Install: 1.00m plain pipe. 2.00m slotted pipe.

Borehole Log

Borehole No. **WS05**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type WS
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 11/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=2				MADE GROUND: Dark blackish brown, sandy, fine to coarse GRAVEL. Of fine to coarse, angular and subangular of clinker, limestone and brick. Low proportion of ash.
					0.70			
		0.90	ES					MADE GROUND: White and yellowish brown, slightly silty, sandy, fine to coarse, angular and subangular GRAVEL of sandstone and white lime.
				PID=1	1.10			
		1.20	SPTL					MADE GROUND: Very loose to loose black, sandy, fine to coarse, angular and subangular GRAVEL of clinker, brick, sandstone and concrete with a high proportion of ash.
		1.20	S	N=3 (1,0/1,0,1,1)				
				PID=2				
		2.00	SPTL					
		2.00	S	N=7 (2,1/1,1,2,3)				
				PID=0				
				PID=1				
					2.70			Soft to firm and stiff dark grey, slightly clayey SILT with occasional lenses of slightly sandy, silty CLAY. TIDAL FLAT DEPOSITS
		3.00	ES					
		3.00		N=5 (1,0/1,1,1,2)				
				PID=2				
				PID=2				
		3.80	SPTL					
		3.90	S	N=20 (8,7/5,5,4,6)				
				PID=1				
				PID=1				
		4.90	SPTL					
		4.90	S	N=9 (1,1/2,2,2,3)				
				PID=0				
					5.45			End of borehole at 5.45 m

Remarks

1) Hand dug pit to 1.20m bgl for surface clearance. 2) Groundwater strike at 2.20m bgl. 3) Terminated at target depth. 4) Cased to 3.00m bgl. 5) Install: 1.00m plain pipe. 2.00m slotted pipe.

Borehole Log

Borehole No. **WS06**

Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type WS
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 11/08/2022 -	Logged By ER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES		0.15			MADE GROUND: Grass over, grey, sandy, fine to coarse, angular and subangular GRAVEL of limestone, brick and concrete.
				PID=1				MADE GROUND: White, silty, sandy, fine to coarse, angular GRAVEL of concrete, sandstone and white lime.
				PID=2				
		1.20	SPTL					
		1.20	S	N=11 (9,6/3,3,2,3)	1.38			
		1.30	ES					MADE GROUND: Medium dense and loose dark grey, sandy, fine to coarse, angular and subangular GRAVEL of brick, concrete, limestone, clinker, mudstone and white lime and ash.
				PID=2				
		2.00	SPTL					
		2.00	S	N=4 (1,1/1,1,1,1)				
				PID=0				
				PID=1				
	▼	3.00	SPTL					
		3.00	S	N=15 (1,1/3,5,4,3)	3.10			Firm and stiff, grey, silty CLAY. TIDAL FLAT DEPOSITS
				PID=0				
				PID=0				
		4.00	SPTL					
		4.00	S	N=28 (4,4/6,6,6,10)				
				PID=0				
				PID=0				
		5.00	SPTL					
		5.00	S	N=11 (1,1/3,3,2,3)				
				PID=0				
					5.45			End of borehole at 5.45 m

Remarks

1) Hand dug pit to 1.10m bgl for surface clearance. 2) Groundwater strike at 3.10m bgl. 3) Terminated at target depth.

Borehole Log

Borehole No. **WS07**
Sheet 1 of 1

Project Name: Hillhouse Business Park	Project No. TE1674	Co-ords: -	Hole Type WS
Location: Thornton Cleveleys		Level:	Scale 1:50
Client: Sesona Ltd		Dates: 11/08/2022 -	Logged By ER

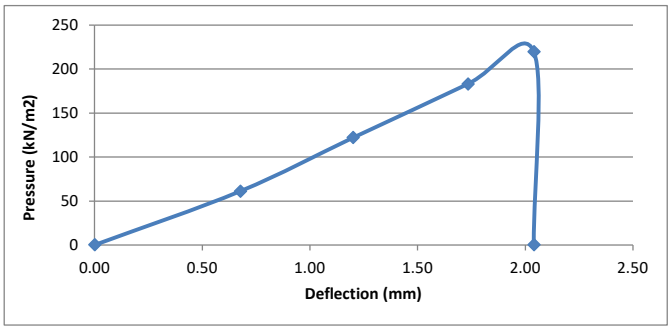
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.17			MADE GROUND: Grey, fine to coarse, angular, GRAVEL of limestone and concrete.
				PID=3				MADE GROUND: Medium dense, dark grey, sandy, fine to coarse, angular and subangular GRAVEL of brick, concrete, limestone, clinker, mudstone and white lime and ash.
				PID=5				
		1.20	ES					
		1.20	SPTL					
		1.20	S	N=14 (1,1/4,4,3,3) PID=4				
		2.00	SPTL					
		2.00	S	N=17 (2,3/3,5,4,5) PID=3				
				PID=3				
					2.60			Very Soft and Soft to firm, grey, slightly gravelly, silty CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone, siltstone and quartz. TIDAL FLAT DEPOSITS
		3.00	SPTL					
		3.00	S	N=10 (1,0/2,3,2,3) PID=1				
		3.30	ES					
				PID=1				
		4.00	SPTL					
		4.00	S	N=2 (1,0/0,0,1,1) PID=1				
				PID=0				
		5.00	SPTL					
		5.00	S	N=6 (1,0/1,1,2,2) PID=0				
					5.45			End of borehole at 5.45 m

Remarks
1) Hand dug pit to 1.10m bgl for surface clearance. 2) No groundwater strike encountered. 3) Terminated at target depth.

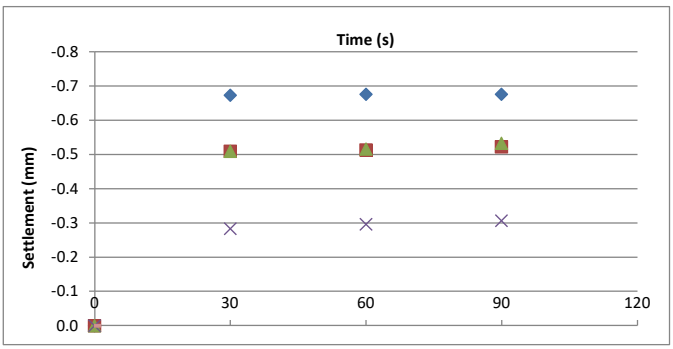
APPENDIX C - PLATE BEARNING TEST RESULTS

Job No.	TE1674		
Job Name:	HILLHOUSE BUSINESS PARK THORNTON CLEVELEYS	Date of Test:	08.08.2022
Plate Bearing Test Results		Test ID:	**PBT01**
EN 1997-3:1999 (Modified)		Technician:	LEE HOGG

Load (kN)	Pressure (kN/m2)	Average Cumulative Settlement (mm)	Time taken to Achieve Settlement (Sec)
0	0	0.00	0
10	61	0.68	90
20	122	1.20	180
30	183	1.73	270
36	220	2.04	360
0	0	2.04	360



Maximum Deflection:	2.0	mm
Deflection for CBR:	1.25	mm
Pressure at 1.25 mm:	127.7	kN/m2
Subgrade Reaction (k):	66538.4	kN/m2/m
Equivalent CBR Value:	13.9	%



Photograph of Material Tested

Photograph of Test Location

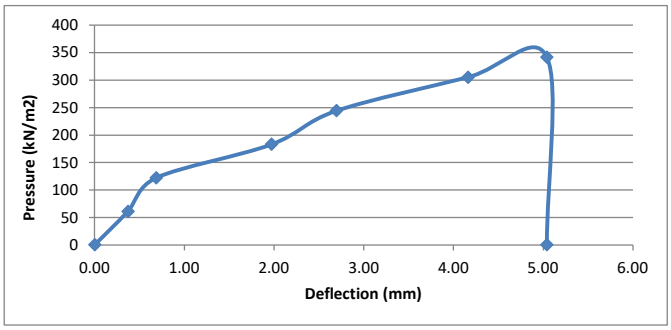
Description of Subgrade:	TARMAC	Depth (m bgl):	0.5
Test hole type:	N/A		
Test hole area (m2):	N/A		
Elevation (m AOD):	N/A	Conversion factor	0.65148
Time (start/end):	to	Plate Diameter (mm):	457
Moisture Content:	N/A	Plate Area (m2):	0.164
Kentledge Description:	7.5 TONNE		
Observations:			

Tier Environmental Ltd
Suite 513 Chadwick House
Brichwood Park
Warrington, WA3 6AE

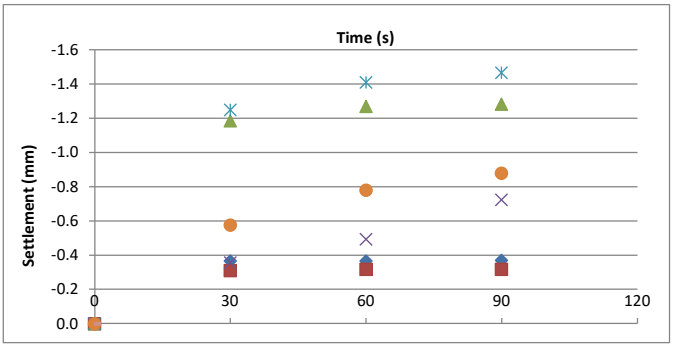
Inuptted by:	CS
Checked:	SL
Approved:	SL

Job No.	TE1674		
Job Name:	HILLHOUSE BUSINESS PARK THORNTON CLEVELEYS	Date of Test:	08.08.2022
Plate Bearing Test Results		Test ID:	**PBT02**
EN 1997-3:1999 (Modified)		Technician:	LEE HOGG

Load (kN)	Pressure (kN/m2)	Average Cumulative Settlement (mm)	Time taken to Achieve Settlement (Sec)
0	0	0.00	0
10	61	0.37	90
20	122	0.69	180
30	183	1.97	270
40	244	2.69	360
50	305	4.16	450
56	341	5.04	540
0	0	5.04	540



Maximum Deflection:	5.0	mm
Deflection for CBR:	1.25	mm
Pressure at 1.25 mm:	148.7	kN/m2
Subgrade Reaction (k):	77509.0	kN/m2/m
Equivalent CBR Value:	18.1	%



Photograph of Material Tested

Photograph of Test Location

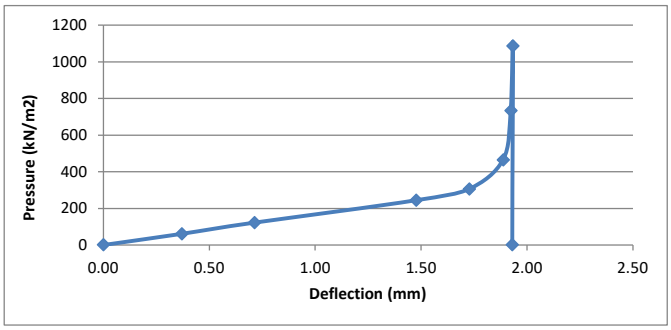
Description of Subgrade:	STONE	Depth (m bgl):	0.5
Test hole type:	N/A		
Test hole area (m2):	N/A		
Elevation (m AOD):	N/A	Conversion factor	0.65148
Time (start/end):	to	Plate Diameter (mm):	457
Moisture Content:	N/A	Plate Area (m2):	0.164
Kentledge Description:	7.5 TONNE		
Observations:			

Tier Environmental Ltd
Suite 513 Chadwick House
Brichwood Park
Warrington, WA3 6AE

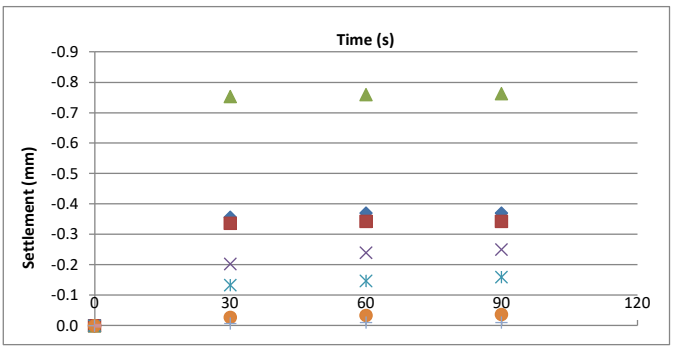
Inuptted by:	CS
Checked:	SL
Approved:	SL

Job No.	TE1674		
Job Name:	HILLHOUSE BUSINESS PARK THORNTON CLEVELEYS	Date of Test:	08.08.2022
Plate Bearing Test Results		Test ID:	**PBT03**
EN 1997-3:1999 (Modified)		Technician:	LEE HOGG

Load (kN)	Pressure (kN/m2)	Average Cumulative Settlement (mm)	Time taken to Achieve Settlement (Sec)
0	0	0.00	0
10	61	0.37	90
20	122	0.71	180
40	244	1.48	270
50	305	1.73	360
76	463	1.89	450
120	732	1.92	540
178	1085	1.93	630
0	0	1.93	630



Maximum Deflection:	1.9	mm
Deflection for CBR:	1.25	mm
Pressure at 1.25 mm:	207.7	kN/m2
Subgrade Reaction (k):	108244.6	kN/m2/m
Equivalent CBR Value:	32.4	%



Photograph of Material Tested

Photograph of Test Location

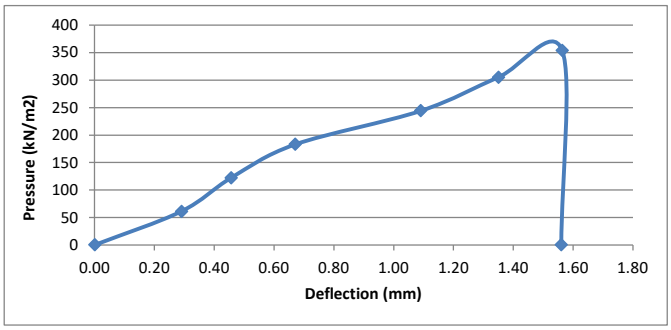
Description of Subgrade:	CLAY	Depth (m bgl):	0.4
Test hole type:	N/A		
Test hole area (m2):	N/A		
Elevation (m AOD):	N/A	Conversion factor	0.65148
Time (start/end):	to	Plate Diameter (mm):	457
Moisture Content:	N/A	Plate Area (m2):	0.164
Kentledge Description:	7.5 TONNE		
Observations:			

Tier Environmental Ltd
Suite 513 Chadwick House
Brichwood Park
Warrington, WA3 6AE

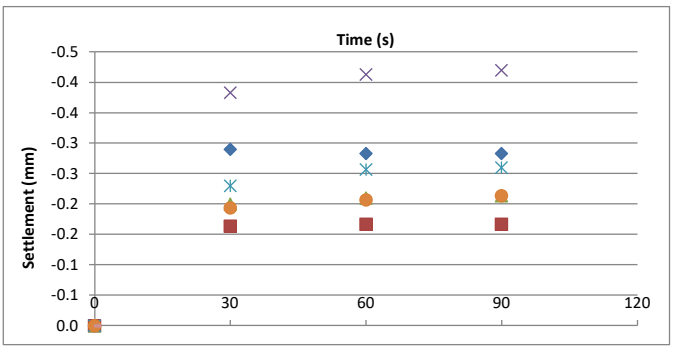
Inuptted by:	CS
Checked:	SL
Approved:	SL

Job No.	TE1674		
Job Name:	HILLHOUSE BUSINESS PARK THORNTON CLEVELEYS	Date of Test:	08.08.2022
Plate Bearing Test Results		Test ID:	**PBT04**
EN 1997-3:1999 (Modified)		Technician:	LEE HOGG

Load (kN)	Pressure (kN/m2)	Average Cumulative Settlement (mm)	Time taken to Achieve Settlement (Sec)
0	0	0.00	0
10	61	0.29	90
20	122	0.46	180
30	183	0.67	270
40	244	1.09	360
50	305	1.35	450
58	354	1.56	540
0	0	1.56	540



Maximum Deflection:	1.6	mm
Deflection for CBR:	1.25	mm
Pressure at 1.25 mm:	281.4	kN/m2
Subgrade Reaction (k):	146674.7	kN/m2/m
Equivalent CBR Value:	54.8	%



Photograph of Material Tested

Photograph of Test Location

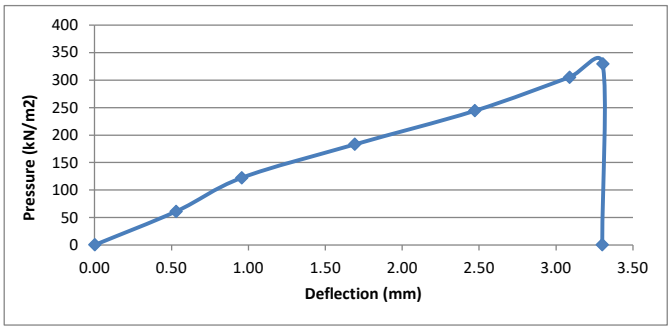
Description of Subgrade:	STONE	Depth (m bgl):	0
Test hole type:	N/A		
Test hole area (m2):	N/A		
Elevation (m AOD):	N/A	Conversion factor	0.65148
Time (start/end):	to	Plate Diameter (mm):	457
Moisture Content:	N/A	Plate Area (m2):	0.164
Kentledge Description:	7.5 TONNE		
Observations:			

Tier Environmental Ltd
Suite 513 Chadwick House
Brichwood Park
Warrington, WA3 6AE

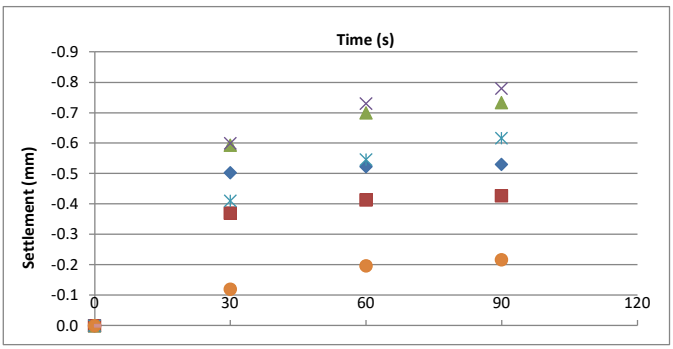
Inuptted by:	CS
Checked:	SL
Approved:	SL

Job No.	TE1674		
Job Name:	HILLHOUSE BUSINESS PARK THORNTON CLEVELEYS	Date of Test:	09.08.2022
Plate Bearing Test Results		Test ID:	**PBT05**
EN 1997-3:1999 (Modified)		Technician:	LEE HOGG

Load (kN)	Pressure (kN/m2)	Average Cumulative Settlement (mm)	Time taken to Achieve Settlement (Sec)
0	0	0.00	0
10	61	0.53	90
20	122	0.96	180
30	183	1.69	270
40	244	2.47	360
50	305	3.09	450
54	329	3.30	540
0	0	3.30	540



Maximum Deflection:	3.3	mm
Deflection for CBR:	1.25	mm
Pressure at 1.25 mm:	146.3	kN/m2
Subgrade Reaction (k):	76270.8	kN/m2/m
Equivalent CBR Value:	17.6	%



Photograph of Material Tested

Photograph of Test Location

Description of Subgrade:	STONE AND SOIL	Depth (m bgl):	0
Test hole type:	N/A		
Test hole area (m2):	N/A		
Elevation (m AOD):	N/A	Conversion factor	0.65148
Time (start/end):	to	Plate Diameter (mm):	457
Moisture Content:	N/A	Plate Area (m2):	0.164
Kentledge Description:	7.5 TONNE		
Observations:			

Tier Environmental Ltd
Suite 513 Chadwick House
Brichwood Park
Warrington, WA3 6AE

Inuptted by:	CS
Checked:	SL
Approved:	SL

APPENDIX D - GEOENVIRONMENTAL SOIL LABORATORY RESULTS

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

P: +44 (0) 1244 833780
F: +44 (0) 1244 833781
W: www.element.com

Tier Environmental
Suite 414, Chadwick House
Warrington Rd
Birchwood
Warrington
WA3 6AE

Attention :	Adrian Read
Date :	26th August, 2022
Your reference :	TE1674
Our reference :	Test Report 22/13043 Batch 1
Location :	Hillhouse Business Park
Date samples received :	12th August, 2022
Status :	Final Report
Issue :	1

Thirty samples were received for analysis on 12th August, 2022 of which nineteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Liza Klebe
Project Co-ordinator

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

Report : Solid

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

EMT Sample No.	4-6	7-9	23-26	35-38	39-42	43-45	46-49	50-53	54-57	58-61	LOD/LOR	Units	Method No.
Sample ID	CP01	CP01	CP02	CP02	CP03	CP03	CP03	CP03	TP01	TP01			
Depth	1.10	2.80	2.00	7.00	0.70	2.50	4.80	7.10	0.20	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	J T	V J T	V J T	V J T	V J T			
Sample Date	08/08/2022	08/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	09/08/2022	09/08/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022			
Arsenic #	32.2	-	25.3	-	-	-	11.9	-	17.0	-	<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1	-	<0.1	mg/kg	TM30/PM15
Chromium #	44.1	-	38.6	-	-	-	59.0	-	33.3	-	<0.5	mg/kg	TM30/PM15
Copper #	45	-	66	-	-	-	13	-	54	-	<1	mg/kg	TM30/PM15
Lead #	33	-	57	-	-	-	12	-	41	-	<5	mg/kg	TM30/PM15
Mercury #	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1	-	<0.1	mg/kg	TM30/PM15
Nickel #	23.0	-	44.1	-	-	-	31.1	-	20.9	-	<0.7	mg/kg	TM30/PM15
Selenium #	<1	-	<1	-	-	-	<1	-	<1	-	<1	mg/kg	TM30/PM15
Sulphur as S	-	-	-	-	-	-	0.07	-	0.08	-	<0.01	%	TM30/PM15
Total Sulphate as SO4 #	1948	-	15570$_{AA}$	-	-	-	862	-	1264	-	<50	mg/kg	TM50/PM29
Total Sulphate as SO4 BRE	-	-	-	-	-	-	0.09	-	0.13	-	<0.01	%	TM50/PM29
Zinc #	89	-	60	-	-	-	66	-	70	-	<5	mg/kg	TM30/PM15
Magnesium	-	-	-	-	-	-	0.0856	-	0.0026	-	<0.0001	g/l	TM30/PM20
Magnesium	-	-	-	-	-	-	-	-	-	-	<0.0001	g/l	TM30/PM60
Arsenic	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Sulphur as S	-	-	-	-	-	-	-	-	-	-	<0.01	%	TM30/PM62
Total Sulphate as SO4 BRE	-	-	-	-	-	-	-	-	-	-	<0.01	%	TM50/PM129
Zinc	-	-	-	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

Report : Solid

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

EMT Sample No.	4-6	7-9	23-26	35-38	39-42	43-45	46-49	50-53	54-57	58-61	LOD/LOR	Units	Method No.
Sample ID	CP01	CP01	CP02	CP02	CP03	CP03	CP03	CP03	TP01	TP01			
Depth	1.10	2.80	2.00	7.00	0.70	2.50	4.80	7.10	0.20	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	J T	V J T	V J T	V J T	V J T			
Sample Date	08/08/2022	08/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	09/08/2022	09/08/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022			
PAH MS													
Naphthalene #	0.31	-	2.18	-	-	-	<0.04	-	0.17	-	<0.04	mg/kg	TM4/PM8
Acenaphthylene	1.01	-	45.47	-	-	-	<0.03	-	0.51	-	<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.09	-	12.04	-	-	-	<0.05	-	0.45	-	<0.05	mg/kg	TM4/PM8
Fluorene #	0.32	-	58.76	-	-	-	<0.04	-	0.59	-	<0.04	mg/kg	TM4/PM8
Phenanthrene #	3.51	-	105.73	-	-	-	0.18	-	14.25	-	<0.03	mg/kg	TM4/PM8
Anthracene #	1.90	-	76.64	-	-	-	0.10	-	5.83	-	<0.04	mg/kg	TM4/PM8
Fluoranthene #	6.29	-	56.22	-	-	-	0.14	-	36.97	-	<0.03	mg/kg	TM4/PM8
Pyrene #	5.17	-	40.04	-	-	-	0.10	-	33.34	-	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	3.76	-	35.04	-	-	-	0.09	-	15.64	-	<0.06	mg/kg	TM4/PM8
Chrysene #	3.64	-	24.79	-	-	-	0.06	-	16.91	-	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	5.95	-	24.14	-	-	-	<0.07	-	24.13	-	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	2.77	-	12.64	-	-	-	<0.04	-	12.55	-	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	1.74	-	5.83	-	-	-	<0.04	-	9.09	-	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.33	-	1.21	-	-	-	<0.04	-	1.54	-	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.53	-	4.30	-	-	-	<0.04	-	6.57	-	<0.04	mg/kg	TM4/PM8
PAH 16 Total	38.3	-	505.0	-	-	-	0.7	-	178.5	-	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	4.28	-	17.38	-	-	-	<0.05	-	17.37	-	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	1.67	-	6.76	-	-	-	<0.02	-	6.76	-	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	93	-	88	-	-	-	92	-	93	-	<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2	-	<2	-	-	-	<2	-	<2	-	<2	ug/kg	TM15/PM10
Benzene #	<3	-	<3	-	-	-	97	-	<3	-	<3	ug/kg	TM15/PM10
Toluene #	6	-	7	-	-	-	<3	-	<3	-	<3	ug/kg	TM15/PM10
Ethylbenzene #	5	-	14	-	-	-	<3	-	<3	-	<3	ug/kg	TM15/PM10
m/p-Xylene #	9	-	24	-	-	-	<5	-	<5	-	<5	ug/kg	TM15/PM10
o-Xylene #	5	-	12	-	-	-	<3	-	<3	-	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	92	-	91	-	-	-	98	-	91	-	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	73	-	74	-	-	-	90	-	73	-	<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	0.2	-	0.4	-	-	-	<0.1	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	-	<0.1	-	-	-	0.8	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	0.1	-	0.7	-	-	-	<0.1	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	-	12.9	-	-	-	<0.2	-	<0.2	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	-	50	-	-	-	<4	-	<4	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	-	194	-	-	-	<7	-	27	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	36	-	297	-	-	-	<7	-	203	-	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	-	16	-	-	-	<7	-	23	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	36	-	571	-	-	-	<26	-	253	-	<26	mg/kg	TM5/TM36/PM8/PM12/PM16

Please see attached notes for all abbreviations and acronyms

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

Element Materials Technology

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

Report : Solid

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

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	4-6	7-9	23-26	35-38	39-42	43-45	46-49	50-53	54-57	58-61	LOD/LOR	Units	Method No.
Sample ID	CP01	CP01	CP02	CP02	CP03	CP03	CP03	CP03	TP01	TP01			
Depth	1.10	2.80	2.00	7.00	0.70	2.50	4.80	7.10	0.20	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	J T	V J T	V J T	V J T	V J T			
Sample Date	08/08/2022	08/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	09/08/2022	09/08/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022			
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	-	1.6	-	-	-	<0.2	-	<0.2	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	-	142	-	-	-	<4	-	9	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	56	-	902	-	-	-	<7	-	297	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	185	-	1234	-	-	-	<7	-	976	-	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	15	-	54	-	-	-	<7	-	99	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	256	-	2334	-	-	-	<26	-	1381	-	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	292	-	2905	-	-	-	<52	-	1634	-	<52	mg/kg	TM5/TM36/PM8/PM12/PM16
Total Phenols HPLC	<0.15	-	0.96	-	-	-	<0.15	-	<0.15	-	<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	22.6	-	35.6	-	-	-	29.1	-	10.9	-	<0.1	%	PM4/PM0
Ammoniacal Nitrogen as NH4	-	-	-	-	-	-	7.2	-	<0.6	-	<0.6	mg/kg	TM38/PM20
Chloride (2:1 Ext BRE) #	-	-	-	-	-	-	2.081	-	0.022	-	<0.002	g/l	TM38/PM20
Chloride (2:1 Ext BRE)	-	-	-	-	-	-	-	-	-	-	<0.002	g/l	TM38/PM60
Hexavalent Chromium #	<0.3	-	<0.3	-	-	-	<0.3	-	<0.3	-	<0.3	mg/kg	TM38/PM20
Nitrate as NO3 (2:1 Ext BRE)	-	-	-	-	-	-	<0.0025	-	0.0031	-	<0.0025	g/l	TM38/PM20
Nitrate as NO3 (2:1 Ext BRE)	-	-	-	-	-	-	-	-	-	-	<0.0025	g/l	TM38/PM60
Sulphate as SO4 (2:1 Ext) #	0.4692	-	0.7239	-	-	-	0.3905	-	0.1473	-	<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-	-	-	-	-	-	-	-	-	-	<0.0015	g/l	TM38/PM60
Total Organic Carbon #	5.73	-	6.62	-	-	-	0.44	-	2.77	-	<0.02	%	TM21/PM24
pH #	8.88	8.50	11.66	8.77	11.88	11.79	8.21	8.32	8.37	8.29	<0.01	pH units	TM73/PM11
Dioxins & Furans	-	-	-	-	-	-	-	-	-	-			

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

Element Materials Technology

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

Report : Solid

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

EMT Sample No.	62-65	70-73	74-77	78-81	82-85	86-89	90-93	94-97	102-105		LOD/LOR	Units	Method No.
Sample ID	TP02	TP03	TP04	TP05	TP07	TP07	WS01	WS01	WS02				
Depth	0.30	1.00	0.80	1.10	1.20	3.10	0.50	2.40	0.90				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022	11/08/2022	11/08/2022	11/08/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022				
Arsenic #	-	-	-	12.9	-	-	-	NDP	37.9		<0.5	mg/kg	TM30/PM15
Cadmium #	-	-	-	0.8	-	-	-	NDP	<0.1		<0.1	mg/kg	TM30/PM15
Chromium #	-	-	-	25.1	-	-	-	NDP	52.7		<0.5	mg/kg	TM30/PM15
Copper #	-	-	-	29	-	-	-	NDP	217		<1	mg/kg	TM30/PM15
Lead #	-	-	-	61	-	-	-	NDP	103		<5	mg/kg	TM30/PM15
Mercury #	-	-	-	1.3	-	-	-	NDP	<0.1		<0.1	mg/kg	TM30/PM15
Nickel #	-	-	-	14.4	-	-	-	NDP	46.3		<0.7	mg/kg	TM30/PM15
Selenium #	-	-	-	<1	-	-	-	NDP	<1		<1	mg/kg	TM30/PM15
Sulphur as S	-	-	-	-	-	-	-	NDP	0.98		<0.01	%	TM30/PM15
Total Sulphate as SO4 #	-	-	-	109100$_{AD}$	-	-	-	NDP	32530$_{AA}$		<50	mg/kg	TM50/PM29
Total Sulphate as SO4 BRE	-	-	-	-	-	-	-	NDP	3.25$_{AA}$		<0.01	%	TM50/PM29
Zinc #	-	-	-	15	-	-	-	NDP	86		<5	mg/kg	TM30/PM15
Magnesium	-	-	-	-	-	-	-	NDP	<0.0001		<0.0001	g/l	TM30/PM20
Magnesium	-	-	-	-	-	-	-	0.0307	-		<0.0001	g/l	TM30/PM60
Arsenic	-	-	-	-	-	-	-	36.6	-		<0.5	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	-	<0.1	-		<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	-	133.6	-		<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	-	83	-		<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	-	95	-		<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	-	0.3	-		<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	-	38.2	-		<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	-	<1	-		<1	mg/kg	TM30/PM62
Sulphur as S	-	-	-	-	-	-	-	0.35	-		<0.01	%	TM30/PM62
Total Sulphate as SO4 BRE	-	-	-	-	-	-	-	0.24	-		<0.01	%	TM50/PM129
Zinc	-	-	-	-	-	-	-	61	-		<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

Report : Solid

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

EMT Sample No.	62-65	70-73	74-77	78-81	82-85	86-89	90-93	94-97	102-105		LOD/LOR	Units	Method No.
Sample ID	TP02	TP03	TP04	TP05	TP07	TP07	WS01	WS01	WS02				
Depth	0.30	1.00	0.80	1.10	1.20	3.10	0.50	2.40	0.90				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022	11/08/2022	11/08/2022	11/08/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022				
PAH MS													
Naphthalene #	-	-	-	<0.04	-	-	-	34.96 AE	0.23		<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	-	-	<0.03	-	-	-	119.80 AE	0.65		<0.03	mg/kg	TM4/PM8
Acenaphthene #	-	-	-	<0.05	-	-	-	56.08 AE	<0.05		<0.05	mg/kg	TM4/PM8
Fluorene #	-	-	-	<0.04	-	-	-	333.16 AE	0.34		<0.04	mg/kg	TM4/PM8
Phenanthrene #	-	-	-	0.61	-	-	-	653.66 AE	3.08		<0.03	mg/kg	TM4/PM8
Anthracene #	-	-	-	<0.04	-	-	-	418.40 AE	1.97		<0.04	mg/kg	TM4/PM8
Fluoranthene #	-	-	-	0.76	-	-	-	238.60 AE	4.51		<0.03	mg/kg	TM4/PM8
Pyrene #	-	-	-	0.50	-	-	-	200.34 AE	3.84		<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	-	-	<0.06	-	-	-	205.15 AE	3.57		<0.06	mg/kg	TM4/PM8
Chrysene #	-	-	-	0.07	-	-	-	133.06 AE	2.83		<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	-	-	-	<0.07	-	-	-	129.88 AE	3.25		<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	-	-	<0.04	-	-	-	76.87 AE	1.52		<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	-	-	-	<0.04	-	-	-	23.77 AE	0.84		<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	-	-	<0.04	-	-	-	8.42 AE	0.26		<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	-	-	<0.04	-	-	-	27.20 AE	0.78		<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	-	-	1.9	-	-	-	2659.4 AE	27.7		<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-	-	<0.05	-	-	-	93.51 AE	2.34		<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-	-	<0.02	-	-	-	36.37 AE	0.91		<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-	-	93	-	-	-	102 AE	96		<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	-	-	-	<2	-	-	-	<2	<2		<2	ug/kg	TM15/PM10
Benzene #	-	-	-	<3	-	-	-	<48 AC	<3		<3	ug/kg	TM15/PM10
Toluene #	-	-	-	<3	-	-	-	53	<3		<3	ug/kg	TM15/PM10
Ethylbenzene #	-	-	-	<3	-	-	-	47	<3		<3	ug/kg	TM15/PM10
m/p-Xylene #	-	-	-	<5	-	-	-	239	<5		<5	ug/kg	TM15/PM10
o-Xylene #	-	-	-	<3	-	-	-	93	<3		<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	-	-	-	105	-	-	-	67	103		<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	-	-	-	105	-	-	-	59	92		<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	-	-	-	<0.1	-	-	-	0.1 SV	<0.1		<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	-	-	-	<0.1	-	-	-	2.8 SV	0.5		<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-	<0.1	-	-	-	1.1 SV	<0.1		<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	-	-	-	<0.2	-	-	-	15.1	<0.2		<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	-	-	-	<4	-	-	-	514	8		<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	-	-	-	<7	-	-	-	2864	39		<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	-	-	-	<7	-	-	-	3810	104		<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	-	-	-	<7	-	-	-	173	16		<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	-	-	-	<26	-	-	-	7380	168		<26	mg/kg	TM5/TM36/PM8/PM12/PM16

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

Report : Solid

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

EMT Sample No.	62-65	70-73	74-77	78-81	82-85	86-89	90-93	94-97	102-105		LOD/LOR	Units	Method No.
Sample ID	TP02	TP03	TP04	TP05	TP07	TP07	WS01	WS01	WS02				
Depth	0.30	1.00	0.80	1.10	1.20	3.10	0.50	2.40	0.90				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022	11/08/2022	11/08/2022	11/08/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022				
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR) #	-	-	-	<0.1	-	-	-	<0.1 SV	<0.1		<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	-	-	-	<0.1	-	-	-	<0.1 SV	<0.1		<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	-	-	-	<0.1	-	-	-	0.1 SV	<0.1		<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	-	-	-	<0.2	-	-	-	>>89.8	3.1		<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	-	-	-	<4	-	-	-	>>5951	23		<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	-	-	-	36	-	-	-	>>25243	185		<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	-	-	-	<7	-	-	-	>>32654	522		<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	-	-	-	<7	-	-	-	>>1304	75		<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	-	-	-	36	-	-	-	>>65242	808		<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	-	-	-	<52	-	-	-	72622	976		<52	mg/kg	TM5/TM36/PM8/PM12/PM16
Total Phenols HPLC	-	-	-	<0.15	-	-	-	16.16 AA	<0.15		<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	-	-	-	73.0	-	-	-	38.3	55.4		<0.1	%	PM4/PM0
Ammoniacal Nitrogen as NH4	-	-	-	-	-	-	-	1.1	<0.6		<0.6	mg/kg	TM38/PM20
Chloride (2:1 Ext BRE) #	-	-	-	-	-	-	-	NDP	0.099		<0.002	g/l	TM38/PM20
Chloride (2:1 Ext BRE)	-	-	-	-	-	-	-	0.282	-		<0.002	g/l	TM38/PM60
Hexavalent Chromium #	-	-	-	<0.3	-	-	-	NDP	<0.3		<0.3	mg/kg	TM38/PM20
Nitrate as NO3 (2:1 Ext BRE)	-	-	-	-	-	-	-	NDP	0.0449		<0.0025	g/l	TM38/PM20
Nitrate as NO3 (2:1 Ext BRE)	-	-	-	-	-	-	-	<0.0025	-		<0.0025	g/l	TM38/PM60
Sulphate as SO4 (2:1 Ext) #	-	-	-	1.1165	-	-	-	NDP	0.0204		<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-	-	-	-	-	-	-	0.1458	-		<0.0015	g/l	TM38/PM60
Total Organic Carbon #	-	-	-	0.79	-	-	20.13	NDP	9.60		<0.02	%	TM21/PM24
pH #	10.05	9.58	8.19	12.72	8.14	8.13	8.19	7.94	12.75		<0.01	pH units	TM73/PM11
Dioxins & Furans	-	-	-	-	-	-	-	See Tab	See Tab				

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced

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

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

SVOC Report : **Solid**

EMT Sample No.	4-6	23-26	78-81	94-97									
Sample ID	CP01	CP02	TP05	WS01									
Depth	1.10	2.00	1.10	2.40							Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J T	V J T	V J T	V J T									
Sample Date	08/08/2022	10/08/2022	09/08/2022	11/08/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022							LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
2-Methylphenol	39	<100 AB	<10	899 AB							<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	81	294 AB	<10	3648 AB							<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
4-Methylphenol	130	717 AB	<10	2512 AB							<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Phenol #	<10	443 AB	<10	657 AB							<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	201	1904 AB	<10	119808 AB							<10	ug/kg	TM16/PM8
Naphthalene	194	941 AB	<10	49231 AB							<10	ug/kg	TM16/PM8
Acenaphthylene	666	3177 AB	<10	78258 AB							<10	ug/kg	TM16/PM8
Acenaphthene	76	529 AB	<10	59541 AB							<10	ug/kg	TM16/PM8
Fluorene	450	2974 AB	<10	>>287299 AB							<10	ug/kg	TM16/PM8
Phenanthrene #	3158	17883 AB	419	>>535401 AB							<10	ug/kg	TM16/PM8
Anthracene	1449	11561 AB	24	>>331033 AB							<10	ug/kg	TM16/PM8
Fluoranthene #	3858	12083 AB	337	200063 AB							<10	ug/kg	TM16/PM8
Pyrene #	3164	9286 AB	199	169516 AB							<10	ug/kg	TM16/PM8
Benzo(a)anthracene	2289	8219 AB	64	157799 AB							<10	ug/kg	TM16/PM8
Chrysene	1997	5823 AB	28	105179 AB							<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	2956	5033 AB	26	86641 AB							<10	ug/kg	TM16/PM8
Benzo(a)pyrene	1693	2849 AB	<10	62882 AB							<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	655	702 AB	<10	12818 AB							<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	284	423 AB	<10	8443 AB							<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	728	1018 AB	<10	19527 AB							<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	2128	3624 AB	19	62382 AB							<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	828	1409 AB	<10	24259 AB							<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	1047	<1000 AB	<100	5760 AB							<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<1000 AB	<100	<1000 AB							<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<1000 AB	<100	<1000 AB							<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<1000 AB	<100	<1000 AB							<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<1000 AB	<100	<1000 AB							<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<1000 AB	<100	<1000 AB							<100	ug/kg	TM16/PM8

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

SVOC Report : **Solid**

EMT Sample No.	4-6	23-26	78-81	94-97							LOD/LOR	Units	Method No.
Sample ID	CP01	CP02	TP05	WS01									
Depth	1.10	2.00	1.10	2.40									
COC No / misc													
Containers	V J T	V J T	V J T	V J T									
Sample Date	08/08/2022	10/08/2022	09/08/2022	11/08/2022									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022									
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Azobenzene	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Carbazole	270	1355 AB	<10	39294 AB							<10	ug/kg	TM16/PM8
Dibenzofuran #	335	2778 AB	<10	184888 AB							<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<100 AB	<10	248 AB							<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Isophorone #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<100 AB	<10	<100 AB							<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	121	109 AB	109	144 SV AB							<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	125	120 AB	105	169 SV AB							<0	%	TM16/PM8

Please see attached notes for all abbreviations and acronyms

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

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read
EMT Job No: 22/13043

VOC Report : **Solid**

EMT Sample No.	4-6	23-26	46-49	54-57	78-81	94-97	102-105					
Sample ID	CP01	CP02	CP03	TP01	TP05	WS01	WS02					
Depth	1.10	2.00	4.80	0.20	1.10	2.40	0.90					
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	08/08/2022	10/08/2022	10/08/2022	09/08/2022	09/08/2022	11/08/2022	11/08/2022					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1					
Date of Receipt	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022					
VOC MS												
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2				<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2				<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	8	460	<2	<2	830	56				<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1				<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2				<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	49	<6	<6	300	<6				<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7	<7	<7	<7	12	<7				<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	18	<3	<3	84	<3				<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	45	<3	<3	185	<3				<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	221	<3	<3	324	<3				<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Chloroform #	16	<3	43	<3	<3	429	6				<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	16	126	2270	<4	<4	>>13769	>>3308				<4	ug/kg	TM15/PM10
Benzene #	<3	<3	97	<3	<3	<48 $_{AC}$	<3				<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	38	<3	408	4	<3	653	19				<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	<6	<6				<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Toluene #	6	7	<3	<3	<3	53	<3				<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	11	<3	110	<3	<3	384	<3				<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	31	<3	23	6	<3	656	<3				<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	17	<3				<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Ethylbenzene #	5	14	<3	<3	<3	47	<3				<3	ug/kg	TM15/PM10
m/p-Xylene #	9	24	<5	<5	<5	239	<5				<5	ug/kg	TM15/PM10
o-Xylene #	5	12	<3	<3	<3	93	<3				<3	ug/kg	TM15/PM10
Styrene	32	<3	<3	58	<3	<3	<3				<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	8	<3				<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	4	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2				<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Propylbenzene #	<4	14	<4	<4	<4	18	<4				<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	14	<3	<3	<3	84	<3				<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3				<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	10	85	<6	<6	<6	629	<6				<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
4-Isopropyltoluene	<4	88	<4	<4	<4	64	<4				<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
n-Butylbenzene	<4	<4	<4	<4	<4	75	<4				<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene	<7	<7	<7	<7	<7	<7	<7				<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene	<7	<7	<7	<7	<7	<7	<7				<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	92	91	98	91	105	67	103				<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	73	74	90	73	105	59	92				<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

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

Element Materials Technology

ANALYSIS OF PCDDs and PCDFs

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read

Receipt Date: 12/08/2022
Analysis Date: 22/08/2022
Report Date: 24/08/2022

Sample ID: WS01
EMT Job No: 22/13043
EMT Sample No: 97
Matrix: SOIL
Method: Dioxins and Furans by HR-GCMS
Instrument: DFS - High Resolution Magnetic Sector MS

Q* - Qualifiers

n.d. **less than Limit of detection**

Key

LOD	Limit of Detection Limit
#	ISO 17025 (UKAS)
M	MCERTS accredited

Results: **Expressed ng/Kg dry sample**

Compound	Q*	Result	LOD	I-TEFs	TEQ Lower Bound	TEQ Upper Bound	Percent Recovery %
2,3,7,8-TCDD		NDP		1			
1,2,3,7,8-PeCDD		NDP		1			
1,2,3,4,7,8-HeCDD		NDP		0.1			
1,2,3,6,7,8-HeCDD		NDP		0.1			
1,2,3,7,8,9-HeCDD		NDP		0.1			
1,2,3,4,6,7,8-HpCDD		NDP		0.01			
OCDD		NDP		0.0003			
Total 2,3,7,8-Dioxins		0.00					
2,3,7,8-TCDF		NDP		0.1			
1,2,3,7,8-PCDF		NDP		0.03			
2,3,4,7,8-PeCDF		NDP		0.3			
1,2,3,4,7,8-HeCDF		NDP		0.1			
1,2,3,6,7,8-HeCDF		NDP		0.1			
2,3,4,6,7,8-HeCDF		NDP		0.1			
1,2,3,7,8,9-HeCDF		NDP		0.1			
1,2,3,4,6,7,8-HpCDF		NDP		0.01			
1,2,3,4,7,8,9-HpCDF		NDP		0.01			
OCDF		NDP		0.0003			
Total 2,3,7,8-Furans		0.00					
SUM - TEQ					0.00	0.00	

Upper-Bound: 'Upper-bound' means the concept which requires using the limit of quantification for the contribution of each non-quantified congener
Lower-Bound: 'Lower-bound' means the concept which requires using zero for the contribution of each non-quantified congener
TEQ: Toxic Equivalent Value
TEF: Toxic Equivalent Factor

Comment:

Element Materials Technology

ANALYSIS OF PCDDs and PCDFs

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read

Receipt Date: 12/08/2022
Analysis Date: 22/08/2022
Report Date: 24/08/2022

Sample ID: WS02
EMT Job No: 22/13043
EMT Sample No: 105
Matrix: SOIL
Method: Dioxins and Furans by HR-GCMS
Instrument: DFS - High Resolution Magnetic Sector MS

Q* - Qualifiers

n.d. **less than Limit of detection**

Key

LOD	Limit of Detection Limit
#	ISO 17025 (UKAS)
M	MCERTS accredited

Results: **Expressed ng/Kg dry sample**

Compound	Q*	Result	LOD	I-TEFs	TEQ Lower Bound	TEQ Upper Bound	Percent Recovery %
2,3,7,8-TCDD		0.93049	0.23947	1	0.93049	0.93049	121
1,2,3,7,8-PeCDD		5.08004	0.52998	1	5.08004	5.08004	93
1,2,3,4,7,8-HeCDD		3.59587	0.44810	0.1	0.35959	0.35959	72
1,2,3,6,7,8-HeCDD		7.55528	0.47509	0.1	0.75553	0.75553	70
1,2,3,7,8,9-HeCDD		4.86124	0.47772	0.1	0.48612	0.48612	
1,2,3,4,6,7,8-HpCDD		45.99887	0.25781	0.01	0.45999	0.45999	73
OCDD		85.98519	0.26510	0.0003	0.02580	0.02580	72
Total 2,3,7,8-Dioxins		154.00698					
2,3,7,8-TCDF		12.66868	0.61785	0.1	1.26687	1.26687	78
1,2,3,7,8-PCDF		17.30728	0.65888	0.03	0.51922	0.51922	90
2,3,4,7,8-PeCDF		10.74250	0.82420	0.3	3.22275	3.22275	74
1,2,3,4,7,8-HeCDF		32.70108	0.51748	0.1	3.27011	3.27011	81
1,2,3,6,7,8-HeCDF		18.32174	0.52292	0.1	1.83217	1.83217	75
2,3,4,6,7,8-HeCDF		5.55774	0.80213	0.1	0.55577	0.55577	54
1,2,3,7,8,9-HeCDF		6.26959	0.79859	0.1	0.62696	0.62696	62
1,2,3,4,6,7,8-HpCDF		69.56654	0.22861	0.01	0.69567	0.69567	74
1,2,3,4,7,8,9-HpCDF		13.96050	0.31255	0.01	0.13960	0.13960	70
OCDF		90.15210	0.24058	0.0003	0.02705	0.02705	60
Total 2,3,7,8-Furans		277.24775					
SUM - TEQ					20.25373	20.25373	

Upper-Bound: 'Upper-bound' means the concept which requires using the limit of quantification for the contribution of each non-quantified congener
Lower-Bound: 'Lower-bound' means the concept which requires using zero for the contribution of each non-quantified congener
TEQ: Toxic Equivalent Value
TEF: Toxic Equivalent Factor

Comment:

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/13043	1	CP01	1.10	6	Andrew Alker	19/08/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Andrew Alker	19/08/2022	**Asbestos Fibres**	Fibre Bundles
					Andrew Alker	19/08/2022	**Asbestos Fibres (2)**	Fibre Bundles
					Andrew Alker	19/08/2022	**Asbestos ACM**	NAD
					Andrew Alker	19/08/2022	**Asbestos ACM (2)**	NAD
					Andrew Alker	19/08/2022	**Asbestos Type**	Chrysotile
					Andrew Alker	19/08/2022	**Asbestos Type (2)**	Amosite
					Matthew Turner	23/08/2022	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Matthew Turner	23/08/2022	**Total Detailed Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Matthew Turner	23/08/2022	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	<0.001 (mass %)
					Matthew Turner	23/08/2022	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					Matthew Turner	23/08/2022	**Asbestos Gravimetric & PCOM Total**	<0.001 (mass %)
22/13043	1	CP02	2.00	25	Rebecca Collins	19/08/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Rebecca Collins	19/08/2022	**Asbestos Fibres**	NAD
					Rebecca Collins	19/08/2022	**Asbestos ACM**	NAD
					Rebecca Collins	19/08/2022	**Asbestos Type**	NAD
22/13043	1	CP03	4.80	48	Rebecca Collins	19/08/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Rebecca Collins	19/08/2022	**Asbestos Fibres**	NAD
					Rebecca Collins	19/08/2022	**Asbestos ACM**	NAD
					Rebecca Collins	19/08/2022	**Asbestos Type**	NAD
22/13043	1	TP01	0.20	56	Andrew Alker	19/08/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Andrew Alker	19/08/2022	**Asbestos Fibres**	NAD
					Andrew Alker	19/08/2022	**Asbestos ACM**	NAD
					Andrew Alker	19/08/2022	**Asbestos Type**	NAD
22/13043	1	TP05	1.10	80	Andrew Alker	19/08/2022	**General Description (Bulk Analysis)**	white chalk
					Andrew Alker	19/08/2022	**Asbestos Fibres**	NAD
					Andrew Alker	19/08/2022	**Asbestos ACM**	NAD
					Andrew Alker	19/08/2022	**Asbestos Type**	NAD
22/13043	1	WS01	2.40	96	Andrew Alker	19/08/2022	**General Description (Bulk Analysis)**	black tar
					Andrew Alker	19/08/2022	**Asbestos Fibres**	NAD
					Andrew Alker	19/08/2022	**Asbestos ACM**	NAD
					Andrew Alker	19/08/2022	**Asbestos Type**	NAD

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/13043	1	WS02	0.90	104	Rebecca Collins	19/08/2022	**General Description (Bulk Analysis)**	white grey soil
					Rebecca Collins	19/08/2022	**Asbestos Fibres**	NAD
					Rebecca Collins	19/08/2022	**Asbestos ACM**	NAD
					Rebecca Collins	19/08/2022	**Asbestos Type**	NAD

Client Name: Tier Environmental

Reference: TE1674

Location: Hillhouse Business Park

Contact: Adrian Read

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Method No.	NDP Reason
22/13043	1	WS01	2.40	94-97	TM30/PM15	Oily sample unsuitable for this test
22/13043	1	WS01	2.40	94-97	TM30/PM20	Oily sample unsuitable for this test
22/13043	1	WS01	2.40	94-97	TM21/PM24	Oily sample unsuitable for this test
22/13043	1	WS01	2.40	94-97	TM38/PM20	Oily sample unsuitable for this test
22/13043	1	WS01	2.40	94-97	TM38/PM20	Sample unsuitable for this test
22/13043	1	WS01	2.40	94-97	TM50/PM29	Oily sample unsuitable for this test

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Adrian Read

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/13043						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/13043

SOILS and ASH

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

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x10 Dilution
AC	x16 Dilution
AD	x20 Dilution
AE	x100 Dilution

HWOL ACRONYMS AND OPERATORS USED

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

EMT Job No: 22/13043

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

EMT Job No: 22/13043

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes

EMT Job No: 22/13043

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM129	A hot hydrochloric acid digest is performed on an as received sample, and the resulting liquor is analysed.			AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.			AD	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes		AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM131	Quantification of Asbestos Fibres and ACM based on HSG 248 Second edition:2021, HSG 264 Second edition:2012, HSE Contract Research Report No.83/1996, MDHS 87:1998, WM3 1st Edition v1.1:2018	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes

EMT Job No: 22/13043

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15_A	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM 206	Dioxins, Furans and PCBs in solid samples by HR-GCMS	PM139	Extraction and clean-up of Dioxins (PCDDs), Furans (PCDFs) and dioxin like PCBs from solid samples using accelerator solvent extractor and clean up system				

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

P: +44 (0) 1244 833780
F: +44 (0) 1244 833781
W: www.element.com

Tier Environmental
Suite 414, Chadwick House
Warrington Rd
Birchwood
Warrington
WA3 6AE

Attention :	Eve Rowland
Date :	26th August, 2022
Your reference :	TE1674
Our reference :	Test Report 22/13136 Batch 1
Location :	Hillhouse Business Park
Date samples received :	13th August, 2022
Status :	Final Report
Issue :	1

Eleven samples were received for analysis on 13th August, 2022 of which nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Liza Klebe
Project Co-ordinator

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland
EMT Job No: 22/13136

Report : Solid

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

EMT Sample No.	1-4	5-8	9-12	13-16	21-24	25-28	29-32	33-36	41-44		LOD/LOR	Units	Method No.
Sample ID	WS03	WS03	WS04	WS04	WS05	WS05	WS06	WS06	WS07				
Depth	2.50	4.10	0.30	1.80	0.90	3.00	0.10	1.30	3.30				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J B				
Sample Date	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022				
Arsenic #	NDP	-	-	57.6	-	6.0	21.4	14.3	-		<0.5	mg/kg	TM30/PM15
Cadmium #	NDP	-	-	<0.1	-	<0.1	<0.1	<0.1	-		<0.1	mg/kg	TM30/PM15
Chromium #	NDP	-	-	49.0	-	44.1	24.4	32.9	-		<0.5	mg/kg	TM30/PM15
Copper #	NDP	-	-	56	-	6	41	49	-		<1	mg/kg	TM30/PM15
Lead #	NDP	-	-	<5	-	13	74	9	-		<5	mg/kg	TM30/PM15
Mercury #	NDP	-	-	<0.1	-	<0.1	<0.1	<0.1	-		<0.1	mg/kg	TM30/PM15
Nickel #	NDP	-	-	34.2	-	18.5	20.8	33.4	-		<0.7	mg/kg	TM30/PM15
Selenium #	NDP	-	-	<1	-	<1	<1	<1	-		<1	mg/kg	TM30/PM15
Sulphur as S	NDP	-	-	0.06	-	0.10	0.09	-	-		<0.01	%	TM30/PM15
Total Sulphate as SO4 #	NDP	-	-	1022	-	723	2128	38600$_{AA}$	-		<50	mg/kg	TM50/PM29
Total Sulphate as SO4 BRE	NDP	-	-	0.10	-	0.07	0.21	-	-		<0.01	%	TM50/PM29
Zinc #	NDP	-	-	29	-	44	52	26	-		<5	mg/kg	TM30/PM15
Magnesium	NDP	-	-	0.0322	-	0.0453	0.0064	-	-		<0.0001	g/l	TM30/PM20
Magnesium	<0.0001	-	-	-	-	-	-	-	-		<0.0001	g/l	TM30/PM60
Arsenic	93.3	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Cadmium	<0.1	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Chromium	20.5	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Copper	97	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Lead	32	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62
Mercury	0.3	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Nickel	104.1	-	-	-	-	-	-	-	-		<0.7	mg/kg	TM30/PM62
Selenium	<1	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Sulphur as S	0.38	-	-	-	-	-	-	-	-		<0.01	%	TM30/PM62
Total Sulphate as SO4 BRE	1.13	-	-	-	-	-	-	-	-		<0.01	%	TM50/PM129
Zinc	194	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms

Client Name: Tier Environmental
Reference: TE1674
Location: -
Contact: Eve Rowland
EMT Job No: 22/13136

Report : Solid

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

EMT Sample No.	1-4	5-8	9-12	13-16	21-24	25-28	29-32	33-36	41-44		LOD/LOR	Units	Method No.
Sample ID	WS03	WS03	WS04	WS04	WS05	WS05	WS06	WS06	WS07				
Depth	2.50	4.10	0.30	1.80	0.90	3.00	0.10	1.30	3.30				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J B				
Sample Date	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022				
PAH MS													
Naphthalene #	>>568.92 AB	-	-	4.10	-	0.06	0.26	<0.04	-		<0.04	mg/kg	TM4/PM8
Acenaphthylene	>>708.36 AB	-	-	13.90	-	0.13	0.49	<0.03	-		<0.03	mg/kg	TM4/PM8
Acenaphthene #	173.38 AB	-	-	1.42	-	<0.05	0.17	<0.05	-		<0.05	mg/kg	TM4/PM8
Fluorene #	>>834.77 AB	-	-	15.78	-	0.08	0.29	<0.04	-		<0.04	mg/kg	TM4/PM8
Phenanthrene #	>>1066.24 AB	-	-	34.37	-	0.17	3.44	0.14	-		<0.03	mg/kg	TM4/PM8
Anthracene #	>>662.09 AB	-	-	22.49	-	0.09	1.99	0.06	-		<0.04	mg/kg	TM4/PM8
Fluoranthene #	>>337.18 AB	-	-	17.65	-	0.09	6.84	0.14	-		<0.03	mg/kg	TM4/PM8
Pyrene #	>>274.45 AB	-	-	10.82	-	0.06	5.19	0.14	-		<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	>>210.62 AB	-	-	9.69	-	0.09	3.48	0.15	-		<0.06	mg/kg	TM4/PM8
Chrysene #	>>230.04 AB	-	-	6.32	-	0.04	3.39	0.09	-		<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	144.37 AB	-	-	5.74	-	<0.07	5.21	0.14	-		<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	156.33 AB	-	-	2.54	-	<0.04	2.29	<0.04	-		<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	48.24 AB	-	-	1.13	-	<0.04	1.49	<0.04	-		<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.40 AB	-	-	<0.04	-	<0.04	0.30	<0.04	-		<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	41.56 AB	-	-	0.80	-	<0.04	1.29	<0.04	-		<0.04	mg/kg	TM4/PM8
PAH 16 Total	5456.6 AB	-	-	146.8	-	0.8	36.1	0.9	-		<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	103.95 AB	-	-	4.13	-	<0.05	3.75	0.10	-		<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	40.42 AB	-	-	1.61	-	<0.02	1.46	0.04	-		<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	95 AB	-	-	88	-	89	97	100	-		<0	%	TM4/PM8
Methyl Tertiary Butyl Ether #	<2 SV	-	-	<2	-	<2	<2 SV	<2	-		<2	ug/kg	TM15/PM10
Benzene #	456 SV	-	-	<3	-	<3	<3 SV	<3	-		<3	ug/kg	TM15/PM10
Toluene #	2147 SV	-	-	<3	-	<3	<3 SV	<3	-		<3	ug/kg	TM15/PM10
Ethylbenzene #	2557 SV	-	-	<3	-	<3	<3 SV	<3	-		<3	ug/kg	TM15/PM10
m/p-Xylene #	>>19022	-	-	<5	-	<5	<5 SV	<5	-		<5	ug/kg	TM15/PM10
o-Xylene #	>>7677	-	-	<3	-	<3	<3 SV	<3	-		<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	47 SV	-	-	74	-	96	49 SV	109	-		<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	50 SV	-	-	68	-	89	46 SV	102	-		<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	0.3 SV	-	-	<0.1	-	<0.1	<0.1 SV	<0.1	-		<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	2.0 SV	-	-	<0.1	-	<0.1	<0.1 SV	<0.1	-		<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	4.2 SV	-	-	<0.1	-	<0.1	<0.1 SV	<0.1	-		<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	>>362.1	-	-	<0.2	-	<0.2	<0.2	<0.2	-		<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	>>6701	-	-	11	-	<4	<4	<4	-		<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	>>11519	-	-	61	-	<7	18	<7	-		<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	>>7019	-	-	120	-	<7	54	<7	-		<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	>>173	-	-	12	-	<7	<7	<7	-		<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	>>25781	-	-	204	-	<26	72	<26	-		<26	mg/kg	TM5/TM36/PM8/PM12/PM16

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced

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

Client Name: Tier Environmental
Reference: TE1674
Location: -
Contact: Eve Rowland
EMT Job No: 22/13136

Report : Solid

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

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-4	5-8	9-12	13-16	21-24	25-28	29-32	33-36	41-44		LOD/LOR	Units	Method No.
Sample ID	WS03	WS03	WS04	WS04	WS05	WS05	WS06	WS06	WS07				
Depth	2.50	4.10	0.30	1.80	0.90	3.00	0.10	1.30	3.30				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J B				
Sample Date	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022				
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1 SV	-	-	<0.1	-	<0.1	<0.1 SV	<0.1	-		<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	0.4 SV	-	-	<0.1	-	<0.1	<0.1 SV	<0.1	-		<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	1.5 SV	-	-	<0.1	-	<0.1	<0.1 SV	<0.1	-		<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	>>612.4	-	-	14.4	-	<0.2	0.6	<0.2	-		<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	>>15136	-	-	315	-	<4	14	<4	-		<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	>>34373	-	-	1570	-	<7	144	<7	-		<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	>>40964	-	-	2008	-	<7	429	<7	-		<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	>>1625	-	-	157	-	<7	31	<7	-		<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	>>92712	-	-	4064	-	<26	619	<26	-		<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	118493	-	-	4268	-	<52	691	<52	-		<52	mg/kg	TM5/TM36/PM8/PM12/PM16
Total Phenols HPLC	34.28 AA	<0.15	<0.15	5.79	<0.15	<0.15	<0.15	<0.15	-		<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	34.1	30.8	31.9	36.3	53.7	27.6	14.5	51.5	-		<0.1	%	PM4/PM0
Ammoniacal Nitrogen as NH4	10.1	-	-	69.1	-	5.1	<0.6	-	-		<0.6	mg/kg	TM38/PM20
Chloride (2:1 Ext BRE) #	NDP	-	-	0.029	-	1.061	0.012	-	-		<0.002	g/l	TM38/PM20
Chloride (2:1 Ext BRE)	0.658	-	-	-	-	-	-	-	-		<0.002	g/l	TM38/PM60
Hexavalent Chromium #	<0.3	-	-	<0.3	-	<0.3	<0.3	<0.3	-		<0.3	mg/kg	TM38/PM20
Nitrate as NO3 (2:1 Ext BRE)	NDP	-	-	0.0071	-	<0.0025	0.0066	-	-		<0.0025	g/l	TM38/PM20
Nitrate as NO3 (2:1 Ext BRE)	<0.0025	-	-	-	-	-	-	-	-		<0.0025	g/l	TM38/PM60
Sulphate as SO4 (2:1 Ext) #	NDP	-	-	0.2141	-	0.2402	0.2406	0.0056	-		<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	0.2946	-	-	-	-	-	-	-	-		<0.0015	g/l	TM38/PM60
Total Organic Carbon #	NDP	-	-	5.61	-	0.44	4.44	0.97	-		<0.02	%	TM21/PM24
pH #	11.22	-	-	8.18	-	8.80	8.63	12.71	8.34		<0.01	pH units	TM73/PM11
Dioxins & Furans	-	-	-	-	-	-	-	-	See Tab				

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland
EMT Job No: 22/13136

SVOC Report : **Solid**

EMT Sample No.	1-4	13-16									LOD/LOR	Units	Method No.
Sample ID	WS03	WS04											
Depth	2.50	1.80											
COC No / misc													
Containers	V J T	V J T											
Sample Date	11/08/2022	11/08/2022											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	13/08/2022	13/08/2022											
SVOC MS													
Phenols													
2-Chlorophenol #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
2-Methylphenol	3716 AB	4411 AB									<10	ug/kg	TM16/PM8
2-Nitrophenol	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	18466 AB	8129 AB									<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
4-Methylphenol	14231 AB	17043 AB									<10	ug/kg	TM16/PM8
4-Nitrophenol	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Pentachlorophenol	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Phenol #	3361 AB	8659 AB									<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	868924 AB	8412 AB									<10	ug/kg	TM16/PM8
Naphthalene	481309 AB	5557 AB									<10	ug/kg	TM16/PM8
Acenaphthylene	569071 AB	20854 AB									<10	ug/kg	TM16/PM8
Acenaphthene	176001 AB	1929 AB									<10	ug/kg	TM16/PM8
Fluorene	655199 AB	20186 AB									<10	ug/kg	TM16/PM8
Phenanthrene #	712186 AB	49649 AB									<10	ug/kg	TM16/PM8
Anthracene	566900 AB	30355 AB									<10	ug/kg	TM16/PM8
Fluoranthene #	311481 AB	24982 AB									<10	ug/kg	TM16/PM8
Pyrene #	244844 AB	15861 AB									<10	ug/kg	TM16/PM8
Benzo(a)anthracene	218674 AB	12542 AB									<10	ug/kg	TM16/PM8
Chrysene	159619 AB	9183 AB									<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	125465 AB	5767 AB									<10	ug/kg	TM16/PM8
Benzo(a)pyrene	90984 AB	2834 AB									<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	18448 AB	586 AB									<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	11272 AB	240 AB									<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	24570 AB	572 AB									<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	90335 AB	4152 AB									<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	35130 AB	1615 AB									<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	2685 AB	<1000 AB									<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<1000 AB	<1000 AB									<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<1000 AB	<1000 AB									<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<1000 AB	<1000 AB									<100	ug/kg	TM16/PM8
Diethyl phthalate	<1000 AB	<1000 AB									<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<1000 AB	<1000 AB									<100	ug/kg	TM16/PM8

Please see attached notes for all abbreviations and acronyms

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Client Name: Tier Environmental
Reference: TE1674
Location: -
Contact: Eve Rowland
EMT Job No: 22/13136

SVOC Report : **Solid**

EMT Sample No.	1-4	13-16									LOD/LOR	Units	Method No.
Sample ID	WS03	WS04											
Depth	2.50	1.80											
COC No / misc													
Containers	V J T	V J T											
Sample Date	11/08/2022	11/08/2022											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	13/08/2022	13/08/2022											
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
2-Nitroaniline	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
3-Nitroaniline	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
4-Chloroaniline	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
4-Nitroaniline	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Azobenzene	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Carbazole	111642 AB	7758 AB									<10	ug/kg	TM16/PM8
Dibenzofuran #	449568 AB	8468 AB									<10	ug/kg	TM16/PM8
Hexachlorobenzene	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Hexachloroethane	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Isophorone #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Nitrobenzene #	<100 AB	<100 AB									<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	159 SV AB	121 AB									<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	209 SV AB	130 AB									<0	%	TM16/PM8

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Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland
EMT Job No: 22/13136

VOC Report : **Solid**

EMT Sample No.	1-4	13-16	25-28	29-32	33-36						LOD/LOR	Units	Method No.
Sample ID	WS03	WS04	WS05	WS06	WS06								
Depth	2.50	1.80	3.00	0.10	1.30								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022								
VOC MS													
Dichlorodifluoromethane	<2 SV	<2	<2	<2 SV	<2						<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2 SV	<2	<2	<2 SV	<2						<2	ug/kg	TM15/PM10
Chloromethane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Vinyl Chloride	1632 SV	10	<2	5 SV	<2						<2	ug/kg	TM15_A/PM10
Bromomethane	<1 SV	<1	<1	<1 SV	<1						<1	ug/kg	TM15/PM10
Chloroethane #	<2 SV	<2	<2	<2 SV	<2						<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2 SV	<2	<2	<2 SV	<2						<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	134 SV	15	<6	<6 SV	<6						<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	99 SV	<7	<7	<7 SV	<7						<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3 SV	11	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	196 SV	15	<3	3 SV	<3						<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	17 SV	8	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
Bromochloromethane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Chloroform #	44 SV	14	<3	8 SV	<3						<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3 SV	<3	<3	56 SV	<3						<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	>>11305	192	29	<4 SV	17						<4	ug/kg	TM15/PM10
Benzene #	456 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	60 SV	42	<3	7 SV	<3						<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6 SV	<6	<6	<6 SV	<6						<6	ug/kg	TM15/PM10
Dibromomethane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
Toluene #	2147 SV	<3	<3	<3 SV	6						<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3 SV	11	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3 SV	41	<3	134 SV	6						<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Chlorobenzene #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Ethylbenzene #	2557 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
m/p-Xylene #	>>19022	<5	<5	<5 SV	<5						<5	ug/kg	TM15/PM10
o-Xylene #	>>7677	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Styrene	1796 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15_A/PM10
Bromoform	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Isopropylbenzene #	311 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
Bromobenzene	<2 SV	<2	<2	<2 SV	<2						<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
Propylbenzene #	869 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	>>5855	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3 SV	<3	<3	<3 SV	<3						<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5 SV	<5	<5	<5 SV	<5						<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	>>54622	<6	<6	<6 SV	<6						<6	ug/kg	TM15/PM10
sec-Butylbenzene #	465 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
4-Isopropyltoluene	2634 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4 SV	<4	10	<4 SV	<4						<4	ug/kg	TM15/PM10
n-Butylbenzene	>>2895	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4 SV	5	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane	<4 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene	<7 SV	<7	<7	<7 SV	<7						<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4 SV	<4	<4	<4 SV	<4						<4	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene	<7 SV	<7	<7	<7 SV	<7						<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	47 SV	74	96	49 SV	98						<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	50 SV	68	89	46 SV	90						<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

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

Element Materials Technology

ANALYSIS OF PCDDs and PCDFs

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland

Receipt Date: 13/08/22
Analysis Date: 18/08/22
Report Date: 26/08/22

Sample ID: WS07
EMT Job No: 22/13136
EMT Sample No: 43
Matrix: Soil
Method: Dioxins and Furans by HR-GCMS
Instrument: DFS - High Resolution Magnetic Sector MS

Q* - Qualifiers

n.d. **less than Limit of detection**

Key

LOD	Limit of Detection Limit
#	ISO 17025 (UKAS)
M	MCERTS accredited

Results: **Expressed ng/Kg dry sample**

Compound	Q*	Result	LOD	I-TEFs	TEQ Lower Bound	TEQ Upper Bound	Percent Recovery %
2,3,7,8-TCDD		n.d.	0.12505	1	0.00000	0.12505	61
1,2,3,7,8-PeCDD		1.11294	0.40309	1	1.11294	1.11294	51
1,2,3,4,7,8-HeCDD		0.82441	0.24238	0.1	0.08244	0.08244	48
1,2,3,6,7,8-HeCDD		1.59892	0.27471	0.1	0.15989	0.15989	46
1,2,3,7,8,9-HeCDD		1.44226	0.27624	0.1	0.14423	0.14423	
1,2,3,4,6,7,8-HpCDD		12.43733	0.12574	0.01	0.12437	0.12437	46
OCDD		37.07045	0.16553	0.0003	0.01112	0.01112	56
Total 2,3,7,8-Dioxins		54.48631					
2,3,7,8-TCDF		0.57099	0.21541	0.1	0.05710	0.05710	34
1,2,3,7,8-PCDF		0.95915	0.11868	0.03	0.02877	0.02877	71
2,3,4,7,8-PeCDF		0.27721	0.23842	0.3	0.08316	0.08316	34
1,2,3,4,7,8-HeCDF		2.59144	0.10654	0.1	0.25914	0.25914	58
1,2,3,6,7,8-HeCDF		1.07065	0.11209	0.1	0.10707	0.10707	54
2,3,4,6,7,8-HeCDF		n.d.	0.26595	0.1	0.00000	0.02660	26
1,2,3,7,8,9-HeCDF		n.d.	0.14743	0.1	0.00000	0.01474	52
1,2,3,4,6,7,8-HpCDF		4.90880	0.08487	0.01	0.04909	0.04909	54
1,2,3,4,7,8,9-HpCDF		0.40800	0.09544	0.01	0.00408	0.00408	63
OCDF		8.71102	0.11870	0.0003	0.00261	0.00261	50
Total 2,3,7,8-Furans		19.49726					
SUM - TEQ					2.22602	2.39241	

	TEQ Lower	TEQ Upper
TEQ (NATO)	1.77622	1.94261
TEQ (WHO) - Mammals	2.22602	2.39241
TEQ (WHO)-Birds	2.69488	2.86127
TEQ (WHO)-Fish	2.20706	2.37345

Upper-Bound: 'Upper-bound' means the concept which requires using the limit of quantification for the contribution of each non-quantified congener
Lower-Bound: 'Lower-bound' means the concept which requires using zero for the contribution of each non-quantified congener
TEQ: Toxic Equivalent Value
TEF: Toxic Equivalent Factor

Comment:

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/13136	1	WS03	2.50	3	Simon Postlewhite	19/08/2022	**General Description (Bulk Analysis)**	Bitumen product
					Simon Postlewhite	19/08/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos Type**	NAD
22/13136	1	WS04	1.80	15	Simon Postlewhite	19/08/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	19/08/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos Type**	NAD
22/13136	1	WS05	3.00	27	Simon Postlewhite	19/08/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	19/08/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos Type**	NAD
22/13136	1	WS06	0.10	31	Simon Postlewhite	19/08/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	19/08/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos Type**	NAD
22/13136	1	WS06	1.30	35	Simon Postlewhite	19/08/2022	**General Description (Bulk Analysis)**	grey soil/stones
					Simon Postlewhite	19/08/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	19/08/2022	**Asbestos Type**	NAD

Client Name: Tier Environmental

Reference: TE1674

Location: Hillhouse Business Park

Contact: Eve Rowland

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Method No.	NDP Reason
22/13136	1	WS03	2.50	1-4	TM30/PM15	Oily sample unsuitable for this test
22/13136	1	WS03	2.50	1-4	TM30/PM20	Oily sample unsuitable for this test
22/13136	1	WS03	2.50	1-4	TM21/PM24	Oily sample unsuitable for this test
22/13136	1	WS03	2.50	1-4	TM38/PM20	Oily sample unsuitable for this test
22/13136	1	WS03	2.50	1-4	TM50/PM29	Oily sample unsuitable for this test

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/13136						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/13136

SOILS and ASH

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

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x10 Dilution

HWOL ACRONYMS AND OPERATORS USED

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

EMT Job No: 22/13136

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes

EMT Job No: 22/13136

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes

EMT Job No: 22/13136

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM129	A hot hydrochloric acid digest is performed on an as received sample, and the resulting liquor is analysed.			AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.			AD	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes		AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM15_A	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM 206	Dioxins, Furans and PCBs in solid samples by HR-GCMS	PM139	Extraction and clean-up of Dioxins (PCDDs), Furans (PCDFs) and dioxin like PCBs from solid samples using accelerator solvent extractor and clean up system				

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

1C2XK-OF0YL-UXP2L

Job name

EMT-22-13043-Batch-1-202208261640

Description/Comments

Project

TE1674

Site

Hillhouse Business Park, Thornton Cleveleys

Classified by

Name:
Adrian Read
Date:
30 Aug 2022 10:30 GMT
Telephone:
01925 818388

Company:
Tier Environmental
Suite 414
Chadwick House
Warrington
WA3 6AE

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	03 Dec 2020

Next 3 year Refresher due by Dec 2023

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CP01-08/08/2022-1.10m		Potentially Hazardous	HP 3(i)	3
2	CP01-08/08/2022-2.80m		Non Hazardous		9
3	CP02-10/08/2022-2.00m		Hazardous	HP 3(i), HP 3(iv), HP 7, HP 8, HP 11	10
4	CP02-10/08/2022-7.00m		Non Hazardous		16
5	CP03-10/08/2022-0.70m		Hazardous	HP 8	17
6	CP03-10/08/2022-2.50m		Hazardous	HP 8	18
7	CP03-10/08/2022-4.80m		Potentially Hazardous	HP 3(i), HP 3(iv)	19
8	CP03-10/08/2022-7.10m		Non Hazardous		23
9	TP01-09/08/2022-0.20m		Hazardous	HP 3(i), HP 7, HP 11	24
10	TP01-09/08/2022-2.00m		Non Hazardous		29
11	TP02-09/08/2022-0.30m		Non Hazardous		30
12	TP03-09/08/2022-1.00m		Non Hazardous		31
13	TP04-09/08/2022-0.80m		Non Hazardous		32
14	TP05-09/08/2022-1.10m		Hazardous	HP 8	33
15	TP07-09/08/2022-1.20m		Non Hazardous		39
16	TP07-09/08/2022-3.10m		Non Hazardous		40
17	WS01-11/08/2022-0.50m		Non Hazardous		41
18	WS01-11/08/2022-2.40m		Hazardous	HP 3(i), HP 3(iv), HP 7, HP 10, HP 11, HP 14	42
19	WS02-11/08/2022-0.90m		Hazardous	HP 3(i), HP 3(iv), HP 8	49

Related documents

#	Name	Description
1	EMT-22-13043-Batch-1-202208261640.HWOL	Element .hwol file used to populate the Job
2	Example waste stream template for contaminated soils	waste stream template used to create this Job

Report

Created by: Adrian Read

Created date: 30 Aug 2022 10:30 GMT

Classification of sample: CP01-08/08/2022-1.10m

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:
CP01-08/08/2022-1.10m
Moisture content:
22.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

toluene: (conc.: 4.89e-07%)
ethylbenzene: (conc.: 4.08e-07%)
1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 1.31e-06%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.0238%)
xylene: (conc.: 1.55e-06%)
1,2,4-trimethylbenzene: (conc.: 8.16e-07%)
styrene: (conc.: 2.61e-06%)

Determinands

Moisture content: 22.6% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		32.2 mg/kg	1.32	34.677 mg/kg	0.00347 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<**LOD**
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				44.1 mg/kg	2.27	81.653 mg/kg	0.00817 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		45 mg/kg	1.126	41.325 mg/kg	0.00413 %	✓	
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	33 mg/kg	1.56	41.985 mg/kg	0.00269 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<**LOD**
7	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		23 mg/kg	2.976	55.835 mg/kg	0.00558 %	✓	
8	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		89 mg/kg	2.774	201.386 mg/kg	0.0201 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
10		TPH (C6 to C40) petroleum group		TPH		292	mg/kg		238.173	mg/kg	0.0238 %	✓	
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
12		benzene	601-020-00-8	200-753-7	71-43-2	<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
13		toluene	601-021-00-3	203-625-9	108-88-3	0.006	mg/kg		0.0048	mg/kg	0.000000489 %	✓	
14		ethylbenzene	601-023-00-4	202-849-4	100-41-4	0.005	mg/kg		0.004	mg/kg	0.000000408 %	✓	
15		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	0.019	mg/kg		0.0155	mg/kg	0.00000155 %	✓	
16		pH		PH		8.88	pH		8.88	pH	8.88 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3	0.31	mg/kg		0.253	mg/kg	0.0000253 %	✓	
18		acenaphthylene		205-917-1	208-96-8	1.01	mg/kg		0.824	mg/kg	0.0000824 %	✓	
19		acenaphthene		201-469-6	83-32-9	0.09	mg/kg		0.0734	mg/kg	0.00000734 %	✓	
20		fluorene		201-695-5	86-73-7	0.45	mg/kg		0.367	mg/kg	0.0000367 %	✓	
21		phenanthrene		201-581-5	85-01-8	3.51	mg/kg		2.863	mg/kg	0.000286 %	✓	
22		anthracene		204-371-1	120-12-7	1.9	mg/kg		1.55	mg/kg	0.000155 %	✓	
23		fluoranthene		205-912-4	206-44-0	6.29	mg/kg		5.131	mg/kg	0.000513 %	✓	
24		pyrene		204-927-3	129-00-0	5.17	mg/kg		4.217	mg/kg	0.000422 %	✓	
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	3.76	mg/kg		3.067	mg/kg	0.000307 %	✓	
26		chrysene	601-048-00-0	205-923-4	218-01-9	3.64	mg/kg		2.969	mg/kg	0.000297 %	✓	
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	4.28	mg/kg		3.491	mg/kg	0.000349 %	✓	
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.67	mg/kg		1.362	mg/kg	0.000136 %	✓	
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	2.77	mg/kg		2.259	mg/kg	0.000226 %	✓	
30		indeno[123-cd]pyrene		205-893-2	193-39-5	1.74	mg/kg		1.419	mg/kg	0.000142 %	✓	
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.33	mg/kg		0.269	mg/kg	0.0000269 %	✓	
32		benzo[ghi]perylene		205-883-8	191-24-2	1.53	mg/kg		1.248	mg/kg	0.000125 %	✓	
33		phenol	604-001-00-2	203-632-7	108-95-2	<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34		1,1-dichloroethane and 1,2-dichloroethane (combined)		203-458-1, 200-863-5	107-06-2, 75-34-3	0.016	mg/kg		0.0131	mg/kg	0.00000131 %	✓	
35		tetrachloroethylene	602-028-00-4	204-825-9	127-18-4	0.031	mg/kg		0.0253	mg/kg	0.00000253 %	✓	
36		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5	<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
37		trichloroethylene; trichloroethene				0.038	mg/kg		0.031	mg/kg	0.0000031 %	✓	
		602-027-00-9	201-167-4	79-01-6									
38		vinyl chloride; chloroethylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-023-00-7	200-831-0	75-01-4									
39		hexachlorobenzene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		602-065-00-6	204-273-9	118-74-1									
40	●	dichlorodifluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-893-9	75-71-8									
41		chloromethane; methyl chloride				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-001-00-7	200-817-4	74-87-3									
42		bromomethane; methylbromide				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		602-002-00-2	200-813-2	74-83-9									
43		chloroethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-009-00-0	200-830-5	75-00-3									
44	●	trichlorofluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-892-3	75-69-4									
45		1,1-dichloroethylene; vinylidene chloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-025-00-8	200-864-0	75-35-4									
46		dichloromethane; methylene chloride				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-004-00-3	200-838-9	75-09-2									
47	●	2,2-dichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			209-832-0	594-20-7									
48	●	bromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-826-3	74-97-5									
49		chloroform; trichloromethane				0.016	mg/kg		0.0131	mg/kg	0.00000131 %	✓	
		602-006-00-4	200-663-8	67-66-3									
50		1,1,1-trichloroethane; methyl chloroform				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-013-00-2	200-756-3	71-55-6									
51		1,1-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-031-00-0	209-253-3	563-58-6									
52		1,2-dichloropropane; propylene dichloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-020-00-0	201-152-2	78-87-5									
53		dibromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-003-00-8	200-824-2	74-95-3									
54	●	bromodichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-856-7	75-27-4									
55		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
56	●	trans-1,3-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			431-460-4	10061-02-6									
57		1,1,2-trichloroethane				0.011	mg/kg		0.0089	mg/kg	0.000000897 %	✓	
		602-014-00-8	201-166-9	79-00-5									
58	●	1,3-dichloropropane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			205-531-3	142-28-9									
59	●	dibromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			204-704-0	124-48-1									
60		1,2-dibromoethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-010-00-6	203-444-5	106-93-4									
61		chlorobenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-033-00-1	203-628-5	108-90-7									
62	●	1,1,1,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			211-135-1	630-20-6									
63		bromoform; tribromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-007-00-X	200-854-6	75-25-2									
64		1,1,2,2-tetrachloroethane				0.004	mg/kg		0.0032	mg/kg	0.000000326 %	✓	
		602-015-00-3	201-197-8	79-34-5									
65		bromobenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-060-00-9	203-623-8	108-86-1									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
66		1,2,3-trichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4									
67		mesitylene; 1,3,5-trimethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-025-00-5	203-604-4	108-67-8									
68	●	tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
69		1,2,4-trimethylbenzene				0.01	mg/kg		0.0081	mg/kg	0.000000816 %	✓	
		601-043-00-3	202-436-9	95-63-6									
70	●	sec-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			205-227-0	135-98-8									
71	●	4-isopropyltoluene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			202-796-7	99-87-6									
72		1,3-dichlorbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-067-00-7	208-792-1	541-73-1									
73		1,4-dichlorobenzene; p-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-035-00-2	203-400-5	106-46-7									
74	●	n-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			203-209-7	104-51-8									
75		1,2-dichlorobenzene; o-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-034-00-7	202-425-9	95-50-1									
76		1,2-dibromo-3-chloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-021-00-6	202-479-3	96-12-8									
77		1,2,4-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-087-00-6	204-428-0	120-82-1									
78	●	hexachlorobutadiene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			201-765-5	87-68-3									
79	●	1,2,3-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
			201-757-1	87-61-6									
80		styrene				0.032	mg/kg		0.0261	mg/kg	0.00000261 %	✓	
		601-026-00-0	202-851-5	100-42-5									
81		2-chlorophenol; [1] 4-chlorophenol; [2] 3-chlorophenol; [3] chlorophenol [4]				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-008-00-0	202-433-2 [1] 203-402-6 [2] 203-582-6 [3] 246-691-4 [4]	95-57-8 [1] 106-48-9 [2] 108-43-0 [3] 25167-80-0 [4]									
82	●	2-nitrophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-857-5	88-75-5									
83		2,4-dichlorophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-011-00-7	204-429-6	120-83-2									
84		3,4-xylenol; [1] 2,5-xylenol; [2] 2,4-xylenol; [3] 2,3-xylenol; [4] 2,6-xylenol; [5] xylenol; [6] 2,4(or 2,5)-xylenol [7]				0.081	mg/kg		0.0661	mg/kg	0.00000661 %	✓	
		604-006-00-X	202-439-5 [1] 202-461-5 [2] 203-321-6 [3] 208-395-3 [4] 209-400-1 [5] 215-089-3 [6] 276-245-4 [7]	95-65-8 [1] 95-87-4 [2] 105-67-9 [3] 526-75-0 [4] 576-26-1 [5] 1300-71-6 [6] 71975-58-1 [7]									
85		2,4,5-trichlorophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-017-00-X	202-467-8	95-95-4									
86		2,4,6-trichlorophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-018-00-5	201-795-9	88-06-2									
87		chlorocresol; 4-chloro-m-cresol; 4-chloro-3-methylphenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-014-00-3	200-431-6	59-50-7									
88		4-nitrophenol; p-nitrophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		609-015-00-2	202-811-7	100-02-7									
89		pentachlorophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-002-00-8	201-778-6	87-86-5									
90	●	2-chloronaphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			202-079-9	91-58-7									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
91		2-methyl naphthalene				0.201	mg/kg		0.164	mg/kg	0.0000164 %	✓	
			202-078-3	91-57-6									
92		bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP				1.047	mg/kg		0.854	mg/kg	0.0000854 %	✓	
		607-317-00-9	204-211-0	117-81-7									
93		BBP; benzyl butyl phthalate				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		607-430-00-3	201-622-7	85-68-7									
94		dibutyl phthalate; DBP				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		607-318-00-4	201-557-4	84-74-2									
95		di-n-octyl phthalate				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-214-7	117-84-0									
96		diethyl phthalate				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-550-6	84-66-2									
97		dimethyl phthalate				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-011-6	131-11-3									
98		2,4-dinitrotoluene; [1] dinitrotoluene [2]				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		609-007-00-9	204-450-0 [1] 246-836-1 [2]	121-14-2 [1] 25321-14-6 [2]									
99		2,6-dinitrotoluene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		609-049-00-8	210-106-0	606-20-2									
100		4-bromophenylphenylether				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			202-952-4	101-55-3									
101		4-chloroaniline				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		612-137-00-9	203-401-0	106-47-8									
102		4-chlorophenylphenylether				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			230-281-7	7005-72-3									
103		azobenzene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		611-001-00-6	203-102-5	103-33-3									
104		bis(2-chloroethoxy)methane				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			203-920-2	111-91-1									
105		bis(2-chloroethyl) ether				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		603-029-00-2	203-870-1	111-44-4									
106		carbazole				0.27	mg/kg		0.22	mg/kg	0.000022 %	✓	
			201-696-0	86-74-8									
107		dibenzofuran				0.335	mg/kg		0.273	mg/kg	0.0000273 %	✓	
			205-071-3	132-64-9									
108		hexachlorocyclopentadiene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		602-078-00-7	201-029-3	77-47-4									
109		hexachloroethane				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			200-666-4	67-72-1									
110		3,5,5-trimethylcyclohex-2-enone; isophorone				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		606-012-00-8	201-126-0	78-59-1									
111		nitrosodipropylamine				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		612-098-00-8	210-698-0	621-64-7									
112		nitrobenzene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		609-003-00-7	202-716-0	98-95-3									
113		asbestos				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
114		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]									
115		cumene; [1] propylbenzene [2]				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
116		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<**LOD**
		602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]									
117		m-cresol; [1] o-cresol; [2] p-cresol; [3] mix-cresol [4]				0.169	mg/kg		0.138	mg/kg	0.0000138 %	✓	
		604-004-00-9	203-577-9 [1] 202-423-8 [2] 203-398-6 [3] 215-293-2 [4]	108-39-4 [1] 95-48-7 [2] 106-44-5 [3] 1319-77-3 [4]									
118		o-nitroaniline; [1] m-nitroaniline; [2] p-nitroaniline [3]				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
		612-012-00-9	201-855-4 [1] 202-729-1 [2] 202-810-1 [3]	88-74-4 [1] 99-09-2 [2] 100-01-6 [3]									
										Total:	0.0727 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP01-08/08/2022-2.80m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CP01-08/08/2022-2.80m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.5 pH		8.5 pH	8.5 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: CP02-10/08/2022-2.00m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
CP02-10/08/2022-2.00m
Moisture content:
35.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.214%)

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH: (conc.: 11.66 pH)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.214%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

toluene: (conc.: 5.16e-07%)
ethylbenzene: (conc.: 1.03e-06%)
1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 9.29e-06%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.214%)
xylene: (conc.: 3.54e-06%)
mesitylene; 1,3,5-trimethylbenzene: (conc.: 1.03e-06%)
1,2,4-trimethylbenzene: (conc.: 6.27e-06%)
4-isopropyltoluene: (conc.: 6.49e-06%)
cumene; [1] propylbenzene [2]: (conc.: 1.03e-06%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 5.9e-07%)

Determinands

Moisture content: 35.6% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		25.3	mg/kg	1.32	24.634	mg/kg	0.00246 %	✓	
2		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<**LOD**
3		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				38.6	mg/kg	2.27	64.618	mg/kg	0.00646 %	✓	
4		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		66	mg/kg	1.126	54.8	mg/kg	0.00548 %	✓	
5		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	57	mg/kg	1.56	65.567	mg/kg	0.0042 %	✓	
6		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<**LOD**
7		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		44.1	mg/kg	2.976	96.794	mg/kg	0.00968 %	✓	
8		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
9		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		60	mg/kg	2.774	122.75	mg/kg	0.0123 %	✓	
10		TPH (C6 to C40) petroleum group			TPH		2905	mg/kg		2142.33	mg/kg	0.214 %	✓	
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
12		benzene	601-020-00-8	200-753-7	71-43-2		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<**LOD**
13		toluene	601-021-00-3	203-625-9	108-88-3		0.007	mg/kg		0.0051	mg/kg	0.000000516 %	✓	
14		ethylbenzene	601-023-00-4	202-849-4	100-41-4		0.014	mg/kg		0.0103	mg/kg	0.00000103 %	✓	
15		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		0.048	mg/kg		0.0354	mg/kg	0.00000354 %	✓	
16		pH			PH		11.66	pH		11.66	pH	11.66 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		2.18	mg/kg		1.608	mg/kg	0.000161 %	✓	
18		acenaphthylene		205-917-1	208-96-8		45.47	mg/kg		33.532	mg/kg	0.00335 %	✓	
19		acenaphthene		201-469-6	83-32-9		12.04	mg/kg		8.879	mg/kg	0.000888 %	✓	
20		fluorene		201-695-5	86-73-7		58.76	mg/kg		43.333	mg/kg	0.00433 %	✓	
21		phenanthrene		201-581-5	85-01-8		105.73	mg/kg		77.972	mg/kg	0.0078 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
22		anthracene		204-371-1	120-12-7		76.64	mg/kg		56.519	mg/kg	0.00565 %	✓	
23		fluoranthene		205-912-4	206-44-0		56.22	mg/kg		41.46	mg/kg	0.00415 %	✓	
24		pyrene		204-927-3	129-00-0		40.04	mg/kg		29.528	mg/kg	0.00295 %	✓	
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		35.04	mg/kg		25.841	mg/kg	0.00258 %	✓	
26		chrysene	601-048-00-0	205-923-4	218-01-9		24.79	mg/kg		18.282	mg/kg	0.00183 %	✓	
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		17.38	mg/kg		12.817	mg/kg	0.00128 %	✓	
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		6.76	mg/kg		4.985	mg/kg	0.000499 %	✓	
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		12.64	mg/kg		9.322	mg/kg	0.000932 %	✓	
30		indeno[123-cd]pyrene		205-893-2	193-39-5		5.83	mg/kg		4.299	mg/kg	0.00043 %	✓	
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		1.21	mg/kg		0.892	mg/kg	0.0000892 %	✓	
32		benzo[ghi]perylene		205-883-8	191-24-2		4.3	mg/kg		3.171	mg/kg	0.000317 %	✓	
33		phenol	604-001-00-2	203-632-7	108-95-2		0.443	mg/kg		0.327	mg/kg	0.0000327 %	✓	
34		1,1-dichloroethane and 1,2-dichloroethane (combined)		203-458-1, 200-863-5	107-06-2, 75-34-3		0.126	mg/kg		0.0929	mg/kg	0.00000929 %	✓	
35		tetrachloroethylene	602-028-00-4	204-825-9	127-18-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
36		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
37		trichloroethylene; trichloroethene	602-027-00-9	201-167-4	79-01-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
38		vinyl chloride; chloroethylene	602-023-00-7	200-831-0	75-01-4		0.008	mg/kg		0.0059	mg/kg	0.00000059 %	✓	
39		hexachlorobenzene	602-065-00-6	204-273-9	118-74-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		dichlorodifluoromethane		200-893-9	75-71-8		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
41		chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
42		bromomethane; methylbromide	602-002-00-2	200-813-2	74-83-9		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
43		chloroethane	602-009-00-0	200-830-5	75-00-3		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
44		trichlorofluoromethane		200-892-3	75-69-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
45		1,1-dichloroethylene; vinylidene chloride	602-025-00-8	200-864-0	75-35-4		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
46		dichloromethane; methylene chloride	602-004-00-3	200-838-9	75-09-2		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
47		2,2-dichloropropane		209-832-0	594-20-7		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
48		bromochloromethane		200-826-3	74-97-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
49		chloroform; trichloromethane	602-006-00-4	200-663-8	67-66-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
50		1,1,1-trichloroethane; methyl chloroform	602-013-00-2	200-756-3	71-55-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
51		1,1-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-031-00-0	209-253-3	563-58-6									
52		1,2-dichloropropane; propylene dichloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-020-00-0	201-152-2	78-87-5									
53		dibromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-003-00-8	200-824-2	74-95-3									
54		bromodichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-856-7	75-27-4									
55		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
56		trans-1,3-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			431-460-4	10061-02-6									
57		1,1,2-trichloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-014-00-8	201-166-9	79-00-5									
58		1,3-dichloropropane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			205-531-3	142-28-9									
59		dibromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			204-704-0	124-48-1									
60		1,2-dibromoethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-010-00-6	203-444-5	106-93-4									
61		chlorobenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-033-00-1	203-628-5	108-90-7									
62		1,1,1,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			211-135-1	630-20-6									
63		bromoform; tribromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-007-00-X	200-854-6	75-25-2									
64		1,1,2,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-015-00-3	201-197-8	79-34-5									
65		bromobenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-060-00-9	203-623-8	108-86-1									
66		1,2,3-trichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4									
67		mesitylene; 1,3,5-trimethylbenzene				0.014	mg/kg		0.0103	mg/kg	0.00000103 %	✓	
		601-025-00-5	203-604-4	108-67-8									
68		tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
69		1,2,4-trimethylbenzene				0.085	mg/kg		0.0627	mg/kg	0.00000627 %	✓	
		601-043-00-3	202-436-9	95-63-6									
70		sec-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			205-227-0	135-98-8									
71		4-isopropyltoluene				0.088	mg/kg		0.0649	mg/kg	0.00000649 %	✓	
			202-796-7	99-87-6									
72		1,3-dichlorbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-067-00-7	208-792-1	541-73-1									
73		1,4-dichlorobenzene; p-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-035-00-2	203-400-5	106-46-7									
74		n-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			203-209-7	104-51-8									
75		1,2-dichlorobenzene; o-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-034-00-7	202-425-9	95-50-1									
76		1,2-dibromo-3-chloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-021-00-6	202-479-3	96-12-8									
77		1,2,4-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-087-00-6	204-428-0	120-82-1									
78		hexachlorobutadiene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			201-765-5	87-68-3									
79		1,2,3-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
			201-757-1	87-61-6									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
80		styrene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<**LOD**
		601-026-00-0	202-851-5	100-42-5									
81		2-chlorophenol; [1] 4-chlorophenol; [2] 3-chlorophenol; [3] chlorophenol [4]				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-008-00-0	202-433-2 [1] 203-402-6 [2] 203-582-6 [3] 246-691-4 [4]	95-57-8 [1] 106-48-9 [2] 108-43-0 [3] 25167-80-0 [4]									
82		2-nitrophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-857-5	88-75-5									
83		2,4-dichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-011-00-7	204-429-6	120-83-2									
84		3,4-xylenol; [1] 2,5-xylenol; [2] 2,4-xylenol; [3] 2,3-xylenol; [4] 2,6-xylenol; [5] xylenol; [6] 2,4(or 2,5)-xylenol [7]				0.294	mg/kg		0.217	mg/kg	0.0000217 %	✓	
		604-006-00-X	202-439-5 [1] 202-461-5 [2] 203-321-6 [3] 208-395-3 [4] 209-400-1 [5] 215-089-3 [6] 276-245-4 [7]	95-65-8 [1] 95-87-4 [2] 105-67-9 [3] 526-75-0 [4] 576-26-1 [5] 1300-71-6 [6] 71975-58-1 [7]									
85		2,4,5-trichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-017-00-X	202-467-8	95-95-4									
86		2,4,6-trichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-018-00-5	201-795-9	88-06-2									
87		chlorocresol; 4-chloro-m-cresol; 4-chloro-3-methylphenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-014-00-3	200-431-6	59-50-7									
88		4-nitrophenol; p-nitrophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		609-015-00-2	202-811-7	100-02-7									
89		pentachlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		604-002-00-8	201-778-6	87-86-5									
90		2-chloronaphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			202-079-9	91-58-7									
91		2-methyl naphthalene				1.904	mg/kg		1.404	mg/kg	0.00014 %	✓	
			202-078-3	91-57-6									
92		bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		607-317-00-9	204-211-0	117-81-7									
93		BBP; benzyl butyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		607-430-00-3	201-622-7	85-68-7									
94		dibutyl phthalate; DBP				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		607-318-00-4	201-557-4	84-74-2									
95		di-n-octyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
			204-214-7	117-84-0									
96		diethyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
			201-550-6	84-66-2									
97		dimethyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
			205-011-6	131-11-3									
98		2,4-dinitrotoluene; [1] dinitrotoluene [2]				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		609-007-00-9	204-450-0 [1] 246-836-1 [2]	121-14-2 [1] 25321-14-6 [2]									
99		2,6-dinitrotoluene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		609-049-00-8	210-106-0	606-20-2									
100		4-bromophenylphenylether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			202-952-4	101-55-3									
101		4-chloroaniline				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		612-137-00-9	203-401-0	106-47-8									
102		4-chlorophenylphenylether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			230-281-7	7005-72-3									
103		azobenzene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		611-001-00-6	203-102-5	103-33-3									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
104		bis(2-chloroethoxy)methane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			203-920-2	111-91-1									
105		bis(2-chloroethyl) ether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		603-029-00-2	203-870-1	111-44-4									
106		carbazole				1.355	mg/kg		0.999	mg/kg	0.0000999 %	✓	
			201-696-0	86-74-8									
107		dibenzofuran				2.778	mg/kg		2.049	mg/kg	0.000205 %	✓	
			205-071-3	132-64-9									
108		hexachlorocyclopentadiene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		602-078-00-7	201-029-3	77-47-4									
109		hexachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			200-666-4	67-72-1									
110		3,5,5-trimethylcyclohex-2-enone; isophorone				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		606-012-00-8	201-126-0	78-59-1									
111		nitrosodipropylamine				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		612-098-00-8	210-698-0	621-64-7									
112		nitrobenzene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		609-003-00-7	202-716-0	98-95-3									
113		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<**LOD**
		602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]									
114		cumene; [1] propylbenzene [2]				0.014	mg/kg		0.0103	mg/kg	0.00000103 %	✓	
		601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]									
115		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<**LOD**
		602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]									
116		m-cresol; [1] o-cresol; [2] p-cresol; [3] mix-cresol [4]				0.717	mg/kg		0.529	mg/kg	0.0000529 %	✓	
		604-004-00-9	203-577-9 [1] 202-423-8 [2] 203-398-6 [3] 215-293-2 [4]	108-39-4 [1] 95-48-7 [2] 106-44-5 [3] 1319-77-3 [4]									
117		o-nitroaniline; [1] m-nitroaniline; [2] p-nitroaniline [3]				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
		612-012-00-9	201-855-4 [1] 202-729-1 [2] 202-810-1 [3]	88-74-4 [1] 99-09-2 [2] 100-01-6 [3]									
										Total:	0.294 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP02-10/08/2022-7.00m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CP02-10/08/2022-7.00m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.77 pH		8.77 pH	8.77 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: CP03-10/08/2022-0.70m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
CP03-10/08/2022-0.70m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH: (conc.: 11.88 pH)

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH				11.88 pH		11.88 pH	11.88 pH		
				PH							
								Total:	0%		

Key

	User supplied data
	Hazardous result
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: CP03-10/08/2022-2.50m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
CP03-10/08/2022-2.50m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH: (conc.: 11.79 pH)

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		11.79 pH		11.79 pH	11.79 pH		
								Total:	0%		

Key

	User supplied data
	Hazardous result
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: CP03-10/08/2022-4.80m

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:
CP03-10/08/2022-4.80m
Moisture content:
29.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 1; H224 "Extremely flammable liquid and vapour."

Because of determinand:

1,1-dichloroethylene; vinylidene chloride: (conc.: 3.8e-06%)

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene: (conc.: 7.51e-06%)
1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 0.00017%)
1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]: (conc.: 0.00001%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 0.00003%)

Determinands

Moisture content: 29.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11.9 mg/kg	1.32	12.17 mg/kg	0.00122 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<**LOD**
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				59 mg/kg	2.27	103.741 mg/kg	0.0104 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	11.337 mg/kg	0.00113 %	✓	
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	14.499 mg/kg	0.00093 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
7		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		31.1	mg/kg	2.976	71.698	mg/kg	0.00717 %	✓	
8		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
9		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		66	mg/kg	2.774	141.823	mg/kg	0.0142 %	✓	
10		TPH (C6 to C40) petroleum group			TPH		<52	mg/kg		<52	mg/kg	<0.0052 %		<**LOD**
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
12		benzene	601-020-00-8	200-753-7	71-43-2		0.097	mg/kg		0.0751	mg/kg	0.00000751 %	✓	
13		toluene	601-021-00-3	203-625-9	108-88-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<**LOD**
14		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<**LOD**
15		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.011	mg/kg		<0.011	mg/kg	<0.0000011 %		<**LOD**
16		pH			PH		8.21	pH		8.21	pH	8.21 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
18		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
19		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
20		fluorene		201-695-5	86-73-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
21		phenanthrene		201-581-5	85-01-8		0.18	mg/kg		0.139	mg/kg	0.0000139 %	✓	
22		anthracene		204-371-1	120-12-7		0.1	mg/kg		0.0775	mg/kg	0.00000775 %	✓	
23		fluoranthene		205-912-4	206-44-0		0.14	mg/kg		0.108	mg/kg	0.0000108 %	✓	
24		pyrene		204-927-3	129-00-0		0.1	mg/kg		0.0775	mg/kg	0.00000775 %	✓	
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.09	mg/kg		0.0697	mg/kg	0.00000697 %	✓	
26		chrysene	601-048-00-0	205-923-4	218-01-9		0.06	mg/kg		0.0465	mg/kg	0.00000465 %	✓	
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
30		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
32		benzo[ghi]perylene		205-883-8	191-24-2		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
33		1,1-dichloroethane and 1,2-dichloroethane (combined)		203-458-1, 200-863-5	107-06-2, 75-34-3		2.315	mg/kg		1.793	mg/kg	0.000179 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
34		tetrachloroethylene	602-028-00-4	204-825-9	127-18-4		0.023	mg/kg		0.0178	mg/kg	0.00000178 %	✓	
35		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
36		trichloroethylene; trichloroethene	602-027-00-9	201-167-4	79-01-6		0.408	mg/kg		0.316	mg/kg	0.0000316 %	✓	
37		vinyl chloride; chloroethylene	602-023-00-7	200-831-0	75-01-4		0.46	mg/kg		0.356	mg/kg	0.0000356 %	✓	
38	●	dichlorodifluoromethane		200-893-9	75-71-8		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
39		chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
40		bromomethane; methylbromide	602-002-00-2	200-813-2	74-83-9		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
41		chloroethane	602-009-00-0	200-830-5	75-00-3		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
42	●	trichlorofluoromethane		200-892-3	75-69-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
43		1,1-dichloroethylene; vinylidene chloride	602-025-00-8	200-864-0	75-35-4		0.049	mg/kg		0.038	mg/kg	0.0000038 %	✓	
44		dichloromethane; methylene chloride	602-004-00-3	200-838-9	75-09-2		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
45	●	2,2-dichloropropane		209-832-0	594-20-7		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
46	●	bromochloromethane		200-826-3	74-97-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
47		chloroform; trichloromethane	602-006-00-4	200-663-8	67-66-3		0.043	mg/kg		0.0333	mg/kg	0.00000333 %	✓	
48		1,1,1-trichloroethane; methyl chloroform	602-013-00-2	200-756-3	71-55-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
49		1,1-dichloropropene	602-031-00-0	209-253-3	563-58-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
50		1,2-dichloropropane; propylene dichloride	602-020-00-0	201-152-2	78-87-5		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
51		dibromomethane	602-003-00-8	200-824-2	74-95-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
52	●	bromodichloromethane		200-856-7	75-27-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
53		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]	602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
54	●	trans-1,3-dichloropropene		431-460-4	10061-02-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
55		1,1,2-trichloroethane	602-014-00-8	201-166-9	79-00-5		0.11	mg/kg		0.0852	mg/kg	0.00000852 %	✓	
56	●	1,3-dichloropropane		205-531-3	142-28-9		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
57	●	dibromochloromethane		204-704-0	124-48-1		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
58		1,2-dibromoethane	602-010-00-6	203-444-5	106-93-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
59		chlorobenzene	602-033-00-1	203-628-5	108-90-7		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
60	●	1,1,1,2-tetrachloroethane		211-135-1	630-20-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
61		bromoform; tribromomethane	602-007-00-X	200-854-6	75-25-2		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
62		1,1,2,2-tetrachloroethane	602-015-00-3	201-197-8	79-34-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
63		bromobenzene	602-060-00-9	203-623-8	108-86-1		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
64		1,2,3-trichloropropane	602-062-00-X	202-486-1	96-18-4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
65		mesitylene; 1,3,5-trimethylbenzene	601-025-00-5	203-604-4	108-67-8		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
66		tert-butylbenzene		202-632-4	98-06-6		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
67		1,2,4-trimethylbenzene	601-043-00-3	202-436-9	95-63-6		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
68		sec-butylbenzene		205-227-0	135-98-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
69		4-isopropyltoluene		202-796-7	99-87-6		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
70		1,3-dichlorbenzene	602-067-00-7	208-792-1	541-73-1		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
71		1,4-dichlorobenzene; p-dichlorobenzene	602-035-00-2	203-400-5	106-46-7		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
72		n-butylbenzene		203-209-7	104-51-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
73		1,2-dichlorobenzene; o-dichlorobenzene	602-034-00-7	202-425-9	95-50-1		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
74		1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3	96-12-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
75		1,2,4-trichlorobenzene	602-087-00-6	204-428-0	120-82-1		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
76		hexachlorobutadiene		201-765-5	87-68-3		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
77		1,2,3-trichlorobenzene		201-757-1	87-61-6		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
78		styrene	601-026-00-0	202-851-5	100-42-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
79		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		700	mg/kg		542.215	mg/kg	0.0542 %	✓	
80		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]	602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		0.239	mg/kg		0.185	mg/kg	0.0000185 %	✓	
81		cumene; [1] propylbenzene [2]	601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
82		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]	602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
											Total:	0.0951 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP03-10/08/2022-7.10m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CP03-10/08/2022-7.10m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.32 pH		8.32 pH	8.32 pH		
								Total:	0%		

Key

User supplied data
● Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP01-09/08/2022-0.20m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
TP01-09/08/2022-0.20m
Moisture content:
10.9%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.147%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.147%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.147%)
styrene: (conc.: 5.23e-06%)

Determinands

Moisture content: 10.9% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	20.239 mg/kg	0.00202 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<**LOD**
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				33.3 mg/kg	2.27	68.161 mg/kg	0.00682 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		54 mg/kg	1.126	54.822 mg/kg	0.00548 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
5		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	41	mg/kg	1.56	57.667	mg/kg	0.0037 %	✓	
6		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
7		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20.9	mg/kg	2.976	56.09	mg/kg	0.00561 %	✓	
8		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
9		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		70	mg/kg	2.774	175.104	mg/kg	0.0175 %	✓	
10		TPH (C6 to C40) petroleum group			TPH		1634	mg/kg		1473.399	mg/kg	0.147 %	✓	
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
12		benzene	601-020-00-8	200-753-7	71-43-2		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
13		toluene	601-021-00-3	203-625-9	108-88-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
14		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
15		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.011	mg/kg		<0.011	mg/kg	<0.0000011 %		<LOD
16		pH			PH		8.37	pH		8.37	pH	8.37 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		0.17	mg/kg		0.153	mg/kg	0.0000153 %	✓	
18		acenaphthylene		205-917-1	208-96-8		0.51	mg/kg		0.46	mg/kg	0.000046 %	✓	
19		acenaphthene		201-469-6	83-32-9		0.45	mg/kg		0.406	mg/kg	0.0000406 %	✓	
20		fluorene		201-695-5	86-73-7		0.59	mg/kg		0.532	mg/kg	0.0000532 %	✓	
21		phenanthrene		201-581-5	85-01-8		14.25	mg/kg		12.849	mg/kg	0.00128 %	✓	
22		anthracene		204-371-1	120-12-7		5.83	mg/kg		5.257	mg/kg	0.000526 %	✓	
23		fluoranthene		205-912-4	206-44-0		36.97	mg/kg		33.336	mg/kg	0.00333 %	✓	
24		pyrene		204-927-3	129-00-0		33.34	mg/kg		30.063	mg/kg	0.00301 %	✓	
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		15.64	mg/kg		14.103	mg/kg	0.00141 %	✓	
26		chrysene	601-048-00-0	205-923-4	218-01-9		16.91	mg/kg		15.248	mg/kg	0.00152 %	✓	
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		17.37	mg/kg		15.663	mg/kg	0.00157 %	✓	
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		6.76	mg/kg		6.096	mg/kg	0.00061 %	✓	
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		12.55	mg/kg		11.317	mg/kg	0.00113 %	✓	
30		indeno[123-cd]pyrene		205-893-2	193-39-5		9.09	mg/kg		8.197	mg/kg	0.00082 %	✓	
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		1.54	mg/kg		1.389	mg/kg	0.000139 %	✓	
32		benzo[ghi]perylene		205-883-8	191-24-2		6.57	mg/kg		5.924	mg/kg	0.000592 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
33	●	1,1-dichloroethane and 1,2-dichloroethane (combined)		203-458-1, 200-863-5	107-06-2, 75-34-3		<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<**LOD**
34		tetrachloroethylene	602-028-00-4	204-825-9	127-18-4		0.006 mg/kg		0.0054 mg/kg	0.000000541 %	✓	
35		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<**LOD**
36		trichloroethylene; trichloroethene	602-027-00-9	201-167-4	79-01-6		0.004 mg/kg		0.0036 mg/kg	0.000000361 %	✓	
37		vinyl chloride; chloroethylene	602-023-00-7	200-831-0	75-01-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**
38	●	dichlorodifluoromethane		200-893-9	75-71-8		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**
39		chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
40		bromomethane; methylbromide	602-002-00-2	200-813-2	74-83-9		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**
41		chloroethane	602-009-00-0	200-830-5	75-00-3		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**
42	●	trichlorofluoromethane		200-892-3	75-69-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**
43		1,1-dichloroethylene; vinylidene chloride	602-025-00-8	200-864-0	75-35-4		<0.006 mg/kg		<0.006 mg/kg	<0.0000006 %		<**LOD**
44		dichloromethane; methylene chloride	602-004-00-3	200-838-9	75-09-2		<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<**LOD**
45	●	2,2-dichloropropane		209-832-0	594-20-7		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<**LOD**
46	●	bromochloromethane		200-826-3	74-97-5		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
47		chloroform; trichloromethane	602-006-00-4	200-663-8	67-66-3		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
48		1,1,1-trichloroethane; methyl chloroform	602-013-00-2	200-756-3	71-55-6		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
49		1,1-dichloropropene	602-031-00-0	209-253-3	563-58-6		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
50		1,2-dichloropropane; propylene dichloride	602-020-00-0	201-152-2	78-87-5		<0.006 mg/kg		<0.006 mg/kg	<0.0000006 %		<**LOD**
51		dibromomethane	602-003-00-8	200-824-2	74-95-3		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
52	●	bromodichloromethane		200-856-7	75-27-4		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
53		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]	602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<**LOD**
54	●	trans-1,3-dichloropropene		431-460-4	10061-02-6		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
55		1,1,2-trichloroethane	602-014-00-8	201-166-9	79-00-5		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
56	●	1,3-dichloropropane		205-531-3	142-28-9		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
57	●	dibromochloromethane		204-704-0	124-48-1		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
58		1,2-dibromoethane	602-010-00-6	203-444-5	106-93-4		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
59		chlorobenzene	602-033-00-1	203-628-5	108-90-7		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
60	●	1,1,1,2-tetrachloroethane		211-135-1	630-20-6		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
61		bromoform; tribromomethane	602-007-00-X	200-854-6	75-25-2		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
62		1,1,2,2-tetrachloroethane	602-015-00-3	201-197-8	79-34-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
63		bromobenzene	602-060-00-9	203-623-8	108-86-1		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
64		1,2,3-trichloropropane	602-062-00-X	202-486-1	96-18-4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
65		mesitylene; 1,3,5-trimethylbenzene	601-025-00-5	203-604-4	108-67-8		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
66		tert-butylbenzene		202-632-4	98-06-6		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
67		1,2,4-trimethylbenzene	601-043-00-3	202-436-9	95-63-6		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
68		sec-butylbenzene		205-227-0	135-98-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
69		4-isopropyltoluene		202-796-7	99-87-6		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
70		1,3-dichlorbenzene	602-067-00-7	208-792-1	541-73-1		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
71		1,4-dichlorobenzene; p-dichlorobenzene	602-035-00-2	203-400-5	106-46-7		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
72		n-butylbenzene		203-209-7	104-51-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
73		1,2-dichlorobenzene; o-dichlorobenzene	602-034-00-7	202-425-9	95-50-1		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
74		1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3	96-12-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
75		1,2,4-trichlorobenzene	602-087-00-6	204-428-0	120-82-1		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
76		hexachlorobutadiene		201-765-5	87-68-3		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
77		1,2,3-trichlorobenzene		201-757-1	87-61-6		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
78		styrene	601-026-00-0	202-851-5	100-42-5		0.058	mg/kg		0.0523	mg/kg	0.00000523 %	✓	
79		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		800	mg/kg		721.371	mg/kg	0.0721 %	✓	
80		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]	602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
81		cumene; [1] propylbenzene [2]	601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
82		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]	602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
											Total:	0.277 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP01-09/08/2022-2.00m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP01-09/08/2022-2.00m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.29 pH		8.29 pH	8.29 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP02-09/08/2022-0.30m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP02-09/08/2022-0.30m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		10.05 pH		10.05 pH	10.05 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP03-09/08/2022-1.00m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP03-09/08/2022-1.00m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		9.58 pH		9.58 pH	9.58 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP04-09/08/2022-0.80m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP04-09/08/2022-0.80m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.19 pH		8.19 pH	8.19 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP05-09/08/2022-1.10m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
TP05-09/08/2022-1.10m
Moisture content:
73%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH: (conc.: 12.72 pH)

Determinands

Moisture content: 73% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12.9 mg/kg	1.32	9.845 mg/kg	0.000985 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.8 mg/kg	1.142	0.528 mg/kg	0.0000528 %	✓	
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				25.1 mg/kg	2.27	32.935 mg/kg	0.00329 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		29 mg/kg	1.126	18.873 mg/kg	0.00189 %	✓	
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	61 mg/kg	1.56	54.999 mg/kg	0.00353 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		1.3 mg/kg	1.353	1.017 mg/kg	0.000102 %	✓	
7	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		14.4 mg/kg	2.976	24.774 mg/kg	0.00248 %	✓	
8	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		15 mg/kg	2.774	24.053 mg/kg	0.00241 %	✓	
10	TPH (C6 to C40) petroleum group			TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<**LOD**
11	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**
12	benzene	601-020-00-8	200-753-7	71-43-2		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
13	toluene	601-021-00-3	203-625-9	108-88-3		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**
14	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.011	mg/kg		<0.011	mg/kg	<0.0000011 %		<LOD
16	•	pH		PH		12.72	pH		12.72	pH	12.72 pH		
17		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
18	•	acenaphthylene	205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
19	•	acenaphthene	201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
20	•	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
21	•	phenanthrene	201-581-5	85-01-8		0.61	mg/kg		0.353	mg/kg	0.0000353 %	✓	
22	•	anthracene	204-371-1	120-12-7		0.024	mg/kg		0.0139	mg/kg	0.00000139 %	✓	
23	•	fluoranthene	205-912-4	206-44-0		0.76	mg/kg		0.439	mg/kg	0.0000439 %	✓	
24	•	pyrene	204-927-3	129-00-0		0.5	mg/kg		0.289	mg/kg	0.0000289 %	✓	
25		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.064	mg/kg		0.037	mg/kg	0.0000037 %	✓	
26		chrysene 601-048-00-0	205-923-4	218-01-9		0.07	mg/kg		0.0405	mg/kg	0.00000405 %	✓	
27		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.019	mg/kg		0.011	mg/kg	0.0000011 %	✓	
28		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30	•	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32	•	benzo[ghi]perylene	205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		phenol 604-001-00-2	203-632-7	108-95-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	•	1,1-dichloroethane and 1,2-dichloroethane (combined)	203-458-1, 200-863-5	107-06-2, 75-34-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
35		tetrachloroethylene 602-028-00-4	204-825-9	127-18-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
36		carbon tetrachloride; tetrachloromethane 602-008-00-5	200-262-8	56-23-5		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
37		trichloroethylene; trichloroethene 602-027-00-9	201-167-4	79-01-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
38		vinyl chloride; chloroethylene 602-023-00-7	200-831-0	75-01-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
39		hexachlorobenzene 602-065-00-6	204-273-9	118-74-1		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
40	•	dichlorodifluoromethane	200-893-9	75-71-8		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
41		chloromethane; methyl chloride 602-001-00-7	200-817-4	74-87-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
42		bromomethane; methylbromide 602-002-00-2	200-813-2	74-83-9		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
43		chloroethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-009-00-0	200-830-5	75-00-3									
44		trichlorofluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-892-3	75-69-4									
45		1,1-dichloroethylene; vinylidene chloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-025-00-8	200-864-0	75-35-4									
46		dichloromethane; methylene chloride				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-004-00-3	200-838-9	75-09-2									
47		2,2-dichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			209-832-0	594-20-7									
48		bromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-826-3	74-97-5									
49		chloroform; trichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-006-00-4	200-663-8	67-66-3									
50		1,1,1-trichloroethane; methyl chloroform				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-013-00-2	200-756-3	71-55-6									
51		1,1-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-031-00-0	209-253-3	563-58-6									
52		1,2-dichloropropane; propylene dichloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-020-00-0	201-152-2	78-87-5									
53		dibromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-003-00-8	200-824-2	74-95-3									
54		bromodichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-856-7	75-27-4									
55		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
56		trans-1,3-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			431-460-4	10061-02-6									
57		1,1,2-trichloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-014-00-8	201-166-9	79-00-5									
58		1,3-dichloropropane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			205-531-3	142-28-9									
59		dibromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			204-704-0	124-48-1									
60		1,2-dibromoethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-010-00-6	203-444-5	106-93-4									
61		chlorobenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-033-00-1	203-628-5	108-90-7									
62		1,1,1,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			211-135-1	630-20-6									
63		bromoform; tribromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-007-00-X	200-854-6	75-25-2									
64		1,1,2,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-015-00-3	201-197-8	79-34-5									
65		bromobenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-060-00-9	203-623-8	108-86-1									
66		1,2,3-trichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4									
67		mesitylene; 1,3,5-trimethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-025-00-5	203-604-4	108-67-8									
68		tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
69		1,2,4-trimethylbenzene				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		601-043-00-3	202-436-9	95-63-6									
70		sec-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			205-227-0	135-98-8									
71		4-isopropyltoluene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			202-796-7	99-87-6									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
72		1,3-dichlorbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-067-00-7	208-792-1	541-73-1									
73		1,4-dichlorobenzene; p-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-035-00-2	203-400-5	106-46-7									
74		n-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			203-209-7	104-51-8									
75		1,2-dichlorobenzene; o-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-034-00-7	202-425-9	95-50-1									
76		1,2-dibromo-3-chloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-021-00-6	202-479-3	96-12-8									
77		1,2,4-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-087-00-6	204-428-0	120-82-1									
78		hexachlorobutadiene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			201-765-5	87-68-3									
79		1,2,3-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
			201-757-1	87-61-6									
80		styrene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-026-00-0	202-851-5	100-42-5									
81		2-chlorophenol; [1] 4-chlorophenol; [2] 3-chlorophenol; [3] chlorophenol [4]				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-008-00-0	202-433-2 [1] 203-402-6 [2] 203-582-6 [3] 246-691-4 [4]	95-57-8 [1] 106-48-9 [2] 108-43-0 [3] 25167-80-0 [4]									
82		2-nitrophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-857-5	88-75-5									
83		2,4-dichlorophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-011-00-7	204-429-6	120-83-2									
84		3,4-xylenol; [1] 2,5-xylenol; [2] 2,4-xylenol; [3] 2,3-xylenol; [4] 2,6-xylenol; [5] xylenol; [6] 2,4(or 2,5)-xylenol [7]				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-006-00-X	202-439-5 [1] 202-461-5 [2] 203-321-6 [3] 208-395-3 [4] 209-400-1 [5] 215-089-3 [6] 276-245-4 [7]	95-65-8 [1] 95-87-4 [2] 105-67-9 [3] 526-75-0 [4] 576-26-1 [5] 1300-71-6 [6] 71975-58-1 [7]									
85		2,4,5-trichlorophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-017-00-X	202-467-8	95-95-4									
86		2,4,6-trichlorophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-018-00-5	201-795-9	88-06-2									
87		chlorocresol; 4-chloro-m-cresol; 4-chloro-3-methylphenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-014-00-3	200-431-6	59-50-7									
88		4-nitrophenol; p-nitrophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		609-015-00-2	202-811-7	100-02-7									
89		pentachlorophenol				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		604-002-00-8	201-778-6	87-86-5									
90		2-chloronaphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			202-079-9	91-58-7									
91		2-methyl naphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			202-078-3	91-57-6									
92		bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		607-317-00-9	204-211-0	117-81-7									
93		BBP; benzyl butyl phthalate				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		607-430-00-3	201-622-7	85-68-7									
94		dibutyl phthalate; DBP				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		607-318-00-4	201-557-4	84-74-2									
95		di-n-octyl phthalate				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-214-7	117-84-0									
96		diethyl phthalate				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-550-6	84-66-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
97		dimethyl phthalate				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-011-6	131-11-3									
98		2,4-dinitrotoluene; [1] dinitrotoluene [2]				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		609-007-00-9	204-450-0 [1] 246-836-1 [2]	121-14-2 [1] 25321-14-6 [2]									
99		2,6-dinitrotoluene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		609-049-00-8	210-106-0	606-20-2									
100		4-bromophenylphenylether				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			202-952-4	101-55-3									
101		4-chloroaniline				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		612-137-00-9	203-401-0	106-47-8									
102		4-chlorophenylphenylether				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			230-281-7	7005-72-3									
103		azobenzene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		611-001-00-6	203-102-5	103-33-3									
104		bis(2-chloroethoxy)methane				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			203-920-2	111-91-1									
105		bis(2-chloroethyl) ether				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		603-029-00-2	203-870-1	111-44-4									
106		carbazole				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-696-0	86-74-8									
107		dibenzofuran				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			205-071-3	132-64-9									
108		hexachlorocyclopentadiene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		602-078-00-7	201-029-3	77-47-4									
109		hexachloroethane				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			200-666-4	67-72-1									
110		3,5,5-trimethylcyclohex-2-enone; isophorone				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		606-012-00-8	201-126-0	78-59-1									
111		nitrosodipropylamine				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		612-098-00-8	210-698-0	621-64-7									
112		nitrobenzene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		609-003-00-7	202-716-0	98-95-3									
113		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]									
114		cumene; [1] propylbenzene [2]				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]									
115		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]									
116		m-cresol; [1] o-cresol; [2] p-cresol; [3] mix-cresol [4]				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		604-004-00-9	203-577-9 [1] 202-423-8 [2] 203-398-6 [3] 215-293-2 [4]	108-39-4 [1] 95-48-7 [2] 106-44-5 [3] 1319-77-3 [4]									
117		o-nitroaniline; [1] m-nitroaniline; [2] p-nitroaniline [3]				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
		612-012-00-9	201-855-4 [1] 202-729-1 [2] 202-810-1 [3]	88-74-4 [1] 99-09-2 [2] 100-01-6 [3]									
										Total:	0.0204 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP07-09/08/2022-1.20m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP07-09/08/2022-1.20m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.14 pH		8.14 pH	8.14 pH		
								Total:	0%		

Key

User supplied data
● Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP07-09/08/2022-3.10m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP07-09/08/2022-3.10m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.13 pH		8.13 pH	8.13 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: WS01-11/08/2022-0.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS01-11/08/2022-0.50m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.19 pH		8.19 pH	8.19 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: WS01-11/08/2022-2.40m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS01-11/08/2022-2.40m
Moisture content:
38.3%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 5.251%)

HP 10: Toxic for reproduction "waste which has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring"

Hazard Statements hit:

Repr. 2; H361d "Suspected of damaging the unborn child."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 5.251%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 5.251%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 2; H411 "Toxic to aquatic life with long lasting effects."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 5.251%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 1; H224 "Extremely flammable liquid and vapour."

Because of determinand:

1,1-dichloroethylene; vinylidene chloride: (conc.: 0.00002%)

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

toluene: (conc.: 3.83e-06%)
ethylbenzene: (conc.: 3.4e-06%)
1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 0.00101%)
1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]: (conc.: 0.00002%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 5.251%)
xylene: (conc.: 0.00003%)
chlorobenzene: (conc.: 1.23e-06%)
mesitylene; 1,3,5-trimethylbenzene: (conc.: 6.07e-06%)
1,2,4-trimethylbenzene: (conc.: 0.00004%)
4-isopropyltoluene: (conc.: 4.63e-06%)
n-butylbenzene: (conc.: 5.42e-06%)
cumene; [1] propylbenzene [2]: (conc.: 1.88e-06%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 0.00006%)

Determinands

Moisture content: 38.3% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		36.6 mg/kg	1.32	34.941 mg/kg	0.00349 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				133.6 mg/kg	2.27	219.286 mg/kg	0.0219 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		83 mg/kg	1.126	67.57 mg/kg	0.00676 %	✓	
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	95 mg/kg	1.56	107.146 mg/kg	0.00687 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3 mg/kg	1.353	0.294 mg/kg	0.0000294 %	✓	
7	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		38.2 mg/kg	2.976	82.208 mg/kg	0.00822 %	✓	
8	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		61 mg/kg	2.774	122.359 mg/kg	0.0122 %	✓	
10	TPH (C6 to C40) petroleum group			TPH		72622 mg/kg		52510.484 mg/kg	5.251 %	✓	
11	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
12	benzene	601-020-00-8	200-753-7	71-43-2		<0.048 mg/kg		<0.048 mg/kg	<0.0000048 %		<LOD
13	toluene	601-021-00-3	203-625-9	108-88-3		0.053 mg/kg		0.0383 mg/kg	0.00000383 %	✓	
14	ethylbenzene	601-023-00-4	202-849-4	100-41-4		0.047 mg/kg		0.034 mg/kg	0.0000034 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		0.425	mg/kg		0.307	mg/kg	0.0000307 %	✓	
16		pH			PH		7.94	pH		7.94	pH	7.94 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		49.231	mg/kg		35.597	mg/kg	0.00356 %	✓	
18		acenaphthylene		205-917-1	208-96-8		119.8	mg/kg		86.623	mg/kg	0.00866 %	✓	
19		acenaphthene		201-469-6	83-32-9		59.541	mg/kg		43.052	mg/kg	0.00431 %	✓	
20		fluorene		201-695-5	86-73-7		333.16	mg/kg		240.897	mg/kg	0.0241 %	✓	
21		phenanthrene		201-581-5	85-01-8		653.66	mg/kg		472.639	mg/kg	0.0473 %	✓	
22		anthracene		204-371-1	120-12-7		418.4	mg/kg		302.531	mg/kg	0.0303 %	✓	
23		fluoranthene		205-912-4	206-44-0		238.6	mg/kg		172.523	mg/kg	0.0173 %	✓	
24		pyrene		204-927-3	129-00-0		200.34	mg/kg		144.859	mg/kg	0.0145 %	✓	
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		205.15	mg/kg		148.337	mg/kg	0.0148 %	✓	
26		chrysene	601-048-00-0	205-923-4	218-01-9		133.06	mg/kg		96.211	mg/kg	0.00962 %	✓	
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		93.51	mg/kg		67.614	mg/kg	0.00676 %	✓	
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		36.37	mg/kg		26.298	mg/kg	0.00263 %	✓	
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		76.87	mg/kg		55.582	mg/kg	0.00556 %	✓	
30		indeno[123-cd]pyrene		205-893-2	193-39-5		23.77	mg/kg		17.187	mg/kg	0.00172 %	✓	
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		8.443	mg/kg		6.105	mg/kg	0.00061 %	✓	
32		benzo[ghi]perylene		205-883-8	191-24-2		27.2	mg/kg		19.667	mg/kg	0.00197 %	✓	
33		phenol	604-001-00-2	203-632-7	108-95-2		0.657	mg/kg		0.475	mg/kg	0.0000475 %	✓	
34		1,1-dichloroethane and 1,2-dichloroethane (combined)		203-458-1, 200-863-5	107-06-2, 75-34-3		13.954	mg/kg		10.09	mg/kg	0.00101 %	✓	
35		tetrachloroethylene	602-028-00-4	204-825-9	127-18-4		0.656	mg/kg		0.474	mg/kg	0.0000474 %	✓	
36		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<**LOD**
37		trichloroethylene; trichloroethene	602-027-00-9	201-167-4	79-01-6		0.653	mg/kg		0.472	mg/kg	0.0000472 %	✓	
38		vinyl chloride; chloroethylene	602-023-00-7	200-831-0	75-01-4		0.83	mg/kg		0.6	mg/kg	0.00006 %	✓	
39		hexachlorobenzene	602-065-00-6	204-273-9	118-74-1		0.248	mg/kg		0.179	mg/kg	0.0000179 %	✓	
40		dichlorodifluoromethane		200-893-9	75-71-8		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
41		chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<**LOD**
42		bromomethane; methylbromide	602-002-00-2	200-813-2	74-83-9		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
43		chloroethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-009-00-0	200-830-5	75-00-3									
44		trichlorofluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-892-3	75-69-4									
45		1,1-dichloroethylene; vinylidene chloride				0.3	mg/kg		0.217	mg/kg	0.0000217 %	✓	
		602-025-00-8	200-864-0	75-35-4									
46		dichloromethane; methylene chloride				0.012	mg/kg		0.0086	mg/kg	0.000000868 %	✓	
		602-004-00-3	200-838-9	75-09-2									
47		2,2-dichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			209-832-0	594-20-7									
48		bromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-826-3	74-97-5									
49		chloroform; trichloromethane				0.429	mg/kg		0.31	mg/kg	0.000031 %	✓	
		602-006-00-4	200-663-8	67-66-3									
50		1,1,1-trichloroethane; methyl chloroform				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-013-00-2	200-756-3	71-55-6									
51		1,1-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-031-00-0	209-253-3	563-58-6									
52		1,2-dichloropropane; propylene dichloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-020-00-0	201-152-2	78-87-5									
53		dibromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-003-00-8	200-824-2	74-95-3									
54		bromodichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-856-7	75-27-4									
55		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
56		trans-1,3-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			431-460-4	10061-02-6									
57		1,1,2-trichloroethane				0.384	mg/kg		0.278	mg/kg	0.0000278 %	✓	
		602-014-00-8	201-166-9	79-00-5									
58		1,3-dichloropropane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			205-531-3	142-28-9									
59		dibromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			204-704-0	124-48-1									
60		1,2-dibromoethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-010-00-6	203-444-5	106-93-4									
61		chlorobenzene				0.017	mg/kg		0.0123	mg/kg	0.00000123 %	✓	
		602-033-00-1	203-628-5	108-90-7									
62		1,1,1,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			211-135-1	630-20-6									
63		bromoform; tribromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-007-00-X	200-854-6	75-25-2									
64		1,1,2,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-015-00-3	201-197-8	79-34-5									
65		bromobenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-060-00-9	203-623-8	108-86-1									
66		1,2,3-trichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4									
67		mesitylene; 1,3,5-trimethylbenzene				0.084	mg/kg		0.0607	mg/kg	0.00000607 %	✓	
		601-025-00-5	203-604-4	108-67-8									
68		tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
69		1,2,4-trimethylbenzene				0.629	mg/kg		0.455	mg/kg	0.0000455 %	✓	
		601-043-00-3	202-436-9	95-63-6									
70		sec-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			205-227-0	135-98-8									
71		4-isopropyltoluene				0.064	mg/kg		0.0463	mg/kg	0.00000463 %	✓	
			202-796-7	99-87-6									

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
72		1,3-dichlorbenzene	602-067-00-7	208-792-1	541-73-1		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
73		1,4-dichlorobenzene; p-dichlorobenzene	602-035-00-2	203-400-5	106-46-7		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
74		n-butylbenzene		203-209-7	104-51-8		0.075	mg/kg		0.0542	mg/kg	0.00000542 %	✓	
75		1,2-dichlorobenzene; o-dichlorobenzene	602-034-00-7	202-425-9	95-50-1		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
76		1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3	96-12-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
77		1,2,4-trichlorobenzene	602-087-00-6	204-428-0	120-82-1		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
78		hexachlorobutadiene		201-765-5	87-68-3		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
79		1,2,3-trichlorobenzene		201-757-1	87-61-6		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
80		styrene	601-026-00-0	202-851-5	100-42-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
81		2-chlorophenol; [1] 4-chlorophenol; [2] 3-chlorophenol; [3] chlorophenol [4]	604-008-00-0	202-433-2 [1] 203-402-6 [2] 203-582-6 [3] 246-691-4 [4]	95-57-8 [1] 106-48-9 [2] 108-43-0 [3] 25167-80-0 [4]		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
82		2-nitrophenol		201-857-5	88-75-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
83		2,4-dichlorophenol	604-011-00-7	204-429-6	120-83-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
84		3,4-xylenol; [1] 2,5-xylenol; [2] 2,4-xylenol; [3] 2,3-xylenol; [4] 2,6-xylenol; [5] xylenol; [6] 2,4(or 2,5)-xylenol [7]	604-006-00-X	202-439-5 [1] 202-461-5 [2] 203-321-6 [3] 208-395-3 [4] 209-400-1 [5] 215-089-3 [6] 276-245-4 [7]	95-65-8 [1] 95-87-4 [2] 105-67-9 [3] 526-75-0 [4] 576-26-1 [5] 1300-71-6 [6] 71975-58-1 [7]		3.648	mg/kg		2.638	mg/kg	0.000264 %	✓	
85		2,4,5-trichlorophenol	604-017-00-X	202-467-8	95-95-4		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
86		2,4,6-trichlorophenol	604-018-00-5	201-795-9	88-06-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
87		chlorocresol; 4-chloro-m-cresol; 4-chloro-3-methylphenol	604-014-00-3	200-431-6	59-50-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
88		4-nitrophenol; p-nitrophenol	609-015-00-2	202-811-7	100-02-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
89		pentachlorophenol	604-002-00-8	201-778-6	87-86-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
90		2-chloronaphthalene		202-079-9	91-58-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
91		2-methyl naphthalene		202-078-3	91-57-6		119.808	mg/kg		86.629	mg/kg	0.00866 %	✓	
92		bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP	607-317-00-9	204-211-0	117-81-7		5.76	mg/kg		4.165	mg/kg	0.000416 %	✓	
93		BBP; benzyl butyl phthalate	607-430-00-3	201-622-7	85-68-7		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
94		dibutyl phthalate; DBP	607-318-00-4	201-557-4	84-74-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
95		di-n-octyl phthalate		204-214-7	117-84-0		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
96		diethyl phthalate		201-550-6	84-66-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
97		dimethyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
			205-011-6	131-11-3									
98		2,4-dinitrotoluene; [1] dinitrotoluene [2]				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		609-007-00-9	204-450-0 [1] 246-836-1 [2]	121-14-2 [1] 25321-14-6 [2]									
99		2,6-dinitrotoluene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		609-049-00-8	210-106-0	606-20-2									
100		4-bromophenylphenylether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			202-952-4	101-55-3									
101		4-chloroaniline				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		612-137-00-9	203-401-0	106-47-8									
102		4-chlorophenylphenylether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			230-281-7	7005-72-3									
103		azobenzene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		611-001-00-6	203-102-5	103-33-3									
104		bis(2-chloroethoxy)methane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			203-920-2	111-91-1									
105		bis(2-chloroethyl) ether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		603-029-00-2	203-870-1	111-44-4									
106		carbazole				39.294	mg/kg		28.412	mg/kg	0.00284 %	✓	
			201-696-0	86-74-8									
107		dibenzofuran				184.888	mg/kg		133.686	mg/kg	0.0134 %	✓	
			205-071-3	132-64-9									
108		hexachlorocyclopentadiene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		602-078-00-7	201-029-3	77-47-4									
109		hexachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			200-666-4	67-72-1									
110		3,5,5-trimethylcyclohex-2-enone; isophorone				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		606-012-00-8	201-126-0	78-59-1									
111		nitrosodipropylamine				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		612-098-00-8	210-698-0	621-64-7									
112		nitrobenzene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		609-003-00-7	202-716-0	98-95-3									
113		sulfur { sulfur }				3500	mg/kg		2530.73	mg/kg	0.253 %	✓	
		016-094-00-1	231-722-6	7704-34-9									
114		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]				0.408	mg/kg		0.295	mg/kg	0.0000295 %	✓	
		602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]									
115		cumene; [1] propylbenzene [2]				0.026	mg/kg		0.0188	mg/kg	0.00000188 %	✓	
		601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]									
116		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<**LOD**
		602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]									
117		m-cresol; [1] o-cresol; [2] p-cresol; [3] mix-cresol [4]				3.411	mg/kg		2.466	mg/kg	0.000247 %	✓	
		604-004-00-9	203-577-9 [1] 202-423-8 [2] 203-398-6 [3] 215-293-2 [4]	108-39-4 [1] 95-48-7 [2] 106-44-5 [3] 1319-77-3 [4]									
118		o-nitroaniline; [1] m-nitroaniline; [2] p-nitroaniline [3]				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
		612-012-00-9	201-855-4 [1] 202-729-1 [2] 202-810-1 [3]	88-74-4 [1] 99-09-2 [2] 100-01-6 [3]									
										Total:	5.786 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS02-11/08/2022-0.90m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS02-11/08/2022-0.90m
Moisture content:
55.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH: (conc.: 12.75 pH)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 0.00021%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0628%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 3.6e-06%)

Determinands

Moisture content: 55.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		37.9 mg/kg	1.32	32.201 mg/kg	0.00322 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<**LOD**
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				52.7 mg/kg	2.27	76.981 mg/kg	0.0077 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
4		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		217	mg/kg	1.126	157.219	mg/kg	0.0157 %	✓	
5		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	103	mg/kg	1.56	103.385	mg/kg	0.00663 %	✓	
6		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<**LOD**
7		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		46.3	mg/kg	2.976	88.675	mg/kg	0.00887 %	✓	
8		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
9		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		86	mg/kg	2.774	153.524	mg/kg	0.0154 %	✓	
10		TPH (C6 to C40) petroleum group			TPH		976	mg/kg		628.057	mg/kg	0.0628 %	✓	
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
12		benzene	601-020-00-8	200-753-7	71-43-2		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<**LOD**
13		toluene	601-021-00-3	203-625-9	108-88-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<**LOD**
14		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<**LOD**
15		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.011	mg/kg		<0.011	mg/kg	<0.0000011 %		<**LOD**
16		pH			PH		12.75	pH		12.75	pH	12.75 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		0.23	mg/kg		0.148	mg/kg	0.0000148 %	✓	
18		acenaphthylene		205-917-1	208-96-8		0.65	mg/kg		0.418	mg/kg	0.0000418 %	✓	
19		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
20		fluorene		201-695-5	86-73-7		0.34	mg/kg		0.219	mg/kg	0.0000219 %	✓	
21		phenanthrene		201-581-5	85-01-8		3.08	mg/kg		1.982	mg/kg	0.000198 %	✓	
22		anthracene		204-371-1	120-12-7		1.97	mg/kg		1.268	mg/kg	0.000127 %	✓	
23		fluoranthene		205-912-4	206-44-0		4.51	mg/kg		2.902	mg/kg	0.00029 %	✓	
24		pyrene		204-927-3	129-00-0		3.84	mg/kg		2.471	mg/kg	0.000247 %	✓	
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		3.57	mg/kg		2.297	mg/kg	0.00023 %	✓	
26		chrysene	601-048-00-0	205-923-4	218-01-9		2.83	mg/kg		1.821	mg/kg	0.000182 %	✓	
27		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.34	mg/kg		1.506	mg/kg	0.000151 %	✓	
28		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.91	mg/kg		0.586	mg/kg	0.0000586 %	✓	
29		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.52	mg/kg		0.978	mg/kg	0.0000978 %	✓	
30		indeno[123-cd]pyrene		205-893-2	193-39-5		0.84	mg/kg		0.541	mg/kg	0.0000541 %	✓	
31		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.26	mg/kg		0.167	mg/kg	0.0000167 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
32		benzo[ghi]perylene		205-883-8	191-24-2		0.78	mg/kg		0.502	mg/kg	0.0000502 %	✓	
33		1,1-dichloroethane and 1,2-dichloroethane (combined)		203-458-1, 200-863-5	107-06-2, 75-34-3		3.308	mg/kg		2.129	mg/kg	0.000213 %	✓	
34		tetrachloroethylene	602-028-00-4	204-825-9	127-18-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
35		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
36		trichloroethylene; trichloroethene	602-027-00-9	201-167-4	79-01-6		0.019	mg/kg		0.0122	mg/kg	0.00000122 %	✓	
37		vinyl chloride; chloroethylene	602-023-00-7	200-831-0	75-01-4		0.056	mg/kg		0.036	mg/kg	0.0000036 %	✓	
38		dichlorodifluoromethane		200-893-9	75-71-8		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
39		chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
40		bromomethane; methylbromide	602-002-00-2	200-813-2	74-83-9		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
41		chloroethane	602-009-00-0	200-830-5	75-00-3		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
42		trichlorofluoromethane		200-892-3	75-69-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
43		1,1-dichloroethylene; vinylidene chloride	602-025-00-8	200-864-0	75-35-4		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
44		dichloromethane; methylene chloride	602-004-00-3	200-838-9	75-09-2		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
45		2,2-dichloropropane		209-832-0	594-20-7		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
46		bromochloromethane		200-826-3	74-97-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
47		chloroform; trichloromethane	602-006-00-4	200-663-8	67-66-3		0.006	mg/kg		0.0038	mg/kg	0.000000386 %	✓	
48		1,1,1-trichloroethane; methyl chloroform	602-013-00-2	200-756-3	71-55-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
49		1,1-dichloropropene	602-031-00-0	209-253-3	563-58-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
50		1,2-dichloropropane; propylene dichloride	602-020-00-0	201-152-2	78-87-5		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
51		dibromomethane	602-003-00-8	200-824-2	74-95-3		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
52		bromodichloromethane		200-856-7	75-27-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
53		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]	602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
54		trans-1,3-dichloropropene		431-460-4	10061-02-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
55		1,1,2-trichloroethane	602-014-00-8	201-166-9	79-00-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
56		1,3-dichloropropane		205-531-3	142-28-9		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
57		dibromochloromethane		204-704-0	124-48-1		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
58		1,2-dibromoethane	602-010-00-6	203-444-5	106-93-4		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
59		chlorobenzene	602-033-00-1	203-628-5	108-90-7		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
60		1,1,1,2-tetrachloroethane		211-135-1	630-20-6		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
61		bromoform; tribromomethane	602-007-00-X	200-854-6	75-25-2		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
62		1,1,2,2-tetrachloroethane	602-015-00-3	201-197-8	79-34-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
63		bromobenzene	602-060-00-9	203-623-8	108-86-1		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
64		1,2,3-trichloropropane	602-062-00-X	202-486-1	96-18-4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
65		mesitylene; 1,3,5-trimethylbenzene	601-025-00-5	203-604-4	108-67-8		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
66		tert-butylbenzene		202-632-4	98-06-6		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
67		1,2,4-trimethylbenzene	601-043-00-3	202-436-9	95-63-6		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
68		sec-butylbenzene		205-227-0	135-98-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
69		4-isopropyltoluene		202-796-7	99-87-6		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
70		1,3-dichlorbenzene	602-067-00-7	208-792-1	541-73-1		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
71		1,4-dichlorobenzene; p-dichlorobenzene	602-035-00-2	203-400-5	106-46-7		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
72		n-butylbenzene		203-209-7	104-51-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
73		1,2-dichlorobenzene; o-dichlorobenzene	602-034-00-7	202-425-9	95-50-1		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
74		1,2-dibromo-3-chloropropane	602-021-00-6	202-479-3	96-12-8		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
75		1,2,4-trichlorobenzene	602-087-00-6	204-428-0	120-82-1		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
76		hexachlorobutadiene		201-765-5	87-68-3		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
77		1,2,3-trichlorobenzene		201-757-1	87-61-6		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
78		styrene	601-026-00-0	202-851-5	100-42-5		<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
79		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		9800	mg/kg		6306.306	mg/kg	0.631 %	✓	
80		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]	602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
81		cumene; [1] propylbenzene [2]	601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
82		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]	602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
											Total:	0.753 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

- **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

- **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

- **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

- **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

- **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

- **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

1,1-dichloroethane and 1,2-dichloroethane (combined) (EC Number: 203-458-1, 200-863-5, CAS Number: 107-06-2, 75-34-3)

Description/Comments: Combines the hazard statements and risk phrases for 1,1-dichloroethane and 1,2-dichloroethane
Data source: N/a
Data source date: 14 Oct 2016
Hazard Statements: Flam. Liq. 2; H225 , Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 1B; H350 , Aquatic Chronic 3; H412

dichlorodifluoromethane (EC Number: 200-893-9, CAS Number: 75-71-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Aquatic Chronic 3; H412 , Ozone 1; H420 , Press. Gas; H280

trichlorofluoromethane (EC Number: 200-892-3, CAS Number: 75-69-4)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H312 , Ozone 1; H420

2,2-dichloropropane (EC Number: 209-832-0, CAS Number: 594-20-7)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Acute Tox. 4; H302 , Acute Tox. 4; H312 , Eye Irrit. 2; H319

bromochloromethane (EC Number: 200-826-3, CAS Number: 74-97-5)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H312 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Ozone 1; H420

bromodichloromethane (EC Number: 200-856-7, CAS Number: 75-27-4)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 1A; H360

trans-1,3-dichloropropene (EC Number: 431-460-4, CAS Number: 10061-02-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Acute Tox. 3; H301 , Asp. Tox. 1; H304 , Acute Tox. 3; H311 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , Aquatic Chronic 1; H410

1,3-dichloropropane (EC Number: 205-531-3, CAS Number: 142-28-9)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335

dibromochloromethane (EC Number: 204-704-0, CAS Number: 124-48-1)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , STOT SE 3; H336 , Muta. 2; H341 , Aquatic Chronic 2; H411

1,1,1,2-tetrachloroethane (EC Number: 211-135-1, CAS Number: 630-20-6)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , Carc. 2; H351 , Acute Tox. 4; H312 , Aquatic Chronic 3; H412 , Skin Irrit. 2; H315

tert-butylbenzene (EC Number: 202-632-4, CAS Number: 98-06-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Acute Tox. 4; H332 , STOT SE 3; H335 , Asp. Tox. 1; H304 , Aquatic Chronic 2; H411

sec-butylbenzene (EC Number: 205-227-0, CAS Number: 135-98-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Chronic 2; H411

4-isopropyltoluene (EC Number: 202-796-7, CAS Number: 99-87-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Chronic 2; H411

n-butylbenzene (EC Number: 203-209-7, CAS Number: 104-51-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

hexachlorobutadiene (EC Number: 201-765-5, CAS Number: 87-68-3)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 2; H310 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 2; H330 , Carc. 2; H351 , Repr. 2; H361 , STOT SE 2; H371 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

1,2,3-trichlorobenzene (EC Number: 201-757-1, CAS Number: 87-61-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , STOT SE 3; H336 , Aquatic Acute 1; H400 , Aquatic Chronic 3; H410

2-nitrophenol (EC Number: 201-857-5, CAS Number: 88-75-5)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , STOT RE 2; H373 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

2-chloronaphthalene (EC Number: 202-079-9, CAS Number: 91-58-7)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

2-methyl naphthalene (EC Number: 202-078-3, CAS Number: 91-57-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , STOT SE 3; H336 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

di-n-octyl phthalate (EC Number: 204-214-7, CAS Number: 117-84-0)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Repr. 2; H361 , Skin Sens. 1; H317 , Resp. Sens. 1; H334 , Eye Irrit. 2; H319 , Aquatic Chronic 4; H413

diethyl phthalate (EC Number: 201-550-6, CAS Number: 84-66-2)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , STOT SE 3; H335 , STOT RE 2; H373 , Repr. 2; H361 , Acute Tox. 4; H302 , STOT SE 3; H336 , Skin Sens. 1; H317 , Aquatic Chronic 1; H410

dimethyl phthalate (EC Number: 205-011-6, CAS Number: 131-11-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , STOT SE 3; H335 , STOT SE 3; H336 , Repr. 2; H361 , Aquatic Chronic 3; H412

4-bromophenylphenylether (EC Number: 202-952-4, CAS Number: 101-55-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

4-chlorophenylphenylether (EC Number: 230-281-7, CAS Number: 7005-72-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

bis(2-chloroethoxy)methane (EC Number: 203-920-2, CAS Number: 111-91-1)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 4; H312 , Acute Tox. 1; H330 , Acute Tox. 2; H330 , STOT SE 1; H370 , STOT RE 2; H373

carbazole (EC Number: 201-696-0, CAS Number: 86-74-8)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Muta. 2; H341 , Carc. 2; H351 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301

dibenzofuran (EC Number: 205-071-3, CAS Number: 132-64-9)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Acute Tox. 4; H332 , Aquatic Chronic 2; H411

hexachloroethane (EC Number: 200-666-4, CAS Number: 67-72-1)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , STOT RE 2; H373

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

sulfur {sulfur}

Worse case compound.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2022.234.5304.9918 (22 Aug 2022)
HazWasteOnline Database: 2022.234.5304.9918 (22 Aug 2022)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

18RHK-DD14N-BHQ3P

Job name

EMT-22-13136-Batch-1-202208260940

Description/Comments

Project

TE1674

Site

Hillhouse Business Park, Thornton Cleveleys

Classified by

Name:
Adrian Read
Date:
14 Sep 2022 08:18 GMT
Telephone:
01925 818388

Company:
Tier Environmental
Suite 414
Chadwick House
Warrington
WA3 6AE

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	03 Dec 2020

Next 3 year Refresher due by Dec 2023

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS03-11/08/2022-2.50m		Hazardous	HP 3(i), HP 3(iv), HP 7, HP 10, HP 11, HP 14	2
2	WS03-11/08/2022-4.10m		Unknown. Chemistry data not provided.		9
3	WS04-11/08/2022-0.30m		Unknown. Chemistry data not provided.		10
4	WS04-11/08/2022-1.80m		Hazardous	HP 3(i), HP 3(iv), HP 7, HP 11	11
5	WS05-11/08/2022-0.90m		Unknown. Chemistry data not provided.		17
6	WS05-11/08/2022-3.00m		Potentially Hazardous	HP 3(i)	18
7	WS06-11/08/2022-0.10m		Potentially Hazardous	HP 3(i), HP 3(iv)	22
8	WS06-11/08/2022-1.30m		Hazardous	HP 3(i), HP 8	26
9	WS07-11/08/2022-3.30m		Non Hazardous		30

Related documents

#	Name	Description
1	EMT-22-13136-Batch-1-202208260940.HWOL	Element .hwol file used to populate the Job
2	Example waste stream template for contaminated soils	waste stream template used to create this Job

Report

Created by: Adrian Read

Created date: 14 Sep 2022 08:18 GMT

Classification of sample: WS03-11/08/2022-2.50m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS03-11/08/2022-2.50m
Moisture content:
34.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 8.836%)

HP 10: Toxic for reproduction "waste which has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring"

Hazard Statements hit:

Repr. 2; H361d "Suspected of damaging the unborn child."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 8.836%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 8.836%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 2; H411 "Toxic to aquatic life with long lasting effects."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 8.836%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 1; H224 "Extremely flammable liquid and vapour."

Because of determinand:

1,1-dichloroethylene; vinylidene chloride: (conc.: 9.99e-06%)

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene: (conc.: 0.00003%)
toluene: (conc.: 0.00016%)
ethylbenzene: (conc.: 0.00019%)
1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 0.00085%)
1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]: (conc.: 1.27e-06%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 8.836%)
xylene: (conc.: 0.00256%)
mesitylene; 1,3,5-trimethylbenzene: (conc.: 0.00043%)
1,2,4-trimethylbenzene: (conc.: 0.00407%)
sec-butylbenzene: (conc.: 0.00003%)
4-isopropyltoluene: (conc.: 0.00019%)
n-butylbenzene: (conc.: 0.00021%)
styrene: (conc.: 0.00013%)
cumene; [1] propylbenzene [2]: (conc.: 0.00008%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 0.00012%)

Determinands

Moisture content: 34.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		93.3 mg/kg	1.32	91.862 mg/kg	0.00919 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<**LOD**
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				20.5 mg/kg	2.27	34.702 mg/kg	0.00347 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		97 mg/kg	1.126	81.44 mg/kg	0.00814 %	✓	
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	32 mg/kg	1.56	37.222 mg/kg	0.00239 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.3 mg/kg	1.353	0.303 mg/kg	0.0000303 %	✓	
7	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		104.1 mg/kg	2.976	231.043 mg/kg	0.0231 %	✓	
8	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		194 mg/kg	2.774	401.331 mg/kg	0.0401 %	✓	
10	TPH (C6 to C40) petroleum group			TPH		118493 mg/kg		88361.67 mg/kg	8.836 %	✓	
11	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**
12	benzene	601-020-00-8	200-753-7	71-43-2		0.456 mg/kg		0.34 mg/kg	0.000034 %	✓	
13	toluene	601-021-00-3	203-625-9	108-88-3		2.147 mg/kg		1.601 mg/kg	0.00016 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
14		ethylbenzene				2.557	mg/kg		1.907	mg/kg	0.000191 %	✓	
		601-023-00-4	202-849-4	100-41-4									
15		xylene				34.376	mg/kg		25.635	mg/kg	0.00256 %	✓	
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
16		pH				11.22	pH		11.22	pH	11.22 pH		
				PH									
17		naphthalene				568.92	mg/kg		424.251	mg/kg	0.0424 %	✓	
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				708.36	mg/kg		528.233	mg/kg	0.0528 %	✓	
			205-917-1	208-96-8									
19		acenaphthene				176.001	mg/kg		131.246	mg/kg	0.0131 %	✓	
			201-469-6	83-32-9									
20		fluorene				834.77	mg/kg		622.498	mg/kg	0.0622 %	✓	
			201-695-5	86-73-7									
21		phenanthrene				1066.24	mg/kg		795.108	mg/kg	0.0795 %	✓	
			201-581-5	85-01-8									
22		anthracene				662.09	mg/kg		493.729	mg/kg	0.0494 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				337.18	mg/kg		251.439	mg/kg	0.0251 %	✓	
			205-912-4	206-44-0									
24		pyrene				274.45	mg/kg		204.661	mg/kg	0.0205 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				218.674	mg/kg		163.068	mg/kg	0.0163 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				230.04	mg/kg		171.544	mg/kg	0.0172 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				103.95	mg/kg		77.517	mg/kg	0.00775 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				40.42	mg/kg		30.142	mg/kg	0.00301 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				156.33	mg/kg		116.577	mg/kg	0.0117 %	✓	
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				48.24	mg/kg		35.973	mg/kg	0.0036 %	✓	
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				11.272	mg/kg		8.406	mg/kg	0.000841 %	✓	
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				41.56	mg/kg		30.992	mg/kg	0.0031 %	✓	
			205-883-8	191-24-2									
33		phenol				3.361	mg/kg		2.506	mg/kg	0.000251 %	✓	
		604-001-00-2	203-632-7	108-95-2									
34		1,1-dichloroethane and 1,2-dichloroethane (combined)				11.501	mg/kg		8.576	mg/kg	0.000858 %	✓	
			203-458-1, 200-863-5	107-06-2, 75-34-3									
35		tetrachloroethylene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-028-00-4	204-825-9	127-18-4									
36		carbon tetrachloride; tetrachloromethane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-008-00-5	200-262-8	56-23-5									
37		trichloroethylene; trichloroethene				0.06	mg/kg		0.0447	mg/kg	0.00000447 %	✓	
		602-027-00-9	201-167-4	79-01-6									
38		vinyl chloride; chloroethylene				1.632	mg/kg		1.217	mg/kg	0.000122 %	✓	
		602-023-00-7	200-831-0	75-01-4									
39		hexachlorobenzene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-065-00-6	204-273-9	118-74-1									
40		dichlorodifluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-893-9	75-71-8									
41		chloromethane; methyl chloride				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-001-00-7	200-817-4	74-87-3									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
42		bromomethane; methylbromide				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		602-002-00-2	200-813-2	74-83-9									
43		chloroethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-009-00-0	200-830-5	75-00-3									
44		trichlorofluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-892-3	75-69-4									
45		1,1-dichloroethylene; vinylidene chloride				0.134	mg/kg		0.0999	mg/kg	0.00000999 %	✓	
		602-025-00-8	200-864-0	75-35-4									
46		dichloromethane; methylene chloride				0.099	mg/kg		0.0738	mg/kg	0.00000738 %	✓	
		602-004-00-3	200-838-9	75-09-2									
47		2,2-dichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			209-832-0	594-20-7									
48		bromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-826-3	74-97-5									
49		chloroform; trichloromethane				0.044	mg/kg		0.0328	mg/kg	0.00000328 %	✓	
		602-006-00-4	200-663-8	67-66-3									
50		1,1,1-trichloroethane; methyl chloroform				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-013-00-2	200-756-3	71-55-6									
51		1,1-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-031-00-0	209-253-3	563-58-6									
52		1,2-dichloropropane; propylene dichloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-020-00-0	201-152-2	78-87-5									
53		dibromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-003-00-8	200-824-2	74-95-3									
54		bromodichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-856-7	75-27-4									
55		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
56		trans-1,3-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			431-460-4	10061-02-6									
57		1,1,2-trichloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-014-00-8	201-166-9	79-00-5									
58		1,3-dichloropropane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			205-531-3	142-28-9									
59		dibromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			204-704-0	124-48-1									
60		1,2-dibromoethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-010-00-6	203-444-5	106-93-4									
61		chlorobenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-033-00-1	203-628-5	108-90-7									
62		1,1,1,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			211-135-1	630-20-6									
63		bromoform; tribromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-007-00-X	200-854-6	75-25-2									
64		1,1,2,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-015-00-3	201-197-8	79-34-5									
65		bromobenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-060-00-9	203-623-8	108-86-1									
66		1,2,3-trichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4									
67		mesitylene; 1,3,5-trimethylbenzene				5.855	mg/kg		4.366	mg/kg	0.000437 %	✓	
		601-025-00-5	203-604-4	108-67-8									
68		tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
69		1,2,4-trimethylbenzene				54.622	mg/kg		40.732	mg/kg	0.00407 %	✓	
		601-043-00-3	202-436-9	95-63-6									
70		sec-butylbenzene				0.465	mg/kg		0.347	mg/kg	0.0000347 %	✓	
			205-227-0	135-98-8									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
71		4-isopropyltoluene				2.634	mg/kg		1.964	mg/kg	0.000196 %	✓	
			202-796-7	99-87-6									
72		1,3-dichlorbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-067-00-7	208-792-1	541-73-1									
73		1,4-dichlorobenzene; p-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-035-00-2	203-400-5	106-46-7									
74		n-butylbenzene				2.895	mg/kg		2.159	mg/kg	0.000216 %	✓	
			203-209-7	104-51-8									
75		1,2-dichlorobenzene; o-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-034-00-7	202-425-9	95-50-1									
76		1,2-dibromo-3-chloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-021-00-6	202-479-3	96-12-8									
77		1,2,4-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-087-00-6	204-428-0	120-82-1									
78		hexachlorobutadiene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			201-765-5	87-68-3									
79		1,2,3-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
			201-757-1	87-61-6									
80		styrene				1.796	mg/kg		1.339	mg/kg	0.000134 %	✓	
		601-026-00-0	202-851-5	100-42-5									
81		2-chlorophenol; [1] 4-chlorophenol; [2] 3-chlorophenol; [3] chlorophenol [4]				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-008-00-0	202-433-2 [1] 203-402-6 [2] 203-582-6 [3] 246-691-4 [4]	95-57-8 [1] 106-48-9 [2] 108-43-0 [3] 25167-80-0 [4]									
82		2-nitrophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-857-5	88-75-5									
83		2,4-dichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-011-00-7	204-429-6	120-83-2									
84		3,4-xylenol; [1] 2,5-xylenol; [2] 2,4-xylenol; [3] 2,3-xylenol; [4] 2,6-xylenol; [5] xylenol; [6] 2,4(or 2,5)-xylenol [7]				18.466	mg/kg		13.77	mg/kg	0.00138 %	✓	
		604-006-00-X	202-439-5 [1] 202-461-5 [2] 203-321-6 [3] 208-395-3 [4] 209-400-1 [5] 215-089-3 [6] 276-245-4 [7]	95-65-8 [1] 95-87-4 [2] 105-67-9 [3] 526-75-0 [4] 576-26-1 [5] 1300-71-6 [6] 71975-58-1 [7]									
85		2,4,5-trichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-017-00-X	202-467-8	95-95-4									
86		2,4,6-trichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-018-00-5	201-795-9	88-06-2									
87		chlorocresol; 4-chloro-m-cresol; 4-chloro-3-methylphenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-014-00-3	200-431-6	59-50-7									
88		4-nitrophenol; p-nitrophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		609-015-00-2	202-811-7	100-02-7									
89		pentachlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-002-00-8	201-778-6	87-86-5									
90		2-chloronaphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			202-079-9	91-58-7									
91		2-methyl naphthalene				868.924	mg/kg		647.967	mg/kg	0.0648 %	✓	
			202-078-3	91-57-6									
92		bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP				2.685	mg/kg		2.002	mg/kg	0.0002 %	✓	
		607-317-00-9	204-211-0	117-81-7									
93		BBP; benzyl butyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		607-430-00-3	201-622-7	85-68-7									
94		dibutyl phthalate; DBP				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		607-318-00-4	201-557-4	84-74-2									
95		di-n-octyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
			204-214-7	117-84-0									

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
96		diethyl phthalate		201-550-6	84-66-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
97		dimethyl phthalate		205-011-6	131-11-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
98		2,4-dinitrotoluene; [1] dinitrotoluene [2]	609-007-00-9	204-450-0 [1] 246-836-1 [2]	121-14-2 [1] 25321-14-6 [2]		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
99		2,6-dinitrotoluene	609-049-00-8	210-106-0	606-20-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
100		4-bromophenylphenylether		202-952-4	101-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
101		4-chloroaniline	612-137-00-9	203-401-0	106-47-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
102		4-chlorophenylphenylether		230-281-7	7005-72-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
103		azobenzene	611-001-00-6	203-102-5	103-33-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
104		bis(2-chloroethoxy)methane		203-920-2	111-91-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
105		bis(2-chloroethyl) ether	603-029-00-2	203-870-1	111-44-4		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
106		carbazole		201-696-0	86-74-8		111.642	mg/kg		83.253	mg/kg	0.00833 %	✓	
107		dibenzofuran		205-071-3	132-64-9		449.568	mg/kg		335.248	mg/kg	0.0335 %	✓	
108		hexachlorocyclopentadiene	602-078-00-7	201-029-3	77-47-4		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
109		hexachloroethane		200-666-4	67-72-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
110		3,5,5-trimethylcyclohex-2-enone; isophorone	606-012-00-8	201-126-0	78-59-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
111		nitrosodipropylamine	612-098-00-8	210-698-0	621-64-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
112		nitrobenzene	609-003-00-7	202-716-0	98-95-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
113		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		3800	mg/kg		2833.706	mg/kg	0.283 %	✓	
114		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]	602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]		0.017	mg/kg		0.0127	mg/kg	0.00000127 %	✓	
115		cumene; [1] propylbenzene [2]	601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]		1.18	mg/kg		0.88	mg/kg	0.000088 %	✓	
116		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]	602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
117		m-cresol; [1] o-cresol; [2] p-cresol; [3] mix-cresol [4]	604-004-00-9	203-577-9 [1] 202-423-8 [2] 203-398-6 [3] 215-293-2 [4]	108-39-4 [1] 95-48-7 [2] 106-44-5 [3] 1319-77-3 [4]		17.947	mg/kg		13.383	mg/kg	0.00134 %	✓	
118		o-nitroaniline; [1] m-nitroaniline; [2] p-nitroaniline [3]	612-012-00-9	201-855-4 [1] 202-729-1 [2] 202-810-1 [3]	88-74-4 [1] 99-09-2 [2] 100-01-6 [3]		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
											Total:	9.735 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS03-11/08/2022-4.10m

Unknown. Chemistry data not provided.
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS03-11/08/2022-4.10m
Moisture content:
30.8%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 30.8% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
								Total:	0%		

Key

User supplied data

Classification of sample: WS04-11/08/2022-0.30m

Unknown. Chemistry data not provided.
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS04-11/08/2022-0.30m
Moisture content:
31.9%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 31.9% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
								Total:	0%		

Key

User supplied data

Classification of sample: WS04-11/08/2022-1.80m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS04-11/08/2022-1.80m
Moisture content:
36.3%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.313%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.313%)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 1; H224 "Extremely flammable liquid and vapour."

Because of determinand:

1,1-dichloroethylene; vinylidene chloride: (conc.: 1.1e-06%)

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 0.00001%)
1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]: (conc.: 1.39e-06%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.313%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 7.34e-07%)

Determinands

Moisture content: 36.3% Dry Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		57.6 mg/kg	1.32	55.797 mg/kg	0.00558 %	✓	
2		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
3		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				49 mg/kg	2.27	81.607 mg/kg	0.00816 %	✓	
4		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		56 mg/kg	1.126	46.258 mg/kg	0.00463 %	✓	
5		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	<5 mg/kg	1.56	<7.799 mg/kg	<0.0005 %		<LOD
6		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
7		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		34.2 mg/kg	2.976	74.68 mg/kg	0.00747 %	✓	
8		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
9		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		29 mg/kg	2.774	59.024 mg/kg	0.0059 %	✓	
10		TPH (C6 to C40) petroleum group			TPH		4268 mg/kg		3131.328 mg/kg	0.313 %	✓	
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
12		benzene	601-020-00-8	200-753-7	71-43-2		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
13		toluene	601-021-00-3	203-625-9	108-88-3		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
14		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
15		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.011 mg/kg		<0.011 mg/kg	<0.0000011 %		<LOD
16		pH			PH		8.18 pH		8.18 pH	8.18 pH		
17		naphthalene	601-052-00-2	202-049-5	91-20-3		5.557 mg/kg		4.077 mg/kg	0.000408 %	✓	
18		acenaphthylene		205-917-1	208-96-8		20.854 mg/kg		15.3 mg/kg	0.00153 %	✓	
19		acenaphthene		201-469-6	83-32-9		1.929 mg/kg		1.415 mg/kg	0.000142 %	✓	
20		fluorene		201-695-5	86-73-7		20.186 mg/kg		14.81 mg/kg	0.00148 %	✓	
21		phenanthrene		201-581-5	85-01-8		49.649 mg/kg		36.426 mg/kg	0.00364 %	✓	
22		anthracene		204-371-1	120-12-7		30.355 mg/kg		22.271 mg/kg	0.00223 %	✓	
23		fluoranthene		205-912-4	206-44-0		24.982 mg/kg		18.329 mg/kg	0.00183 %	✓	
24		pyrene		204-927-3	129-00-0		15.861 mg/kg		11.637 mg/kg	0.00116 %	✓	
25		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		12.542 mg/kg		9.202 mg/kg	0.00092 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
26		chrysene				9.183	mg/kg		6.737	mg/kg	0.000674 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				4.152	mg/kg		3.046	mg/kg	0.000305 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				1.615	mg/kg		1.185	mg/kg	0.000118 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				2.834	mg/kg		2.079	mg/kg	0.000208 %	✓	
		601-032-00-3	200-028-5	50-32-8									
30	●	indeno[123-cd]pyrene				1.13	mg/kg		0.829	mg/kg	0.0000829 %	✓	
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				0.24	mg/kg		0.176	mg/kg	0.0000176 %	✓	
		601-041-00-2	200-181-8	53-70-3									
32	●	benzo[ghi]perylene				0.8	mg/kg		0.587	mg/kg	0.0000587 %	✓	
			205-883-8	191-24-2									
33		phenol				8.659	mg/kg		6.353	mg/kg	0.000635 %	✓	
		604-001-00-2	203-632-7	108-95-2									
34	●	1,1-dichloroethane and 1,2-dichloroethane (combined)				0.207	mg/kg		0.152	mg/kg	0.0000152 %	✓	
			203-458-1, 200-863-5	107-06-2, 75-34-3									
35		tetrachloroethylene				0.041	mg/kg		0.0301	mg/kg	0.00000301 %	✓	
		602-028-00-4	204-825-9	127-18-4									
36		carbon tetrachloride; tetrachloromethane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-008-00-5	200-262-8	56-23-5									
37		trichloroethylene; trichloroethene				0.042	mg/kg		0.0308	mg/kg	0.00000308 %	✓	
		602-027-00-9	201-167-4	79-01-6									
38		vinyl chloride; chloroethylene				0.01	mg/kg		0.0073	mg/kg	0.000000734 %	✓	
		602-023-00-7	200-831-0	75-01-4									
39		hexachlorobenzene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-065-00-6	204-273-9	118-74-1									
40	●	dichlorodifluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-893-9	75-71-8									
41		chloromethane; methyl chloride				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-001-00-7	200-817-4	74-87-3									
42		bromomethane; methylbromide				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		602-002-00-2	200-813-2	74-83-9									
43		chloroethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-009-00-0	200-830-5	75-00-3									
44	●	trichlorofluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-892-3	75-69-4									
45		1,1-dichloroethylene; vinylidene chloride				0.015	mg/kg		0.011	mg/kg	0.0000011 %	✓	
		602-025-00-8	200-864-0	75-35-4									
46		dichloromethane; methylene chloride				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-004-00-3	200-838-9	75-09-2									
47	●	2,2-dichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			209-832-0	594-20-7									
48	●	bromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-826-3	74-97-5									
49		chloroform; trichloromethane				0.014	mg/kg		0.0103	mg/kg	0.00000103 %	✓	
		602-006-00-4	200-663-8	67-66-3									
50		1,1,1-trichloroethane; methyl chloroform				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-013-00-2	200-756-3	71-55-6									
51		1,1-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-031-00-0	209-253-3	563-58-6									
52		1,2-dichloropropane; propylene dichloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-020-00-0	201-152-2	78-87-5									
53		dibromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-003-00-8	200-824-2	74-95-3									
54	●	bromodichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-856-7	75-27-4									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
55		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
56		trans-1,3-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			431-460-4	10061-02-6									
57		1,1,2-trichloroethane				0.011	mg/kg		0.008	mg/kg	0.000000807 %	✓	
		602-014-00-8	201-166-9	79-00-5									
58		1,3-dichloropropane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			205-531-3	142-28-9									
59		dibromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			204-704-0	124-48-1									
60		1,2-dibromoethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-010-00-6	203-444-5	106-93-4									
61		chlorobenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-033-00-1	203-628-5	108-90-7									
62		1,1,1,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			211-135-1	630-20-6									
63		bromoform; tribromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-007-00-X	200-854-6	75-25-2									
64		1,1,2,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-015-00-3	201-197-8	79-34-5									
65		bromobenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-060-00-9	203-623-8	108-86-1									
66		1,2,3-trichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4									
67		mesitylene; 1,3,5-trimethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-025-00-5	203-604-4	108-67-8									
68		tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
69		1,2,4-trimethylbenzene				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		601-043-00-3	202-436-9	95-63-6									
70		sec-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			205-227-0	135-98-8									
71		4-isopropyltoluene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			202-796-7	99-87-6									
72		1,3-dichlorbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-067-00-7	208-792-1	541-73-1									
73		1,4-dichlorobenzene; p-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-035-00-2	203-400-5	106-46-7									
74		n-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			203-209-7	104-51-8									
75		1,2-dichlorobenzene; o-dichlorobenzene				0.005	mg/kg		0.0036	mg/kg	0.000000367 %	✓	
		602-034-00-7	202-425-9	95-50-1									
76		1,2-dibromo-3-chloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-021-00-6	202-479-3	96-12-8									
77		1,2,4-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-087-00-6	204-428-0	120-82-1									
78		hexachlorobutadiene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			201-765-5	87-68-3									
79		1,2,3-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
			201-757-1	87-61-6									
80		styrene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-026-00-0	202-851-5	100-42-5									
81		2-chlorophenol; [1] 4-chlorophenol; [2] 3-chlorophenol; [3] chlorophenol [4]				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-008-00-0	202-433-2 [1] 203-402-6 [2] 203-582-6 [3] 246-691-4 [4]	95-57-8 [1] 106-48-9 [2] 108-43-0 [3] 25167-80-0 [4]									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
82		2-nitrophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-857-5	88-75-5									
83		2,4-dichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-011-00-7	204-429-6	120-83-2									
84		3,4-xylenol; [1] 2,5-xylenol; [2] 2,4-xylenol; [3] 2,3-xylenol; [4] 2,6-xylenol; [5] xylenol; [6] 2,4(or 2,5)-xylenol [7]				8.129	mg/kg		5.964	mg/kg	0.000596 %	✓	
		604-006-00-X	202-439-5 [1] 202-461-5 [2] 203-321-6 [3] 208-395-3 [4] 209-400-1 [5] 215-089-3 [6] 276-245-4 [7]	95-65-8 [1] 95-87-4 [2] 105-67-9 [3] 526-75-0 [4] 576-26-1 [5] 1300-71-6 [6] 71975-58-1 [7]									
85		2,4,5-trichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-017-00-X	202-467-8	95-95-4									
86		2,4,6-trichlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-018-00-5	201-795-9	88-06-2									
87		chlorocresol; 4-chloro-m-cresol; 4-chloro-3-methylphenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-014-00-3	200-431-6	59-50-7									
88		4-nitrophenol; p-nitrophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		609-015-00-2	202-811-7	100-02-7									
89		pentachlorophenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-002-00-8	201-778-6	87-86-5									
90		2-chloronaphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			202-079-9	91-58-7									
91		2-methyl naphthalene				8.412	mg/kg		6.172	mg/kg	0.000617 %	✓	
			202-078-3	91-57-6									
92		bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		607-317-00-9	204-211-0	117-81-7									
93		BBP; benzyl butyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		607-430-00-3	201-622-7	85-68-7									
94		dibutyl phthalate; DBP				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		607-318-00-4	201-557-4	84-74-2									
95		di-n-octyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
			204-214-7	117-84-0									
96		diethyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
			201-550-6	84-66-2									
97		dimethyl phthalate				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
			205-011-6	131-11-3									
98		2,4-dinitrotoluene; [1] dinitrotoluene [2]				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		609-007-00-9	204-450-0 [1] 246-836-1 [2]	121-14-2 [1] 25321-14-6 [2]									
99		2,6-dinitrotoluene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		609-049-00-8	210-106-0	606-20-2									
100		4-bromophenylphenylether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			202-952-4	101-55-3									
101		4-chloroaniline				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		612-137-00-9	203-401-0	106-47-8									
102		4-chlorophenylphenylether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			230-281-7	7005-72-3									
103		azobenzene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		611-001-00-6	203-102-5	103-33-3									
104		bis(2-chloroethoxy)methane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			203-920-2	111-91-1									
105		bis(2-chloroethyl) ether				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		603-029-00-2	203-870-1	111-44-4									
106		carbazole				7.758	mg/kg		5.692	mg/kg	0.000569 %	✓	
			201-696-0	86-74-8									
107		dibenzofuran				8.468	mg/kg		6.213	mg/kg	0.000621 %	✓	
			205-071-3	132-64-9									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
108		hexachlorocyclopentadiene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-078-00-7	201-029-3	77-47-4									
109		hexachloroethane				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			200-666-4	67-72-1									
110		3,5,5-trimethylcyclohex-2-enone; isophorone				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		606-012-00-8	201-126-0	78-59-1									
111		nitrosodipropylamine				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		612-098-00-8	210-698-0	621-64-7									
112		nitrobenzene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		609-003-00-7	202-716-0	98-95-3									
113		sulfur { sulfur }				600	mg/kg		440.205	mg/kg	0.044 %	✓	
		016-094-00-1	231-722-6	7704-34-9									
114		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]				0.019	mg/kg		0.0139	mg/kg	0.00000139 %	✓	
		602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]									
115		cumene; [1] propylbenzene [2]				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]									
116		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]									
117		m-cresol; [1] o-cresol; [2] p-cresol; [3] mix-cresol [4]				21.454	mg/kg		15.74	mg/kg	0.00157 %	✓	
		604-004-00-9	203-577-9 [1] 202-423-8 [2] 203-398-6 [3] 215-293-2 [4]	108-39-4 [1] 95-48-7 [2] 106-44-5 [3] 1319-77-3 [4]									
118		o-nitroaniline; [1] m-nitroaniline; [2] p-nitroaniline [3]				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
		612-012-00-9	201-855-4 [1] 202-729-1 [2] 202-810-1 [3]	88-74-4 [1] 99-09-2 [2] 100-01-6 [3]									
										Total:	0.41 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS05-11/08/2022-0.90m

Unknown. Chemistry data not provided.
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS05-11/08/2022-0.90m
Moisture content:
53.7%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 53.7% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
								Total:	0%		

Key

User supplied data

Classification of sample: WS05-11/08/2022-3.00m

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS05-11/08/2022-3.00m
Moisture content:
27.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 2.27e-06%)

Determinands

Moisture content: 27.6% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6 mg/kg	1.32	6.208 mg/kg	0.000621 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				44.1 mg/kg	2.27	78.454 mg/kg	0.00785 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6 mg/kg	1.126	5.294 mg/kg	0.000529 %	✓	
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	13 mg/kg	1.56	15.892 mg/kg	0.00102 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
7	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18.5 mg/kg	2.976	43.151 mg/kg	0.00432 %	✓	
8	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		44 mg/kg	2.774	95.66 mg/kg	0.00957 %	✓	
10	TPH (C6 to C40) petroleum group			TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
11	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
12	benzene	601-020-00-8	200-753-7	71-43-2		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
13	toluene	601-021-00-3	203-625-9	108-88-3		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
14		ethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
15		xylene				<0.011	mg/kg		<0.011	mg/kg	<0.0000011 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
16		pH				8.8	pH		8.8	pH	8.8 pH		
				PH									
17		naphthalene				0.06	mg/kg		0.047	mg/kg	0.0000047 %	✓	
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				0.13	mg/kg		0.102	mg/kg	0.0000102 %	✓	
			205-917-1	208-96-8									
19		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
20		fluorene				0.08	mg/kg		0.0627	mg/kg	0.00000627 %	✓	
			201-695-5	86-73-7									
21		phenanthrene				0.17	mg/kg		0.133	mg/kg	0.0000133 %	✓	
			201-581-5	85-01-8									
22		anthracene				0.09	mg/kg		0.0705	mg/kg	0.00000705 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				0.09	mg/kg		0.0705	mg/kg	0.00000705 %	✓	
			205-912-4	206-44-0									
24		pyrene				0.06	mg/kg		0.047	mg/kg	0.0000047 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				0.09	mg/kg		0.0705	mg/kg	0.00000705 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				0.04	mg/kg		0.0313	mg/kg	0.00000313 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
33		1,1-dichloroethane and 1,2-dichloroethane (combined)				0.029	mg/kg		0.0227	mg/kg	0.00000227 %	✓	
			203-458-1, 200-863-5	107-06-2, 75-34-3									
34		tetrachloroethylene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-028-00-4	204-825-9	127-18-4									
35		carbon tetrachloride; tetrachloromethane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-008-00-5	200-262-8	56-23-5									
36		trichloroethylene; trichloroethene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-027-00-9	201-167-4	79-01-6									
37		vinyl chloride; chloroethylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-023-00-7	200-831-0	75-01-4									
38		dichlorodifluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-893-9	75-71-8									
39		chloromethane; methyl chloride				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-001-00-7	200-817-4	74-87-3									
40		bromomethane; methylbromide				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		602-002-00-2	200-813-2	74-83-9									
41		chloroethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-009-00-0	200-830-5	75-00-3									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
42		trichlorofluoromethane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
			200-892-3	75-69-4									
43		1,1-dichloroethylene; vinylidene chloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-025-00-8	200-864-0	75-35-4									
44		dichloromethane; methylene chloride				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-004-00-3	200-838-9	75-09-2									
45		2,2-dichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			209-832-0	594-20-7									
46		bromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-826-3	74-97-5									
47		chloroform; trichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-006-00-4	200-663-8	67-66-3									
48		1,1,1-trichloroethane; methyl chloroform				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-013-00-2	200-756-3	71-55-6									
49		1,1-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-031-00-0	209-253-3	563-58-6									
50		1,2-dichloropropane; propylene dichloride				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-020-00-0	201-152-2	78-87-5									
51		dibromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-003-00-8	200-824-2	74-95-3									
52		bromodichloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			200-856-7	75-27-4									
53		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]									
54		trans-1,3-dichloropropene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			431-460-4	10061-02-6									
55		1,1,2-trichloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-014-00-8	201-166-9	79-00-5									
56		1,3-dichloropropane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			205-531-3	142-28-9									
57		dibromochloromethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			204-704-0	124-48-1									
58		1,2-dibromoethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-010-00-6	203-444-5	106-93-4									
59		chlorobenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-033-00-1	203-628-5	108-90-7									
60		1,1,1,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
			211-135-1	630-20-6									
61		bromoform; tribromomethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-007-00-X	200-854-6	75-25-2									
62		1,1,2,2-tetrachloroethane				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-015-00-3	201-197-8	79-34-5									
63		bromobenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		602-060-00-9	203-623-8	108-86-1									
64		1,2,3-trichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4									
65		mesitylene; 1,3,5-trimethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-025-00-5	203-604-4	108-67-8									
66		tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
67		1,2,4-trimethylbenzene				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		601-043-00-3	202-436-9	95-63-6									
68		sec-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			205-227-0	135-98-8									
69		4-isopropyltoluene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			202-796-7	99-87-6									
70		1,3-dichlorbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-067-00-7	208-792-1	541-73-1									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
71		1,4-dichlorobenzene; p-dichlorobenzene				0.01	mg/kg		0.0078	mg/kg	0.000000784 %	✓	
		602-035-00-2	203-400-5	106-46-7									
72	●	n-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			203-209-7	104-51-8									
73		1,2-dichlorobenzene; o-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-034-00-7	202-425-9	95-50-1									
74		1,2-dibromo-3-chloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-021-00-6	202-479-3	96-12-8									
75		1,2,4-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-087-00-6	204-428-0	120-82-1									
76	●	hexachlorobutadiene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			201-765-5	87-68-3									
77	●	1,2,3-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
			201-757-1	87-61-6									
78		styrene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-026-00-0	202-851-5	100-42-5									
79		sulfur { sulfur }				1000	mg/kg		783.699	mg/kg	0.0784 %	✓	
		016-094-00-1	231-722-6	7704-34-9									
80		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]									
81		cumene; [1] propylbenzene [2]				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]									
82		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]									
										Total:	0.108 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Potentially Hazardous result
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS06-11/08/2022-0.10m

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS06-11/08/2022-0.10m
Moisture content:
14.5%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 or 17 05 03 * (Soil and stones other than those mentioned in 17 05 03 or Soil and stones containing hazardous substances)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 2.62e-07%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0603%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 4.37e-07%)

Determinands

Moisture content: 14.5% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		21.4 mg/kg	1.32	24.677 mg/kg	0.00247 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<**LOD**
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				24.4 mg/kg	2.27	48.374 mg/kg	0.00484 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		41 mg/kg	1.126	40.316 mg/kg	0.00403 %	✓	
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	74 mg/kg	1.56	100.809 mg/kg	0.00646 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<**LOD**
7	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20.8 mg/kg	2.976	54.067 mg/kg	0.00541 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
8		selenium { nickel selenate }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
		028-031-00-5	239-125-2	15060-62-5									
9		zinc { zinc chromate }				52	mg/kg	2.774	125.987	mg/kg	0.0126 %	✓	
		024-007-00-3	236-878-9	13530-65-9									
10		TPH (C6 to C40) petroleum group				691	mg/kg		603.493	mg/kg	0.0603 %	✓	
				TPH									
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
12		benzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
13		toluene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
14		ethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
15		xylene				<0.011	mg/kg		<0.011	mg/kg	<0.0000011 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
16		pH				8.63	pH		8.63	pH	8.63 pH		
				PH									
17		naphthalene				0.26	mg/kg		0.227	mg/kg	0.0000227 %	✓	
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				0.49	mg/kg		0.428	mg/kg	0.0000428 %	✓	
			205-917-1	208-96-8									
19		acenaphthene				0.17	mg/kg		0.148	mg/kg	0.0000148 %	✓	
			201-469-6	83-32-9									
20		fluorene				0.29	mg/kg		0.253	mg/kg	0.0000253 %	✓	
			201-695-5	86-73-7									
21		phenanthrene				3.44	mg/kg		3.004	mg/kg	0.0003 %	✓	
			201-581-5	85-01-8									
22		anthracene				1.99	mg/kg		1.738	mg/kg	0.000174 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				6.84	mg/kg		5.974	mg/kg	0.000597 %	✓	
			205-912-4	206-44-0									
24		pyrene				5.19	mg/kg		4.533	mg/kg	0.000453 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				3.48	mg/kg		3.039	mg/kg	0.000304 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				3.39	mg/kg		2.961	mg/kg	0.000296 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				3.75	mg/kg		3.275	mg/kg	0.000328 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				1.46	mg/kg		1.275	mg/kg	0.000128 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				2.29	mg/kg		2	mg/kg	0.0002 %	✓	
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				1.49	mg/kg		1.301	mg/kg	0.00013 %	✓	
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				0.3	mg/kg		0.262	mg/kg	0.0000262 %	✓	
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				1.29	mg/kg		1.127	mg/kg	0.000113 %	✓	
			205-883-8	191-24-2									
33		1,1-dichloroethane and 1,2-dichloroethane (combined)				0.003	mg/kg		0.0026	mg/kg	0.000000262 %	✓	
			203-458-1, 200-863-5	107-06-2, 75-34-3									
34		tetrachloroethylene				0.134	mg/kg		0.117	mg/kg	0.0000117 %	✓	
		602-028-00-4	204-825-9	127-18-4									

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
35		carbon tetrachloride; tetrachloromethane	602-008-00-5	200-262-8	56-23-5		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
36		trichloroethylene; trichloroethene	602-027-00-9	201-167-4	79-01-6		0.007 mg/kg		0.0061 mg/kg	0.000000611 %	✓	
37		vinyl chloride; chloroethylene	602-023-00-7	200-831-0	75-01-4		0.005 mg/kg		0.0043 mg/kg	0.000000437 %	✓	
38		dichlorodifluoromethane		200-893-9	75-71-8		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
39		chloromethane; methyl chloride	602-001-00-7	200-817-4	74-87-3		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
40		bromomethane; methylbromide	602-002-00-2	200-813-2	74-83-9		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
41		chloroethane	602-009-00-0	200-830-5	75-00-3		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
42		trichlorofluoromethane		200-892-3	75-69-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
43		1,1-dichloroethylene; vinylidene chloride	602-025-00-8	200-864-0	75-35-4		<0.006 mg/kg		<0.006 mg/kg	<0.0000006 %		<LOD
44		dichloromethane; methylene chloride	602-004-00-3	200-838-9	75-09-2		<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
45		2,2-dichloropropane		209-832-0	594-20-7		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
46		bromochloromethane		200-826-3	74-97-5		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
47		chloroform; trichloromethane	602-006-00-4	200-663-8	67-66-3		0.008 mg/kg		0.0069 mg/kg	0.000000699 %	✓	
48		1,1,1-trichloroethane; methyl chloroform	602-013-00-2	200-756-3	71-55-6		0.056 mg/kg		0.0489 mg/kg	0.00000489 %	✓	
49		1,1-dichloropropene	602-031-00-0	209-253-3	563-58-6		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
50		1,2-dichloropropane; propylene dichloride	602-020-00-0	201-152-2	78-87-5		<0.006 mg/kg		<0.006 mg/kg	<0.0000006 %		<LOD
51		dibromomethane	602-003-00-8	200-824-2	74-95-3		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
52		bromodichloromethane		200-856-7	75-27-4		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
53		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]	602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
54		trans-1,3-dichloropropene		431-460-4	10061-02-6		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
55		1,1,2-trichloroethane	602-014-00-8	201-166-9	79-00-5		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
56		1,3-dichloropropane		205-531-3	142-28-9		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
57		dibromochloromethane		204-704-0	124-48-1		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
58		1,2-dibromoethane	602-010-00-6	203-444-5	106-93-4		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
59		chlorobenzene	602-033-00-1	203-628-5	108-90-7		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
60		1,1,1,2-tetrachloroethane		211-135-1	630-20-6		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
61		bromoform; tribromomethane	602-007-00-X	200-854-6	75-25-2		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
62		1,1,2,2-tetrachloroethane	602-015-00-3	201-197-8	79-34-5		<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
63		bromobenzene	602-060-00-9	203-623-8	108-86-1		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
64		1,2,3-trichloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4									
65		mesitylene; 1,3,5-trimethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-025-00-5	203-604-4	108-67-8									
66	•	tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
67		1,2,4-trimethylbenzene				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		601-043-00-3	202-436-9	95-63-6									
68	•	sec-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			205-227-0	135-98-8									
69	•	4-isopropyltoluene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			202-796-7	99-87-6									
70		1,3-dichlorbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-067-00-7	208-792-1	541-73-1									
71		1,4-dichlorobenzene; p-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-035-00-2	203-400-5	106-46-7									
72	•	n-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			203-209-7	104-51-8									
73		1,2-dichlorobenzene; o-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-034-00-7	202-425-9	95-50-1									
74		1,2-dibromo-3-chloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-021-00-6	202-479-3	96-12-8									
75		1,2,4-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-087-00-6	204-428-0	120-82-1									
76	•	hexachlorobutadiene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			201-765-5	87-68-3									
77	•	1,2,3-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
			201-757-1	87-61-6									
78		styrene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-026-00-0	202-851-5	100-42-5									
79		sulfur { sulfur }				900	mg/kg		786.026	mg/kg	0.0786 %	✓	
		016-094-00-1	231-722-6	7704-34-9									
80		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]									
81		cumene; [1] propylbenzene [2]				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]									
82		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]									
										Total:	0.178 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Potentially Hazardous result
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS06-11/08/2022-1.30m

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS06-11/08/2022-1.30m
Moisture content:
51.5%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH: (conc.: 12.71 pH)

Hazard properties (substances considered hazardous until shown otherwise)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

toluene: (conc.: 3.96e-07%)
1,1-dichloroethane and 1,2-dichloroethane (combined): (conc.: 1.12e-06%)

Determinands

Moisture content: 51.5% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14.3 mg/kg	1.32	12.462 mg/kg	0.00125 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
3	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				32.9 mg/kg	2.27	49.296 mg/kg	0.00493 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		49 mg/kg	1.126	36.415 mg/kg	0.00364 %	✓	
5	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	9 mg/kg	1.56	9.266 mg/kg	0.000594 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
7	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		33.4 mg/kg	2.976	65.615 mg/kg	0.00656 %	✓	
8	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		26 mg/kg	2.774	47.609 mg/kg	0.00476 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
10		TPH (C6 to C40) petroleum group		TPH		<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
12		benzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
13		toluene				0.006	mg/kg		0.0039	mg/kg	0.000000396 %	✓	
		601-021-00-3	203-625-9	108-88-3									
14		ethylbenzene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
15		xylene				<0.011	mg/kg		<0.011	mg/kg	<0.0000011 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
16		pH		PH		12.71	pH		12.71	pH	12.71 pH		
17		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
18		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
19		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
20		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
21		phenanthrene				0.14	mg/kg		0.0924	mg/kg	0.00000924 %	✓	
			201-581-5	85-01-8									
22		anthracene				0.06	mg/kg		0.0396	mg/kg	0.00000396 %	✓	
			204-371-1	120-12-7									
23		fluoranthene				0.14	mg/kg		0.0924	mg/kg	0.00000924 %	✓	
			205-912-4	206-44-0									
24		pyrene				0.14	mg/kg		0.0924	mg/kg	0.00000924 %	✓	
			204-927-3	129-00-0									
25		benzo[a]anthracene				0.15	mg/kg		0.099	mg/kg	0.0000099 %	✓	
		601-033-00-9	200-280-6	56-55-3									
26		chrysene				0.09	mg/kg		0.0594	mg/kg	0.00000594 %	✓	
		601-048-00-0	205-923-4	218-01-9									
27		benzo[b]fluoranthene				0.1	mg/kg		0.066	mg/kg	0.0000066 %	✓	
		601-034-00-4	205-911-9	205-99-2									
28		benzo[k]fluoranthene				0.04	mg/kg		0.0264	mg/kg	0.00000264 %	✓	
		601-036-00-5	205-916-6	207-08-9									
29		benzo[a]pyrene; benzo[def]chrysene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
30		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
31		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
32		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
33		1,1-dichloroethane and 1,2-dichloroethane (combined)				0.017	mg/kg		0.0112	mg/kg	0.00000112 %	✓	
			203-458-1, 200-863-5	107-06-2, 75-34-3									
34		tetrachloroethylene				0.006	mg/kg		0.0039	mg/kg	0.000000396 %	✓	
		602-028-00-4	204-825-9	127-18-4									
35		carbon tetrachloride; tetrachloromethane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-008-00-5	200-262-8	56-23-5									
36		trichloroethylene; trichloroethene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		602-027-00-9	201-167-4	79-01-6									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
37		vinyl chloride; chloroethylene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
		602-023-00-7	200-831-0	75-01-4							
38		dichlorodifluoromethane				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
			200-893-9	75-71-8							
39		chloromethane; methyl chloride				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-001-00-7	200-817-4	74-87-3							
40		bromomethane; methylbromide				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		602-002-00-2	200-813-2	74-83-9							
41		chloroethane				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
		602-009-00-0	200-830-5	75-00-3							
42		trichlorofluoromethane				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
			200-892-3	75-69-4							
43		1,1-dichloroethylene; vinylidene chloride				<0.006 mg/kg		<0.006 mg/kg	<0.0000006 %		<LOD
		602-025-00-8	200-864-0	75-35-4							
44		dichloromethane; methylene chloride				<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
		602-004-00-3	200-838-9	75-09-2							
45		2,2-dichloropropane				<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
			209-832-0	594-20-7							
46		bromochloromethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
			200-826-3	74-97-5							
47		chloroform; trichloromethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-006-00-4	200-663-8	67-66-3							
48		1,1,1-trichloroethane; methyl chloroform				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-013-00-2	200-756-3	71-55-6							
49		1,1-dichloropropene				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-031-00-0	209-253-3	563-58-6							
50		1,2-dichloropropane; propylene dichloride				<0.006 mg/kg		<0.006 mg/kg	<0.0000006 %		<LOD
		602-020-00-0	201-152-2	78-87-5							
51		dibromomethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-003-00-8	200-824-2	74-95-3							
52		bromodichloromethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
			200-856-7	75-27-4							
53		1,3-dichloropropene; [1] (Z)-1,3-dichloropropene [2]				<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
		602-030-00-5	208-826-5 [1] 233-195-8 [2]	542-75-6 [1] 10061-01-5 [2]							
54		trans-1,3-dichloropropene				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
			431-460-4	10061-02-6							
55		1,1,2-trichloroethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-014-00-8	201-166-9	79-00-5							
56		1,3-dichloropropane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
			205-531-3	142-28-9							
57		dibromochloromethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
			204-704-0	124-48-1							
58		1,2-dibromoethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-010-00-6	203-444-5	106-93-4							
59		chlorobenzene				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-033-00-1	203-628-5	108-90-7							
60		1,1,1,2-tetrachloroethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
			211-135-1	630-20-6							
61		bromoform; tribromomethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-007-00-X	200-854-6	75-25-2							
62		1,1,2,2-tetrachloroethane				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		602-015-00-3	201-197-8	79-34-5							
63		bromobenzene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
		602-060-00-9	203-623-8	108-86-1							
64		1,2,3-trichloropropane				<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
		602-062-00-X	202-486-1	96-18-4							
65		mesitylene; 1,3,5-trimethylbenzene				<0.003 mg/kg		<0.003 mg/kg	<0.0000003 %		<LOD
		601-025-00-5	203-604-4	108-67-8							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
66		tert-butylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
			202-632-4	98-06-6									
67		1,2,4-trimethylbenzene				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		601-043-00-3	202-436-9	95-63-6									
68		sec-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			205-227-0	135-98-8									
69		4-isopropyltoluene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			202-796-7	99-87-6									
70		1,3-dichlorbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-067-00-7	208-792-1	541-73-1									
71		1,4-dichlorobenzene; p-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-035-00-2	203-400-5	106-46-7									
72		n-butylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			203-209-7	104-51-8									
73		1,2-dichlorobenzene; o-dichlorobenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-034-00-7	202-425-9	95-50-1									
74		1,2-dibromo-3-chloropropane				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		602-021-00-6	202-479-3	96-12-8									
75		1,2,4-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		602-087-00-6	204-428-0	120-82-1									
76		hexachlorobutadiene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
			201-765-5	87-68-3									
77		1,2,3-trichlorobenzene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
			201-757-1	87-61-6									
78		styrene				<0.003	mg/kg		<0.003	mg/kg	<0.0000003 %		<LOD
		601-026-00-0	202-851-5	100-42-5									
79		1,2-dichloroethylene; [1] cis-dichloroethylene; [2] trans-dichloroethylene [3]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-026-00-3	208-750-2 [1] 205-859-7 [2] 205-860-2 [3]	540-59-0 [1] 156-59-2 [2] 156-60-5 [3]									
80		cumene; [1] propylbenzene [2]				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
		601-024-00-X	202-704-5 [1] 203-132-9 [2]	98-82-8 [1] 103-65-1 [2]									
81		2-chlorotoluene; [1] 3-chlorotoluene; [2] 4-chlorotoluene; [3] chlorotoluene [4]				<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
		602-040-00-X	202-424-3 [1] 203-580-5 [2] 203-397-0 [3] 246-698-2 [4]	95-49-8 [1] 108-41-8 [2] 106-43-4 [3] 25168-05-2 [4]									
										Total:	0.0273 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Potentially Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS07-11/08/2022-3.30m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS07-11/08/2022-3.30m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.34 pH		8.34 pH	8.34 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Appendix A: Classifier defined and non GB MCL determinands

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **1,1-dichloroethane and 1,2-dichloroethane (combined)** (EC Number: 203-458-1, 200-863-5, CAS Number: 107-06-2, 75-34-3)

Description/Comments: Combines the hazard statements and risk phrases for 1,1-dichloroethane and 1,2-dichloroethane
Data source: N/a
Data source date: 14 Oct 2016
Hazard Statements: Flam. Liq. 2; H225 , Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 1B; H350 , Aquatic Chronic 3; H412

- **dichlorodifluoromethane** (EC Number: 200-893-9, CAS Number: 75-71-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Aquatic Chronic 3; H412 , Ozone 1; H420 , Press. Gas; H280

- **trichlorofluoromethane** (EC Number: 200-892-3, CAS Number: 75-69-4)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H312 , Ozone 1; H420

- **2,2-dichloropropane** (EC Number: 209-832-0, CAS Number: 594-20-7)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Acute Tox. 4; H302 , Acute Tox. 4; H312 , Eye Irrit. 2; H319

- **bromochloromethane** (EC Number: 200-826-3, CAS Number: 74-97-5)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H312 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Ozone 1; H420

- **bromodichloromethane** (EC Number: 200-856-7, CAS Number: 75-27-4)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 1A; H360

- **trans-1,3-dichloropropene** (EC Number: 431-460-4, CAS Number: 10061-02-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Acute Tox. 3; H301 , Asp. Tox. 1; H304 , Acute Tox. 3; H311 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , Aquatic Chronic 1; H410

- **1,3-dichloropropane** (EC Number: 205-531-3, CAS Number: 142-28-9)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H332 , Flam. Liq. 2; H225 , Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335

dibromochloromethane (EC Number: 204-704-0, CAS Number: 124-48-1)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , STOT SE 3; H336 , Muta. 2; H341 , Aquatic Chronic 2; H411

1,1,1,2-tetrachloroethane (EC Number: 211-135-1, CAS Number: 630-20-6)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Eye Dam. 1; H318 , Acute Tox. 4; H332 , Carc. 2; H351 , Acute Tox. 4; H312 , Aquatic Chronic 3; H412 , Skin Irrit. 2; H315

tert-butylbenzene (EC Number: 202-632-4, CAS Number: 98-06-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , Acute Tox. 4; H332 , STOT SE 3; H335 , Asp. Tox. 1; H304 , Aquatic Chronic 2; H411

sec-butylbenzene (EC Number: 205-227-0, CAS Number: 135-98-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Chronic 2; H411

4-isopropyltoluene (EC Number: 202-796-7, CAS Number: 99-87-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Chronic 2; H411

n-butylbenzene (EC Number: 203-209-7, CAS Number: 104-51-8)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Flam. Liq. 3; H226 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

hexachlorobutadiene (EC Number: 201-765-5, CAS Number: 87-68-3)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 3;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 2; H310 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Irrit. 2; H319 , Acute Tox. 2; H330 , Carc. 2; H351 , Repr. 2; H361 , STOT SE 2; H371 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

1,2,3-trichlorobenzene (EC Number: 201-757-1, CAS Number: 87-61-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , STOT SE 3; H336 , Aquatic Acute 1; H400 , Aquatic Chronic 3; H410

2-nitrophenol (EC Number: 201-857-5, CAS Number: 88-75-5)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 4; H332 , STOT SE 3; H335 , STOT RE 2; H373 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

2-chloronaphthalene (EC Number: 202-079-9, CAS Number: 91-58-7)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

- **2-methyl naphthalene** (EC Number: 202-078-3, CAS Number: 91-57-6)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , STOT SE 3; H336 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **di-n-octyl phthalate** (EC Number: 204-214-7, CAS Number: 117-84-0)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Repr. 2; H361 , Skin Sens. 1; H317 , Resp. Sens. 1; H334 , Eye Irrit. 2; H319 , Aquatic Chronic 4; H413

- **diethyl phthalate** (EC Number: 201-550-6, CAS Number: 84-66-2)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , STOT SE 3; H335 , STOT RE 2; H373 , Repr. 2; H361 , Acute Tox. 4; H302 , STOT SE 3; H336 , Skin Sens. 1; H317 , Aquatic Chronic 1; H410

- **dimethyl phthalate** (EC Number: 205-011-6, CAS Number: 131-11-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , Acute Tox. 3; H331 , STOT SE 3; H335 , STOT SE 3; H336 , Repr. 2; H361 , Aquatic Chronic 3; H412

- **4-bromophenylphenylether** (EC Number: 202-952-4, CAS Number: 101-55-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **4-chlorophenylphenylether** (EC Number: 230-281-7, CAS Number: 7005-72-3)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Eye Dam. 1; H318 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **bis(2-chloroethoxy)methane** (EC Number: 203-920-2, CAS Number: 111-91-1)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 3; H301 , Acute Tox. 4; H312 , Acute Tox. 1; H330 , Acute Tox. 2; H330 , STOT SE 1; H370 , STOT RE 2; H373

- **carbazole** (EC Number: 201-696-0, CAS Number: 86-74-8)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Muta. 2; H341 , Carc. 2; H351 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301

- **dibenzofuran** (EC Number: 205-071-3, CAS Number: 132-64-9)

Description/Comments: VOC; Data from C&L Inventory Database
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 4; H312 , Acute Tox. 4; H332 , Aquatic Chronic 2; H411

- **hexachloroethane** (EC Number: 200-666-4, CAS Number: 67-72-1)

Description/Comments: VOC; Data from C&L Inventory Database; IARC considers substance Group 2B;
Data source: https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 02 Mar 2017
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , STOT RE 2; H373

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

sulfur {sulfur}

Worse case compound

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2022.255.5323.9951 (12 Sep 2022)
HazWasteOnline Database: 2022.255.5323.9951 (12 Sep 2022)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021

APPENDIX E - GEOENVIRONMENTAL GROUNDWATER LABORATORY RESULTS

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

P: +44 (0) 1244 833780
F: +44 (0) 1244 833781
W: www.element.com

Tier Environmental
Suite 414, Chadwick House
Warrington Rd
Birchwood
Warrington
WA3 6AE

Attention :	Eve Rowland
Date :	2nd September, 2022
Your reference :	TE1674
Our reference :	Test Report 22/13715 Batch 1
Location :	Hillhouse Business Park
Date samples received :	25th August, 2022
Status :	Final report
Issue :	1

Three samples were received for analysis on 25th August, 2022 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland
EMT Job No: 22/13715

Report : Liquid

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

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-5	6-9	10-13								LOD/LOR	Units	Method No.
Sample ID	CP01	WS01	WS05										
Depth	2.46	2.41	2.24										
COC No / misc													
Containers	V HN P G	V BOD G	V P G										
Sample Date	25/08/2022	25/08/2022	25/08/2022										
Sample Type	Ground Water	Ground Water	Ground Water										
Batch Number	1	1	1										
Date of Receipt	25/08/2022	25/08/2022	25/08/2022										
Dissolved Arsenic #	NDP	NDP	NDP								<0.9	ug/l	TM170/PM14
Dissolved Cadmium #	NDP	NDP	NDP								<0.03	ug/l	TM170/PM14
Total Dissolved Chromium #	NDP	NDP	NDP								<0.2	ug/l	TM170/PM14
Dissolved Copper #	NDP	NDP	NDP								<1	ug/l	TM170/PM14
Dissolved Lead #	NDP	NDP	NDP								<0.4	ug/l	TM170/PM14
Dissolved Mercury #	NDP	NDP	NDP								<0.5	ug/l	TM170/PM14
Dissolved Nickel #	NDP	NDP	NDP								<0.2	ug/l	TM170/PM14
Dissolved Selenium #	NDP	NDP	NDP								<1.2	ug/l	TM170/PM14
Dissolved Zinc #	NDP	NDP	NDP								<1.5	ug/l	TM170/PM14
Dissolved Arsenic #	1.8	<0.9	11.8								<0.9	ug/l	TM30/PM14
Dissolved Cadmium #	<0.03	<0.03	<0.03								<0.03	ug/l	TM30/PM14
Total Dissolved Chromium #	0.6	1.4	0.4								<0.2	ug/l	TM30/PM14
Dissolved Copper #	<3	<3	<3								<3	ug/l	TM30/PM14
Dissolved Lead #	<0.4	<0.4	<0.4								<0.4	ug/l	TM30/PM14
Dissolved Mercury #	<0.5	<0.5	<0.5								<0.5	ug/l	TM30/PM14
Dissolved Nickel #	5.6	18.9	4.2								<0.2	ug/l	TM30/PM14
Dissolved Selenium #	<1.2	<1.2	<1.2								<1.2	ug/l	TM30/PM14
Dissolved Zinc #	16.2	4.8	2.1								<1.5	ug/l	TM30/PM14
Total Hardness Dissolved (as CaCO3)	2096_{AA}	4459_{AA}	1468_{AA}								<1	mg/l	TM30/PM14
PAH MS													
Naphthalene #	$<2.0_{AB}$	11.1_{AB}	<0.1								<0.1	ug/l	TM4/PM30
Acenaphthylene #	15.139_{AB}	66.166_{AB}	0.108								<0.005	ug/l	TM4/PM30
Acenaphthene #	2.975_{AB}	45.608_{AB}	<0.005								<0.005	ug/l	TM4/PM30
Fluorene #	18.429_{AB}	207.075_{AB}	0.029								<0.005	ug/l	TM4/PM30
Phenanthrene #	69.919_{AB}	419.565_{AB}	0.294								<0.005	ug/l	TM4/PM30
Anthracene #	42.273_{AB}	410.151_{AB}	0.182								<0.005	ug/l	TM4/PM30
Fluoranthene #	65.165_{AB}	286.764_{AB}	0.660								<0.005	ug/l	TM4/PM30
Pyrene #	51.996_{AB}	240.730_{AB}	0.587								<0.005	ug/l	TM4/PM30
Benzo(a)anthracene #	42.001_{AB}	205.745_{AB}	0.471								<0.005	ug/l	TM4/PM30
Chrysene #	29.926_{AB}	138.433_{AB}	0.386								<0.005	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	34.621_{AB}	128.198_{AB}	0.641								<0.008	ug/l	TM4/PM30
Benzo(a)pyrene #	20.821_{AB}	89.101_{AB}	0.395								<0.005	ug/l	TM4/PM30
Indeno(123cd)pyrene #	6.444_{AB}	20.044_{AB}	0.163								<0.005	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	1.956_{AB}	7.021_{AB}	0.037								<0.005	ug/l	TM4/PM30
Benzo(ghi)perylene #	6.139_{AB}	18.872_{AB}	0.126								<0.005	ug/l	TM4/PM30
PAH 16 Total #	407.804_{AB}	2294.573_{AB}	4.079								<0.173	ug/l	TM4/PM30
Benzo(b)fluoranthene	24.927_{AB}	92.303_{AB}	0.462								<0.008	ug/l	TM4/PM30
Benzo(k)fluoranthene	9.694_{AB}	35.895_{AB}	0.179								<0.008	ug/l	TM4/PM30
PAH Surrogate % Recovery	92_{AB}	61^{SV}_{AB}	79								<0	%	TM4/PM30
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1								<0.1	ug/l	TM15/PM10
Benzene #	<0.5	10.4	<0.5								<0.5	ug/l	TM15/PM10

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

Element Materials Technology

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland
EMT Job No: 22/13715

Report : Liquid

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

EMT Sample No.	1-5	6-9	10-13								LOD/LOR	Units	Method No.
Sample ID	CP01	WS01	WS05										
Depth	2.46	2.41	2.24										
COC No / misc													
Containers	V HN P G	V BOD G	V P G										
Sample Date	25/08/2022	25/08/2022	25/08/2022										
Sample Type	Ground Water	Ground Water	Ground Water										
Batch Number	1	1	1										
Date of Receipt	25/08/2022	25/08/2022	25/08/2022										
Toluene #	<5	<5	<5								<5	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1								<1	ug/l	TM15/PM10
m/p-Xylene #	<2	2	<2								<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1								<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	99	102	101								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	96	102	94								<0	%	TM15/PM10
TPH CWG													
Aliphatics													
>C5-C6 #	<10	24	<10								<10	ug/l	TM36/PM12
>C6-C8 #	<10	407	<10								<10	ug/l	TM36/PM12
>C8-C10 #	<10	31	<10								<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5								<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>C35-C40	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-40	<10	462	<10								<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	141	<5								<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	810	<10								<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	440	<10								<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>EC35-EC40	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
Total aromatics C5-40	<10	1391	<10								<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-40)	<10	1853	<10								<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total Phenols HPLC	<0.15	5.06	<0.15								<0.15	mg/l	TM26/PM0
Sulphate as SO4 #	826.6	1414.1	666.1								<0.5	mg/l	TM38/PM0
Total Ammonia as N #	0.92	7.29	0.33								<0.03	mg/l	TM38/PM0
Electrical Conductivity @25C #	11513	16825	5339								<2	uS/cm	TM76/PM0
pH #	7.46	6.99	7.56								<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

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

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland
EMT Job No: 22/13715

SVOC Report : **Liquid**

EMT Sample No.	1-5	6-9	10-13									
Sample ID	CP01	WS01	WS05									
Depth	2.46	2.41	2.24							Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V HN P G	V BOD G	V P G									
Sample Date	25/08/2022	25/08/2022	25/08/2022									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	25/08/2022	25/08/2022	25/08/2022									
SVOC MS										LOD/LOR	Units	Method No.
Phenols												
2-Chlorophenol #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	235.2 AB	<0.5							<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	970 AB	<1							<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<20 AB	<1							<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	550 AB	<1							<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<200 AB	<10							<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Phenol	<1	120 AB	<1							<1	ug/l	TM16/PM30
PAHs												
2-Chloronaphthalene #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	20 AB	<1							<1	ug/l	TM16/PM30
Phthalates												
Bis(2-ethylhexyl) phthalate	<5	<100 AB	<5							<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<30.0 AB	<1.5							<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<20 AB	1							<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Other SVOCs												
1,2-Dichlorobenzene #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<20 AB	24							<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<20 AB	<1							<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<20 AB	<1							<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<20 AB	<1							<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<20 AB	<1							<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Carbazole #	<0.5	17.4 AB	<0.5							<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	15.3 AB	0.9							<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Isophorone #	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<10.0 AB	<0.5							<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<20 AB	<1							<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	109	115 AB	111							<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	116	103 AB	122							<0	%	TM16/PM30

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland
EMT Job No: 22/13715

VOC Report : **Liquid**

EMT Sample No.	1-5	6-9	10-13									
Sample ID	CP01	WS01	WS05									
Depth	2.46	2.41	2.24									
COC No / misc												
Containers	V HN P G	V BOD G	V P G									
Sample Date	25/08/2022	25/08/2022	25/08/2022									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	25/08/2022	25/08/2022	25/08/2022									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2								<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1								<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3								<3	ug/l	TM15/PM10
Vinyl Chloride #	0.1	>>1200.5	0.9								<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1								<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3								<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3								<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	72	<3								<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3								<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	12	<3								<3	ug/l	TM15/PM10
1,1-Dichloroethane #	11	60	4								<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	71	<3								<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1								<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2								<2	ug/l	TM15/PM10
Chloroform #	2	142	8								<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2								<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3								<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2								<2	ug/l	TM15/PM10
1,2-Dichloroethane #	13	>>2115	12								<2	ug/l	TM15/PM10
Benzene #	<0.5	10.4	<0.5								<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	80	6								<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2								<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3								<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2								<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2								<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5								<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2								<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	98	19								<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	18	5								<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2								<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2								<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2								<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2								<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2								<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1								<1	ug/l	TM15/PM10
m/p-Xylene #	<2	2	<2								<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1								<1	ug/l	TM15/PM10
Styrene	<2	<2	<2								<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2								<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4								<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2								<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3								<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3								<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3								<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3								<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	28								<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3								<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2								<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3								<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3								<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2								<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3								<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	99	102	101								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	96	102	94								<0	%	TM15/PM10

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

Client Name: Tier Environmental

Reference: TE1674

Location: Hillhouse Business Park

Contact: Eve Rowland

Matrix : Liquid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Method No.	NDP Reason
22/13715	1	CP01	2.46	1-5	TM170/PM14	Sample unsuitable for analysis by ICP-MS. Sample rescheduled for analysis by ICP-OES
22/13715	1	WS01	2.41	6-9	TM170/PM14	Sample unsuitable for analysis by ICP-MS. Sample rescheduled for analysis by ICP-OES
22/13715	1	WS05	2.24	10-13	TM170/PM14	Sample unsuitable for analysis by ICP-MS. Sample rescheduled for analysis by ICP-OES

Client Name: Tier Environmental
Reference: TE1674
Location: Hillhouse Business Park
Contact: Eve Rowland

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/13715						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/13715

SOILS and ASH

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

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution
AB	x20 Dilution

HWOL ACRONYMS AND OPERATORS USED

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

EMT Job No: 22/13715

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				

EMT Job No: 22/13715

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM170	Determination of Trace Metals by ICP-MS (Inductively Coupled Plasma – Mass Spectrometry): Modified USEPA Method 200.8, Rev. 5.4, 1994; Modified EPA Method 6020A, Rev.1, Feb 2007; Modified BS EN ISO 17294-2:2016	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			

APPENDIX F - GEOTECHNICAL IN SITU FIELDWORK AND LABORATORY RESULTS

4041

Steve Hutchings
Murray Rix (Northern Ltd).
Andrew House
Hadfield Street
Dukinfield
SK16 4QX

e: MURRAYRIX Group

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 22-82392

Project / Site name:	TE1674 Hillhouse Business Paark	**Samples received on:**	05/09/2022
Your job number:		**Samples instructed on/ Analysis started on:**	06/09/2022
Your order number:	22 293	**Analysis completed by:**	13/09/2022
Report Issue Number:	1	**Report issued on:**	14/09/2022
Samples Analysed:	5 soil samples		

Signed:

Joanna Wawrzeczko
Reporting Specialist
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

Excel copies of reports are only valid when accompanied by this PDF certificate.

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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 22-82392
Project / Site name: TE1674 Hillhouse Business Paark
Your Order No: 22 293

Lab Sample Number				2415016	2415017	2415018	2415019	2415020
Sample Reference				115688	115687	115600	115614	115660
Sample Number				TP04	TP03	CP01	CP02	WS05
Depth (m)				1.50	2.10	0.20	0.20	1.20
Date Sampled				09/08/2022	09/08/2022	08/08/2022	11/08/2022	09/08/2022
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	17	16	13	22	19
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3	0.3	0.2
General Inorganics								
Calorific Value	MJ/Kg	0.12	ISO 17025	< 0.120	< 0.120	< 0.120	1.31	1.44

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

Analytical Report Number : 22-82392
Project / Site name: TE1674 Hillhouse Business Paark

* 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 *
2415016	115688	TP04	1.5	Brown loam and sand with gravel and vegetation.
2415017	115687	TP03	2.1	Brown loam and clay with gravel and vegetation.
2415018	115600	CP01	0.2	Brown clay and loam with gravel and vegetation.
2415019	115614	CP02	0.2	Brown clay and loam with gravel and vegetation.
2415020	115660	WS05	1.2	Brown clay and loam with gravel and vegetation.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

4041

Analytical Report Number : 22-82392
Project / Site name: TE1674 Hillhouse Business Paark

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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
Calorific Value of soil	Determination of the calorific value of soil by combustion in a controlled environment.	Calorific Value of Soil by Bomb Calorimeter	L013-PL	D	ISO 17025

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.

MURRAY RIX
CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client Tier Environmental Ltd

Address Suite 513
Chadwick House
Warrington Road
Birchwood
WA3 6AE

Contract TE1674 -
Hillhouse Business Park

Job Number MRN 4346/45
Date of Issue 21 September 2022

Approved Signatories

S J Hutchings, O P Davies

Notes

1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.

2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.

3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.

5 The results included within the report are representative of the samples submitted for analysis.

6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.

M U R R A Y R I X

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

DETERMINATION OF THE WATER CONTENT
(OVEN DRY)
BS EN 17892-1:2014

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

DATE SAMPLED	Not advised	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

Laboratory Sample Number	Site Reference	Material	Sample Location	Water Content (%)
115677	CP01 5 B	Firm to stiff brown silty sandy CLAY with rare gravel	CP01	19.5
115655	WS04 1.2 SPT	Brown silty SAND & GRAVEL	WS04	23.3

COMMENT / ANOMALIES

NAME O.P. Davies BA (Hons) (Laboratory Manager) SIGNED DATE 30-Jul-21

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

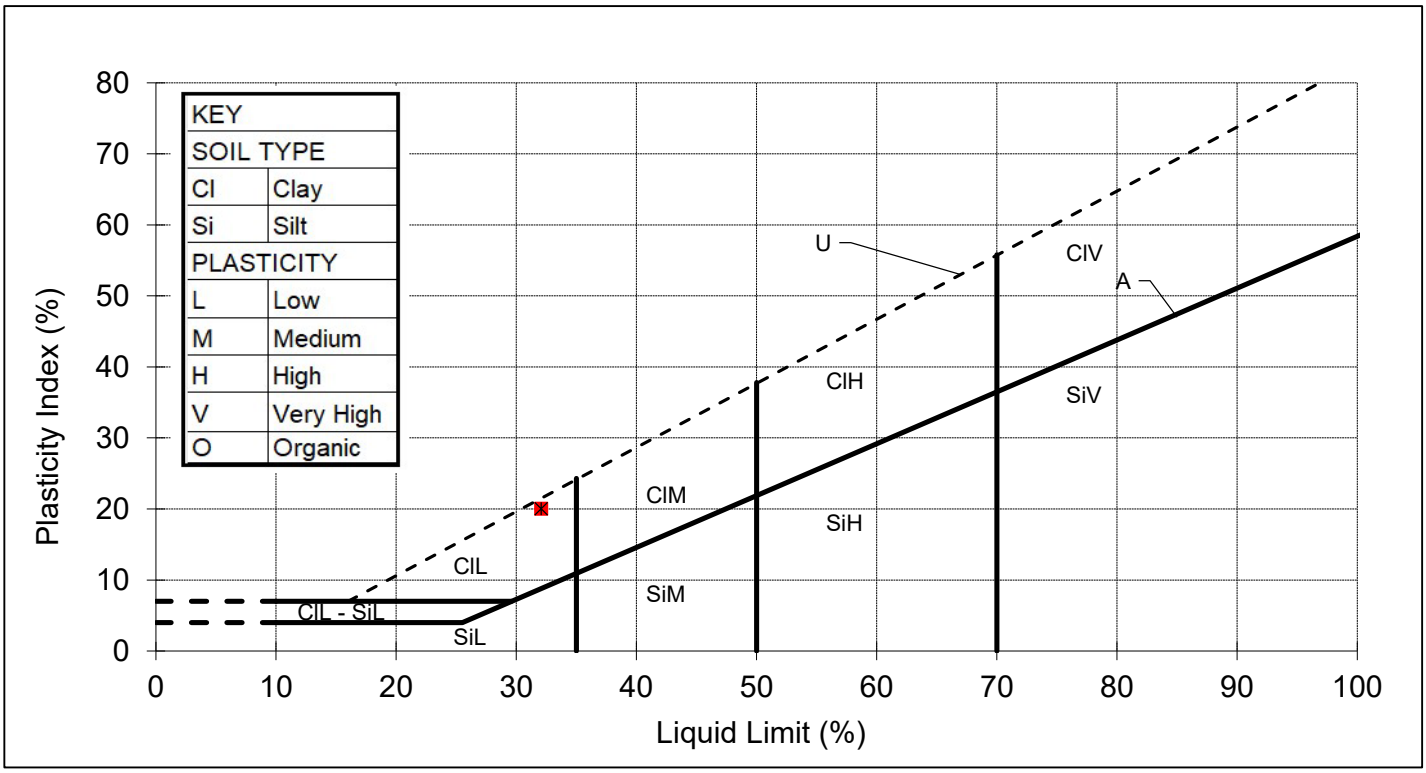
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	WS1 4 SPT	DATE SAMPLED	Not advised
SAMPLE No.	115643	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

MATERIAL	Soft brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	22.4	33.1	0.967	
Determination 2 (avg)	22.4	33.2		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
27.7	32	12	20	93



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

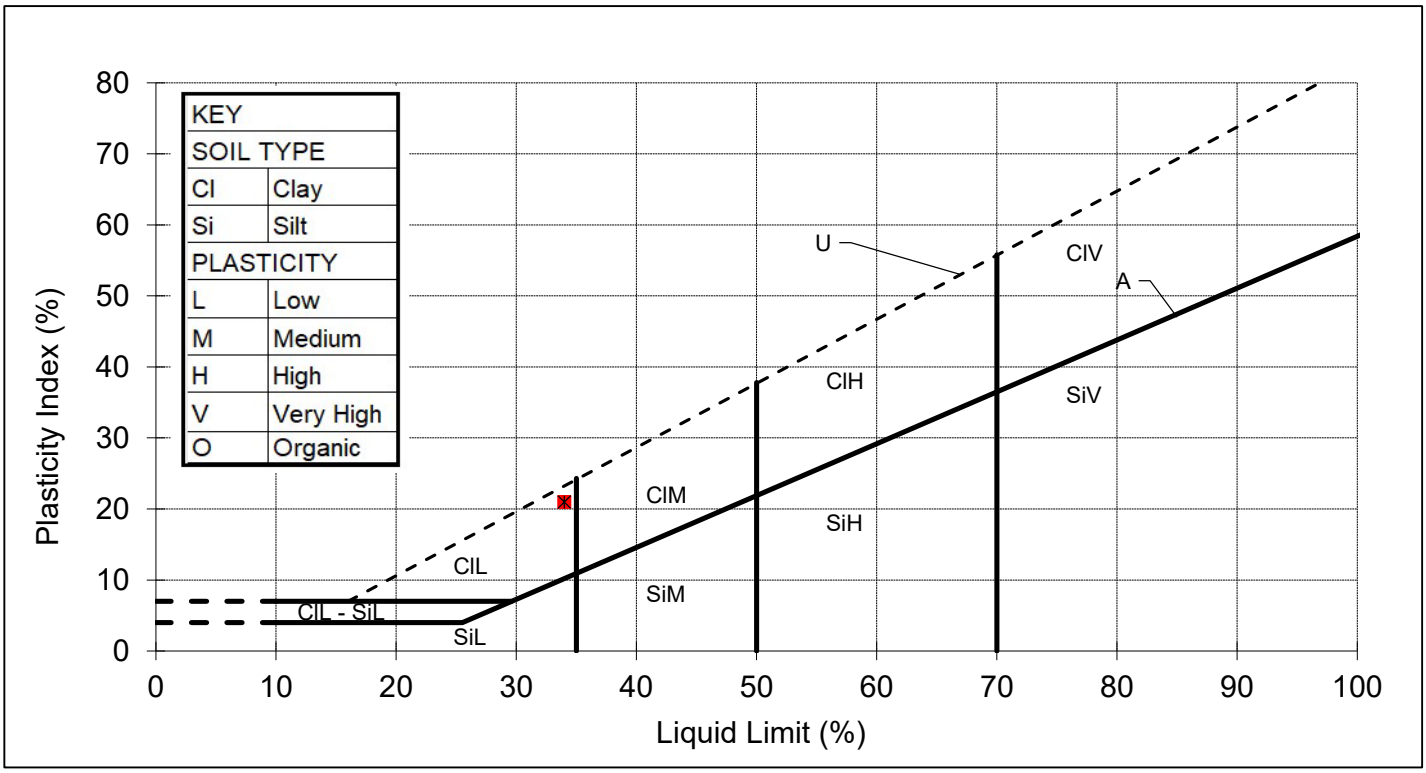
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	WS2 3 SPT	DATE SAMPLED	Not advised
SAMPLE No.	115647	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

MATERIAL	Soft brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	21.3	34.8	0.981	
Determination 2 (avg)	21.2	34.5		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
24.6	34	13	21	82



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

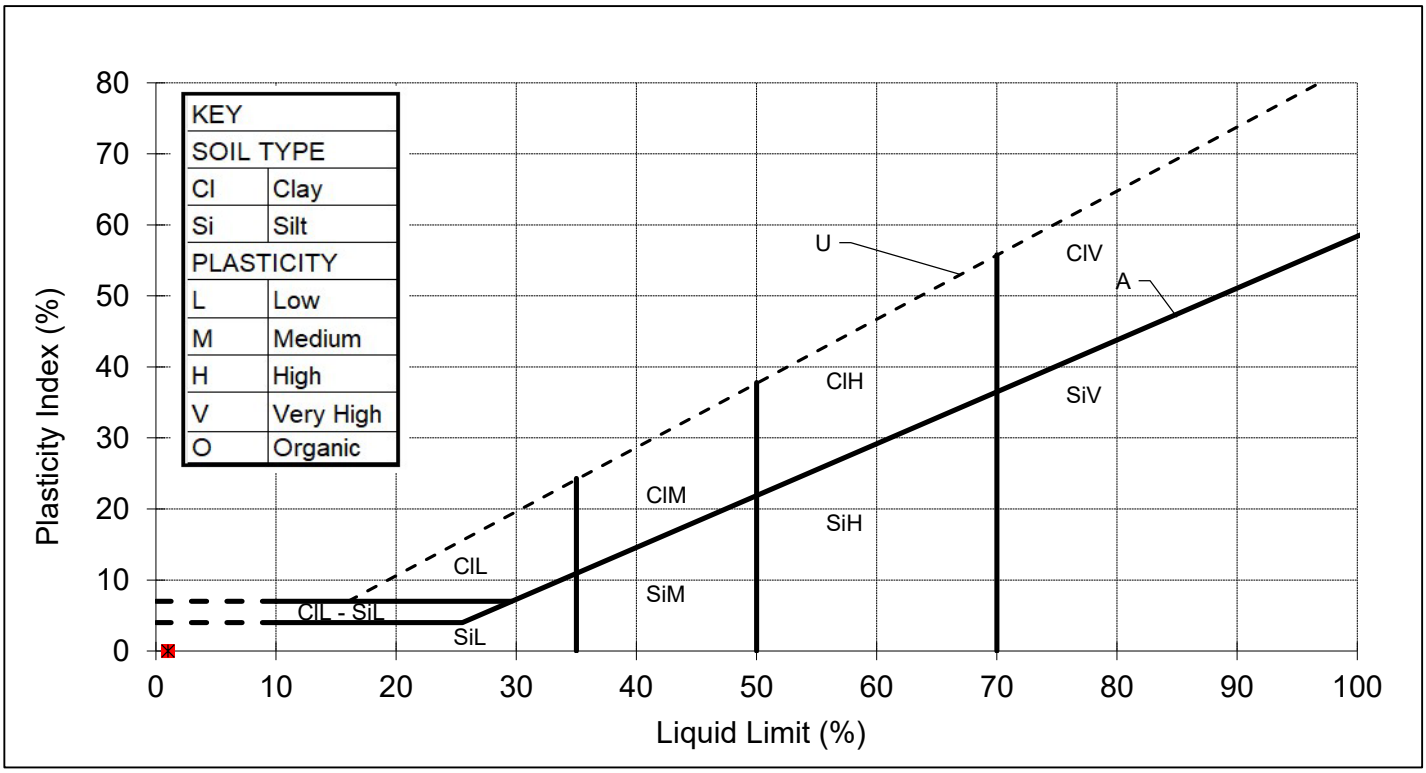
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	WS5 3 SPT	DATE SAMPLED	Not advised
SAMPLE No.	115662	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

MATERIAL	Black brown silty SAND & GRAVEL		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
28.9	N/A	Non Plastic	N/A	42



REMARKS

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NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

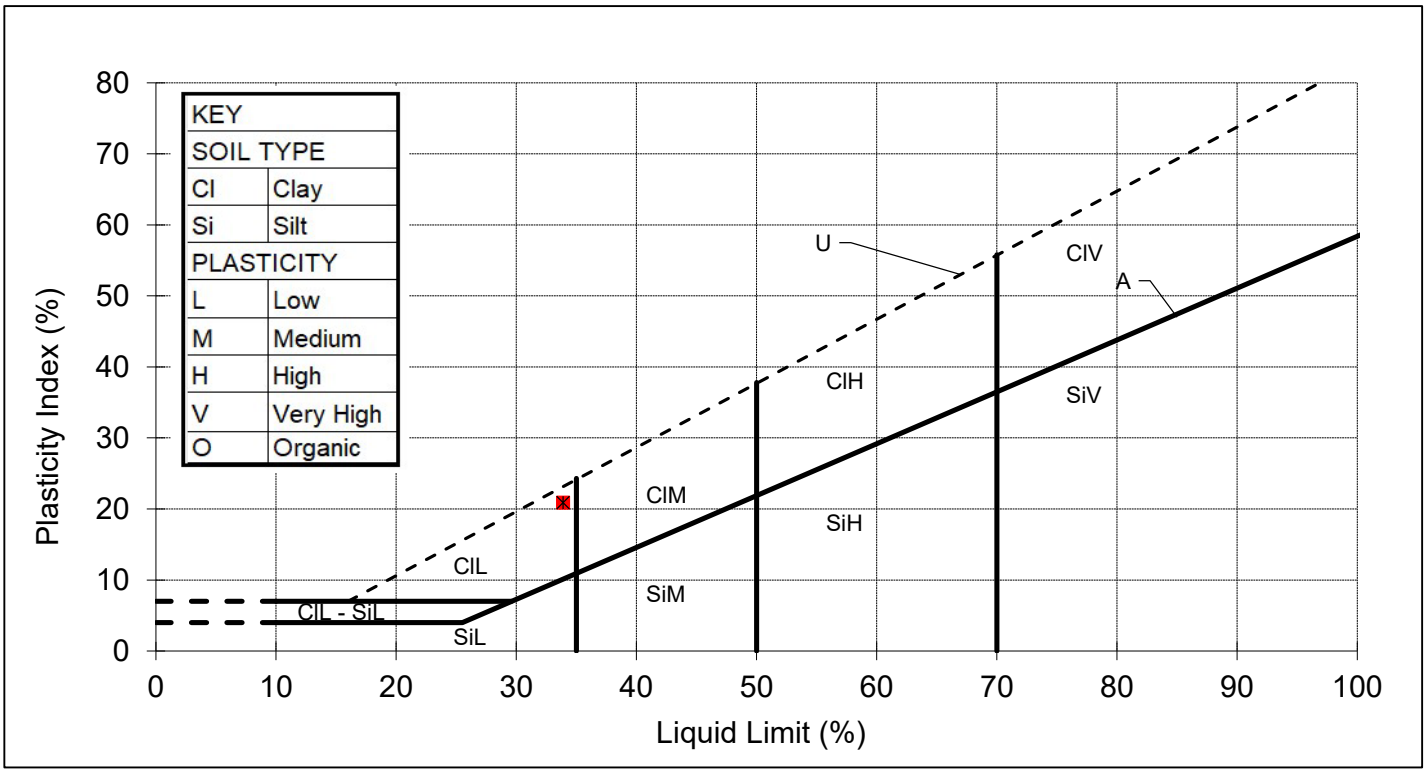
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	WS6 5 SPT	DATE SAMPLED	Not advised
SAMPLE No.	115669	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

MATERIAL	Soft to firm brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	33.9	1.000	
Determination 2 (avg)	20.0	33.9		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
23.6	34	13	21	91



REMARKS

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NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

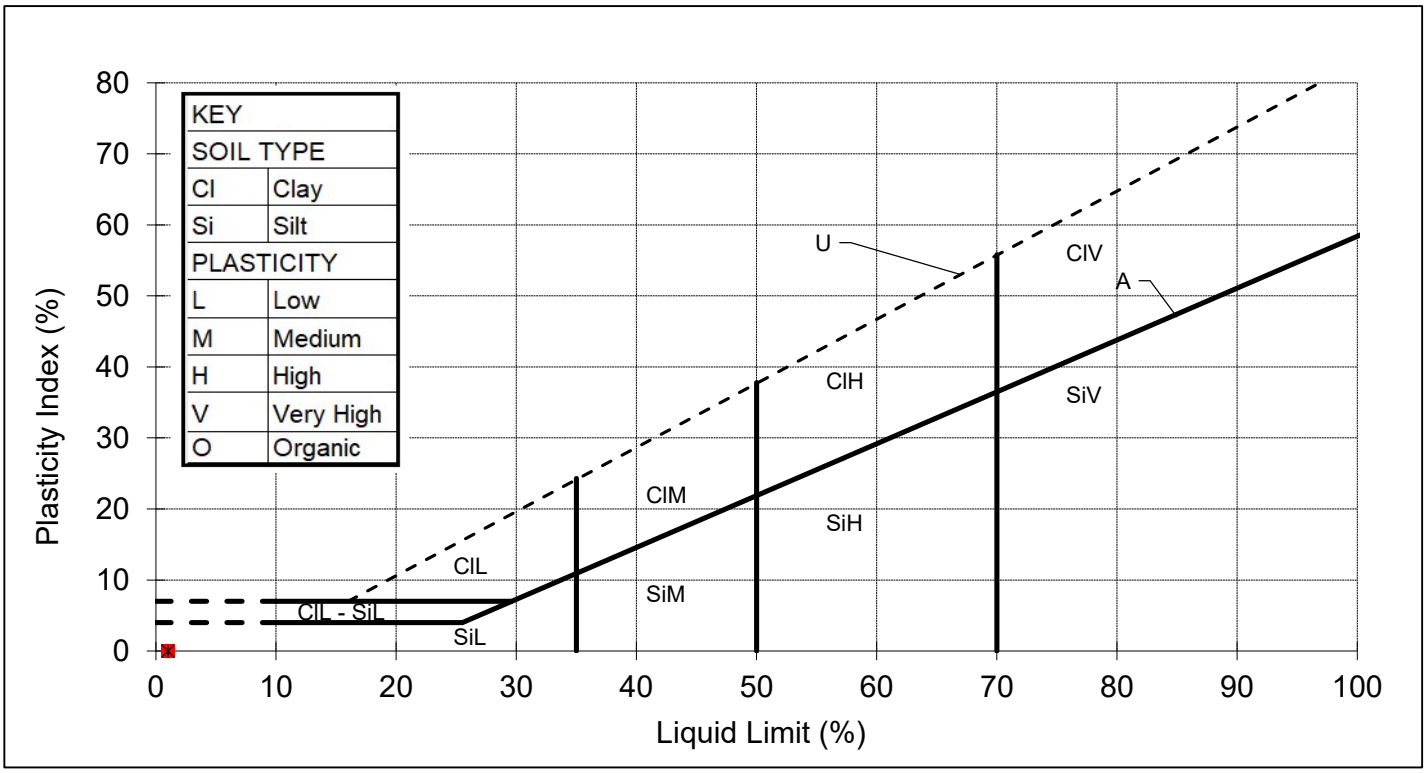
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	WS7 3 SPT	DATE SAMPLED	Not advised
SAMPLE No.	115673	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

MATERIAL	Black brown silty SAND & GRAVEL		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
52.0	N/A	Non Plastic	N/A	50



REMARKS

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NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

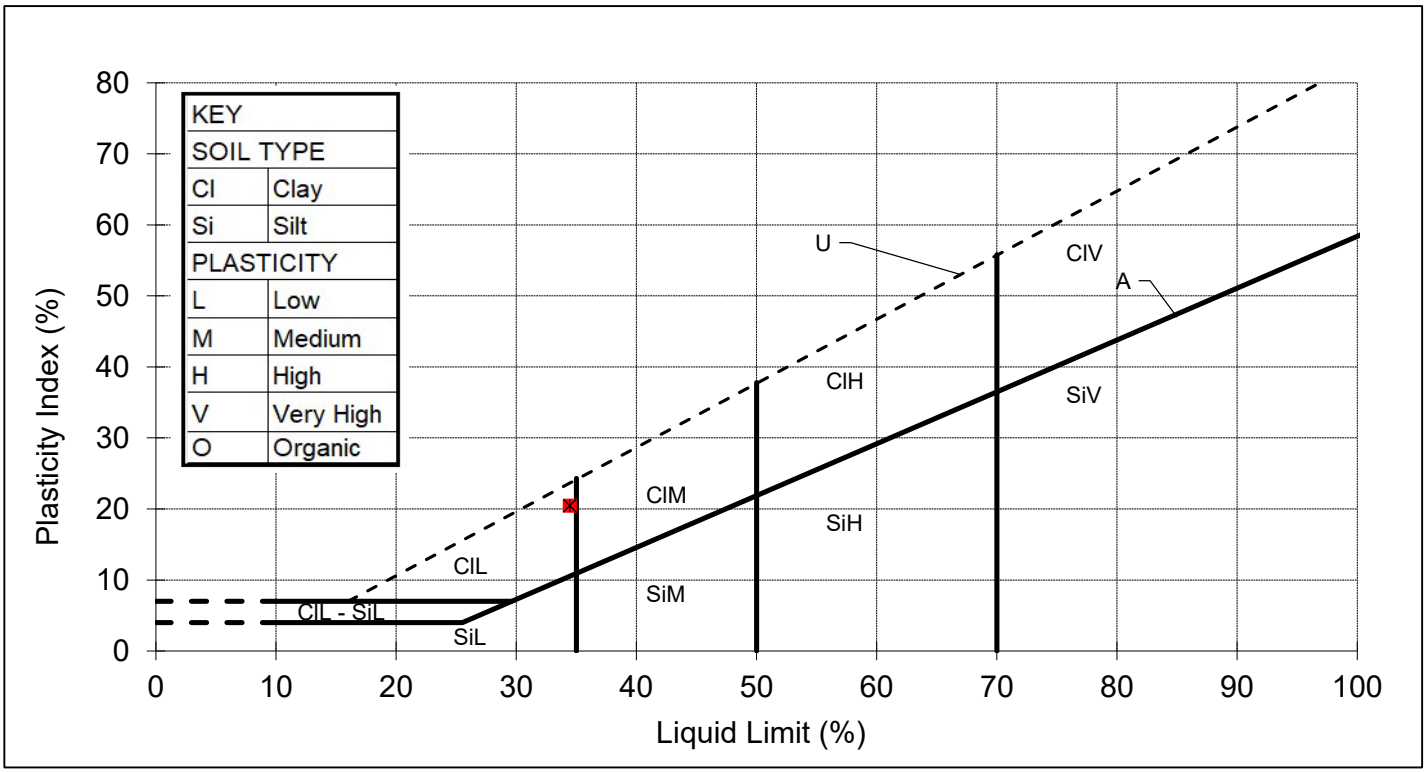
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	TP5 1.7 B	DATE SAMPLED	Not advised
SAMPLE No.	115689	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

MATERIAL	Soft brown silty sandy CLAY with occasional gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	21.3	36.1	0.987	
Determination 2 (avg)	21.3	35.9		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
27.9	34	14	20	79



REMARKS

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NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

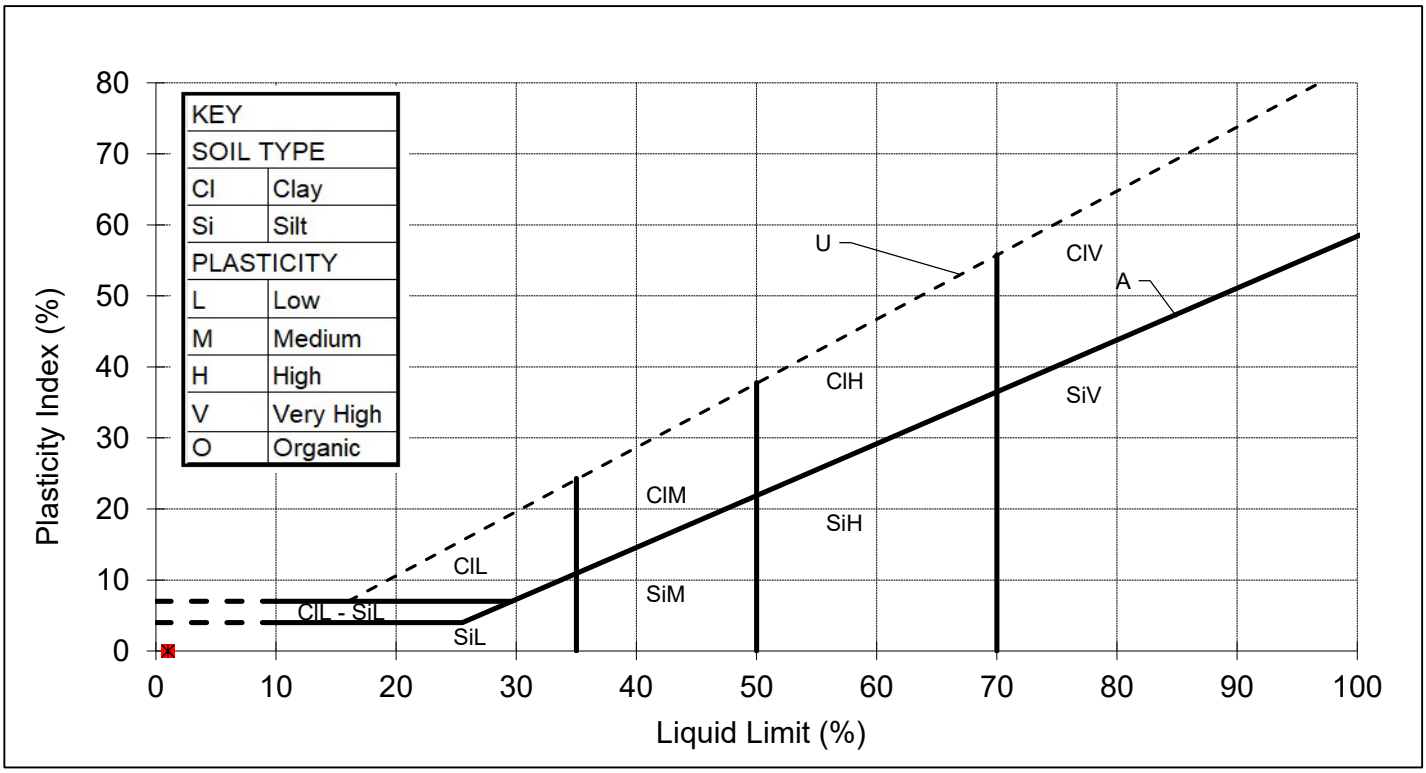
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	TP2 3 B	DATE SAMPLED	Not advised
SAMPLE No.	115686	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

MATERIAL	Black brown silty SAND & GRAVEL		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	N/A	N/A	N/A	
Determination 2 (avg)	N/A	N/A		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
25.3	N/A	Non Plastic	N/A	38



REMARKS

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NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
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UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

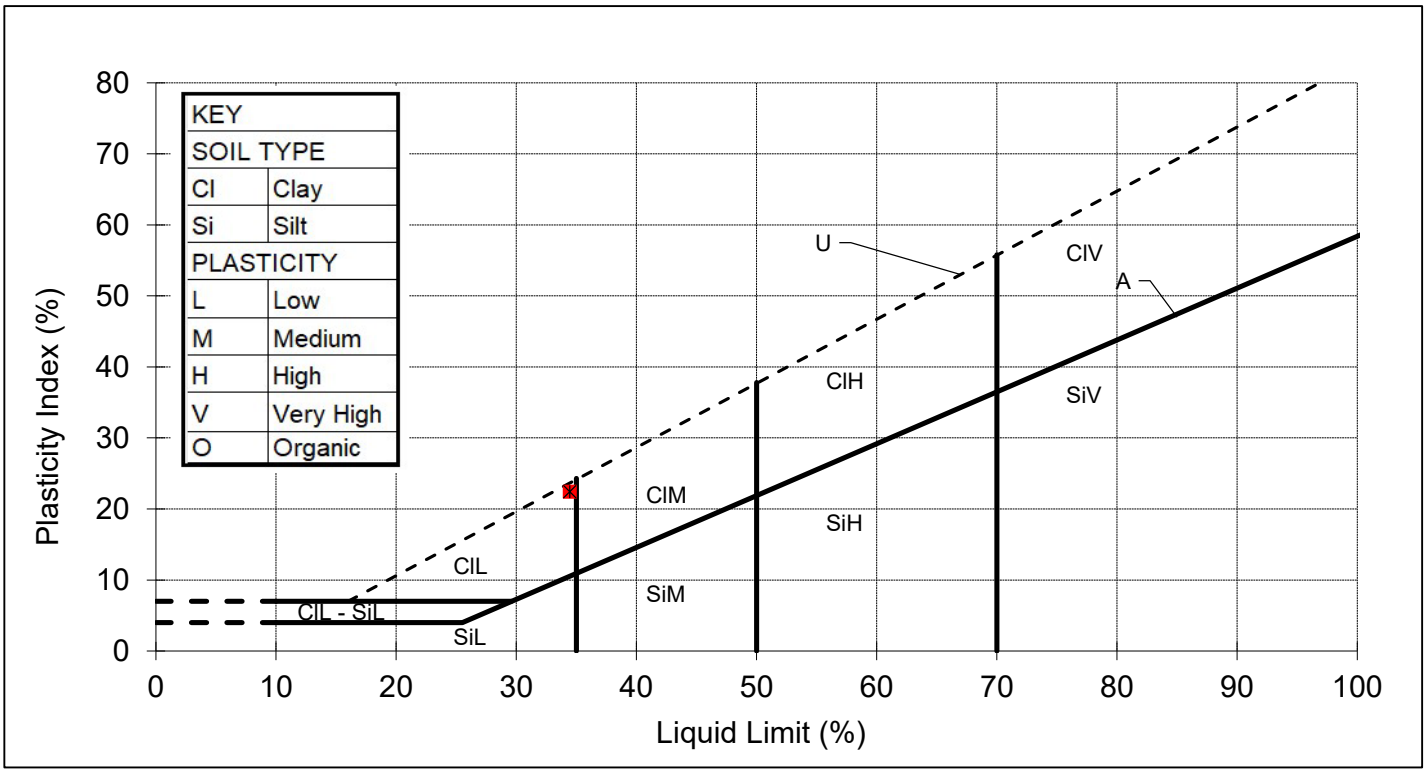
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP3 3.8 B	DATE SAMPLED	Not advised
SAMPLE No.	115682	DATE RECEIVED	16-Aug-22
DATE TESTED	24-Aug-22	SAMPLED BY	Client

MATERIAL	Firm brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.8	34.9	0.987	
Determination 2 (avg)	20.8	34.9		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
20.3	34	12	22	98



REMARKS

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NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

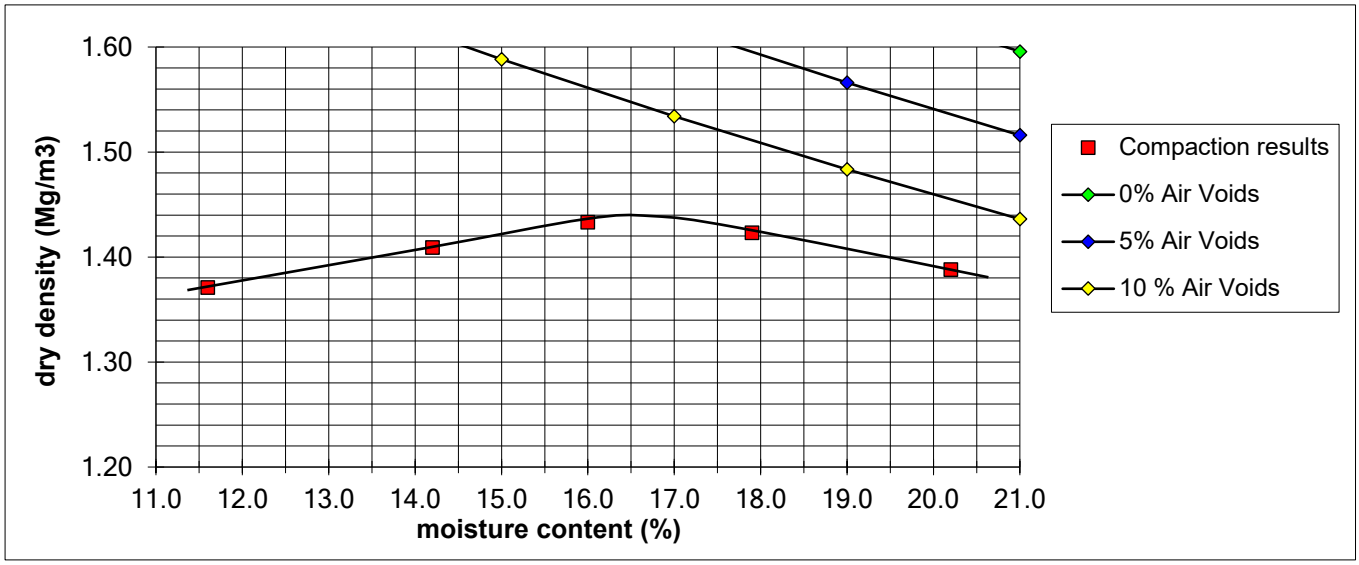
DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER
BS 1377: PART 4: 1990
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	TP5 1.7 B	DATE SAMPLED	Not advised
LAB SAMPLE No	115689	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Soft brown silty sandy CLAY with occasional gravel
ADVISED SOURCE	Site Invesitgation Sample
PRE TREATMENT	Air Dried/Separate Batches

Point Number		Moisture Content (%)	Dry Density (Mg/m3)
1		11.6	1.371
2		14.2	1.409
3		16.0	1.433
4		17.9	1.423
5		20.2	1.388
	Optimum	17.0	
	Maximum		1.44
	Particle Density	2.4 (Assumed)	



REMARKS/ABNORMALITIES
Percentage of material retained on 37.5mm sieve = 1%
Percentage of material retained on 20mm sieve = 3%

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

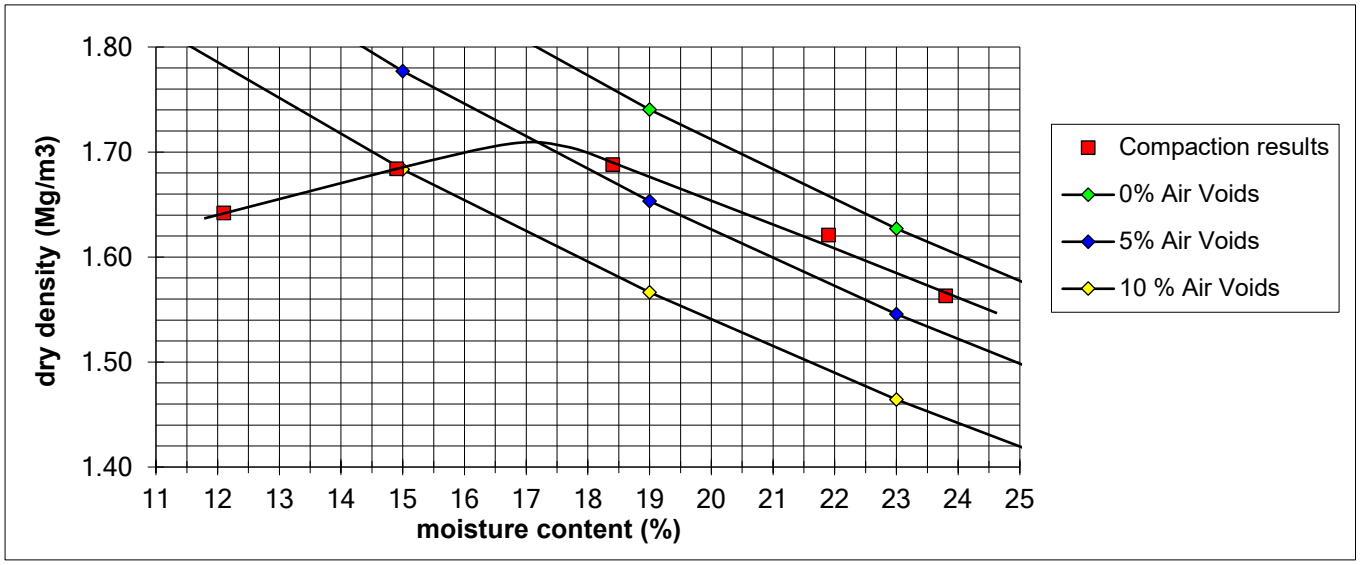
DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER
BS 1377: PART 4: 1990
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP3 3.8 B	DATE SAMPLED	Not advised
LAB SAMPLE No	115682	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Firm brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Invesitgation Sample
PRE TREATMENT	Air Dried/Separate Batches

Point Number		Moisture Content (%)	Dry Density (Mg/m3)
1		12.1	1.642
2		14.9	1.684
3		18.4	1.688
4		21.9	1.621
5		23.8	1.563
	Optimum	17.0	
	Maximum		1.71
	Particle Density	2.6 (Assumed)	



REMARKS/ABNORMALITIES
Percentage of material retained on 37.5mm sieve = 0%
Percentage of material retained on 20mm sieve = 0%

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

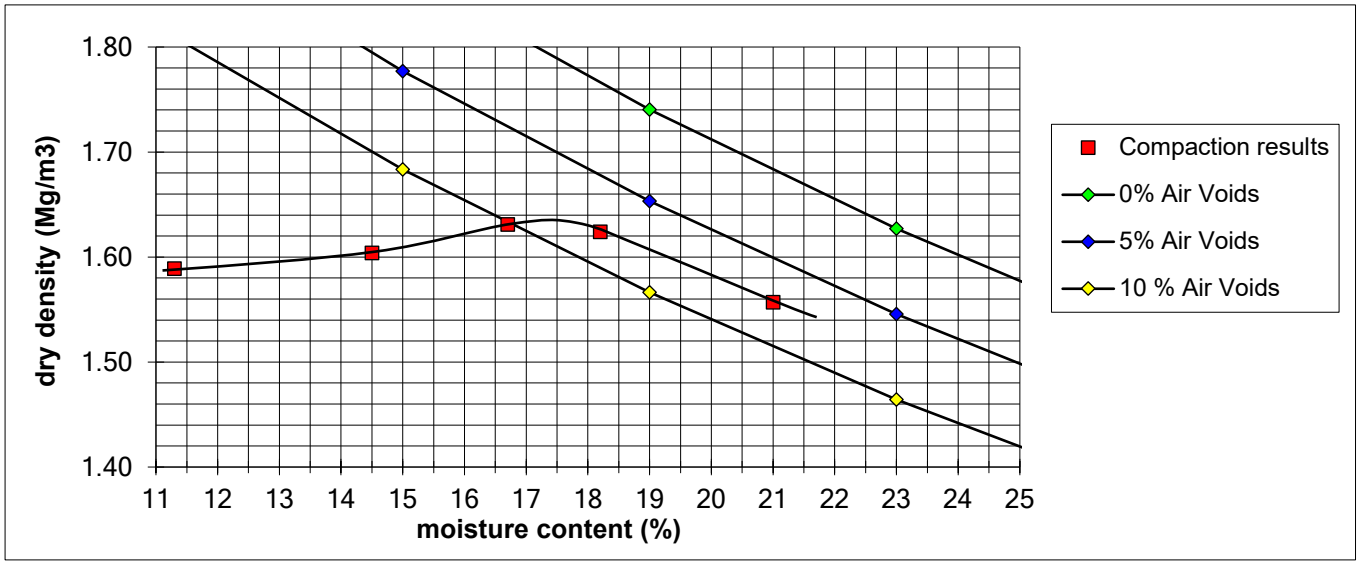
DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER
BS 1377: PART 4: 1990
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	TP07 3.7 B	DATE SAMPLED	Not advised
LAB SAMPLE No	115690	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Brown silty SAND with rare gravel
ADVISED SOURCE	Site Invesitgation Sample
PRE TREATMENT	Air Dried/Separate Batches

Point Number	Moisture Content (%)	Dry Density (Mg/m3)
1	11.3	1.589
2	14.5	1.604
3	16.7	1.631
4	18.2	1.624
5	21.0	1.557
Optimum	17.0	
Maximum		1.63
Particle Density	2.6 (Assumed)	



REMARKS/ABNORMALITIES
Percentage of material retained on 37.5mm sieve = 0%
Percentage of material retained on 20mm sieve = 0%
As received moisture content = 21%

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

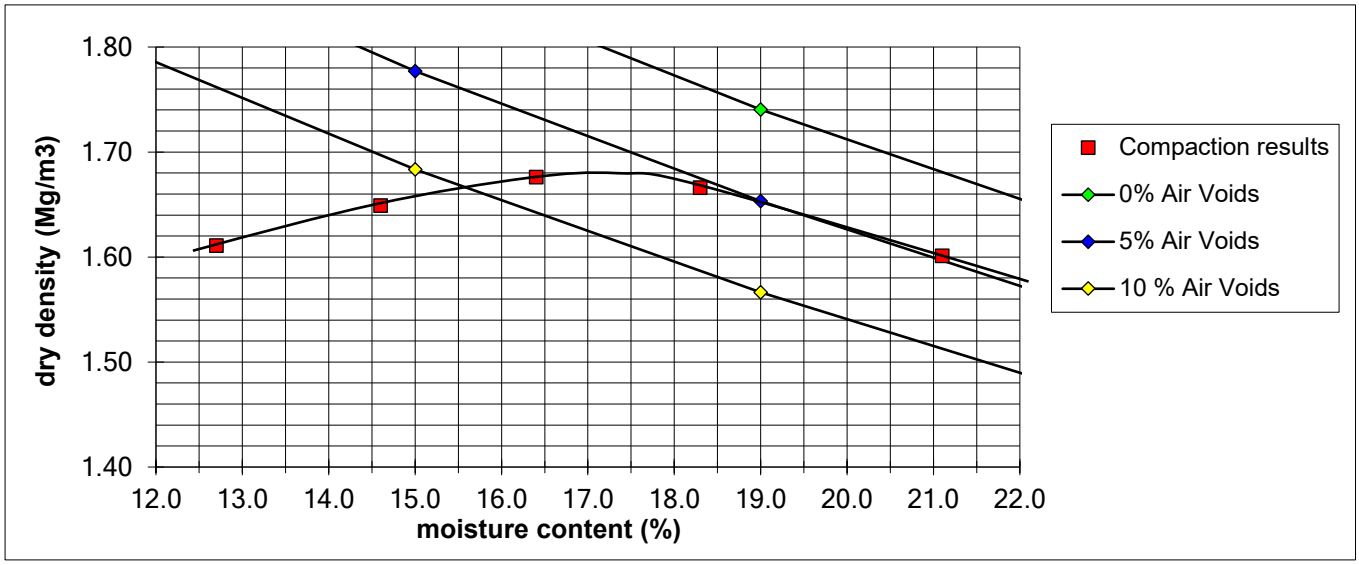
DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER
BS 1377: PART 4: 1990
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP1 3.9 B	DATE SAMPLED	Not advised
LAB SAMPLE No	115675	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Firm brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Invesitgation Sample
PRE TREATMENT	Air Dried/Separate Batches

Point Number		Moisture Content (%)	Dry Density (Mg/m3)
1		12.7	1.611
2		14.6	1.649
3		16.4	1.676
4		18.3	1.666
5		21.1	1.601
	Optimum	17.0	
	Maximum		1.68
	Particle Density	2.6 (Assumed)	



REMARKS/ABNORMALITIES
Percentage of material retained on 37.5mm sieve = 0%
Percentage of material retained on 20mm sieve = 2%
As received moisture content = 25%

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

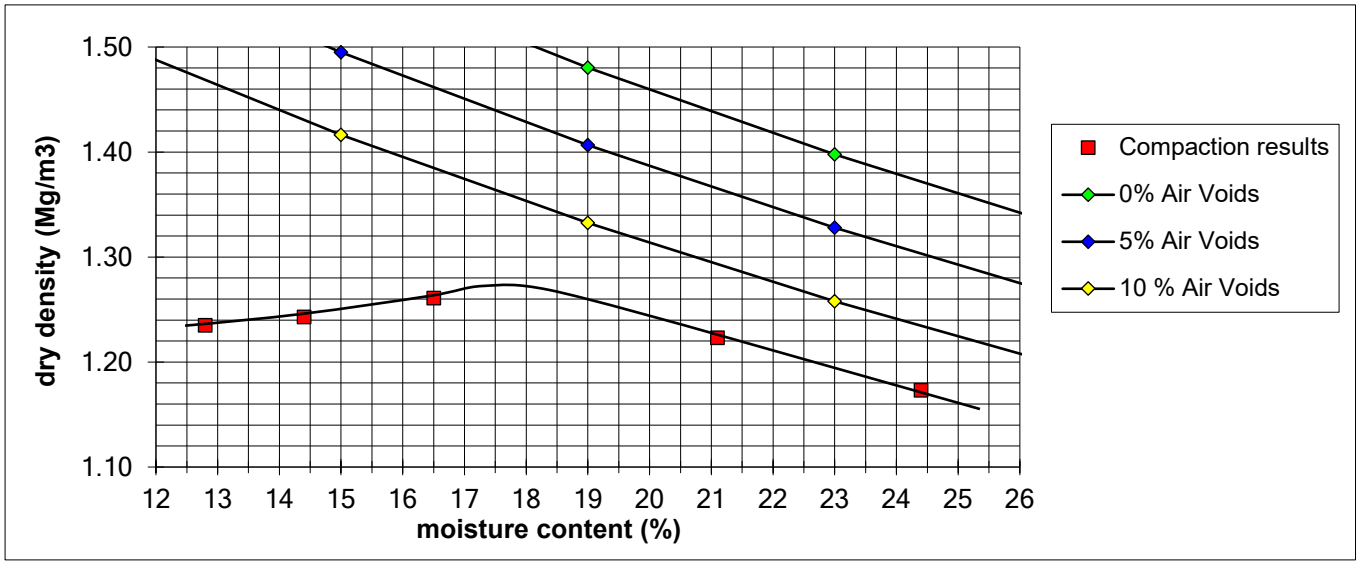
DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER
BS 1377: PART 4: 1990
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	TP04 1.50	DATE SAMPLED	09-Aug-22
LAB SAMPLE No	115688	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Brown grey silty SAND & GRAVEL
ADVISED SOURCE	Site Invesitgation Sample
PRE TREATMENT	Air Dried/Separate Batches

Point Number		Moisture Content (%)	Dry Density (Mg/m3)
1		12.8	1.235
2		14.4	1.243
3		16.5	1.261
4		21.1	1.223
5		24.4	1.173
	Optimum	18.0	
	Maximum		1.27
	Particle Density	2.06 (Measured)	



REMARKS/ABNORMALITIES
Percentage of material retained on 37.5mm sieve = 1%
Percentage of material retained on 20mm sieve = 3%
As received moisture content = 24%

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

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MURRAY RIX

ANDREW HOUSE, HADFIELD STREET
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

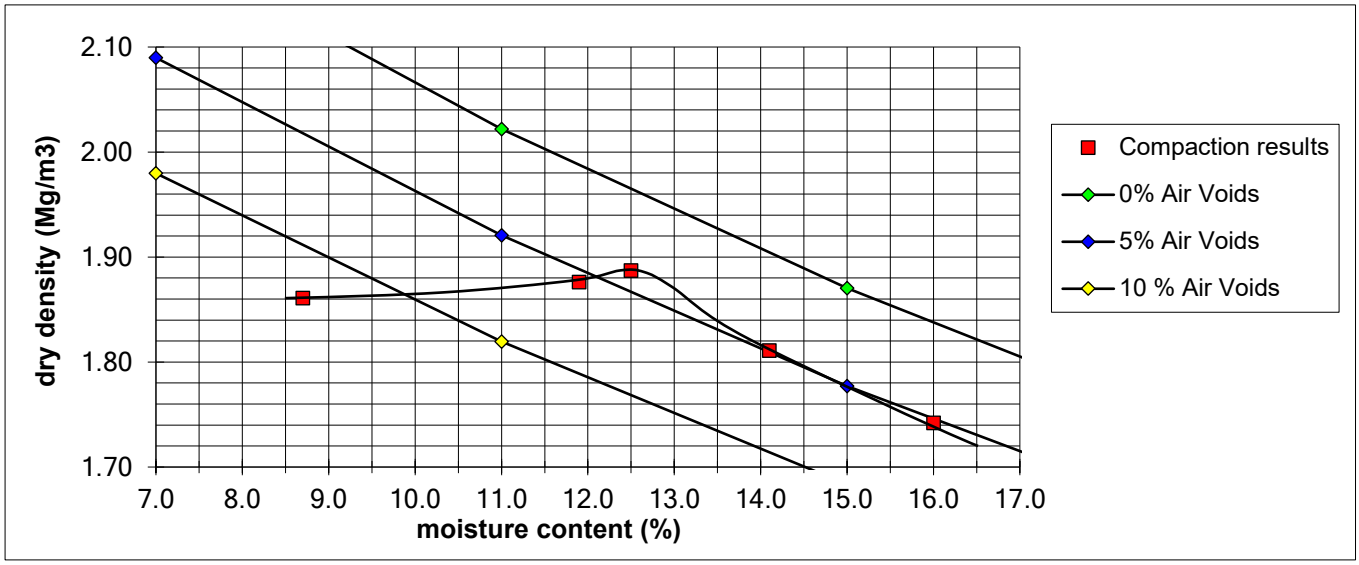
DRY DENSITY/MOISTURE CONTENT RELATIONSHIP 2.5kg RAMMER
BS 1377: PART 4: 1990
PARTICLE DENSITY METHOD BS 1377: PART 2: 1990 Clause 8.2

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP2 3.90	DATE SAMPLED	09-Aug-22
LAB SAMPLE No	115691	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Firm to stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Invesitgation Sample
PRE TREATMENT	Air Dried/Separate Batches

Point Number		Moisture Content (%)	Dry Density (Mg/m3)
1		8.7	1.861
2		11.9	1.876
3		12.5	1.887
4		14.1	1.811
5		16.0	1.742
	Optimum	13.0	
	Maximum		1.89
	Particle Density	2.6 (Assumed)	



REMARKS/ABNORMALITIES
Percentage of material retained on 37.5mm sieve = 0%
Percentage of material retained on 20mm sieve = 0%
As received moisture content = 17%

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

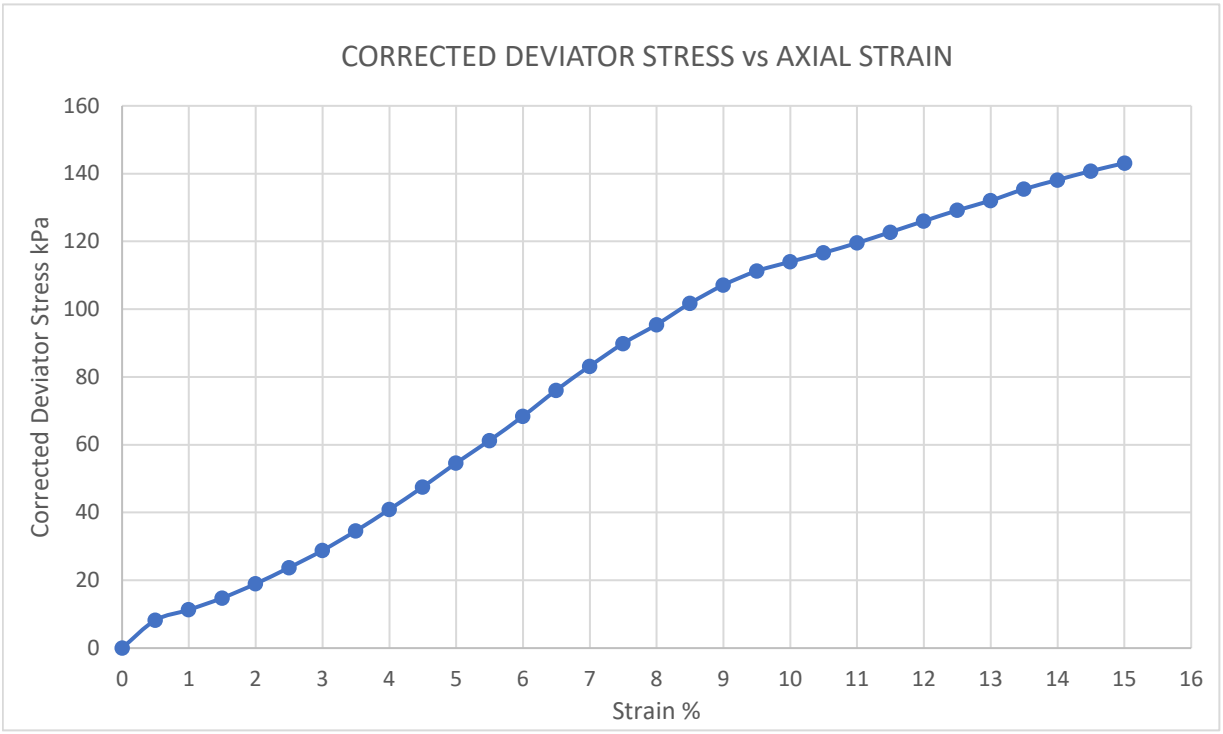
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP3 4.3 U	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	115696	**DATE RECEIVED**	16-Aug-22
DATE TESTED	09-Sep-22	**SAMPLED BY**	Client
MATERIAL	Firm to sitff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

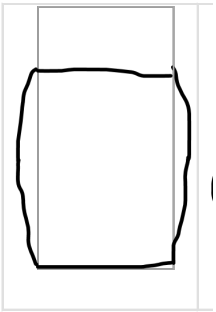
Specimen Location

Sample Length (mm)	340	Specimen depth from top of Sample (mm)	10
Sample Orientation	Vertical	Specimen Condition	Undisturbed
Specimen Length (mm)	197	Specimen Water Content (%)	19.9
Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.14
Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.78
Membrane Correction	3.40		



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
90	15.0	2.0	143	72

Remarks/Abnormalities

Name O.P Davies BA (Hons) (Laboratory Manager) Signed  Date 21 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

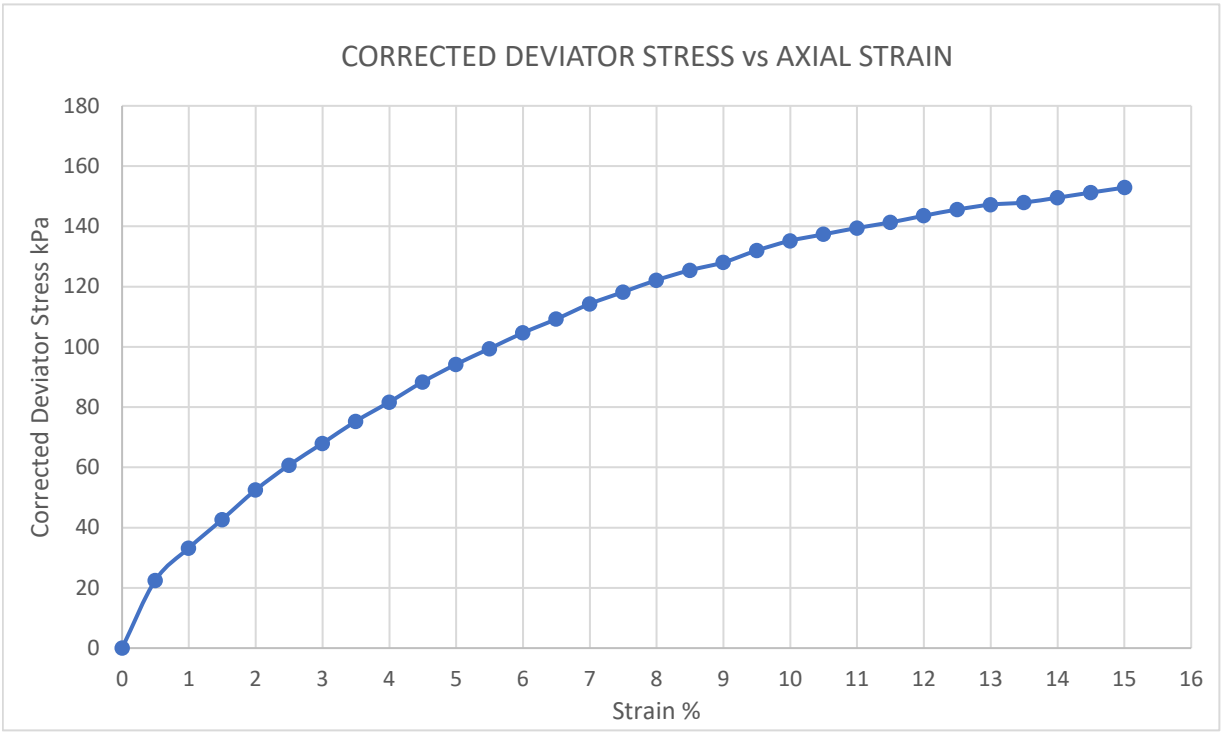
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP3 9.5 U	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	115697	**DATE RECEIVED**	16-Aug-22
DATE TESTED	09-Sep-22	**SAMPLED BY**	Client
MATERIAL	Firm to stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

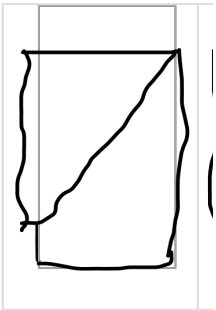
Specimen Location 

Sample Length (mm)	360	Specimen depth from top of Sample (mm)	35
Sample Orientation	Vertical	Specimen Condition	Undisturbed
Specimen Length (mm)	201	Specimen Water Content (%)	11.3
Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.25
Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.02
Membrane Correction	3.28		



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
195	15.0	2.0	153	76

Remarks/Abnormalities

Name O.P Davies BA (Hons) (Laboratory Manager) Signed  Date 21 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

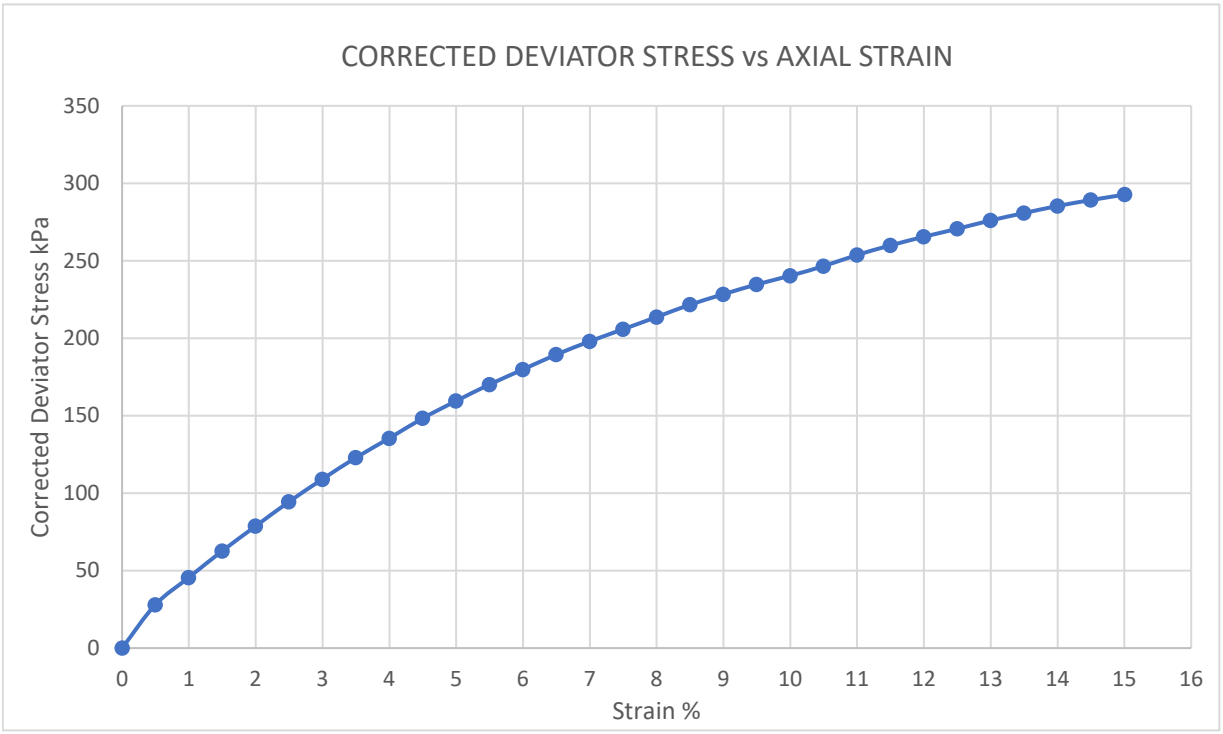
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP2 11.5 U	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	115695	**DATE RECEIVED**	16-Aug-22
DATE TESTED	09-Sep-22	**SAMPLED BY**	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

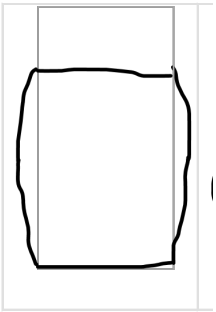
Specimen Location 

Sample Length (mm)	260	Specimen depth from top of Sample (mm)	30
Sample Orientation	Vertical	Specimen Condition	Undisturbed
Specimen Length (mm)	204	Specimen Water Content (%)	9.1
Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.28
Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.09
Membrane Correction	3.40		



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
235	15.0	2.0	293	146

Remarks/Abnormalities

Name O.P Davies BA (Hons) (Laboratory Manager) Signed  Date 21 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

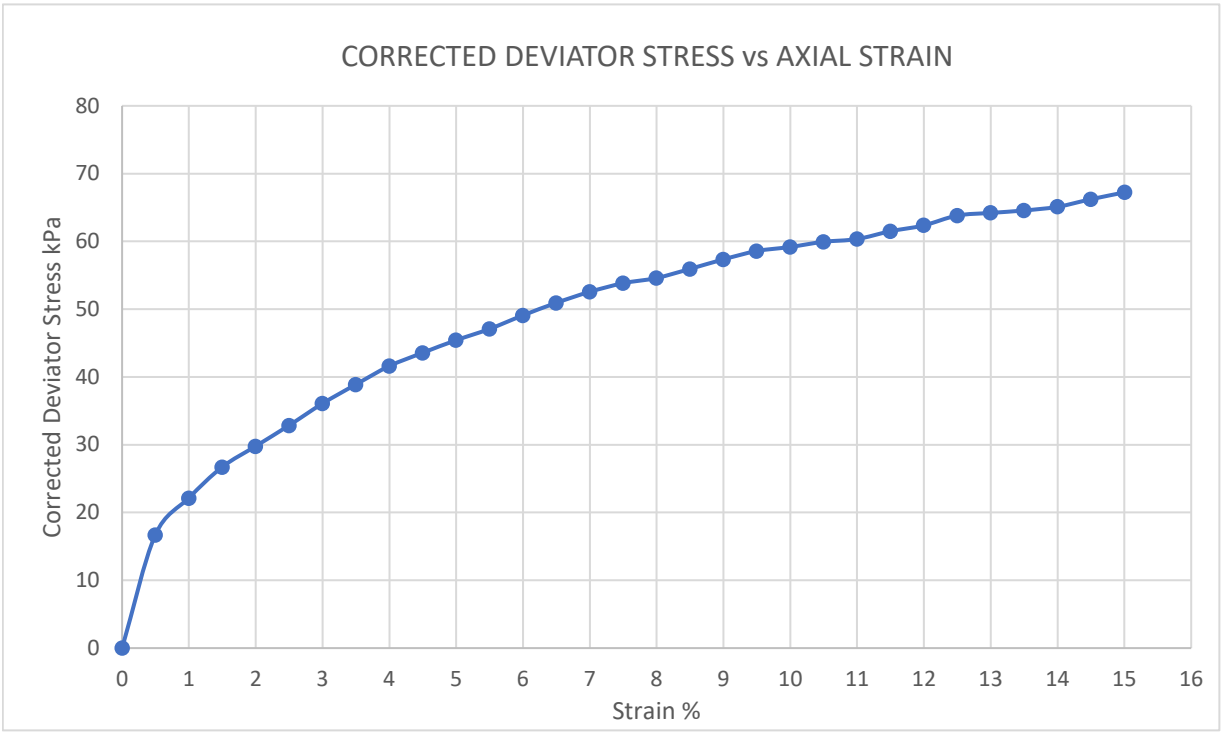
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP2 7 U	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	115694	**DATE RECEIVED**	16-Aug-22
DATE TESTED	09-Sep-22	**SAMPLED BY**	Client
MATERIAL	Soft to firm brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

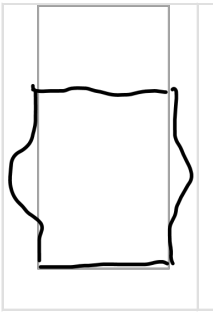
Specimen Location 

Sample Length (mm)	440	Specimen depth from top of Sample (mm)	20
Sample Orientation	Vertical	Specimen Condition	Undisturbed
Specimen Length (mm)	196	Specimen Water Content (%)	21.8
Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.26
Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.86
Membrane Correction	3.40		



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



BULGING

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
145	15.0	2.0	67	34

Remarks/Abnormalities

Name O.P Davies BA (Hons) (Laboratory Manager) Signed  Date 21 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

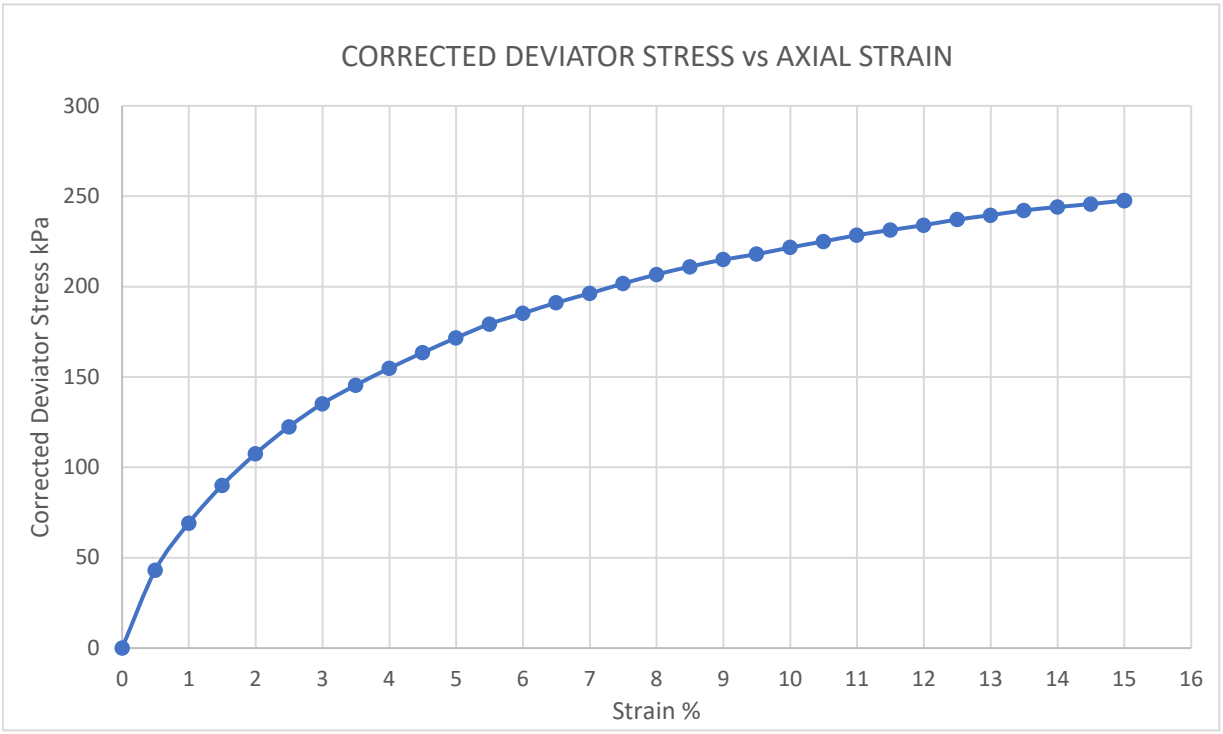
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP1 10.5 U	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	115693	**DATE RECEIVED**	16-Aug-22
DATE TESTED	09-Sep-22	**SAMPLED BY**	Client
MATERIAL	Soft to firm brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

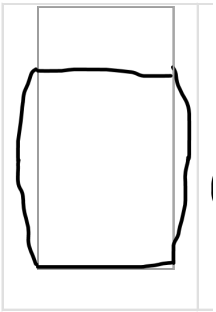
Specimen Location 

Sample Length (mm)	395	Specimen depth from top of Sample (mm)	25
Sample Orientation	Vertical	Specimen Condition	Undisturbed
Specimen Length (mm)	203	Specimen Water Content (%)	10.6
Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.29
Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.07
Membrane Correction	3.40		



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
215	15.0	2.0	248	124

Remarks/Abnormalities

Name O.P Davies BA (Hons) (Laboratory Manager) Signed  Date 21 September 2022

MURRAY RIX
ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

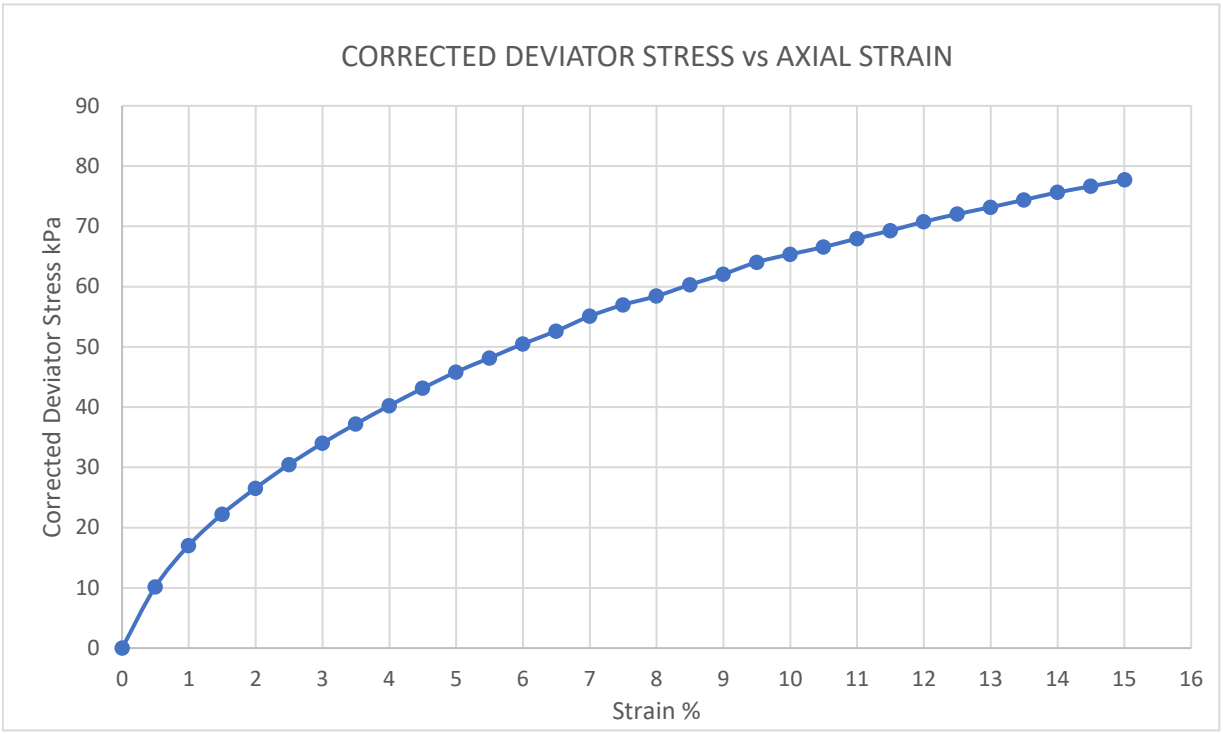
CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP1 7.5 U	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	115692	**DATE RECEIVED**	16-Aug-22
DATE TESTED	09-Sep-22	**SAMPLED BY**	Client
MATERIAL	Soft to firm brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

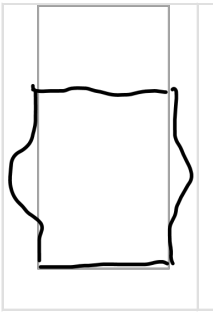
Specimen Location 

Sample Length (mm)	340	Specimen depth from top of Sample (mm)	10
Sample Orientation	Vertical	Specimen Condition	Undisturbed
Specimen Length (mm)	200	Specimen Water Content (%)	23.7
Specimen Diameter (mm)	99	Specimen Bulk Density (Mg/m3)	2.15
Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.74
Membrane Correction	3.40		



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



BULGING

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
155	15.0	2.0	78	39

Remarks/Abnormalities

Name O.P Davies BA (Hons) (Laboratory Manager) Signed  Date 21 September 2022

M U R R A Y R I X
ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

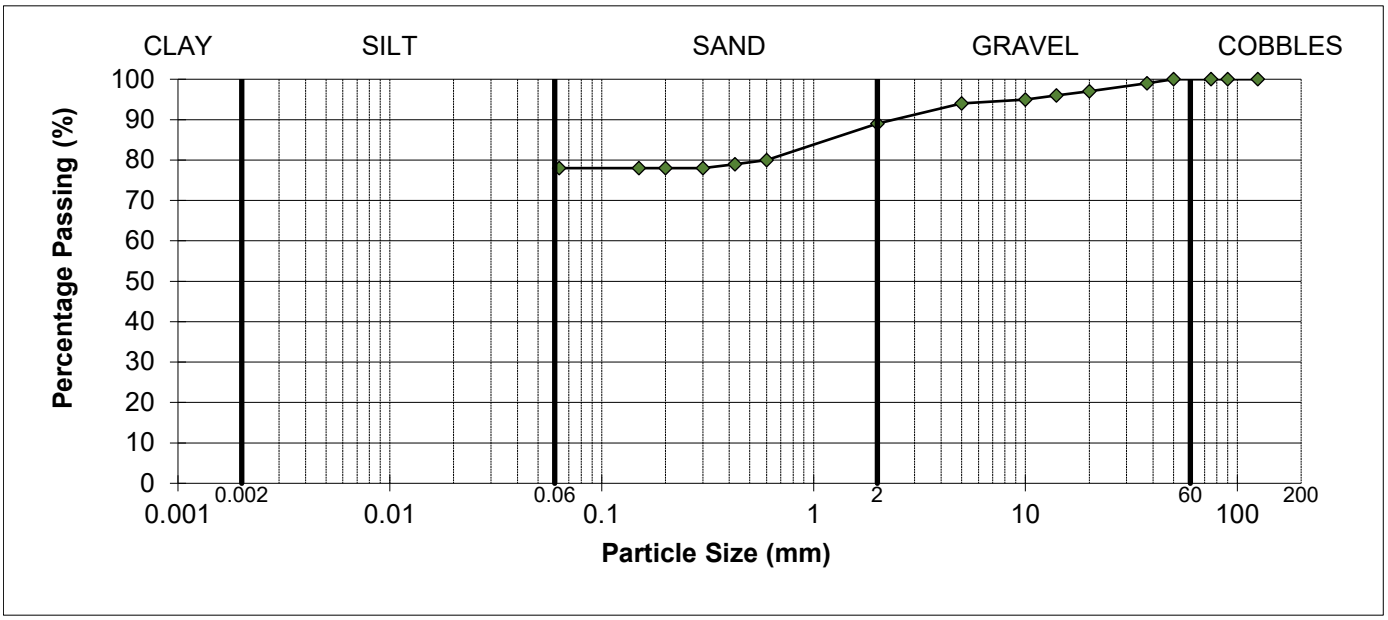
Determination of Water Content in accordance with BS EN ISO 17892-1:2014 (Oven Dry)

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	TP5 1.7 B	DATE SAMPLED	Not advised
LAB SAMPLE No	115689	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Soft brown silty sandy CLAY with occasional gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	94	
90	100		2	89	
75	100		0.6	80	
50	100		0.425	79	
37.5	99		0.3	78	
20	97		0.2	78	
14	96		0.15	78	
10	95		0.063	78	



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

M U R R A Y R I X
ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

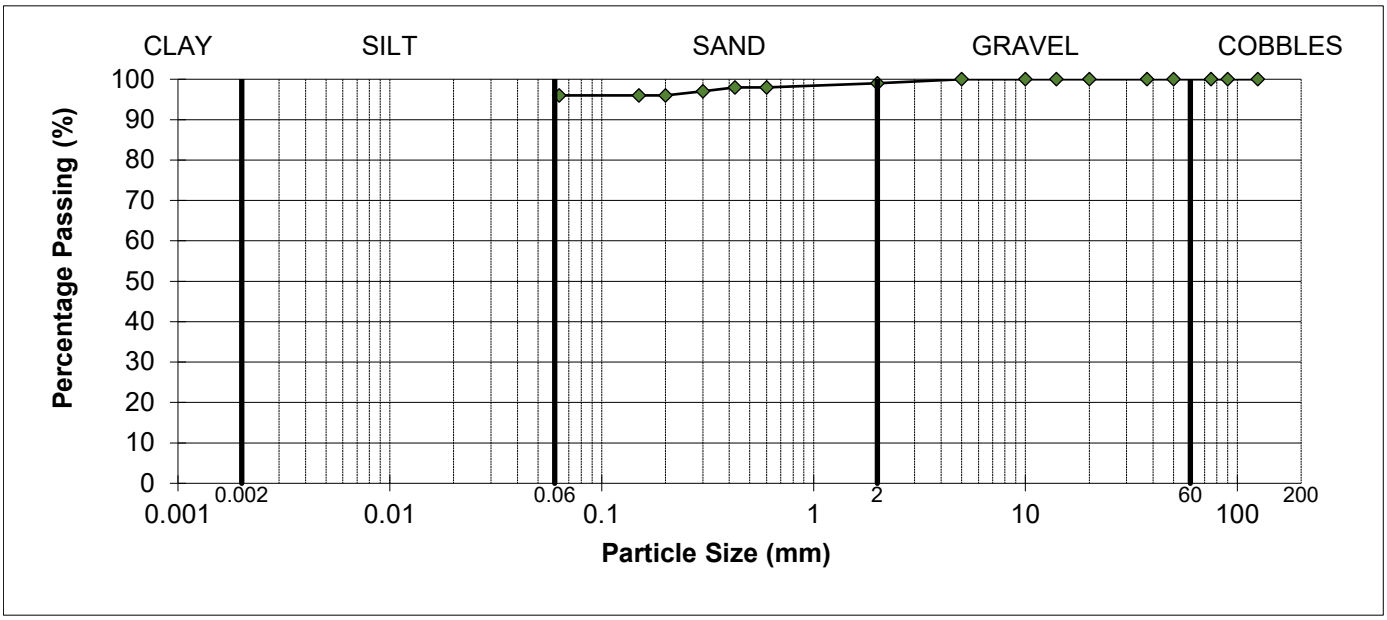
Determination of Water Content in accordance with BS EN ISO 17892-1:2014 (Oven Dry)

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP3 3.8 B	DATE SAMPLED	Not advised
LAB SAMPLE No	115682	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Firm brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	100	
90	100		2	99	
75	100		0.6	98	
50	100		0.425	98	
37.5	100		0.3	97	
20	100		0.2	96	
14	100		0.15	96	
10	100		0.063	96	



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

M U R R A Y R I X
ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

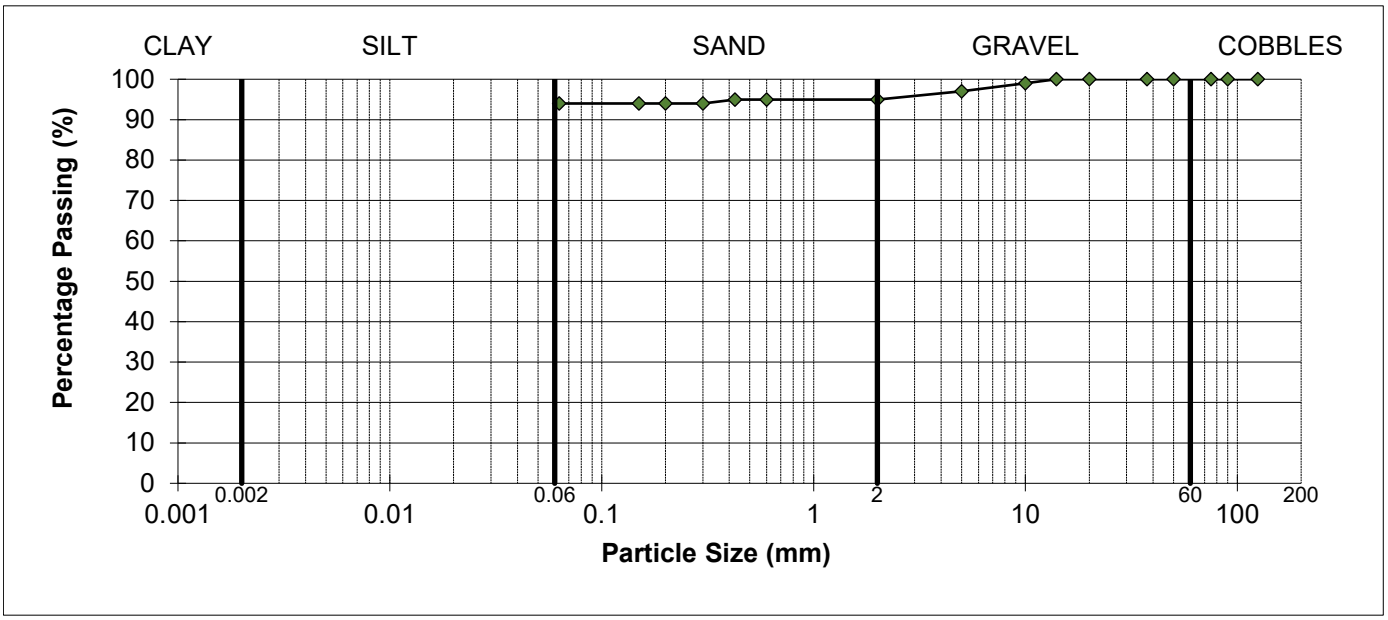
Determination of Water Content in accordance with BS EN ISO 17892-1:2014 (Oven Dry)

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP1 3.9 B	DATE SAMPLED	Not advised
LAB SAMPLE No	115675	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Firm brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	97	
90	100		2	95	
75	100		0.6	95	
50	100		0.425	95	
37.5	100		0.3	94	
20	100		0.2	94	
14	100		0.15	94	
10	99		0.063	94	



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

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ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

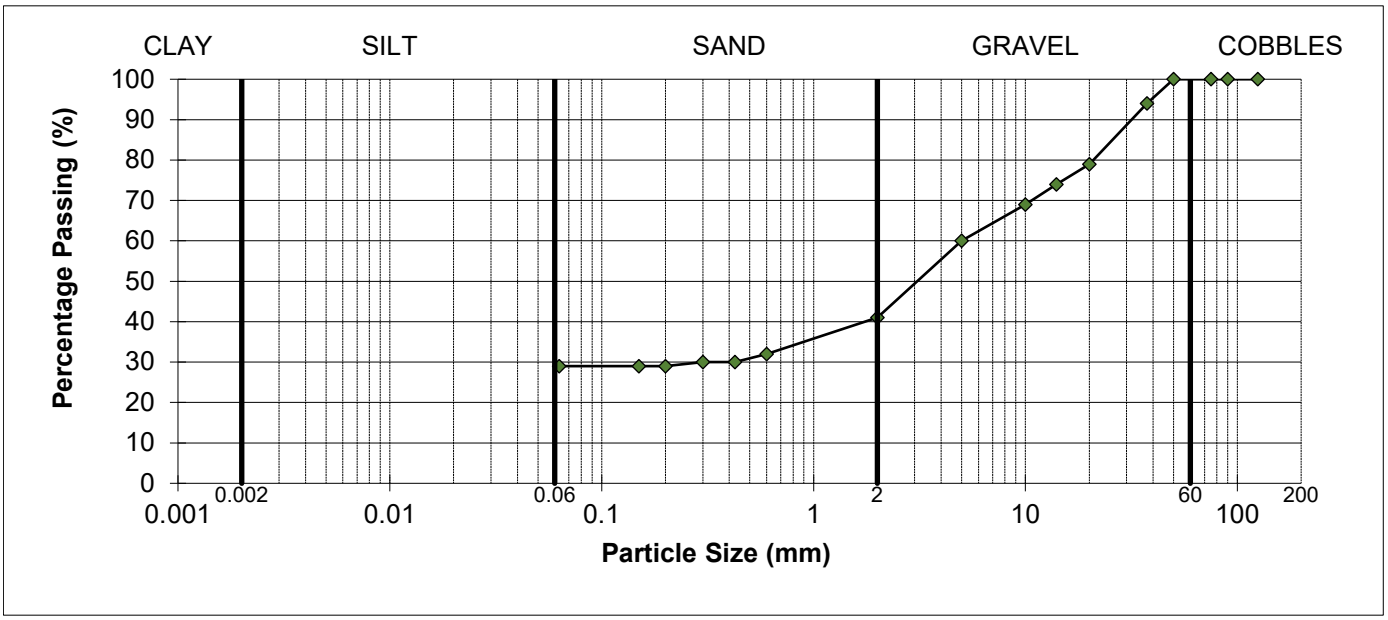
Determination of Water Content in accordance with BS EN ISO 17892-1:2014 (Oven Dry)

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	TP03 2.10	DATE SAMPLED	09-Aug-22
LAB SAMPLE No	115687	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Brown grey silty sandy GRAVEL
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	60	
90	100		2	41	
75	100		0.6	32	
50	100		0.425	30	
37.5	94		0.3	30	
20	79		0.2	29	
14	74		0.15	29	
10	69		0.063	29	



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

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ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

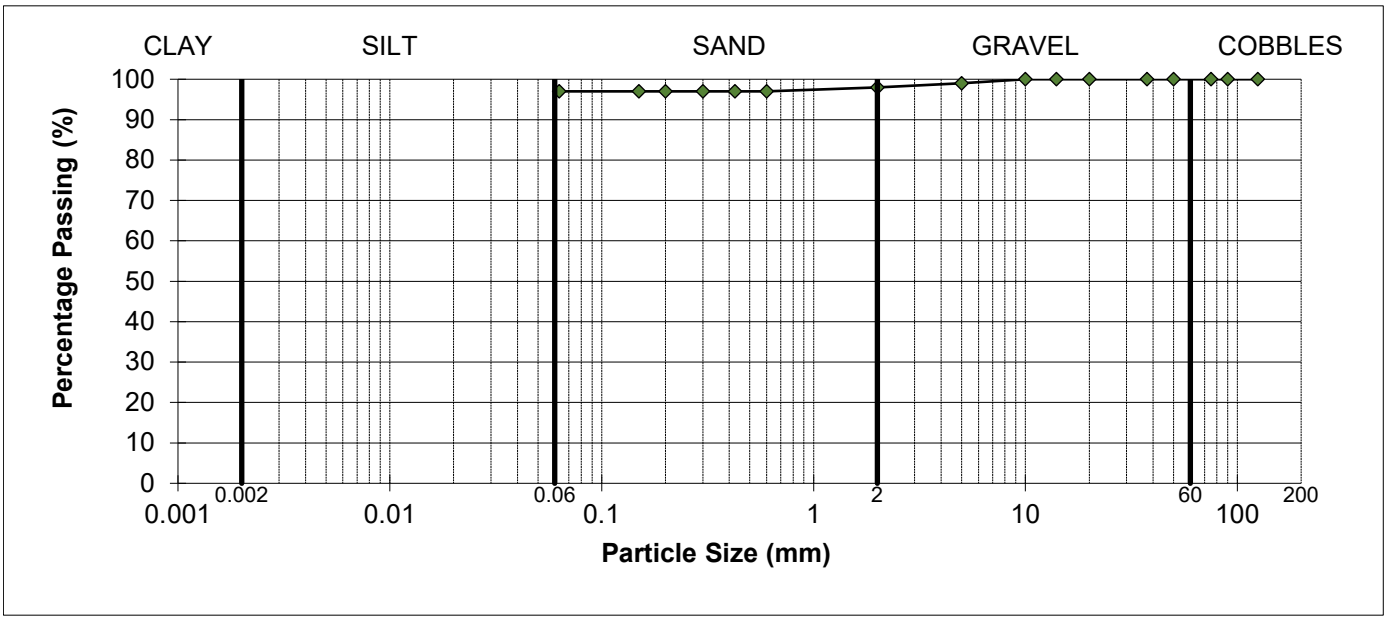
Determination of Water Content in accordance with BS EN ISO 17892-1:2014 (Oven Dry)

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

SAMPLE LABEL	CP01 4.00	DATE SAMPLED	08-Aug-22
LAB SAMPLE No	115676	DATE RECEIVED	16-Aug-22
DATE TESTED	25-Aug-22	SAMPLED BY	Client

MATERIAL	Firm brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	99	
90	100		2	98	
75	100		0.6	97	
50	100		0.425	97	
37.5	100		0.3	97	
20	100		0.2	97	
14	100		0.15	97	
10	100		0.063	97	



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 21-Sep-22

M U R R A Y R I X

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

PARTICLE DENSITY DETERMINATION
BS 1377-2:2022 Cl. 9.2
GAS JAR METHOD

CLIENT	Tier Environmental Ltd
SITE	TE1674 - Hillhouse Business Park
JOB NUMBER	MRN 4346/45

METHOD OF PREPARATION	Oven Dry	VARIATIONS FROM PROCEDURE	None
DATE OF TEST	26-Aug-22	DATE SAMPLED	08-11-Aug-22

Laboratory Sample Number	Sample Label	Sample Location	Material	Particle Density (Mg/m^3)
115688	TP04 1.50	TP04	Brown grey silty SAND & GRAVEL	2.06
115687	TP03 2.10	TP03	Brown grey silty sandy GRAVEL	2.03
115676	CP01 4.00	CP01	Firm brown silty sandy CLAY with rare gravel	2.66
115679	CP02 7.50	CP02	Firm brown silty sandy CLAY with rare gravel	2.66
115683	CP3 6.20	CP3	Firm brown silty sandy CLAY with rare gravel	2.62

Comment / Anomalies
Particle density reported is the average of two determinations

NAME O.P. Davies BA (Hons) (Laboratory Manager) SIGNED DATE 21-Sep-22

APPENDIX G - GROUNDWATER AND GAS MONITORING RESULTS

GAS AND GROUNDWATER MONITORING ACROSS BOREHOLE LOCATIONS FIELD PROFORMA

JOB DETAILS:	
Client:	Sesona Ltd
Site:	Hillhouse business Park
Date:	22.08.2022

Job No:	TE1674		
Visit No:	1	of	6
Operator:	LH		
Project Manager:	ER		

Ground Gas Instrument	GA2000							
Ambient Gas Concentrations:	CH_4	0.1	CO_2	0.1	O_2	20.3		
METEOROLOGICAL AND SITE INFORMATION								
State of ground:	X	Dry		Moist		Wet		Snow		Frozen
Wind:		Calm		Light	X	Moderate		Strong		
Cloud cover:		None		Slight	X	Cloudy		Overcast		
Preciptation:	X	None		Slight		Moderate		Heavy		
Barometric pressure (mbar):			1012	Before			1012	After		
Pressure Trend				Falling	X	Steady		Rising		

Monitoring Point	FLOW DATA		GAS CONCENTRATIONS										WELL AND WATER DATA				RESPONSE ZONE	COMMENTS
	Flow rate (l/hr)		Methane (%v/v) CH4		Carbon dioxide (%v/v) CO2		Oxygen (%v/v) O2		Carbon monoxide (ppm) CO		Hydrogen sulphide (ppm) H2S		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)		
	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady	Peak	Steady						
CP03	ND	ND	0.1	0.1	0.7	0.3	6.5	15.7	45	8	ND	ND	2.25	9.20			TFD and Till	
WS01	ND	ND	ND	ND	7.6	7.6	7.0	7.0	13	3	ND	ND	2.41	2.96			MG	GW sample taken
CP02	ND	ND	ND	ND	6.9	0.1	5.9	5.9	6	5	ND1	ND	2.42	7.57			TFD and Till	
WS03	ND	ND	ND	ND	0.5	0.2	0.1	0.1	3	2	1	ND	2.70	2.78			MG	
CP01	ND	ND	ND	ND	8.5	8.5	2.6	8.0	12	4	1	ND	2.46	11.16			TFD and Till	GW sample taken
WS04	ND	ND	ND	ND	7.6	1.3	8.0	18.5	6	1	1	ND	2.24	2.85			MG	
WS05	ND	ND	ND	ND	1.4	0.7	16.9	18.3	2	2	ND	ND	2.24	2.41			MG	GW sample taken
Min	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.1	2	1	ND	ND	2.24	2.41				
Max	0.1	0.1	0.1	0.1	8.5	8.5	16.9	18.5	45	8	1	ND	2.70	11.16				

GAS AND GROUNDWATER MONITORING ACROSS BOREHOLE LOCATIONS FIELD PROFORMA

JOB DETAILS:	
Client:	Sesona Ltd
Site:	Hillhouse business Park
Date:	30.08.2022

Job No:	TE1674		
Visit No:	2	of	6
Operator:	LH		
Project Manager:	ER		

Ground Gas Instrument	GA2000										
Ambient Gas Concentrations:	CH_4	ND	CO_2	0.1	O_2	19.7					
METEOROLOGICAL AND SITE INFORMATION											
State of ground:	X	Dry		Moist		Wet		Snow		Frozen	
Wind:	X	Calm		Light		Moderate		Strong			
Cloud cover:		None	X	Slight		Cloudy		Overcast			
Preciptation:	X	None		Slight		Moderate		Heavy			
Barometric pressure (mbar):			1029	Before			1029	After			
Pressure Trend				Falling	X	Steady		Rising			

Monitoring Point	FLOW DATA		GAS CONCENTRATIONS										WELL AND WATER DATA				RESPONSE ZONE	COMMENTS
	Flow rate (l/hr)		Methane (%v/v) CH4		Carbon dioxide (%v/v) CO2		Oxygen (%v/v) O2		Carbon monoxide (ppm) CO		Hydrogen sulphide (ppm) H2S		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)		
	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady	Peak	Steady						
CP03	ND	ND	0.1	ND	0.5	0.3	0.5	0.6	336	42	1	ND	2.27	9.23			TFD and Till	CO 336 VERY HIGH
WS01	ND	ND	ND	ND	7.7	7.7	2.8	5.7	16	10	ND	ND	2.42	2.96			MG	
CP02	0.1	0.1	ND	ND	0.3	0.2	4.8	5.0	9	7	ND	ND	2.43	4.33			TFD and Till	
WS03	0.1	0.1	0.1	ND	0.3	0.2	0.1	0.1	6	5	ND	ND	2.70	2.77			MG	
CP01	ND	ND	ND	ND	5.0	5.0	1.1	14.1	10	8	ND	ND	2.45	11.12			TFD and Till	
WS04	0.1	ND	ND	ND	4.5	2.1	13.3	16.4	5	4	ND	ND	2.25	2.35			MG	
WS05	ND	ND	ND	ND	3.2	3.1	8.0	8.0	4	4	ND	ND	2.25	2.40			MG	
Min	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	4	4	ND	ND	2.25	2.35				
Max	0.1	0.1	0.1	0.1	7.7	7.7	13.3	16.4	336	42	1	ND	2.70	11.12				

GAS AND GROUNDWATER MONITORING ACROSS BOREHOLE LOCATIONS FIELD PROFORMA

JOB DETAILS:	
Client:	Sesona Ltd
Site:	Hillhouse business Park
Date:	15.09.2022

Job No:	TE1674		
Visit No:	3	of	6
Operator:	LH		
Project Manager:	ER		

Ground Gas Instrument	GA2000							
Ambient Gas Concentrations:	CH_4	0.1	CO_2	0.1	O_2	20.1		
METEOROLOGICAL AND SITE INFORMATION								
State of ground:	X	Dry		Moist		Wet		Snow		Frozen
Wind:		Calm		Light	X	Moderate		Strong		
Cloud cover:		None		Slight	X	Cloudy		Overcast		
Preciptation:	X	None		Slight		Moderate		Heavy		
Barometric pressure (mbar):			1016	Before			1016	After		
Pressure Trend				Falling		Steady	X	Rising		

Monitoring Point	FLOW DATA		GAS CONCENTRATIONS										WELL AND WATER DATA				RESPONSE ZONE	COMMENTS
	Flow rate (l/hr)		Methane (%v/v) CH4		Carbon dioxide (%v/v) CO2		Oxygen (%v/v) O2		Carbon monoxide (ppm) CO		Hydrogen sulphide (ppm) H2S		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)		
	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady	Peak	Steady						
CP03	ND	ND	0.2	0.1	0.7	0.5	5.2	6.1	888	210	3	2	2.29	9.22			TFD and Till	CO 888 VERY HIGH
WS01	ND	ND	0.1	ND	7.2	7.1	4.4	5.2	52	40	ND	ND	2.39	2.95			MG	
CP02	ND	ND	ND	ND	7.1	0.2	4.9	14.8	34	29	ND	ND	2.38	7.50			TFD and Till	
WS03	ND	ND	ND	ND	0.6	0.1	13.8	20.6	25	22	ND	ND	2.56	2.78			MG	
CP01	ND	ND	ND	ND	5.7	5.6	13.2	13.7	25	22	1	ND	2.43	11.09			TFD and Till	
WS04	0.1	0.1	ND	ND	5.0	1.7	17.9	18.0	22	16	1	ND	2.25	2.36			MG	
WS05	ND	ND	ND	ND	2.0	2.0	13.1	13.2	15	13	ND	ND	2.25	2.41			MG	
Min	0.1	0.1	0.1	0.1	0.6	0.1	4.4	5.2	15	13	ND	ND	2.25	2.36				
Max	0.1	0.1	0.2	0.1	7.2	7.1	17.9	20.6	888	210	3	2	2.56	11.09				

GAS AND GROUNDWATER MONITORING ACROSS BOREHOLE LOCATIONS FIELD PROFORMA

JOB DETAILS:	
Client:	Sesona Ltd
Site:	Hillhouse business Park
Date:	14.10.2022

Job No:	TE1674		
Visit No:	4	of	6
Operator:	LH		
Project Manager:	ER		

Ground Gas Instrument	**GA2000**

Ambient Gas Concentrations:	CH_4	0.1	CO_2	0.1	O_2	20.1

METEOROLOGICAL AND SITE INFORMATION										
State of ground:		Dry		Moist	X	Wet		Snow		Frozen
Wind:		Calm		Light	X	Moderate		Strong		
Cloud cover:		None		Slight		Cloudy	X	Overcast		
Preciptation:		None	X	Slight		Moderate		Heavy		
Barometric pressure (mbar):			1016	Before			1016	After		
Pressure Trend				Falling		Steady	X	Rising		

Monitoring Point	FLOW DATA: Flow rate (l/hr)		GAS CONCENTRATIONS: Methane (%v/v) CH4		Carbon dioxide (%v/v) CO2		Oxygen (%v/v) O2		Carbon monoxide (ppm) CO		Hydrogen sulphide (ppm) H2S		WELL AND WATER DATA: Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)	RESPONSE ZONE	COMMENTS
	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady	Peak	Steady						
CP03	0.1	ND	0.4	0.2	1.0	0.8	0.1	0.3	960	486	ND	ND	2.13	9.23			TFD and Till	
WS01	0.1	ND	0.1	0.1	9.3	8.9	5.4	5.7	244	133	ND	ND	2.28	2.96			MG	
CP02	ND	ND	0.1	ND	8.6	ND	0.9	2.1	110	84	ND	ND	2.29	7.53			TFD and Till	
WS03	0.1	ND	0.1	ND	0.5	0.3	ND	ND	78	65	ND	ND	2.45	2.77			MG	
CP01	0.1	0.1	8.7	8.7	9.4	0.5			45	44	ND	ND	2.19	11.04			TFD and Till	
WS04	ND	ND	0.1	0.1	7.5	1.3	9.4	19.3	40	20	ND	ND	2.12	2.36			MG	
WS05	ND	ND	0.1	0.1	4.9	4.7	8.2	8.3	55	25	ND	ND	2.14	2.41			MG	

	Flow Peak	Flow Steady	CH4 Peak	CH4 Steady	CO2 Peak	CO2 Steady	O2 Lowest	O2 Steady	CO Peak	CO Steady	H2S Peak	H2S Steady	Water Depth	Depth of Well	Ground Level	Water Level
Min	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.1	40	20	ND	ND	2.12	2.36		
Max	0.1	0.1	8.7	8.7	9.4	8.9	9.4	19.3	960	486	ND	ND	2.45	11.04		

GAS AND GROUNDWATER MONITORING ACROSS BOREHOLE LOCATIONS FIELD PROFORMA

JOB DETAILS:	
Client:	Sesona Ltd
Site:	Hillhouse business Park
Date:	03.11.2022

Job No:	TE1674		
Visit No:	5	of	6
Operator:	LH		
Project Manager:	ER		

Ground Gas Instrument	GA2000										
Ambient Gas Concentrations:	CH_4	0.1	CO_2	0.2	O_2	2.1					
METEOROLOGICAL AND SITE INFORMATION											
State of ground:		Dry		Moist	X	Wet		Snow		Frozen	
Wind:		Calm		Light	X	Moderate		Strong			
Cloud cover:		None	X	Slight		Cloudy		Overcast			
Preciptation:		None		Slight	X	Moderate		Heavy			
Barometric pressure (mbar):			997	Before			997	After			
Pressure Trend				Falling	X	Steady		Rising			

Monitoring Point	FLOW DATA		GAS CONCENTRATIONS										WELL AND WATER DATA				RESPONSE ZONE	COMMENTS
	Flow rate (l/hr)		Methane (%v/v) CH4		Carbon dioxide (%v/v) CO2		Oxygen (%v/v) O2		Carbon monoxide (ppm) CO		Hydrogen sulphide (ppm) H2S		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)		
	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady	Peak	Steady						
CP03	ND	ND	0.2	0.1	1.2	0.8	0.3	2.9	258	60	ND	ND	2.09	9.25			TFD and Till	CO 258NOT AS HIGH OVER OTHER TIMES
WS01	ND	ND	0.1	ND	11.2	11.2	2.1	2.7	61	26	ND	ND	2.25	2.96			MG	
CP02	ND	ND	ND	ND	9.6	0.3	1.5	1.5	16	10	ND	ND	2.26	7.52			TFD and Till	
WS03	ND	ND	ND	ND	0.9	0.3	0.1	0.1	14	11	ND	ND	2.48	2.78			MG	
CP01	ND	ND	0.1	ND	9.9	9.8	1.6	7.6	12	9	ND	ND	2.16	11.05			TFD and Till	
WS04	ND	ND	ND	ND	8.1	1.0	7.1	19.1	8	6	ND	ND	2.09	2.35			MG	
WS05	ND	ND	0.1	0.1	6.3	6.2	4.2	4.3	6	5	ND	ND	2.11	2.42			MG	
Min	0.1	0.1	0.1	0.1	0.9	0.3	0.1	0.1	6	5	ND	ND	2.09	2.35				
Max	0.1	0.1	0.2	0.1	11.2	11.2	7.1	19.1	258	60	ND	ND	2.48	11.05				

GAS AND GROUNDWATER MONITORING ACROSS BOREHOLE LOCATIONS FIELD PROFORMA

JOB DETAILS:	
Client:	Sesona Ltd
Site:	Hillhouse business Park
Date:	22.11.2022

Job No:	TE1674		
Visit No:	6	of	6
Operator:	LH		
Project Manager:	ER		

Ground Gas Instrument	GA2000										
Ambient Gas Concentrations:	CH_4	0.2	CO_2	1	O_2	21.1					
METEOROLOGICAL AND SITE INFORMATION											
State of ground:		Dry		Moist	X	Wet		Snow		Frozen	
Wind:		Calm	X	Light		Moderate		Strong			
Cloud cover:		None		Slight	X	Cloudy		Overcast			
Preciptation:	X	None		Slight		Moderate		Heavy			
Barometric pressure (mbar):			990	Before			990	After			
Pressure Trend				Falling	X	Steady		Rising			

Monitoring Point	FLOW DATA		GAS CONCENTRATIONS										WELL AND WATER DATA				RESPONSE ZONE	COMMENTS
	Flow rate (l/hr)		Methane (%v/v) CH4		Carbon dioxide (%v/v) CO2		Oxygen (%v/v) O2		Carbon monoxide (ppm) CO		Hydrogen sulphide (ppm) H2S		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)		
	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady	Peak	Steady						
CP03	ND	ND	0.7	0.4	1.1	0.5	4.2	5.1	1000	350	ND	ND	3.93	9.20			TFD and Till	
WS01	ND	ND	0.2	0.2	9.1	9.1	3.4	3.6	18	2	ND	ND	2.04	2.96			MG	
CP02	ND	ND	0.2	0.2	7.9	0.2	1.6	1.7	119	97	ND	ND	2.16	7.63			TFD and Till	
WS03	ND	ND	0.2	0.2	1.0	0.3	ND	0.1	75	65	ND	ND	2.45	2.78			MG	
CP01	4.1	ND	0.2	0.2	7.2	7.1	0.5	9.4	88	83	ND	ND	2.02	11.01			TFD and Till	
WS04	ND	ND	0.2	0.1	8.3	7.9	3.8	3.8	76	59	ND	ND	1.99	2.36			MG	
WS05	ND	ND	0.2	0.1	7.7	5.3	3.5	3.6	67	56	ND	ND	2.02	2.41			MG	
Min	0.1	0.1	0.2	0.1	1.0	0.2	0.1	0.1	18	2	ND	ND	1.99	2.36				
Max	4.1	0.1	0.7	0.4	9.1	9.1	4.2	9.4	1000	350	ND	ND	3.93	11.01				

APPENDIX H - DEFINITIONS OF TERMS USED IN QUALITATIVE AND QUANTITATIVE RISK ASSESSMENTS

CIRIA C552 Terminology

For the qualitative and quantitative assessment of risks posed by potential pollutant linkages have been undertaken using the risk matrix adapted from CIRIA C552 and outlined in the table below.

	Category	Definition
Potential severity	Severe	Acute (short term) risk to human health, Major pollution of sensitive controlled waters, ecosystems or habitat. Catastrophic damage to buildings or property or crops.
	Medium	Chronic (Medium / long term) risk to human health Pollution of sensitive controlled waters, ecosystems or species, Significant damage to crops, buildings or structures
	Mild	Easily preventable permanent health effects on humans. Pollution of non-sensitive controlled waters. Minor damage to buildings or structures.
	Minor	Easily preventable non-permanent health effects on humans, or no effects. Minor, low level and localised contamination of on-site soil. Easily repairable damage to buildings or structures.
Probability of risk	High Likelihood	Pollutant linkage may be present, and the risk is almost certain to occur , or there is evidence of harm already occurring.
	Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
	Low Likelihood	Pollutant linkages may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
	Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur are improbable.

		Potential Severity			
		Severe	**Medium**	**Mild**	**Minor**
Probability of risk	**High Likelihood**	Very high risk	High risk	Moderate risk	Moderate / low risk
	Likely	High risk	Moderate risk	Moderate / low risk	Low risk
	Low Likelihood	Moderate risk	Moderate / low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	very low risk	Very low risk

APPENDIX I - HUMAN HEALTH ASSESSEMENT CRITERIA

HUMAN HEALTH ASSESSMENT CRITERIA

Context

Contaminated Land is defined under law through Part IIA of the Environmental Protection Act 1990, implemented through Section 57 of the Environment Act 1995 and associated guidance ("Part IIA"). These specify that a "suitable for use" approach is to be applied in the assessment of potentially contaminated land, implemented through a phased programme of site investigation and risk assessment appropriate to the site under consideration.

The assessment of potential risks posed by contaminated land is based upon the assessment of plausible contaminant source - pathway - receptor linkages ("pollutant linkages") for the current and/or proposed future use of the site. The process for the assessment of contaminated land adopted in this report is in line with guidance issued by the Environment Agency Land contamination risk management (LCRM) - GOV.UK (www.gov.uk)

Land contamination can harm:

- human health
- drinking water supplies, groundwater and surface water
- soils
- ecosystems including wildlife, animals and wetlands
- property

It can also affect the current and future land use. Dealing with land contamination helps make the environment clean and safe. Through regeneration it can:

- enhance the health and wellbeing of all
- add to the economic, ecological and amenity value of the area

Use land contamination risk management (LCRM) to:

- identify and assess if there is an unacceptable risk
- assess what remediation options are suitable to manage the risk
- plan and carry out remediation
- verify that remediation has worked

You can use LCRM in a range of regulatory and management contexts. For example, voluntary remediation, planning, assessing liabilities or under the Part 2A contaminated land regime. The Environment Agency expects you to follow LCRM if you are managing the risks from land contamination.

We support the use of the National Quality Mark Scheme (NQMS). You can use it for any type of land contamination report.

Using the NQMS:

- will make sure all legislative requirements and necessary standards related to managing land contamination are met
- can provide increased confidence by submitting reports of the quality we expect
- can result in cost and time savings by 'getting it right first time'

LCRM is made up of 4 guides.

1. LCRM: Before you start.
2. LCRM: Risk assessment.
3. LCRM: Options appraisal.
4. LCRM: Remediation and verification.

We use a staged risk based approach. There are 3 stages, and each stage is broken down into tiers or steps.

Stage 1: Risk assessment

You will use a tiered approach to risk assessment. The 3 tiers are:

1. Preliminary risk assessment.
2. Generic quantitative risk assessment.
3. Detailed quantitative risk assessment.

Stage 1 includes information for intrusive site investigations.

Stage 2: Options appraisal

There are 3 steps to follow.

1. Identify feasible remediation options.
2. Do a detailed evaluation of options.
3. Select the final remediation option.

Stage 3: Remediation and verification

There are 4 steps to follow.

1. Develop a remediation strategy.
2. Remediate.
3. Produce a verification report.
4. Do long term monitoring and maintenance, if required

You must always start with a preliminary risk assessment.

The risk assessment stage is an iterative process. You can do the 3 tiers in order or progress from a preliminary risk assessment to a detailed quantitative risk assessment. As part of a generic or detailed quantitative risk assessment you will need to collect detailed information about the site. This is usually through an intrusive site investigation.

Depending on the level of risk or regulatory requirements, you can proceed from a preliminary risk assessment to the options appraisal stage. If you proceed direct to the options appraisal stage, you still need to collect the detailed site investigation information required by the generic and detailed quantitative risk assessments. This is to confirm that your approach is viable and acceptable.

Following the risk assessment stage, if you conclude that the risks are acceptable, with agreement from the relevant regulator, you can end the process.

If there are unacceptable risks, then remediation or mitigation is required. Follow stages 2 and 3 in order.

In stage 2 options appraisal, you will:

- look at the most feasible options
- produce a shortlist of options
- use evaluation criteria to assess them
- select which ones are the most suitable to take forward to stage 3

In stage 3 remediation and verification, you will produce a remediation strategy, do the remediation and then produce a verification report.

You will decide at the options appraisal stage if long term monitoring and maintenance is the remediation option. You may need to do post-remediation monitoring for further verification.

The risk assessment and subsequent investigation, remediation and verification must address all potential sources of pollutants that may be present on the site (the “hazards”), all receptors that may be harmed by these (e.g., human health, controlled waters, ecological receptors) and the pathways by which the contamination may be transported from the contaminant source(s) to the receptor(s). This is defined within the conceptual model for the site, which represents the characteristics of the site in a form that shows the possible pollutant linkages. As further information becomes available (for example, through site investigation), so the conceptual model will be refined.

Remedial action can be specified at any phase within this assessment process to break the identified pollutant linkage in determining whether or not to undertake further assessment or to undertake remediation, the potential cost-savings arising from a more thorough assessment of the pollutant linkages and more tightly defined remedial strategy must be considered against the direct costs involved in the work and the time that this will take to execute and gain regulatory approval.

A different approach to the statistical appraisal of data is required depending on whether the assessment is being undertaken to assess land as Contaminated Land in accordance with the regulations or whether the assessment is to assess whether the site is suitable for new development in accordance with the Planning regime. The statistical approach to assessment is discussed further in CL:AIRE:2020 “Professional Guidance: Comparing Soil Contamination Data with a Critical Concentration”.

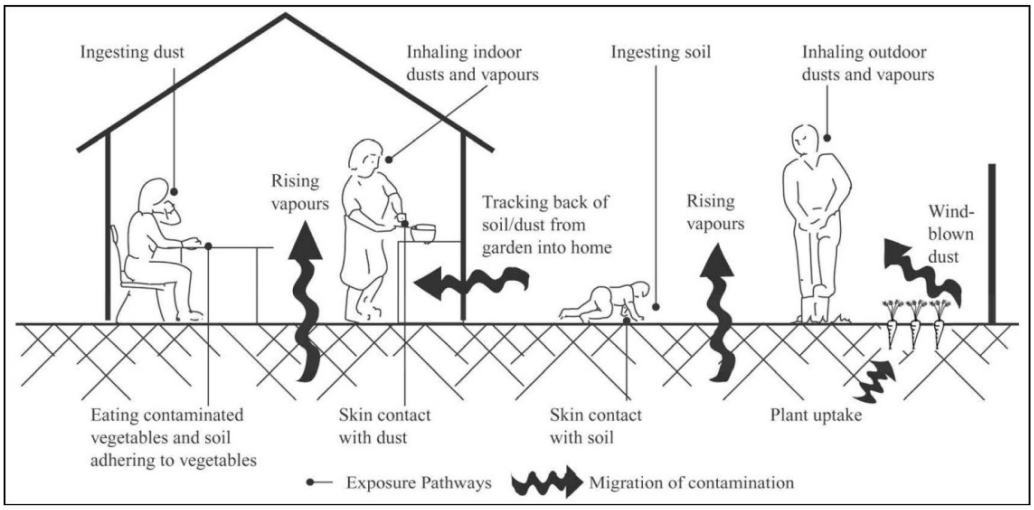
Some form of Detailed Quantitative Risk Assessment (DQRA) will be essential for those cases where appropriate GAC values cannot be established for the contaminant linkages under consideration.

Generic Assessment Criteria for Human Health Risk Assessment

In March 2002, the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency (EA) published the Contaminated Land Exposure Assessment (CLEA) Model and a series of related reports and guidance. These were designed to provide a scientifically based framework for the assessment of chronic risks to human health from contaminated land. The initial documents (CLR7 – 10) were withdrawn and replaced with revised guidance issued by the Environment Agency including:

- "Using Soil Guideline Values"; EA,2009; Land contamination: using soil guideline values (SGVs) - GOV.UK (www.gov.uk)
- "Human Health toxicology assessment of contaminants in soil" EA;, 2009; https://www.gov.uk/government/publications/human-health-toxicological-assessment-of-contaminants-in-soil
- "Update technical background to the CLEA model" 2009; https://www.gov.uk/government/publications/updated-technical-background-to-the-clea-model
- CLEA Software (Version1.05) Handbook 2015; https://www.gov.uk/government/publications/contaminated-land-exposure-assessment-clea-tool
- Compilation of Data for priority Organic Contaminants for Derivation of Soil Guideline Values; Science Report SC050021/SR7, 2008; and,
- "Professional Guidance: Comparing Soil Contamination Data with a Critical Concentration." CL:AIRE:2020 https://www.claire.co.uk/component/phocadownload/category/9-other-cl-aire-documents?download=745:2020-stats-guidance

The CLEA model and associated guidance was developed to calculate an estimated tolerable daily intake (TDI) of contaminants for site users given a set of 'typical' human health exposure pathways which are detailed in "SR3: Updated technical background to the CLEA



model" (Science Report SC050021/SR3, EA, 2009) and reproduced below.

Ingestion

- Outdoor soil;
- Indoor dust;
- Home grown produce;
- Soil attached to home grown produce.

Dermal Contact

- Outdoor soil;
- Indoor dust.

Inhalation

- Outdoor dust;
- Indoor dust;
- Outdoor vapour;
- Indoor vapour.

It should be noted that the CLEA model does not include an exhaustive list of potential exposure pathways, e.g. certain compounds can pass through plastic water pipes into drinking water supply.

The potential significance of each of the exposure pathways is dependent upon the type of land use and the nature of the contaminant being considered. The CLEA model considers principal 'default' land use scenarios and makes a series of assumptions with regards to building type (where applicable), identification of the critical human receptor group, exposure frequency and duration. The definitions of the principal land use types given in SR3 (EA, 2009) are:

Residential land use;

- A typical residential property consisting of a two-storey terraced house built on a ground-bearing slab of 0.15m thickness with a private garden consisting of lawn, flowerbeds, and a small fruit and vegetable patch. The occupants are assumed to be parents with young children, who make regular use of the garden. The critical receptor is a 0 – 6-year-old female.
- Active exposure pathways are ingestion of outdoor soil, ingestion of indoor dust, ingestion of home grown produce and soil adhering to home grown produce; direct dermal contact with outdoor soil and indoor dust; inhalation of outdoor dust and vapour and indoor dust and vapour

Allotments

- A plot of open space commonly made available by the Local Authority to tenants to grow fruit and vegetables for their own consumption. There are usually several plots to a site and the overall site area may cover more than one hectare. The tenants are assumed to be the parents or grandparents and that young children make occasional accompanied visits to the plots. The critical receptor is a 0 – 6-year-old female and there is no building present on Site.
- Active exposure pathways are ingestion of outdoor soil, ingestion of home grown produce and soil adhering to home grown produce; direct dermal contact with outdoor soil; inhalation of outdoor vapour.

Commercial and industrial land use.

- A typical commercial or light industrial property consisting of a three-story office building (pre-1970) with a ground bearing floor slab at which employees spend most time indoors and are involved in office based or related light physical work. The critical receptor is a working female adult aged 16 – 65 years.
- Active exposure pathway is ingestion of outdoor soil, ingestion of indoor dust; direct dermal contact with outdoor soil and indoor dust; inhalation of outdoor dust and vapour and inhalation of indoor dust and vapour.

Soil Guideline Values

Based on the assumption of each land use type, the EA and DEFRA developed and published Soil Guideline Value (SGV) using the CLEA model for a number of principal contaminants and 'default' end-use scenarios of residential, allotments and commercial/industrial use. The primary purpose of the SGVs is as trigger value for the tolerable daily intake (TDI), below which it can be assumed that the soil does not pose an unacceptable risk to the identified receptor. Where soils contamination is present above this level further assessment may be required. SGVs were developed for the following contaminants:

- Heavy metals and other inorganic compounds: arsenic, cadmium, chromium, cyanide, lead (now withdrawn), mercury, nickel and selenium.
- Benzene, ethylbenzene, toluene and xylenes.
- Phenol.
- Dioxins and dioxin-like polychlorinated biphenyls (PCBs)
- Polycyclic aromatic hydrocarbons (PAHs) – 11 substances

LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment

In addition, in 2009 CIEH through LQM and EIC published generic assessment criteria (GACs) for 82 substances including metals, petroleum hydrocarbons, PAHs and explosive substances for a variety of soil types and the three 'default' land uses – (residential, allotments and commercial end-uses) as described in SR3 (EA, 2009). These have been superseded as described below.

Category 4 Screening Values

In 2013 "SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination" (CL:AIRE 2013) was issued which detailed findings of a research project undertaken by CL:AIRE to set out the framework by which potential Category 4 Screening Levels (pC4SL) may be derived for 6 contaminants of concern, Arsenic, Benzene, Benzo(a)pyrene, Cadmium, Chromium VI and Lead.

This was supplemented in 2014 by "SP1010: Development of Category 4 Screening Levels for the Assessment of Land Affected by Contamination – Policy Companion Document" (DEFRA, 2014). SP1010 proposed several updated toxicology information relating to contaminant behaviour updated assumptions relating to the modelling of human exposure to soil contaminants, derivation of separate C4SLs for residential with the consumption of home grown produce, residential without the consumption of home grown produce, and two new land uses: public open spaces near residential housing (POS resi) and public parks (POS park).

Public Open Space: Residential

- For public open space in close proximity to residential housing and the central green area around which houses are located, as on many housing estates from the 1930s to 1970s. It is also applicable for smaller areas commonly incorporated in newer developments as informal grassed areas or more formal landscaped areas with a mixture of open space and covered soil with planting. It is considered to be a generally grassed area up to 0.5ha with up to 50% bare soil. The land use is an important

resource for children and the area is near the homes. The critical receptor is a female child age >3 - <9 years old (CLEA age class 4 – 9) as younger children are unlikely to play outdoors unsupervised.

- Active exposure pathways are ingestion of outdoor soil, ingestion of indoor dust; direct dermal contact with outdoor soil and indoor soil derived dust; inhalation of outdoor and indoor dust and inhalation of outdoor vapour.

Public Open Space: Park

- A public park is defined as an area of open space provided for recreational use and usually owned and maintained by the Local Authority. It is anticipated the park could be used for a wide range of activities, including the following:
    - Family visits and picnics;
    - Children's play area;
    - Sporting activities such as football on an informal basis (i.e. not a dedicated sports pitch); and
    - Dog walking.
- The park is modelled as an area >0.5 ha of predominantly grasses open space with no more than 25% of exposed soil.
- The critical receptor is a female child with CLEA age classes 1 – 6.
- Active exposure pathway are: ingestion of outdoor soil; direct dermal contact with outdoor soil; inhalation of outdoor dust and inhalation of outdoor vapour.

Furthermore, the C4SLs are based on a different toxicological benchmark, the 'low level of toxicological concern' (LLTC). This difference in approach was adopted because the C4SLs were primarily intended for use under Part2A of the EPA 1990 to quickly screen out Category 4 sites where there is "*no risk or that the level of risk posed is low*". SGVs and LQM GACs are based on the more conservative 'minimal or tolerable level of risk' as defined in SR2 (EA, 2009) and were derived for assessment of contamination for the Planning process.

LQM/CIEH Suitable 4 Use Levels (S4ULs)

The publication of the C4SLs resulted in considerable and inconclusive debate about the applicability of the lower level of protection of the C4SL, which are underlain by the LLTC, outside of the Part 2A context for which they were derived. In 2014 LQM/CIEH presented a Suitable 4 Use Levels (S4ULs), which incorporate the updated assumption exposure derived for the production of the C4SLs but within the context of deriving screening criteria above which further assessment of the risks or remedial action may be needed. The S4ULs replace the 82 substances, species and fractions and congeners contained in the previous LQM/CIEH GACs issued in 2009. Additionally, following changes and new land uses proposed in the C4SL research project, S4ULs have also been derived for the majority of substances for which the EA derived SGVs in 2009 with the exception of lead (see below).

Lead

The C4SL for lead provides a technically robust and conservative assessment tool using significantly updated toxicological modelling than the withdrawn SGV and derived in line with current science of lead toxicology.

EIC/AGS/CL:AIRE Soil Generic Assessment Criteria (2010)

In some instances, EIC/AGC/CL:AIRE GACs for certain VOC / SVOC potential contaminants of concern have been used *in lieu* of available LQM / CIEH S4UL values.

Parameter	Residential with homegrown produce			Residential without homegrown produce			Allotment			Commercial / Industrial			Public Open Space near Residential			Public Open Space - Park			Source
	(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			
SOM	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	
Metals/metalloids																			
Arsenic	37			40			43			640			79			170			LQM (2014)
Beryllium	1.7			1.7			35			12			2.2			63			LQM (2014)
Boron	290			11000			45			240000			21000			46000			LQM (2014)
Cadmium	11			85			1.9			190			120			532			LQM (2014)
Chromium III	910			910			18000			8600			1500			33000			LQM (2014)
Chromium VI	6			6			1.8			33			7.7			220			LQM (2014)
Copper	2400			7100			520			68000			12000			44000			LQM (2014)
Lead	200			310			80			2330			630			1300			C4SL
Mercury (elemental)	1.2			1.2			21			58 (25.8)			16			30 (25.8)			LQM (2014)
Mercury (Inorganic)	40			56			19			1100			120			240			LQM (2014)
Methylmercury	11			15			6			320			40			68			LQM (2014)
Nickel	180			180			230			980			230			3400			LQM (2014)
Selenium	250			430			88			12000			1100			1800			LQM (2014)
Vanadium	410			1200			91			9000			2000			5000			LQM (2014)

Parameter	Residential with homegrown produce			Residential without homegrown produce			Allotment			Commercial / Industrial			Public Open Space near Residential			Public Open Space - Park			Source
	(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			
SOM	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	
Zinc	3700			40000			620			730000			81000			170000			LQM (2014)
Other																			
Total Sulphate	2,400			2,400			2,400			2,400			2,400			2,400			BRE (2005)
Water Soluble Sulphate (g/l)	0.5			0.5			0.5			0.5			0.5			0.5			BRE (2005)
PAHs																			
Acenaphthene	210	510	1100	3000 (57)	4700(141)	6000 (336)	34	85	200	84000 (57)	97000 (141)	100000	15000	15000	15000	29000	30000	30000	LQM (2014)
Acenaphthylene	170	420	920	2900 (86.1)	4600 (212)	6000 (506)	28	69	160	8300 (86.1)	97000 (212)	100000	15000	15000	15000	29000	30000	30000	LQM (2014)
Anthracene	2400	5400	11000	31000 (1.17)	35000	37000	380	950	2200	520000	540000	540000	74000	74000	74000	150000	150000	150000	LQM (2014)
Benzo(a)anthracene	7.2	11	13	11	14	15	2.9	6.5	13	170	170	180	29	29	29	49	56	62	LQM (2014)
Benzo(a)pyrene	2.2	2.7	3	3.2	3.2	3.2	0.97	2	3.5	35	35	36	5.7	5.7	5.7	11	12	13	LQM (2014)
Benzo(b)fluoranthene	2.6	3.3	3.7	3.9	4	4	0.99	2.1	3.9	44	44	45	7.1	7.1	7.1	13	15	16	LQM (2014)
Benzo(g,h,i)perylene	320	340	350	360	360	360	290	470	640	3900	4000	4000	640	640	640	1400	1500	1600	LQM (2014)
Benzo(k)fluoranthene	77	93	100	110	110	110	37	75	130	1200	1200	1200	190	190	190	370	410	440	LQM (2014)
Chrysene	15	22	27	30	31	32	4.1	9.4	19	350	350	350	57	57	57	93	110	120	LQM (2014)

Parameter	Residential with homegrown produce			Residential without homegrown produce			Allotment			Commercial / Industrial			Public Open Space near Residential			Public Open Space - Park			Source
	(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			
SOM	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	
Dibenz(a,h)anthracene	0.24	0.28	0.3	0.31	0.32	0.32	0.14	0.27	0.61	3.5	3.6	3.6	0.57	0.57	0.58	1.1	1.3	1.4	LQM (2014)
Fluoranthene	280	560	890	1500	1600	1600	52	130	290	23000	23000	23000	3100	3100	3100	63	6300	6400	LQM (2014)
Fluorene	170	400	860	2800 (30.9)	3800 (76.5)	4500 (183)	27	67	160	63000 (30.9)	68000	71000	9900	9900	9900	20000	20000	20000	LQM (2014)
Indeno(1,2,3-cd)pyrene	27	36	41	45	46	46	9.5	21	39	500	510	510	82	82	82	150	170	180	LQM (2014)
Naphthalene	2.3	5.6	13	2.3	5.6	13	4.1	10	24	190 (76.4)	460 (183)	1100 (432)	4900	4900	4900	1200 (76.4)	1900 (183)	3000	LQM (2014)
Phenanthrene	95	220	440	1300 (36)	1500	1500	15	38	90	22000	22000	23000	3100	3100	3100	6200	6200	6300	LQM (2014)
Pyrene	620	1200	2000	3700	3800	3800	110	270	620	54000	54000	54000	7400	7400	7400	15000	15000	15000	LQM (2014)
Coal Tar (BaP as surrogate marker)	0.79	0.98	1.1	1.2	1.2	1.2	0.32	0.67	1.2	15	15	15	2.2	2.2	2.2	4.4	4.7	4.8	LQM (2014)
BTEX and TPH																			
Benzene	0.087	0.17	0.37	0.38	0.7	1.4	0.017	0.034	0.075	27	47	90	72	72	73	90	100	110	LQM (2014)
Toluene	130	290	660	880 vap (869)	1900	3900	22	51	120	56000 vap (869)	110000 vap (1920)	180000 vap (4360)	56000	56000	56000	87000 vap (869)	95000 vap (1920)	100000 vap (4360)	LQM (2014)
Ethylbenzene	47	110	260	83	190	440	16	39	91	5700 vap (518)	13000 vap (1220)	27000 vap (2840)	24000	24000	25000	17000 vap (518)	22000 vap (1220)	27000 vap (2840)	LQM (2014)
Xylene - o	60	140	330	88	210	480	28	67	160	6600 (478)	15000 (1120)	33000 (2620)	41000	42000	43000	17000 (478)	24000 (1120)	33000 (2620)	LQM (2014)

Parameter	Residential with homegrown produce			Residential without homegrown produce			Allotment			Commercial / Industrial			Public Open Space near Residential			Public Open Space - Park			Source
	(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			
SOM	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	
Xylene - m	59	140	320	82	190	450	31	74	170	6200 (625)	14000 (1470)	31000 (3460)	41000	42000	43000	17000 (625)	24000 (1470)	32000 (3460)	LQM (2014)
Xylene - p	56	130	310	79	180	430	29	69	160	5900 (576)	14000 (1350)	30000 (3170)	41000	42000	43000	17000 (576)	23000 (1350)	31000 (3170)	LQM (2014)
Aliphatic EC 5-6	42	78	160	42	78	160	730	1700	3900	3200 (304)	5900 (558)	12000 (1150)	570000 (304)	590000	60000 0	95000 (304)	130000 (558)	180000 (1150)	LQM (2014)
Aliphatic EC >6-8	100	230	530	100	230	530	2300	5600	13000	7800 (144)	17000 (322)	40000 (736)	600000	610000	62000 0	150000 (144)	220000 (322)	320000 (736)	LQM (2014)
Aliphatic EC >8-10	27	65	150	27	65	150	320	770	1700	2000 (78)	4800 (190)	11000 (451)	13000	13000	13000	14000 (78)	18000 (190)	21000 (451)	LQM (2014)
Aliphatic EC >10-12	130 (48)	330 (118)	760 (283)	130 (48)	330 (118)	760 (283)	2200	4400	7300	9700 (48)	23000 (118)	47000 (283)	13000	13000	13000	21000 (48)	23000 (118)	24000(283)	LQM (2014)
Aliphatic EC >12-16	1100 (24)	2400 (59)	4300 (142)	1100 (24)	2400 (59)	4300 (142)	11000	13000	13000	59000 (24)	82000 (59)	90000 (142)	13000	13000	13000	25000 (24)	25000 (59)	26000 (142)	LQM (2014)
Aliphatic EC >16-35	65000 (8.48)	92000 (21)	11000 0	65000 (8.48)	92000 (21)	110000	26000 0	270000	27000 0	160000 0	1700000	180000 0	250000	250000	25000 0	450000	480000	490000	LQM (2014)
Aliphatic EC >35-44	65000 (8.48)	92000 (21)	11000 0	65000 (8.48)	92000 (21)	110000	26000 0	270000	27000 0	160000 0	1700000	180000 0	250000	250000	25000 0	450000	480000	490000	LQM (2014)
Aromatic EC 5-7	70	140	300	370	690	1400	13	27	57	26000 (1220)	46000 (2260)	86000 (4710)	56000	56000	56000	76000 (1220)	84000 (2260)	92000 (4710)	LQM (2014)
Aromatic EC >7-8	130	290	660	860	1800	3900	22	51	120	56000 (869)	110000 (1920)	180000 (4360)	56000	56000	56000	87000 (869)	95000 (1920)	100000 (4360)	LQM (2014)
Aromatic EC >8-10	34	83	190	47	110	270	8.6	21	51	3500 (613)	8100 (1500)	17000 (3580)	5000	5000	5000	7200 (613)	8500 (1500)	9300 (3580)	LQM (2014)
Aromatic EC >10-12	74	180	380	250	590	1200	13	31	74	16000 (364)	28000 (899)	34000 (2150)	5000	5000	5000	9200 (364)	9700 (899)	10000	LQM (2014)

Parameter	Residential with homegrown produce			Residential without homegrown produce			Allotment			Commercial / Industrial			Public Open Space near Residential			Public Open Space - Park			Source
	(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			
SOM	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	
Aromatic EC >12-16	140	330	660	1800	2300 (419)	2500	23	27	130	36000 (169)	37000	38000	5100	5100	5000	10000	10000	10000	LQM (2014)
Aromatic EC >16-21	260	540	930	1900	1900	1900	46	110	260	28000	28000	28000	3800	3800	3800	7600	7700	7800	LQM (2014)
Aromatic EC >21-35	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900	LQM (2014)
Aromatic EC >35-44	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900	LQM (2014)
Aromatic EC >44-75	1600	1800	1900	1900	1900	1900	1200	2100	3000	28000	28000	28000	3800	3800	3800	7800	7800	7900	LQM (2014)
VOCs																			
1,2-dichloroethane (1,2-DCA)	0.0071	0.011	0.019	0.0092	0.013	0.023	0.0046	0.0083	0.016	0.67	0.97	1.7	29	29	29	21	24	28	LQM (2014)
1,1,1-trichloroethane	8.8	18	39	9	18	40	48	110	240	660	1300	3000	140000	140000	140000	57000 (1425)	76000 (2915)	100000 (6392)	LQM (2014)
1,1,2,2,tetrachloroethane	1.6	3.4	7.5	3.9	8	17	0.41	0.89	2	270	550	1100	1400	1400	1400	1800	2100	2300	LQM (2014)
tetrachloroethene	0.18	0.39	0.9	0.18	0.4	0.92	0.65	1.5	3.6	19	45	95	1400	1400	1400	810 (424)	1100 (951)	1500	LQM (2014)
tetrachloromethane (Carbon tetrachloride)	0.026	0.056	0.13	0.026	0.056	0.13	0.45	1	2.4	2.9	6.3	14	890	920	950	190	270	400	LQM (2014)
Trichloroethene	0.016	0.034	0.075	0.017	0.036	0.08	0.041	0.091	0.21	1.2	2.6	5.7	120	120	120	70	91	120	LQM (2014)
Trichloromethane (chloroform)	0.91	1.7	3.4	1.2	2.1	4.2	0.42	0.83	1.7	99	170	350	2500	2500	2500	2600	2800	3100	LQM (2014)

Parameter	Residential with homegrown produce			Residential without homegrown produce			Allotment			Commercial / Industrial			Public Open Space near Residential			Public Open Space - Park			Source
	(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			
SOM	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	
Chloroethene (Vinyl chloride)	0.00064	0.00087	0.0014	0.00077	0.001	0.0015	0.00055	0.001	0.0018	0.059	0.077	0.12	3.5	3.5	3.5	4.8	5	5.4	LQM (2014)
2,4,6 Trinitrotoluene (TNT)	1.6	3.7	8.1	65	66	66	0.24	0.58	1.4	1000	1000	1000	130	130	130	260	270	270	LQM (2014)
RDX	120	250	540	13000	13000	13000	17	38	85	210000	210000	210000	26000	26000	27000	49000 (18.7)	51000	53000	LQM (2014)
HMX	5.7	13	26	6700	6700	6700	0.86	1.9	3.9	110000	110000	110000	13000	13000	13000	23000 (0.35)	23000 (0.39)	24000 (0.48)	LQM (2014)
Aldrin	5.7	6.6	7.1	7.3	7.4	7.5	3.2	6.1	9.6	170	170	170	18	18	18	30	31	31	LQM (2014)
Dieldrin	0.97	2	3.5	7	7.3	7.4	0.17	0.41	0.96	170	170	170	18	18	18	30	30	31	LQM (2014)
Atrazine	3.3	7.6	17.4	610	620	620	0.5	1.2	2.7	9300	9400	9400	1200	1200	1200	2300	2400	2400	LQM (2014)
Dichlovos	0.032	0.066	0.014	6.4	6.5	6.6	0.0049	0.01	0.022	140	140	140	16	16	16	26	26	27	LQM (2014)
Alpha-Endosulfan	7.4	18	41	160 (0.003)	280 (0.007)	410 (0.016)	1.2	2.9	6.8	5600 (0.003)	7400 (0.007)	8400 (0.016)	1200	1200	1200	2400	2400	2500	LQM (2014)
alpha-Hexachlorocyclohexane	0.23	0.55	1.2	6.9	9.2	11	0.035	0.087	0.21	170	180	180	24	24	24	47	48	48	LQM (2014)
beta-hexachlorocyclohexanes	0.085	0.2	0.46	3.7	3.8	3.8	0.013	0.032	0.077	65	65	65	8.1	8.1	8.1	15	15	16	LQM (2014)
gamma-hexachlorocyclohexanes	0.06	0.14	0.33	2.9	3.3	3.5	0.0092	0.023	0.054	67	69	70	8.2	8.2	8.2	14	15	15	LQM (2014)

Parameter	Residential with homegrown produce			Residential without homegrown produce			Allotment			Commercial / Industrial			Public Open Space near Residential			Public Open Space - Park			Source
	(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			
SOM	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	
Chlorobenzene	0.46	1	2.4	0.46	1	2.4	5.9	14	32	56	130	290	11000	13000	14000	1300 (675)	2000 (1520)	2900	LQM (2014)
1,2-Dichlorobenzene	23	55	130	24	57	130	94	230	540	2000 (571)	4800 (1370)	11000 (3240)	90000	95000	98000	24000 (571)	36000 (1370)	51000 (3240)	LQM (2014)
1,3-Dichlorobenzene	0.4	1	2.3	0.44	1.1	2.5	0.25	0.6	1.5	30	73	170	300	300	300	390	440	470	LQM (2014)
1,4-Dichlorobenzene	61	150	350	61	150	350	15	37	88	4400 (224)	10000 (540)	25000 (1280)	17000	17000	17000	36000 (224)	36000 (540)	36000 (1280)	LQM (2014)
VOCs Continued																			
1,2,3-Trichlorobenzene	1.5	3.6	8.6	1.5	3.7	8.8	4.7	12	28	102	250	590	1800	1800	1800	770 (134)	1100 (330)	1600 (789)	LQM (2014)
1,2,4-Trichlorobenzene	2.6	6.4	15	2.6	6.4	15	55	140	320	220	530	1300	15000	17000	19000	1700 (318)	2600 (786)	4000 (1880)	LQM (2014)
1,3,5-Trichlorobenzene	0.33	0.81	1.9	0.33	0.81	1.9	4.7	12	28	23	55	130	1700	1700	1800	380 (36.7)	580 (90.8)	860 (217)	LQM (2014)
1,2,3,4-Tetrachlorobenzene	15	36	78	24	56	120	4.4	11	26	1700 (122)	3080 (304)	4400 (728)	830	830	830	1500 (122)	1600	1600	LQM (2014)
1,2,3,5-Tetrachlorobenzene	0.66	1.6	3.7	0.75	1.9	4.3	0.38	0.9	2.2	49 (39.4)	120 (98.1)	240 (235)	78	79	79	110 (39)	120	130	LQM (2014)
1,2,4,5-Tetrachlorobenzene	0.33	0.77	1.6	0.73	1.7	3.5	0.06	0.16	0.37	42 (19.7)	72 (49.1)	96	13	13	13	25	26	26	LQM (2014)
Pentachlorobenzene	5.8	12	22	19	30	38	1.2	3.1	7	640 (43)	770 (107)	830	100	100	100	190	190	190	LQM (2014)

Parameter	Residential with homegrown produce			Residential without homegrown produce			Allotment			Commercial / Industrial			Public Open Space near Residential			Public Open Space - Park			Source
	(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			(mg/kg, unless otherwise stated)			
SOM	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	**1%**	**2.50%**	**6%**	
Hexachlorobenzene	1.8 (0.2)	3.3 (0.5)	4.9	4.1 (0.2)	5.7 (0.5)	6.7 (1.2)	0.47	1.1	2.5	110 (0.2)	120	120	16	16	16	30	30	30	LQM (2014)
Phenol	280	550	1100	750	1300	2300	66	140	280	760 dir (31000)	1500 dir (35000)	3200 dir (37000)	760 dir (31000)	1500 dir (35000)	3200 dir (37000)	760 dir (31000)	1500 dir (35000)	3200 dir (37000)	LQM (2014)
Chlorophenols (excluding pentachlorophenol)	0.87 (g)	2	4.5	94	150	210	0.13 (g)	0.3	0.7	3500	4000	4300	620	620	620	1100	1100	1100	LQM (2014)
Pentachlorophenol	0.22	0.52	1.2	27 (16.4)	29	31	0.03	0.08	0.19	400	400	400	60	60	60	110	120	120	LQM (2014)
Carbon Disulphide	0.14	0.29	0.62	0.14	0.29	0.62	4.8	10	23	11	22	47	11000	11000	12000	1300	1900	2700	LQM (2014)
Hexachlorobutadiene	0.29	0.7	1.6	0.32	0.78	1.8	0.25	0.61	1.4	31	66	120	25	25	25	48	50	51	LQM (2014)

(g) derived based on 2,3,4,6-tetrachlorophenol; dir - based on a threshold protective of direct skin contact with phenol (guideline in brackets based on health effects following long term exposure provided for illustration only); (vap) calculated for vapour phase only. SOM – Soil Organic Matter; (4.5) solubility.

APPENDIX J - CONTROLLED WATERS RISK ASSESSMENT

CURRENT GUIDANCE FOR CONTROLLED WATERS RISK ASSESSMENT

Regulatory Context

Government policy is based upon a "suitable for use approach," which is relevant to both the current use of land and also to any proposed future use. When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health, controlled waters or the wider environment given the current use and circumstances of the land. Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

> *"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:*
>
> *(a) Significant harm is being caused or there is a significant possibility of such harm being caused; or*
>
> *(b) Pollution of controlled waters is being, or is likely to be, caused."*

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

> *"the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter"*

Controlled Waters are defined Section 104 of the Water Resources Act 1991. In summary, the comprise relevant territorial waters which extend seaward for three miles from the low-tide limit from which the territorial sea adjacent to England and Wales is measured.

The Environment Agency has powers under Part 7 of The Water Resources Act (1991) to take action to prevent or remedy the pollution of controlled waters, including circumstances where the pollution arises from contamination in the land. This is reinforced in The Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, 2012) which came into force in early April 2012.

Part IIA introduces the concept of a contaminant linkage; where for potential harm to exist there must be a connection between the source of the hazard and the receptor via a pathway. Risk assessment in contaminated land is therefore directed towards identifying the contaminants, pathways and receptors that can provide contaminant linkages. This is known as the contaminant-pathway-receptor link (CPR or contaminant linkage).

Part IIA places contaminated land responsibility as a part of the planning and redevelopment process, rather than Local Authority or Environment Agency directly, except in cases of very high pollution risk or where harm is occurring. In the planning process, guidance is provided by National Planning Policy Framework (NPPF) of March 2012. The NPPF requires that a site which has been developed shall not be capable of being determined "contaminated land" under Part IIA. Therefore, appropriate risk-based investigation is required to identify the contaminant linkages that can then be assessed, and then mitigated using methods that can be agreed with the planners.

Source Protection Zones

Source Protection Zones (SPZs) are defined by the Environment Agency (for England and Wales), SEPA (Scotland) and the Environment and Heritage Service (Northern Ireland) for groundwater sources such as wells, boreholes and springs that are used for public drinking water supply. The zones show the risk of contamination from activities that might cause groundwater pollution in the area. The size and shape of a zone depends upon subsurface conditions, how the groundwater is removed, and other environmental factors.

SPZs are classified into four categories:

- **Zone 1 (Inner protection zone).** Any pollution that can travel to the abstraction point within 50 days from any point within the zone is classified as being inside Zone 1. This applies at and below the groundwater table. This zone also has a minimum 50 m protection radius around the abstraction point. These criteria are designed to protect against the transmission of toxic chemicals and water-borne disease.
- **Zone 2 (Outer protection zone).** The outer zone covers pollution that takes up to 400 days to travel to the abstraction point, or 25% of the total catchment area, whichever area is the largest. This travel time is the minimum period over which the Environment Agency considers that pollutants need to be diluted, reduced in strength or delayed by the time they reach the abstraction point.
- **Zone 3 (Total catchment).** This is the total area needed to support removal of water from the abstraction point, and to support any discharge from this.
- **Zone of special interest.** This may occasionally be defined as a special case. This is usually where local conditions mean that industrial sites and other potential sources of contamination could affect the groundwater source, even though they are outside the normal catchment area.

Groundwater Vulnerability Assessments

From 1 April 2010 The Environment Agency Groundwater Protection Policy began to use aquifer designations which are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems.

The aquifer designation data is based on geological mapping provided by the British Geological Survey. It is updated regularly to reflect their ongoing programme of improvements to these maps. The maps are split into two different type of aquifer designation:

- Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels.
- Bedrock -solid permeable formations e.g. sandstone, chalk and limestone.

The maps display the following aquifer designations:

Table 1. Aquifer Classification ("Geological Classification").

Classification	Definition
Principal Aquifers (Highly Permeable)	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
Secondary A Aquifers	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
Secondary B Aquifers	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
Secondary Undifferentiated Aquifers	This has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Environment Agency Guidance

The Environment Agency's stance on groundwater resources is:

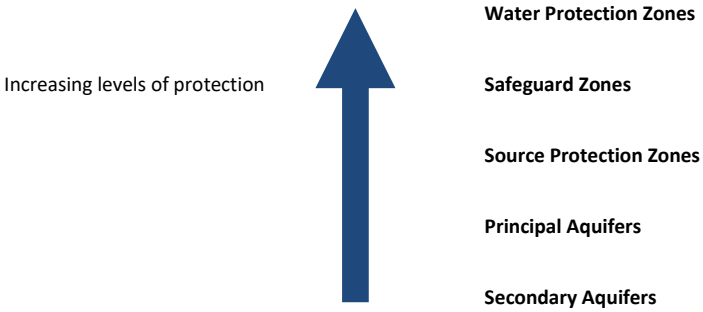
> *"to protect and manage groundwater resources for present and future generations in ways that are appropriate for the risks we identify"* (Groundwater Protection: Policy and Practice GP3, 2012).

At present, the legislation and guidance pertaining to the protection of controlled waters in the UK is complex; however, the core objectives seek to enforce the position given above.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document introduced areas of focus for developments such as Source Protection Zones (SPZs) and Groundwater Vulnerability Maps. The Policy was revised in 1998, since which there have been substantial changes in legislation, driven by key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991 as amended by the Water Act 2003. Gaps in the 1998 PPPG that emerged as the result of further legislative changes were addressed in the Environment Agency Policy document Groundwater Protection: Policy and Practice (GP3), Version 1 of November 2012. The three main parts of GP3 were:

- Groundwater principals;
- Position statements and legislation; and
- Technical information.

The Environment Agency has a tiered risk based approach to drinking water protection as summarised below:



Controlled Waters Risk Assessment

A number of tools are available (as detailed in GP3) in order for a developer of a potentially contaminated site to fulfil their obligations under the legislation. A site assessment would be required in order to identify any potential risks to controlled waters and to derive suitable clean up criteria, if required, to ensure the protection of controlled waters.

There are three main stages to any risk assessment of controlled waters:

1. Risk Screening (devise Conceptual Site Model, making reference to groundwater vulnerability maps, site setting, controlled waters context etc)
2. Generic Risk Assessment (EA Remedial Targets Methodology Tier 1 / Comparison of groundwater data with relevant standards)
3. Detailed Quantitative Risk Assessment (Consideration of aquifer properties and site specific parameters, EA Remedial Targets Methodology Tiers 2 & 3)

Risk Screening

Here, the Conceptual Site Model (CSM) is a critical tool to assessing any potentially contaminated site. The information from a robust CSM can be used to establish any pathways or receptors that do not require further assessment at an early stage. For example, it may be possible to confirm the absence of a particular sensitive controlled water receptor (such as a surface water feature) within the vicinity of the Site thereby breaking the associated source-pathway-receptor pollutant linkage. Information from subsequent tiers of risk assessment, such as following intrusive investigations, are used to update the CSM accordingly.

Generic Risk Assessment - England and Wales

When undertaking the Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Tier 1), comparison of chemical analytical results is made with those screening criteria.

In accordance with Part 2A of the Environmental Protection Act 1990, Tier Environmental has made regard to all of the Water Quality Standards (WQS) that are relevant to the specific site and a judgment has been made against the most stringent of those relevant standards:

- EQS Directive 2008/105/EC
- Priority Substances Directive 2013/39/EU
- Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015
- UK Drinking Water Standards (UK DWS)
- World Health Organisation (WHO Guidelines) for Drinking Water Quality
- Council Directive 98/83/EC on the quality of water intended for human consumption (Drinking water directive)

In some instances, the laboratory method detection limit is greater than the appropriate EQS/UKDWS value. In these instances, only measured concentrations in excess of the laboratory method detection limit have been considered likely to potentially represent a possible significant risk to controlled waters.

Please note that there is no quantitative criterion for total petroleum hydrocarbons (TPH), or speciated TPH fractions. Historically, standards provided for petroleum hydrocarbons ranges from 10µg/l (Private Water Supply Regulations 1991, removed from the 2009 regulations) to 50µg/l-1000µg/l (Surface Waters (Abstraction for Drinking Water) Regulations 1989) which related to the degree of treatment of water prior to use as drinking water. Over time, the legislative standards have been rescinded and no alternative standard provided, although the Environment Agency planned to release speciated TPH criteria (Fretwell et al., 2009).

In order to assess whether there is a potentially unacceptable risk of pollution of controlled waters, the results of the groundwater chemical analysis for TPH and BTEX were evaluated against Water Quality Standards (WQS) appropriate to the conceptual model for the site:

Table 2. Summary of Selected TPH and BTEX Water Quality Standards Selected for Tier 1 Screening

Determinand	Units	WQS Selected	Source of WQS
Aliphatics >C5-C6	µg/l	15000	Table 5.4 of CL:AIRE 2017#
Aliphatics >C6-C8	µg/l	15000	Table 5.4 of CL:AIRE 2017#
Aliphatics >C8-C10	µg/l	300	Table 5.4 of CL:AIRE 2017#
Aliphatics >C10-C12	µg/l	300	Table 5.4 of CL:AIRE 2017#
Aliphatics >C12-C16	µg/l	300	Table 5.4 of CL:AIRE 2017#
Aliphatics >C16-C21	µg/l	-	Table 5.4 of CL:AIRE 2017#
Aliphatics >C21-C35	µg/l	-	Table 5.4 of CL:AIRE 2017#
Aromatics >C5-EC7	µg/l	10	Table 5.4 of CL:AIRE 2017#
Aromatics >EC7-EC8	µg/l	700	Table 5.4 of CL:AIRE 2017#
Aromatics >EC8-EC10	µg/l	300	Table 5.4 of CL:AIRE 2017#
Aromatics >EC10-EC12	µg/l	100	Table 5.4 of CL:AIRE 2017#

Aromatics >EC12-EC16	µg/l	100	Table 5.4 of CL:AIRE 2017#
Aromatics >EC16-EC21	µg/l	90	Table 5.4 of CL:AIRE 2017#
Aromatics >EC21-EC35	µg/l	90	Table 5.4 of CL:AIRE 2017#
Benzene	µg/l	10	Priority Substance Water Framework Directive 2015 and Table 5.3 of CL:AIRE 2017#
Toluene	µg/l	74	Table 1 Water Framework Directive 2015 and Table 5.3 of CL:AIRE 2017#
Ethylbenzene	µg/l	20	R&D Technical Report P2-115/TR4, 2002
Total xylenes	µg/l	30	DoE (1997c) Hedgecott S. and Lewis S, An update on proposed environmental quality standards for xylenes in water, final report to the Department of the Environment. Report No. DoE 4273/1. Medmenham: WRc; and; Table 5.3 of CL:AIRE 2017#

Notes - # = CL:AIRE document 'Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies' (ISBN 978-1-905046-31-7, dated 2017),

Table 5.3 was referenced in the first instance from the CL:AIRE document 'Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies' (ISBN 978-1-905046-31-7, dated 2017), the to select appropriate Freshwater EQS values for benzene, toluene and total xylenes. The selected value for Ethylbenzene was derived from the proposed EQS value of 20µg/l from the Environment Agency R&D Technical Report P2-115/TR4, 2002. This represents a more conservative value than the 300µg/l value in Table 5.3.

With respect to speciated TPH CWG fractions, Table 5.3 states and refers the reader to 'See Table 5.4.' On this basis, Tier Environmental selected the World Health Organization (WHO) guide values for TPHCWG fractions in drinking water that are presented in Table 5.4 which may be considered appropriately protective of the controlled waters environment based on the conceptual site model.

Generic Risk Assessment is generally undertaken via comparison of reported leachate and/or groundwater concentrations against selected assessment criteria for the potential contaminants of concern identified for the Site from a preliminary desk based assessment.

The selected Generic Assessment Criteria (GAC) derived from a Water Quality Standard (WQS) for any specific substance may not necessarily be a simple number and can often be found to be expressed as:

- Annual mean concentration;
- Maximum allowable concentration;
- 95th percentile concentration for *n* samples;
- Total concentration;
- Dissolved concentration (applicable to filtered samples)

The values may sometimes be expressed for individual substances (e.g. arsenic or for groups of substances e.g. total xylenes or sums of certain PAHs).

Environmental Quality Standards (EQS) have been used where available for Priority Substances and Priority Hazardous Substances set at a European level:

- Priority Substances Directive 2013/39/EU;
- Amending 2008/105 and 2000/118/EC

In addition, EQS values derived for Specific Pollutants have been used as presented in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

For assessing risks to potable water abstraction supplies, UK Drinking Water Standards presented in the Water Supply (Water Quality) Regulations 2000 (SI/2000/3184) (as amended) have been applied.

In selecting a GAC for a particular Site, Tier Environmental considers the following factors:

- Current use/function of the groundwater (e.g. drinking water, irrigation water, industrial use, base-flow to rivers and streams);
- Plausible, proposed or planned future uses of the water and nearby waters;
- Sensitivity of the critical receptor (e.g. human health, aquatic life); and,
- Requirements to trigger action under the legal context

In accordance with Part 2A:

> *"in deciding whether pollution of controlled waters is occurring, the assessor will have regard to all of the water quality standards that are relevant to the specific site and make a judgment against the most stringent of those relevant standards"*

Should the Level 1 or 2 assessments indicate threshold levels to be exceeded, then there are three alternative ways in which to proceed:

- To devise suitable remedial solutions;
- To carry out more investigation, sampling and analysis;
- To conduct a site-specific Detailed Quantitative Risk Assessment (DQRA) to whether or not the soil materials are suitable for their site-specific intended use or to devise a site-specific clean-up level.

Detailed Quantitative Risk Assessment (DQRA)

The decision to carry out a DQRA will be informed by the initial qualitative and generic assessment. The scope of any such assessment will be accurately defined by the outcomes of the former two stages. The robust CSM will be sufficiently refined by this stage that only certain contaminants of concern, certain pathways and certain receptors will require further assessment.

Additional site specific data is normally required for this stage of assessment, as explained above, more processes that are capable of affecting contaminant concentrations are considered (such as dilution and attenuation).

Remediation criteria derived will therefore be specific to each site and will be based on a detailed assessment of the potential impact at the identified receptor or compliance point. A greater level of confidence can be placed on the predicted impact on the compliance point following a DQRA.

Hazardous and Non Hazardous Substances

The Groundwater (England and Wales) Regulations 2009 control the disposal to the hydrogeological environment of potentially polluting substances which are divided into Hazardous Substances and Non-hazardous Contaminants (this roughly approximates to the former List 1 and List 2 substances).

Hazardous Substances are the most damaging and toxic and must be prevented from directly or indirectly entering the groundwater environment. Hazardous Substances include mineral oils and hydrocarbons, pesticides, biocides, herbicides, solvents and some metals. Discharge of Hazardous Substances to Controlled Waters must be prevented.

Non-hazardous Pollutants are any contaminants other than Hazardous Substances. Non-hazardous Pollutants are potentially toxic but are less harmful than Hazardous Substances, but their direct discharge to groundwater is generally not permitted and any indirect discharge to groundwater must be limited and be controlled by technical precautions in order to prevent pollution. Non-hazardous Pollutants include ammonia and nitrites, many metals and fluorides.

APPENDIX K - ASSESSMENT CRITERIA APPLIED FOR GROUND GAS

Ground Gas Monitoring Methodology

Monitoring for the following is generally performed as part of ground gas assessment:

- Methane (CH_4): an odourless, flammable gas. Mixtures of methane with air containing between 5 and 15% v/v methane are explosive.
- Carbon dioxide (CO_2): an asphyxiant at elevated concentrations. Denser than air, it can accumulate in excavations, and within low points inside buildings
- Oxygen (O_2): important in the assessment of the potential formation of explosive mixtures with methane. Monitoring normally measures both methane and oxygen concentrations in ground gas to derive an indication of the risk of explosive mixture formation, expressed as a percentage of the Lower Explosive Limit (LEL). Low concentrations of oxygen in ground gas can also exacerbate the risk of CO_2 asphyxiation.
- Hydrogen sulphide (H_2S): odorous and toxic, capable of forming flammable mixtures with air.

In addition, depending on the Conceptual Site Model, monitoring may also include for measurements of Volatile Organic Compounds (VOCs); present as chemical contaminants of soil and sometimes also biologically produced in low concentrations.

Assessment of methane (CH_4) and carbon dioxide (CO_2)

Methane and carbon dioxide can arise from natural geological sources, mine workings, rotting organic matter (peat, landfilled materials, etc.) and/or contaminant biodegradation. Assessment of ground gas composition and flows is therefore an essential part of site assessment. The need to adequately address potential risks from ground gas on development sites is therefore required under the planning regime.

In order to appropriately assess the site risks, the Construction Industry Research and Information Association (CIRIA) and others have issued several guidance documents on landfill and ground gas that are intended to provide advice on how to investigate and deal with gas contaminated ground with respect to development. These are:

- Report 149: 'Protecting Development from Methane' (CIRIA, 1995a)
- Report 150: 'Methane Investigation Strategies' (CIRIA, 1995b)
- Report 151: 'Interpreting Measurement of Gas in the Ground' (CIRIA, 1995c)
- Report 152: 'Risk Assessment for Methane and Other Gases from the Ground' (CIRIA, 1995d)

More recent guidance has been published to update the documents detailed above to collaborate and promote industry 'good practice.' These are:

- CIRIA Report 665: 'Assessing risks posed by hazardous ground gases to buildings (CIRIA, 2008)
- NHBC: 'Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present' (NHBC, 2007)
- BS8485:201+A1:2019: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (BSI Group, 2019)
- BS8576:2013: Guidance on investigations for ground gas. Permanent gases and Volatile Organic Compounds (VOCs) (BSI Group, 2013)
- SoBRA Report Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater (Feb 2017)
- CL:AIRE Technical Bulletin TB17 Ground Gas Monitoring and 'Worst Case' Conditions (CL:AIRE Aug 2018)

The earlier CIRIA 149 approach is now considered to be too conservative. A more realistic measure of the risk posed by methane and CO2 in ground gas can be established by determining an appropriate Gas Screening Value (GSV), using the methods described in the NHBC and CIRIA 659 documents. These values are based upon earlier work undertaken by Wilson and Card (1999).

GSVs are calculated by multiplying the borehole flow rate (l/hr) by the percentage (% v/v) concentration in the gas stream of the specific component, i.e.:

GSV = (Concentration / 100) x Flow rate.

A risk-based methodology for deriving GSVs is defined for two situations (designated A and B), which are adequate for the great majority of site cases (as per CIRIA 665 Section 8.3):

- **Situation A**: Any development other than Situation B, e.g. factories, shops, commercial, warehouses, schools, cinemas, sports centres, stadiums, high rise housing, housing with basements, etc
- **Situation B**: Low rise building with minimum ventilated under floor void (min 150 mm)

Under Situation A, classification of the scope of protection required is determined from the site GSV, summarised in Table 1. For Situation B, GSVs derived are used in a 'Traffic Light' classification (summarised in Table 2) which determines the required level and scope of protection measures. Tables 1 and 2 are summaries only: the details provided in the body text, footnotes and appendices of the above-referenced documents should be read in conjunction with the results to determine the appropriate level of protection.

For conservatism, Tier Environmental **initially** uses the maximum concentration and gas flow rate of methane detected in any borehole during all of the monitoring visits in deriving recommendations on appropriate protection measures. This represents the worst-case risk of forming an explosive mixtures. For carbon dioxide, steady state concentrations and flow data are applied, as these determine the development of an asphyxiating mixture. All values are selected whether or not they occurred in the same borehole or during the same monitoring event.

Exceedances of the maximum concentrations used in a Tier 1 Gas Risk Assessment can be tolerated, when the conceptual site model indicates that it is safe to do so. However, appropriately derived GSV values must never be exceeded - where site-specific circumstances permit the derivation of alternative GSVs according to the defined conceptual model, then the appropriate GSV values should be applied.

Table 1. GSV Categories Defined for Situation A (Summarised from CIRIA Report 665).

Risk classification	GSV (CH4 or CO2; l/hr)	Additional factors	Characteristic Situation
Very low	<0.07	Typically methane <=1% and/or CO_2 <=5%, otherwise consider increase to Low Risk.	1
Low	<0.7	Typically borehole ground gas flow rate <=70 l/hr; otherwise consider increase to Moderate Risk.	2
Moderate	<3.5	---	3
Moderate to high	<15	QRA required to evaluate scope of remediation measures.	4
High	<70	---	5
Very high	>70	---	6

Table 2. GSV Categories Defined for Situation B (Summarised from NHBC, 2007).

Methane		CO_2		"Traffic light" classification
Typical max. conc. (% v/v)	GSV (l/hr)	Typical max. conc. (% v/v)	GSV (l/hr)	
				Green
1	0.13	5	0.78	Amber 1
5	0.63	10	1.60	Amber 2
20	1.60	30	3.10	Red

Assessment of hydrogen sulphide (H2S)

H2S is toxic and highly odorous ("rotten eggs") gas. It is often a minor component within mine gases, in ground gas within or overlying strata rich in pyrites or other sulphide-rich ores, and in most natural gas fields.

H2S can be generated biologically in significant concentrations by the decomposition by sulphate-reducing bacteria of natural or anthropogenic organic matter under oxygen-free conditions. Its potential generation will be greater in environments containing elevated sulphate concentrations (including sea water). H2S is therefore common within the gas arising from estuarine and marine sediments, pond sediment, stagnant water bodies, bogs and marshlands and landfilled waste, for example.

It must be noted that H2S normally occurs together with other potentially hazardous ground gases. The measures adopted for protection against these will prove equally protective against H2S.

There are no standards by which H2S concentrations in ground gas can be assessed directly. Therefore, the significance of measured H2S concentrations in ground gas must be evaluated on a case-by-case basis, taking into account the measured concentrations of other components and the specific conceptual site and exposure models. To assist in this process, the following standards and guidance may be applied.

General protection of land users

There are no UK air quality standards for general exposure to H2S. The World Health Organisation has derived ambient air quality standards (WHO, 2000) for this gas, which may be used to inform risk assessment and decision-making:

The 24 hour average exposure guideline value for ambient air: 0.15 mg/m3 (0.1 ppmv, approx.; this was derived by the application of a 100x safety factor to the LOAEL for long-term exposure).

This is significantly above the odour threshold, which is typically around 0.01 mg/m3. To avoid substantial nuisance odour complaints, WHO (2000) recommends that the 30 minute average H2S concentration in ambient air should not exceed: 0.007 mg/m3 (0.005 ppmv, approx.).

Occupational exposures

For occupational exposure, the HSE (2005) limits for H2S are applicable:

- 8 hour time weighted average occupational exposure limit: 5 ppmv (7 mg/m3).
- Short-term exposure limit (15 minute reference period): 10 ppmv (14 mg/m3).

VOC Data Collection, Sampling and Assessment

BS8576 Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs).

Volatile organic compounds (VOCs) include, for example, halogenated hydrocarbons such as trichloroethene, non-halogenated hydrocarbons such as benzene, and organosulfur compounds such as thiols (mercapatans). They can occur as a component of ground gas originating from historically contaminated ground, spills and leaks from industry, commercial or residential properties (e.g. from pipelines, storage facilities, and at the point of use or dispensing), land-filled wastes and from naturally occurring sources.

The migration of VOCs in ground gas can be via three primary mechanisms:

- diffusive flow (movement of constituent along a concentration gradient);
- advective flow (movement of constituent due to motion of a transporting fluid);
- dispersion (transport resulting from local variations in fluid flow, e.g. due to friction effects in the matrix).

The choice of sampling and monitoring techniques should be based upon the conceptual model and be designed to achieve the objectives of the investigation, bearing in mind the requirements of any subsequent analytical procedures and the need to provide relevant data of sufficient quantity and quality. Consideration should also be given to the nature of ground under investigation, as well as the nature and distribution of contamination, the geology and the hydrogeology. Every effort should be made to avoid cross-contamination and at no point should underlying aquifers be put at risk.

Where the response zone extends below the water table, gas present in the groundwater will tend to produce an equilibrium concentration in the well headspace. This applies to both permanent gases and VOCs but can be particularly misleading in the latter case. Testing for dissolved gases in groundwater is useful to help interpret monitoring results in such a situation. Similarly, any VOCs in a floating non-aqueous hydrocarbon layer will produce an equilibrium concentration in the well headspace.

The monitoring period and frequency of monitoring for VOCs in ground gases should be developed on a site-specific basis from the conceptual site model and investigation data quality objectives.

Ground gas samples can be collected from the unsaturated zone adjacent to, or above, the known or suspected source of VOCs in ground gas through installation of a ground gas monitoring point in the unsaturated zone (see 10.2), and from a near-surface location beneath hardstanding or a floor or foundation slab through installation of a near- or sub-slab monitoring point (see 10.3). For monitoring of VOCs in ground gas the monitoring well should be installed into unsaturated ground to allow sampling for VOCs to take place. The borehole should not be progressed below the groundwater table or the surface of any floating non-aqueous layer. The borehole should be progressed to the target sampling depth within the unsaturated zone. Full details can be found in BS8576 Section 10.2 onwards.

Assessment of VOC concentrations have been made for limited number of VOCs by SoBRA with the Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater in Feb 2017.

The assessment of VOC concentrations is not covered by above-referenced reports. These data can be used to inform the human health risk assessment for site occupants but should not be relied upon to assess human health risk due to uncertainties in the ground gas flow regime, variability in the (generally low) contaminant concentrations measured and inaccuracies in the concentrations measured by PID instruments.

Data on the VOC concentration in ground gas can also help inform potential occupational exposure risks to construction and similar workers. For this purpose, the measured values can be compared to the relevant occupational exposure limit (OEL) for the contaminant(s) of concern, as given in HSE (2005). In cases of doubt as to the identity of the organic contaminants within the ground gas or when these are present as a complex mixture, then the 8 hour time-weighted average (TWA) exposure limit for benzene (1 ppmv) will be applied for screening purposes. This is a reasonably conservative approach since the OEL for benzene is lower than that for the great majority of organic contaminants commonly encountered in soil and groundwater at contaminated sites

APPENDIX L - CHEMICAL AND GEOTECHNICAL TEST SAMPLING

Samples were selected by a representative of Tier Environmental during the site investigation works in accordance with the sampling approach described elsewhere in this report.

Samples for geotechnical and related testing

Bulk samples were placed within robust heavy duty plastic bags and sealed, together with small disturbed samples, within airtight 1 litre plastic containers.

100 mm diameter 'undisturbed' samples ("U100 samples") were obtained where possible from cable percussive and large diameter window sample boreholes within cohesive materials.

Samples for chemical analysis

All samples for chemical analysis were placed into clean new containers as summarised in Table 1. Unless explicitly stated elsewhere in this report, no preservatives were used to eliminate the risk that preservatives cause contaminant dissolution or analytical interference. Containers for VOC analysis were fully filled to exclude headspace.

Soil samples were dispensed as soon as possible after collection using reusable stainless steel spatulas, trowels or similar implements.

Ground water samples were collected from boreholes using single-use Teflon bailers or dedicated Waterra tubing with foot valves, except as otherwise noted within this report. Caution was taken to avoid excessive agitation during collection

New disposable gloves were used by the engineer for the collection of each sample.

Reusable equipment was washed down with distilled or deionised water between samples, except where tarry or similarly sticky materials were present. In such cases specific cleaning procedures were adopted as specifically described elsewhere in this report.

All sub-samples taken for chemical analysis were placed into refrigerators or cool boxes containing frozen ice packs immediately after aliquoting. All samples were transferred in cool boxes containing frozen ice packs to the relevant UKAS/MCERTS accredited laboratory as soon as possible. Recommended maximum holding times before analysis are summarised in Table 1.

Table 1. Sample containers and holding times.

Analysis	**Container/special requirements**	**Max. holding time at 4°C before analysis**
Soil and sediment samples		
VOCs	30-60 g brown or green glass jar with VOC-resistant cap and inert cap liner. Must be fully filled.	14 days
TPHCWG	30-60 g brown or green glass jar with VOC-resistant cap and inert cap liner **PLUS** 250-500 g brown or green glass jar with unwaxed cap liner.[1] The former must be fully filled.	14 days
All other organics	250-500 g brown or green glass jar with unwaxed cap liner.	7 days
Inorganics	Air-tight 0.5-2.0 kg plastic container (250-500 g brown or green glass jar may also be used).	14 days[2]
Water samples		
VOCs	40-50 ml glass vial with VOC resistant screw cap and inert liner. Must be fully filled.	14 days
TPHCWG	40-50 ml glass vial with VOC resistant screw cap and inert liner **PLUS** 500-1000 ml brown or green glass bottle with screw cap and unwaxed liner.[1] The former must be fully filled, the latter should be filled if possible.	14 days
All other organics	500-1000 ml brown or green glass bottle with screw cap. Fill if possible.	7 days
Inorganics	500-1000 ml translucent or opaque screw cap plastic *or* brown or green glass bottles. Fill if possible.	14 days[3]

1 The smaller vessel is used for analysis of the volatile components within the TPH mixture and the larger one is for the non-volatile components.

2 14 days is set as a reasonable limit for all routine analyses of soil for those inorganic components vulnerable to chemical and/or biological breakdown. Samples for sulphate analysis are vulnerable to biological sulphate-reduction but can be held for up to 28 days. For total metals, a holding period of up to 6 months is acceptable.

3 14 days applies for all routine analyses of most inorganic components that may be vulnerable to chemical and/or biological reactions. In the specific cases of sulphide, nitrite, nitrate and phosphate analyses, storage time must not exceed 48 hours. For total metals, a holding time of up to 6 months is acceptable.

Tier Environmental standard analytical suites

The analyses included with Tier Environmental's standard analytical suites for soil, soil leachate and water samples are presented in Table 2. Other individual analyses were specified as described within this report.

Table 2. Tier Environmental Standard Analytical Suites.

Parameter	**Sample type**					
	Soil		**Leachate[1]**		**Water**	
		LoD[2] (mg/kg or as stated)		**LoD (µg/l or as stated)**		**LoD (µg/l or as stated)**
Metals and metalloids						
Arsenic	✓	1	✓	10	✓	10
Cadmium	✓	1	✓	5	✓	5
Chromium	✓	1	✓	5	✓	5
Mercury	✓	1	✓	1	✓	1
Lead	✓	1	✓	4	✓	4
Selenium	✓	2	✓	10	✓	10
Copper	✓	1	✓	1	✓	1
Nickel	✓	1	✓	50	✓	50
Zinc	✓	1	✓	8	✓	8
Other inorganics						
Ammonia (as NH_4-N)					✓	15
Total sulphate	✓	100			✓	50 mg/l
Water-soluble sulphate	✓	0.1 g/l				
Hardness (as $CaCO_3$)					✓	1 mg/l
Organics						
Monohydric phenol	✓	1	✓	0.5	✓	0.5
Speciated PAHs (USEPA 16)	✓	0.1	✓	0.01	✓	0.01
Total Organic Carbon	✓	0.1 wt%				
Others						
Electrical conductivity					✓	NA
pH	✓	NA	✓	NA	✓	NA

NA - Not applicable

1 Leachate preparation according to NRA (1994), 10:1 liquid to solid ratio.

2 The table presents the desired limit of detection for the analysis. Higher LoDs may be reported on analytical data sheets due to interference between analytes within specific samples or if the laboratory needed to dilute samples to achieve results within the calibrated range for that instrument.

Analytical QA procedures

Introduction

Quality Assurance (QA) is a system of review and audit that assesses the effectiveness of that product and assures the producer and user that defined standards of quality have been met. If we consider site investigation and chemical analysis, QA is the management system that ensures these measures are in place and working as intended.

QA within the laboratory form part of relevant certification programmes (such as UKAS and MCERTS) and, indeed, will be undertaken in some form by any reputable analyst, whether for a certified technique or not. Laboratory QA/QC is beyond the control of Tier Environmental and will not be considered further in this document, although the relevant laboratory documentation can be obtained upon request. QA must also form part of the design and execution of a site investigation.

Two parameters often used to assess measurement quality objectives are bias and precision. Bias is a systematic deviation in the data. For example, a positive bias (concentrations higher than in reality) would be introduced if sampling bottles were a source of the analyte and this fact was unknown. Precision is the variation in the measurements around a central 'expected' value. This could be due both to real variability in the environmental medium being measured and random errors in the analytical process. Both precision and bias can be assessed by the use of appropriate blanks and replicates within the site investigation programme.

The objectives of the QA activities undertaken in this present site investigation were to recognise and quantify systematic bias within the analytical dataset and to obtain an indication of precision. In environmental samples, much of the observed variability is likely to result from heterogeneity in the sampled medium, particularly for soil and sediment samples.

Such QA practice within the sampling programme is required by current guidance (e.g., Environment Agency report P5-065/TR (2000); Environment Agency LFTGN02 (2002); BS 10175:2001).

Alternative QA procedures to the generic approach presented in this appendix may be specified for a project, provided case-specific justification is given.

QA checking procedure (data validation)

The responsible Engineer and Project Reviewer are required to undertake data validation and provide comment on data quality within the main body of the report(s) issued, when noteworthy matters arise. This QA checking should involve:

Confirming that data reported by the laboratory have achieved the standards specified by the certification scheme (MCERTS or UKAS). This will be indicated on the analytical certificates issued by the laboratory.

Checking that the limit of detection (LoD) and limit of quantification (LoQ) achieved by the laboratory for an individual analyte is appropriate for the purposes of the report. LoD and LoQ will vary dependent upon analyte concentrations, sample matrix properties and interference from co-contaminants.

A check that the reported range of concentrations are reasonable for the analyte. For example, the dissolved concentration of an analyte in a water sample should not exceed saturation. If it does, then this merits further consideration (e.g., was colloidal organic matter or other solid-phase material present or could there have been unobserved free-phase organic liquid?) and explicit comment. At its simplest, there may be a unit error.

Where analysis involves reporting of Tentatively Identified Compounds (TICs; normally by mass spectrometry), the reviewers should check that these might reasonably be expected at the site under consideration. The uncertainties in identification by MS mean that it is not uncommon that TICs are incorrectly assigned. In cases of doubt, the analytical laboratory can re-check the raw data and confirm.

A review of the analytical precision by comparing data obtained for duplicate samples. There is no absolute threshold - variability is entirely dependent upon the sample matrix and manner in which the contaminant has entered the sample. Variability that cannot reasonably be assigned to such factors (for example a very high apparent variability in data for sediment-free water samples) should be reviewed with the laboratory. Variability that is attributable to the sample matrix can nevertheless provide important pointers to improve understanding of contaminant transport pathways and the risks posed by pollutant linkages (e.g., soil heterogeneity, the association of contamination with particular soil fractions, the presence of residual NAPL within soil pores or the role of suspended sediments in contaminant transport).

Confirmation that no errors have been introduced by data transcription, unit conversion or corrections between preliminary and certificates issued by the laboratory. The reviewer should audit a proportion (typically 5-10%) of all data from the original (final) certificates of analysis through to the equivalent values in the report for those specific samples.

In is important to consult the analytical laboratory if apparent QA issues arise. Many apparent concerns can be adequately resolved on the basis of revisiting the raw analytical data or by obtaining a better understanding of the inherent limitations of the analysis for a particular matrix or sample type.

APPENDIX M - COMPLYING WITH CONTROL OF ASBESTOS REGULATIONS 2012

Complying with Control of Asbestos Regulations (CAR): Risk Assessments, Licensing and Training

This appendix outlines CAR risk assessments and where they should be applied in relation to assessing and remediating brownfield sites. The information below details the different classifications of work with asbestos under CAR, summarises the legal requirements for asbestos awareness training for all involved in the investigation and management of asbestos containing soil (ACS), and details the potential requirements for suitable proficiency training relating specifically to ACS.

CAR RISK ASSESSMENTS

A CAR Risk Assessment is required for any work which may expose employees to asbestos. It is recommended that a precautionary approach is adopted if there is any doubt about risks associated with asbestos.

There are three main activities for potential asbestos exposure during work on brownfield sites:

- Site reconnaissance visits;
- Site investigation works; and
- Site remediation.

CAR risk assessments are needed at each stage but may be incorporated during the site investigation stage into the overarching health and safety risk assessments.

The CAR risk assessment must:

- Identify the type of asbestos to which employees are liable to be exposed, where possible, or assume it is present in different forms;
- Determine the type and extent of exposures to asbestos that may occur during the work
- Identify the steps to be taken to prevent exposure or reduce it to the lowest level reasonably practicable; and,
- Consider the effects of control measures that have been or will be taken.

The CAR risk assessment should include any information used to inform the risk assessment such as asbestos reports or desk study information. In the event that this information is not available, the assessor should be assumed that all forms of asbestos may be present on Site.

For all investigation and remediation of ACSs, a detailed written work plan should he produced and followed as detailed on the HSE website and in the CAR.

The CAR risk assessments for specific investigations or remediation projects, will determine whether or not work is 'licensable work' (LW)**,** notifiable non-licensable work' (NNLW) or 'non-licensed work' (NLW). In addition, training requirements are also defined by the CAR risk assessment.

Some examples of control measures that apply during site reconnaissance, site investigation works, and site remediation are given below and should be applied depending on the asbestos risks identified for the Site at each stage of investigation:

- Avoiding stirring up dust;
- Cleaning footwear after site works;
- Removing and bagging any overalls for disposal/laundering;
- Respirators and hygiene facilities for high risk sites;
- Segregated welfare units;
- Wetting ground
- Minimising soil disturbances;
- Implementation or retention of capping/break layers;
- Implementation of awareness training;
- Air monitoring;
- Managing stockpiles;
- Area segregation;
- Wheel washing
- Road washing/cleaning

It is important to note that during Site reconnaissance visits, Site investigation works and Site remediation that asbestos should not be considered in isolation and control measures are likely to form part of a wider health and safety precautions.

Respiratory protective equipment (RPE)

RPE is the last line of defence and its requirement would be defined by the CAR risk assessment. HSE (2013b) advises that RPE should have an assigned protection factor of 20 or more for all work with asbestos. In certain instances, full face-piece, positive pressure respirators with a protection factor of 40 are necessary (to EN 12942:1998, TM3).

Suitable types of RPE for most ***short*** duration non-licensed asbestos work:

- Disposable respirator to standards EN149 (type FFP3) or EN1827 (type FMP3)
- Half mask respirator (to standard EN140) with P3 filter
- Semi-disposable respirator (to EN405) with P3 filter

These filters are not suitable for people with beards/stubble or for long or continuous use.

LICENSING

CAR defined certain types of activities involving asbestos as 'licensable work' (LW) or as 'notifiable non-licensable work' (NNLW). All other work would be 'non-licensable work' (NLW).

LW is defined as:

- work where exposure is not 'sporadic and low intensity'
- work where the risk assessment cannot demonstrate that the control limits (four hour and 10 minute limits) will not be exceeded
- work on asbestos coating
- work on AIB or insulation where risk assessment is either of first two points above or not of short duration (where short duration is defined for any work liable to disturb asbestos as taking less than two hours per week (including ancillary work) and no one person carries out that work for more than one hour').

NNLW includes work with:

- AIB or asbestos insulation of short duration that is not licensable
- fire-damaged asbestos cement or asbestos cement damaged so as to create significant dust and debris
- asbestos ropes, yarns, woven cloths in poor condition or handling cutting or breaking up the materials
- asbestos papers, felts and cardboard in poor condition, unencapsulated or not bound into another material.

Work with weathered asbestos cement, air monitoring and collecting samples of ACM in buildings would not normally be notifiable.

It is impossible to specify definitively what activities will and will not be licensable. This decision should be made as part of the CAR risk assessment. CAR is not primarily aimed at work with ACSs and there is little published information on airborne asbestos concentrations during work with ACSs. Nevertheless, CAR will require some remediation projects, and occasionally site investigations, to be LW. Investigations on other sites may involve NNLW. The decision as to whether work is LW or NNLW should be made during the CAR risk assessment by those in charge of the brownfield site investigations and remediation projects.

TRAINING REQUIREMENTS

Asbestos health and safety courses are offered by a number of providers in the UK. Training courses that include the problem of identifying ACMs in soil should be undertaken at regular intervals by those involved in the investigation, assessment and management of sites where ACs are known or suspected. It is the role of the employer to identify the level of training required for an employee based on their role, experience and duties. Reference to Regulation 10 of CAR should be referred to for more information on training requirements.

Recognising asbestos within soils is challenging due to the heterogeneity of such soils and the discolouration of asbestos by smeared soil. Specific training for ground workers should include understanding fibre release potential, potential control measures in the field, how to take representative ACSs safely, sample labelling and what analytical tests are available and when the y should be implemented.

Health and safety training required under CAR includes asbestos awareness, non-licensable work (including notifiable non-licensable work) and licensable work with asbestos.

In addition to health and safety training, some staff involved in the technical identification on site of ACMs, sampling and analysis may require technical proficiency training (competency training).

Training vs. Competence

HSE (2005) identifies that ‘training alone does not make people competent. Training must be consolidated by practical experience so that the person becomes confident, skilful and knowledgeable in practice on the job.’ It is critical that ACS surveyors demonstrate competency with details of relevant field experience alongside training and examples of previous works/references.

FICHTNER

Consulting Engineers Limited

Thornton Energy Recovery Centre

Sesona Hill House Ltd

Site Condition Report

ENGINEERING CONSULTING

Document approval

	Name	Signature	Position	Date
Prepared by:	Katie Hampton		Environmental Consultant	16/01/2023
Checked by:	James Sturman		Lead Consultant	16/01/2023

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Contents

1 Introduction

Sesona Hill House Ltd (Sesona) is developing the Thornton Energy Recovery Centre (the Facility) which will comprise a twin-line waste incineration plant and associated infrastructure.

A detailed description of the Facility is presented within section 1.4 of the Supporting Information.

Sesona is applying to the Environment Agency (EA) under the Environmental Permitting Regulations (EPR) for an Environmental Permit (EP) to operate the Facility.

1.1 The objective

This Site Condition Report summarises the existing ground conditions for the land within the Installation Boundary (the 'Site') and describes the setting for the Facility at the time of applying for the EP. This report draws on the following sources of background information which are provided as Appendices:

- Tier Consult, '*Preliminary Risk Assessment Report for Hillhouse Business Park, Thornton Cleveleys*', Version 1, July 2022 (Appendix A); and
- Tier Consult, '*Ground Investigation Report for Hillhouse Business Park, Thornton Cleveleys*', Version 1, October 2022 (Appendix B).

Appendix A also includes a Groundsure Report which has been referenced throughout this report.

This Site Condition Report has been undertaken in accordance with EA guidance '*H5: Site Condition Report*'. This report presents background information on the existing ground conditions at the site, including the following:

1. Geology;
2. Hydrogeology;
3. Hydrology and surface waters; and
4. Historical and present land use.

The report:

1. Considers the proposed activities to be carried out at the site;
2. Identifies any land contamination risks the activities pose that may be linked to previous pollution events; and
3. Identifies a baseline for the existing ground conditions.

Plans and drawings for the Facility can be found in Appendix A of the Application Pack. These include the following:

1. Site location plan;
2. Installation boundary; and
3. Emission points drawing.

2 Site details

2.1 Applicant

Sesona is the developer of the project. Sesona is registered in England (Company Number: 13999163) and has a registered address of Building 3, Chiswick Park, 566 Chiswick, High Road, London, W4 5YA.

The technical solution for the project is being provided by Novalux Energy Solutions Ltd, who work in the design and installation of sustainable energy systems. With over 12 years of experience in the renewables industry, Novalux has significant experience in the design and installation of Energy from Waste systems, including those of a similar design to the Facility, utilising thermal oil boilers alongside an Organic Rankine Cycle (ORC) system.

2.2 Site address

Thornton Energy Recovery Centre,

Hillhouse Business Park,

Thortnton-Cleveleys,

Lancashire,

FY5 4QD

2.3 National grid reference

SD 34399 44026

2.4 Site location

The Facility will be located at Hillhouse Business Park, Thornton-Cleveleys, Lancashire. The Site is located on the northern edge of Thornton, approximately 2.6km east of Cleveleys, 2.9km west of Stalmine, 3.9km south of Fleetwood and 8.2km northeast of Blackpool. The approximate National Grid Reference (NGR) for the centre of the Site is SD 34399 44026. The A585 is approximately 1.5km to the east of the Site and connects Thornton with the M55 motorway which runs west to east from Blackpool to Preston, where it ultimately meets the M6 motorway.

The Site covers an area of land which previously had an industrial use – a former chemicals manufacturing facility was located on the site which was decommissioned by 2000. The previous operations/activities have been removed, and the site is vacant and consists largely of hardstanding and internal roadways remaining from the industrial use.

The Site is bound by an access track and scrub vegetation to the east, beyond which lies the Wyre Way coastal footpath and River Wyre. The site is surrounded by industrial development which forms part of the wider Hillhouse Business Park. The closest residential properties to the Site are located off Butts Road, approximately 360m to the southwest.

A site location plan and Installation Boundary drawing are presented in Appendix A of the Application Pack.

3 Condition of land at permit issue

3.1 Environmental setting

3.1.1 Geology

The geology associated with the Site has been reviewed from both the Preliminary Risk Assessment (refer to Appendix A) and Ground Investigation (refer to Appendix B) and is summarised within Table 1.

Table 1: Site lithology and description

Lithology	Description
Made Ground/Artificial Ground	Historic boreholes suggest depth of Made Ground to be between 2.5m – 5.5m. This is corroborated by the Ground Investigation which states that Made Ground was encountered at all locations assessed, at depths ranging from ground level to between 2.60m-3.60m bgl. Made Ground likely to have been placed during enabling works for previous railway sidings and/or chemical works. Possibility to include historical site-generated waste. Very high to low permeability with a mixed flow type.
Superficial – Tidal Flat Deposits underlain by Glacial Till	Tidal Flat Deposits (clay and silt) present across the whole site, underlain by stiff Glacial Till clays. Low permeability with a mixed flow type. The Ground Investigation states that tidal flat deposits were encountered to maximum depths between 6.10-8.60m bgl.
Bedrock – Kirkham Mudstone Member	Bedrock is Anisian in age. Mudstone and halite-stone is shown to subcrop immediately to the east of the Site. Permeability of bedrock is low with a fracture flow type.

The Preliminary Risk Assessment states that no faults are recorded on or in the immediate vicinity of the site, and no coal seams are shown to outcrop or subcrop on or in the immediate vicinity of the site. The topography of the site is identified as approximately 9.00m AOD in the north sloping to approximately 8.00m AOD in the south.

The BGS Historic Borehole index indicates that there are two boreholes located on-site associated with the Hillhouse development. A number of other boreholes are located within 250m of the site.

3.1.2 Hydrogeology

The underlying hydrogeology to the Site is described in the Preliminary Risk Assessment (Appendix A) and is summarised as follows:

- The superficial deposits (Tidal Flat Deposits underlain by Glacial Till) are designated as an unproductive aquifer, and of 'unproductive' vulnerability.

- The bedrock (Kirkham Mudstone) is designated as a Secondary B aquifer, and of 'low' vulnerability.
- Significant soluble rocks are likely to be present on site, with a high possibility of localised subsidence, or dissolution-related degradation of bedrock occurring naturally.
- Publicly available BGS records indicate standing water is 0.71m and 0.54m below ground level (bgl), perched within clay and clayey silt.
- Groundwater flow is likely to be east/northeast, flowing towards the River Wyre estuary.

There are no Source Protection Zones located on or within 250m of the Site.

There are no records of active licensed groundwater abstractions within 250 m of the Site, no potable water abstraction licenses recorded within 250m of the Site, and no private wells recorded within 250m of the Site.

3.1.3 Hydrology and surface waters

The hydrology surrounding the site is described in the Preliminary Risk Assessment (Appendix A) and can be summarised as follows.

- The nearest surface water feature lies around 59m to the northeast of the site (the River Wyre). There are no other records of surface water features, including canals, ponds, lakes etc, within 250m of the site. The River Wyre has an overall rating of poor, with a chemical rating of 'fail' and an ecological rating of 'poor'.
- The site has a negligible risk of groundwater flooding. The highest risk on site in relation to surface water flooding is a 1 in 100 flood event (0.1 – 0.3m rise). No historical flood events are recorded within 250m of the site. The Groundsure Report denotes an 'area benefitting from flood defences' approximately 28m to the south of the site.
- The site lies in Flood Zone 1. The nearest Flood Zone 2 area lies approximately 23m to the south of the site, and the nearest Flood Zone 3 area lies approximately 28m to the south of the site.

3.2 Pollution History

3.2.1 Site history

The Preliminary Risk Assessment (Appendix A) sets out the site history as follows:

- The Site was undeveloped until 1932, when railway lines were shown on maps.
- In 1969, buildings associated with a chemical works are shown on site along with multiple associated tanks, water storage facilities, yards and chimneys. It is understood that the main vinylidene chloride storage tanks were bunded and located immediately to the east of the study site. By 2010, the buildings associated with the chemical works are no longer shown on maps. It is understood that this was decommissioned in 2000.
- The surrounding land use is commercial/industrial with multiple off-site developments. An Ammonia Soda Works is shown approx. 40m north and 120m west of the site which extends northwards in the west approx. 500m to a reservoir; this is no longer shown on mapping from 1969.

3.2.2 Historical pollution incidents

EA data from the Groundsure report indicates that there are no records of pollution incidents within 250 m of the Site.

Since 2006, published data has only included Category 1 (major) and 2 (significant) pollution incidents.

There are 2 records of pollution incidents between 250 – 500m of the site: one Category 3 (Minor) incident in 2003 which resulted in chemically contaminated runoff being released to water, and another Category 3 (minor) incident in 2003 which involved an undescribed pollutant being released to air.

3.2.3 Historical pollution potential

There are no records of sites determined as 'contaminated land' within 250m of the Site. Furthermore, the Site is not classed at risk from radon, and no radon protection measures are required.

Based on the history of the Site, the Preliminary Risk Assessment (Appendix A) considers it likely that hazardous waste soil and/or ground gas may be present beneath some areas of the site. Potential contaminative features are indicated to be as follows:

- Multiple chemical storage tanks are shown previously on site and within the close vicinity of site from the previous land uses (including the former on-site chemical works). The main vinylidene chloride tanks associated with the former on-site chemical works were stored to the immediate east of the Site).
- Contamination associated with Made Ground from previous developments on site, including the former chemical works. Potential contaminants include metals, PAHs, phenols, TPH and pH, asbestos, VOCs and SVOCs, PCBs, hexavalent chromium and coal tar.
- Potentially hazardous ground gas, possibly resulting from Made Ground at the site, VOCs (notably vinylidene chloride) from historic spillages/leaks, organic soils within the Tidal Flat Deposits and/or historical refuse pits.

3.2.4 Licenses and authorisations

The Preliminary Risk Assessment (Appendix A) sets out the environmental licenses and authorisations in the vicinity of the site. These are summarised in Table 2:

Table 2: Environmental licenses/authorisations within 250 m of the Site

Distance/ direction from the site	Details
Licensed industrial activities (Part A(1))	
223m (W)	BOC Ltd: Flourine Technology Support Facility Process: Inorganic Chemicals; Using Halogens etc if Release to Air/Water (Unless Otherwise Prescribed) (Unless Chlorination of Water) Status: Superseded (last date 01/01/2022)
223m (W)	Victrex Manufacturing Ltd: Victrex Polymer Production Process: Organic Chemicals; Plastic Materials eg Polymers

Distance/ direction from the site	Details
	Status: Superseded (last date 01/01/2022)
Licensed discharges to controlled waters	
111m (N)	Main Outfall, Hillhouse International Business Centre Effluent Type: Trade Discharges - Process Effluent – Not Water Company Effective Dates: 1980-to 1996
List 2 Dangerous Substances	
111m (N)	ICI Chemicals & Polymers, Hillhouse North Status: Not Active Receiving Water: Wyre Estuary Substance: Chromium
COMAH sites	
On Site and 224m (S)	Victrex Manufacturing Limited
On Site	AGC Chemicals Europe Limited
Hazardous substance storage/usage	
134m (S)	Victrex Manufacturing Limited

As reported in the Groundsure Report, none of the following licenses/authorisations are listed within 250m of the Site:

- regulated explosive sites;
- historical licensed industrial activities (IPC);
- licensed pollutant release (Part A(2)/B);
- radioactive substance authorisations;
- pollutant releases to surface waters (Red List);
- pollutant releases to public sewer;
- List 1 Dangerous Substances;
- pollution incidents (EA/NRW);
- pollution inventory substances;
- pollution inventory waste transfers; and
- pollution inventory radioactive waste.

3.2.5 Recent industrial land uses

Recent industrial land uses are set out in the Preliminary Risk Assessment (Appendix A) and summarised in Table 3:

Table 3: Recent industrial land uses

Distance/ direction from the site	Details
On Site, 44m SE, 54m E, 64m N, 73m S, 123m S, 237m W	4 No. Tank features on Site 7 No. between 11m to 236m from Site
62m SE	Gantry – Travelling Cranes and Gantries
147m W	Hillhouse International Business Park
185m S, 143m NW	Unspecified Works or Factories
220m W	Electricity Sub Station

There are no records of current or recent petrol stations, electricity cables or gas pipelines within 250m of the site.

3.2.6 Landfill and waste sites

The waste management activities within 250m of the site as reported within the Preliminary Risk Assessment (Appendix A), are set out in Table 4:

Table 4: Historical waste management facilities within 250m of the site

Site	Location	Details
Historic railway sidings/chemicals plant	On-site	Historical Ordnance Survey plans / BGS borehole logs indicate land raising has taken place to provide a development platform for the historic railway sidings and/or chemicals plant
Unknown historic waste site	40m SE	Refuse pit, dated 1959 (recorded in historic mapping)

3.2.7 Environmental designations

The environmental designations recorded within 2km of the site within the Preliminary Risk Assessment (Appendix A), are set out in Table 5:

Table 5: Environmental designations within 2km of the site

Site	Location	Details
Sites of Special Scientific Interest (SSSI)	57m NE	Wyre Estuary
Conserved wetland sites (Ramsar sites)	56m NE	Morecambe Bay
Special Protection Areas (SPA)	57m NE	Morecambe Bay and Duddon Estuary
Marine Conservation Zones	61m NE, 124 – 540m E	Wyre-Lune

4 Permitted Activities

4.1 Activities

The permitted activities will consist of the Schedule 1 installation activities (as defined in the Environmental Permitting Regulations) and directly associated activities listed in Table 6:

Table 6: Scheduled and Directly Associated Activities

Type of Activity	Schedule 1 Activity	Description of Activity	Limits of specified activity
Installation	Section 5.1 Part A(1) (b)	The incineration of non-hazardous waste in a waste incineration plant with a capacity of 3 tonnes per hour or more	From receipt of waste to treatment and emission of exhaust gas and disposal of any residues arising, including the storage of incinerator bottom ash and air pollution control residues.
Directly associated activities			
Directly Associated Activities		Energy generation	Energy generation and export of electrical power using an Organic Rankine Cycle turbine, with the potential to export heat to local users.
Directly Associated Activities		Back up electrical generator	For providing emergency electrical power to the plant in the event of supply interruption.

4.2 On-site fuel and chemical storage facilities

As identified in the Supporting Information document, the activities undertaken at the Facility will utilise a number of fuels and chemicals. These materials will be stored in accordance with current guidance.

The delivery and transfer details, and secondary and tertiary containment systems associated with the storage of these materials are presented in Table 7.

Table 7: Raw material containment facilities – Primary raw materials

Material	Delivery details	Transfer for storage details	Storage containment details
Fuel oil	Delivered using tanker.	Unloading from delivery vehicle tanker into storage tank using sealed pipework. Storage tanks located with a dedicated concrete sump or other bunding. Hardstanding	Primary: Tank Secondary: Bunding/Sump Tertiary: Hardstanding and contained drainage

Material	Delivery details	Transfer for storage details	Storage containment details
		in this area will also have links to process drainage system.	
Urea solution	Delivered using tanker.	Unloading from sealed delivery vehicle into storage tanks via standard hose connection, under supervision by trained site operatives. Storage tanks and unloading located in a covered area with a dedicated concrete sump or other bunding. Hardstanding in this area will have contained drainage. Tanks to have high tank level alarms or trips.	Primary: Tank Secondary: Bunding/Sump Tertiary: Hardstanding and contained drainage
Sodium bicarbonate	Delivered using tanker.	Pneumatic unloading from delivery vehicle into storage silo. Exhaust air to be de-dusted using fabric filters and automatic cleaning with compressed air after filling. Filter to be regularly inspected for leaks. Silos to be fitted with a high level alarm system to prevent overfilling.	Primary: Silo Secondary: Hardstanding Tertiary: Contained process drainage
Activated carbon	Delivered using tanker.	Pneumatic unloading from delivery vehicle into storage silo. Exhaust air to be de-dusted using fabric filters and automatic cleaning with compressed air after filling. Filter to be regularly inspected for leaks. Silos to be fitted with a high level alarm system to prevent overfilling.	Primary: Silo Secondary: Hardstanding Tertiary: Contained drainage

Various maintenance materials (oils, greases, insulants, antifreezes, welding and firefighting gases etc.) will be stored in an appropriate manner. Any gas bottles on-site will be kept secure in dedicated area(s).

4.3 Environmental Risk Assessment

An Environmental Risk Assessment has been carried out following the Environment Agency Horizontal Guidance Note H1. This is included within Appendix D of the Application Pack. The assessment considers all potential sources of air, land and water pollution that could occur due to emissions from the Facility or from accidents occurring at the Facility. The risk assessment also details any mitigation measures that will be employed to reduce the frequency or impact of fugitive emissions or accidents.

The Environmental Risk Assessment identifies that the operation of the Facility will require the storage of various chemicals, which could pose a risk to the land, groundwater and/or surface water during operations. All process areas, loading/unloading areas, materials handling areas and roadways will be covered in concrete and/or tarmac hardstanding. As such, it is regarded that there will be little risk of ground/groundwater contamination during normal operation of the Facility.

Therefore, it is concluded that the Facility will pose little risk of pollution. However, periodic soil and groundwater samples at the Site will be undertaken to fulfil the requirements of Articles 14(1)(b), 14(1)(e) and 16(2) of the Industrial Emissions Directive (IED).

5 EC Guidance: Stage 1 – 3 Assessment

In accordance with European Commission Guidance concerning baseline reports under Article 22(2) of the IED, a Stage 1 – 3 assessment has been undertaken to identify hazardous substances used at the Facility.

Stages 1 – 3 of the assessment are described as follows:

1. Identify which hazardous substances are used, produced or released at the installation.
2. Identify which of these substances are classed as 'relevant hazardous substances' (defined within Article 3 of EC Regulation 1272/2008). Justify any hazardous substances which have been excluded due to their incapability to contaminate soil or groundwater.
3. For each relevant hazardous substance, identify the actual possibility for soil or groundwater contamination at the Site (including probability of release), taking into account quantities, storage and transport, risk of release.

The full stage 1 – 3 assessment of the primary raw materials and residues handled at the Facility is presented in Table 8. The substances handled at the Facility are identified in the context of their hazards and theoretical pollution risk, with justification as to whether the substance is of concern or not in the context of the Site.

Table 8: Stage 1 – 3 assessment of waste, raw materials and residues at the Facility

Stage 1: Chemicals handled	Stage 2: Chemical characteristics and toxicity							Stage 3: Site specific characteristics			Stage 4: Site specific risk
Substance	**Concentration / State**	**CAS No.**	**EC/List No.**	**Hazard statements (CLP)**	**Hazard substance under Stage 2?**	**Environmental fate / behaviour**	**Potential Pollution Risk?**	**Approx. Quantity Stored**	**Storage Arrangements/ Containment**	**Delivery, Storage and use details**	**Comments/ Chemical of concern?**
Waste and raw materials											
Non-hazardous RDF	Solid (possibly some liquids)	N/A	N/A	N/A	No	Mostly insoluble, however potential for a wide range of contaminants and potential for small amounts of liquids to be present.	Yes	250 tonnes per RDF deposit area (2 areas total), 450m^3 maximum per stockpile bay	RDF deposit area (in or adjacent to), or stockpile bays.	RDF will be delivered in enclosed waste delivery vehicles from off-site sources, before entering the tipping hall. The delivery vehicles will discharge RDF directly into 2 walking floor RDF deposit areas, or on the floor adjacent to the deposit areas, or potentially into a stockpile bay.	RDF unloading activities will be undertaken on areas of hardstanding. RDF storage facilities will be designed at water-retaining structures to prevent underlying ground/groundwater. Periodic inspections of RDF levels against maximum capacity will be undertaken. Any spillages will be cleaned up. Regular preventive maintenance of the storage facilities.
Fuel Oil (saturated and aromatic hydrocarbons)	Liquid	68334-30-5	269-822-7	H226, H304, H373, H315, H332, H351, H411, H350	Yes	Insoluble, high toxic effects, volatile	Yes	40,000 litres (split between 2 tanks)	Enclosed tanks with bunding/sumps	Delivery to the Facility in dedicated road tankers, unloaded into storage tanks via flexible hose, direct feed into burners.	Periodic inspections of tank undertaken (preventative maintenance), refuelling undertaken on areas of hardstanding with contained drainage, overfill protection on tank.
Urea solution $CO(NH_2)_2$ + H_2O	Liquid	57-13-6	200-315-5	N/A	No	Water soluble Potential for mobility in soil and water systems	Yes	120,000 L (split between 2 silos)	Enclosed tanks with bunding/sumps	Delivered by road tanker and pumped into storage tank via flexible hose, direct feed from tank into the process	Unloading operations on areas of hardstanding with contained drainage, storage in a bunded area or area with sump, site drainage will be able to be isolated in a spill event, air emissions system is subject to advanced control measures

Stage 1: Chemicals handled	Stage 2: Chemical characteristics and toxicity							Stage 3: Site specific characteristics			Stage 4: Site specific risk
Substance	**Concentration / State**	**CAS No.**	**EC/List No.**	**Hazard statements (CLP)**	**Hazard substance under Stage 2?**	**Environmental fate / behaviour**	**Potential Pollution Risk?**	**Approx. Quantity Stored**	**Storage Arrangements/ Containment**	**Delivery, Storage and use details**	**Comments/ Chemical of concern?**
Sodium bicarbonate ($NaHCO_3$)	100%, Solid	144-55-8	205-633-8	N/A	No	High aqueous solubility	Yes	16,000 L split between 2 silos)	Enclosed silo(s)	Delivered in tankers, unloaded into storage silo by flexible hose, feed into flue gas treatment systems.	Any spillages easily swept up, site containment and handling procedures are good. Chemical dosing rates and flows within the FGT process are subject to control systems. Storage silos will be located above concrete hardstanding, and fitted with high-level alarms for unloading operations. Drainage in these areas will be contained.
Powder Activated Carbon, PAC	100%, Solid	7440-44-0	231-153-3	H252	Yes	Insoluble	No	2,000 L (split between 2 silos)	Enclosed silo(s)	Delivered by road, unloaded into silo via flexible hose, feed into flue gas treatment systems.	Any spillages easily swept up, site containment and handling procedures are good. Silo located above an area of concrete hardstanding.
Residues											
APCr (contains heavy metals, POPs)	Solid	90989-48-3	292-705-7	N/A	Yes	Presence of persistent organic pollutants (e.g. dioxins), volatiles.	Yes	2 x 40 yd enclosed RoRo skips	Skips	Ash from flue gas treatment. Direct feed from flue gas treatment system into storage facilities, then loaded into tanker (all enclosed) for transfer to hazardous landfill disposal or for recovery.	Any leaks during loading/ unloading operations will be contained by concrete hardstanding, with measures to prevent overfilling in place. APCr storage and unloading will be in areas with contained drainage to the process drainage network.
Incinerator Bottom Ash (IBA)	Solid	91082-83-6	293-798-7	N/A	No	Limited solubility, potential for the presence of heavy metals	No	2 x 40 yd skips	Skips	Grate ash (relatively inert and non-hazardous). Transferred to skips via conveyors. Transferred off-site for processing into secondary aggregate.	Inert and non-hazardous. Transfer to skips will be using enclosed conveyors. Storage in sealed RoRo skips.

6 Previous Contamination & Site Investigations

6.1 Site investigations

As stated within Article 22 (2) of the EA Industrial Emissions Directive (IED):

> *"Where the activity involves the use, production or release of relevant hazardous substances [RHS] and having regard to the possibility of soil and groundwater contamination at the site of the installation, the operator shall prepare and submit to the competent authority a baseline report before starting operation of an installation or before a permit for an installation is updated for the first time after 7 January 2013".*

Furthermore, the EA guidance note '*H5: Site Condition Report – Guidance and Templates*' states that "*where a facility involves the use, production or release of RHS*", a baseline report must be submitted as part of the application.

6.1.1 Tier Environmental Ground Investigation – August 2022

A ground investigation was undertaken by Tier Environmental Ltd to determine the nature and extent of soil and groundwater beneath the site. A copy of the ground investigation report is presented within Appendix B. Fieldwork was carried out between 8 – 11 August 2022, which comprised the following:

- Advancement of 10 No. hand dug pits to 1.20m bgl in all borehole locations for service clearance purposes.
- Advancement of 3 No. cable percussive boreholes to depths between 14.80m bgl and 15.10m bgl.
- Advancement of 7 No. window sample boreholes to depths of 5.45m bgl.
- Excavation of 7 No. machine excavated trial pits to depths between 0.40m bgl and 3.60m bgl.
- Completion of 4 No. plate bearing tests in selected trial pit locations.

Samples of soil and groundwater were submitted for analysis of a range of substances. Furthermore, gas monitoring was undertaken and the results analysed.

6.2 Baseline reference data

The baseline reference data has been derived from soil and groundwater analysis presented in the August 2022 ground investigation. The following is intended to provide a summary of the baseline concentrations at the site – the full baseline data which should be referenced that sets out the ground conditions at the site at the time of applying for the permit application is provided within Appendix B.

6.2.1 Soil monitoring and results

A summary of the soil pollutant concentrations for samples analysed from the August 2022 ground investigation is presented in Table 9. If further site investigations are undertaken prior to the commencement of operations at the site, Table 9 will be updated.

Table 9: Summary of soil monitoring results

Determinant	Units	Min Value	Max Value
Arsenic	mg/kg	6	93.3
Cadmium	mg/kg	<0.1	0.8
Chromium	mg/kg	20.5	133.6
Copper	mg/kg	6	217
Lead	mg/kg	<5	103
Mercury	mg/kg	<0.1	1.3
Nickel	mg/kg	14.4	104.1
Selenium	mg/kg	<1	<1
Sulphur as S	%	0.06	0.98
Total Sulphate as SO4	mg/kg	723	7720
Total Sulphate as SO4 BRE	%	0.07	1.13
Zinc	mg/kg	15	194
Magnesium	g/l	<0.0001	0.086
Naphthalene	mg/kg	<0.01	>>56.892
Acenaphthylene	mg/kg	<0.01	>>70.836
Acenaphthene	mg/kg	<0.01	17.60
Fluorene	mg/kg	<0.01	>>83.477
Phenanthrene	mg/kg	0.14	>>106.624
Anthracene	mg/kg	<0.04	76.64
Fluoranthene	mg/kg	0.09	56.22
Pyrene	mg/kg	0.06	40.04
Benzo(a)anthracene	mg/kg	<0.06	35.04
Chrysene	mg/kg	0.028	24.79
Benzo(bk)fluoranthene	mg/kg	<0.07	24.14
Benzo(a)pyrene	mg/kg	<0.01	15.633
Indeno(123cd)pyrene	mg/kg	<0.01	9.09
Dibenzo(ah)anthracene	mg/kg	<0.01	1.54
Benzo(ghi)perylene	mg/kg	<0.01	6.57
PAH 16 Total	mg/kg	0.7	545.66
Benzo(b)fluoranthene	mg/kg	<0.05	17.38
Benzo(k)fluoranthene	mg/kg	<0.01	6.76
PAH Surrogate % Recovery	%	1.02	100
Methyl Tertiary Butyl Ether	ug/kg	<2	209
Benzene	ug/kg	<3	456
Toluene	ug/kg	<3	2147

Determinant	Units	Min Value	Max Value
Ethylbenzene	ug/kg	<3	2557
m/p-Xylene	ug/kg	<5	>>19022
o-Xylene	ug/kg	<3	>>7677
Surrogate Recovery Toluene D8	%	47	109
Surrogate Recovery 4-Bromofluorobenzene	%	46	105
>C5-C6 (HS_1D_AL)	mg/kg	<0.1	0.4
>C6-C8 (HS_1D_AL)	mg/kg	<0.1	2.8
>C8-C10 (HS_1D_AL)	mg/kg	<0.1	4.2
>C10-C12 (EH_CU_1D_AL)	mg/kg	<0.2	>>362.1
>C12-C16 (EH_CU_1D_AL)	mg/kg	<4	>>6701
>C16-C21 (EH_CU_1D_AL)	mg/kg	<7	>>11519
>C21-C35 (EH_CU_1D_AL)	mg/kg	<7	>>7019
>C35-C40 (EH_1D_AL)	mg/kg	<7	>>173
Total aliphatics C5-40 (EH+HS_1D_AL)	mg/kg	<26	>>25781
>C5-EC7 (HS_1D_AR)	mg/kg	<0.1	<0.1
>EC7-EC8 (HS_1D_AR)	mg/kg	<0.1	0.4
>EC8-EC10 (HS_1D_AR)	mg/kg	<0.1	1.5
>EC10-EC12 (EH_CU_1D_AR)	mg/kg	<0.2	>>612.4
>EC12-EC16 (EH_CU_1D_AR)	mg/kg	<4	>>15136
>EC16-EC21 (EH_CU_1D_AR)	mg/kg	<7	>>34373
>EC21-EC35 (EH_CU_1D_AR)	mg/kg	<7	>>40964
>EC35-EC40 (EH_1D_AR)	mg/kg	<7	>>1625
Total aromatics C5-40 (EH+HS_1D_AR)	mg/kg	<26	>>92712
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	mg/kg	<52	118493
Total Phenols HPLC	mg/kg	<0.15	6.856
Natural Moisture Content	%	10.9	73
Ammoniacal Nitrogen as NH4	mg/kg	<0.6	69.1
Chloride (2:1 Ext BRE)	g/l	0.012	2.081
Hexavalent Chromium	mg/kg	<0.3	<0.3
Nitrate as NO3 (2:1 Ext BRE)	g/l	<0.0025	0.0449
Sulphate as SO4 (2:1 Ext)	g/l	0.006	1.12
Total Organic Carbon	%	0.44	20.13
pH	pH units	7.94	12.75
2-Chlorophenol	ug/kg	<10	<10
2-Methylphenol	ug/kg	<10	441.1

Determinant	Units	Min Value	Max Value
2-Nitrophenol	ug/kg	<10	<10
2,4-Dichlorophenol	ug/kg	<10	<10
2,4-Dimethylphenol	ug/kg	<10	1846.6
2,4,5-Trichlorophenol	ug/kg	<10	<10
2,4,6-Trichlorophenol	ug/kg	<10	<10
4-Chloro-3-methylphenol	ug/kg	<10	<10
4-Methylphenol	ug/kg	<10	1704.3
4-Nitrophenol	ug/kg	<10	<10
Pentachlorophenol	ug/kg	<10	<10
Phenol	ug/kg	<10	865.9
2-Chloronaphthalene	ug/kg	<10	<10
2-Methylnaphthalene	ug/kg	<10	86892.4
Bis(2-ethylhexyl) phthalate	ug/kg	<100	1047
Butylbenzyl phthalate	ug/kg	<100	<100
Di-n-butyl phthalate	ug/kg	<100	<100
Di-n-Octyl phthalate	ug/kg	<100	<100
Diethyl phthalate	ug/kg	<100	<100
Dimethyl phthalate	ug/kg	<100	<100
1,2-Dichlorobenzene	ug/kg	<4	<10
1,2,4-Trichlorobenzene	ug/kg	<7	<10
1,3-Dichlorobenzene	ug/kg	<4	<10
1,4-Dichlorobenzene	ug/kg	<4	10
2-Nitroaniline	ug/kg	<10	<10
2,4-Dinitrotoluene	ug/kg	<10	<10
2,6-Dinitrotoluene	ug/kg	<10	<10
3-Nitroaniline	ug/kg	<10	<10
4-Bromophenylphenylether	ug/kg	<10	<10
4-Chloroaniline	ug/kg	<10	<10
4-Chlorophenylphenylether	ug/kg	<10	<10
4-Nitroaniline	ug/kg	<10	<10
Azobenzene	ug/kg	<10	<10
Bis(2-chloroethoxy)methane	ug/kg	<10	<10
Bis(2-chloroethyl)ether	ug/kg	<10	<10
Carbazole	ug/kg	<10	11164.2
Dibenzofuran	ug/kg	<10	44956.8
Hexachlorobenzene	ug/kg	<10	24.8

Determinant	Units	Min Value	Max Value
Hexachlorobutadiene	ug/kg	<4	<10
Hexachlorocyclopentadiene	ug/kg	<10	<10
Hexachloroethane	ug/kg	<10	<10
Isophorone	ug/kg	<10	<10
N-nitrosodi-n-propylamine	ug/kg	<10	<10
Nitrobenzene	ug/kg	<10	<10
Surrogate Recovery 2-Fluorobiphenyl	%	10.9	159
Surrogate Recovery p-Terphenyl-d14	%	12	125
Dichlorodifluoromethane	ug/kg	<2	<2
Chloromethane	ug/kg	<3	<3
Vinyl Chloride	ug/kg	<2	1632
Bromomethane	ug/kg	<1	<1
Chloroethane	ug/kg	<2	<2
Trichlorofluoromethane	ug/kg	<2	<2
1,1-Dichloroethene (1,1 DCE)	ug/kg	<6	300
Dichloromethane (DCM)	ug/kg	<7	99
trans-1-2-Dichloroethene	ug/kg	<3	84
1,1-Dichloroethane	ug/kg	<3	196
cis-1-2-Dichloroethene	ug/kg	<3	324
2,2-Dichloropropane	ug/kg	<4	0
Bromochloromethane	ug/kg	<3	0
Chloroform	ug/kg	<3	429
1,1,1-Trichloroethane	ug/kg	<3	56
1,1-Dichloropropene	ug/kg	<3	0
Carbon tetrachloride	ug/kg	<4	0
1,2-Dichloroethane	ug/kg	<4	>>13769
Trichloroethene (TCE)	ug/kg	<3	653
1,2-Dichloropropane	ug/kg	<6	0
Dibromomethane	ug/kg	<3	0
Bromodichloromethane	ug/kg	<3	0
cis-1-3-Dichloropropene	ug/kg	<4	0
trans-1-3-Dichloropropene	ug/kg	<3	0
1,1,2-Trichloroethane	ug/kg	<3	384
Tetrachloroethene (PCE)	ug/kg	<3	656
1,3-Dichloropropane	ug/kg	<3	<3
Dibromochloromethane	ug/kg	<3	<3

Determinant	Units	Min Value	Max Value
1,2-Dibromoethane	ug/kg	<3	<3
Chlorobenzene	ug/kg	<3	17
1,1,1,2-Tetrachloroethane	ug/kg	<3	0
Styrene	ug/kg	<3	1796
Bromoform	ug/kg	<3	0
Isopropylbenzene	ug/kg	<3	311
1,1,2,2-Tetrachloroethane	ug/kg	<3	4
Bromobenzene	ug/kg	<2	0
1,2,3-Trichloropropane	ug/kg	<4	0
Propylbenzene	ug/kg	<4	869
2-Chlorotoluene	ug/kg	<3	0
1,3,5-Trimethylbenzene	ug/kg	<3	>>5855
4-Chlorotoluene	ug/kg	<3	0
tert-Butylbenzene	ug/kg	<5	0
1,2,4-Trimethylbenzene	ug/kg	<6	>>54622
sec-Butylbenzene	ug/kg	<4	465
4-Isopropyltoluene	ug/kg	<4	2634
n-Butylbenzene	ug/kg	<4	>>2895
1,2-Dibromo-3-chloropropane	ug/kg	<4	<4
1,2,3-Trichlorobenzene	ug/kg	<7	<7
2,3,7,8-TCDD	ng/Kg	0.93	0.93
1,2,3,7,8-PeCDD	ng/Kg	1.11	5.08
1,2,3,4,7,8-HeCDD	ng/Kg	0.82	3.60
1,2,3,6,7,8-HeCDD	ng/Kg	1.60	7.56
1,2,3,7,8,9-HeCDD	ng/Kg	1.44	4.86
1,2,3,4,6,7,8-HpCDD	ng/Kg	12.44	46.00
OCDD	ng/Kg	37.07	85.99
Total 2,3,7,8-Dioxins	ng/Kg	54.49	154.01
2,3,7,8-TCDF	ng/Kg	0.57	12.67
1,2,3,7,8-PCDF	ng/Kg	0.96	17.31
2,3,4,7,8-PeCDF	ng/Kg	0.28	10.74
1,2,3,4,7,8-HeCDF	ng/Kg	2.59	32.70
1,2,3,6,7,8-HeCDF	ng/Kg	1.07	18.32
2,3,4,6,7,8-HeCDF	ng/Kg	5.56	5.56
1,2,3,7,8,9-HeCDF	ng/Kg	6.27	6.27
1,2,3,4,6,7,8-HpCDF	ng/Kg	4.91	69.57

Determinant	Units	Min Value	Max Value
1,2,3,4,7,8,9-HpCDF	ng/Kg	0.41	13.96
OCDF	ng/Kg	8.71	90.15
Total 2,3,7,8-Furans	ng/Kg	19.50	277.25
Total ACM Gravimetric Quantification (% Asb)	mass %	<0.001	<0.001
Total Detailed Gravimetric Quantification (% Asb)	mass %	<0.001	<0.001
Total Gravimetric Quantification (ACM + Detailed) (% Asb)	mass %	<0.001	<0.001
Asbestos PCOM Quantification (Fibres)(1)	mass %	<0.001	<0.001
Asbestos Gravimetric & PCOM Total(1)	mass %	<0.001	<0.001

Notes:

(1) Only one positive asbestos identification was noted in the soil samples, comprising chrysotile and amosite fibre bundles. However, quantification concluded the asbestos percentage present to be <0.001%.

>> means the result was above the calibration range; therefore, the actual result could be higher.

6.2.2 Groundwater monitoring and results

A summary of the groundwater pollutant concentrations for samples analysed from the August 2022 ground investigation is presented in Table 10. If further site investigations and ground water monitoring is undertaken prior to the commencement of operations at the site, Table 10 will be updated.

Table 10: Summary of groundwater monitoring results

Determinant	Units	Min Value	Max Value
Dissolved Arsenic	ug/l	<0.9	11.8
Dissolved Cadmium	ug/l	<0.03	<0.03
Total Dissolved Chromium	ug/l	0.4	1.4
Dissolved Copper	ug/l	<3	<3
Dissolved Lead	ug/l	<0.4	<0.4
Dissolved Mercury	ug/l	<0.5	<0.5
Dissolved Nickel	ug/l	4.2	18.9
Dissolved Selenium	ug/l	<1.2	<1.2
Dissolved Zinc	ug/l	2.1	16.2
Total Hardness Dissolved (as CaCO3)	mg/l	146.8	445.9
Naphthalene	ug/l	<0.1	0.555
Acenaphthylene	ug/l	0.108	3.3083
Acenaphthene	ug/l	<0.005	2.2804
Fluorene	ug/l	0.029	10.35375

Determinant	Units	Min Value	Max Value
Phenanthrene	ug/l	0.294	20.97825
Anthracene	ug/l	0.182	20.50755
Fluoranthene	ug/l	0.66	14.3382
Pyrene	ug/l	0.587	12.0365
Benzo(a)anthracene	ug/l	0.471	10.28725
Chrysene	ug/l	0.386	6.92165
Benzo(bk)fluoranthene	ug/l	0.641	6.4099
Benzo(a)pyrene	ug/l	0.395	4.45505
Indeno(123cd)pyrene	ug/l	0.163	1.0022
Dibenzo(ah)anthracene	ug/l	0.037	0.35105
Benzo(ghi)perylene	ug/l	0.126	0.9436
PAH 16 Total	ug/l	4.079	114.72865
Benzo(b)fluoranthene	ug/l	0.462	4.61515
Benzo(k)fluoranthene	ug/l	0.179	1.79475
PAH Surrogate % Recovery	%	3.05	79
Methyl Tertiary Butyl Ether	ug/	<0.1	<0.1
Benzene	ug/	<0.5	10.4
Toluene	ug/l	<5	<5
Ethylbenzene	ug/l	<1	<1
m/p-Xylene	ug/l	<2	2
o-Xylene	ug/l	<1	<1
Surrogate Recovery Toluene D8	%	99	102
Surrogate Recovery 4-Bromofluorobenzene	%	94	102
>C5-C6	ug/l	<10	24
>C6-C8	ug/l	<10	407
>C8-C10	ug/l	<10	31
>C10-C12	ug/l	<5	<5
>C12-C16	ug/l	<10	<10
>C16-C21	ug/l	<10	<10
>C21-C35	ug/l	<10	<10
>C35-C40	ug/l	<10	<10
Total aliphatics C5-40	ug/l	<10	462
>C5-EC7	ug/l	<10	<10
>EC7-EC8	ug/l	<10	<10
>EC8-EC10	ug/l	<10	<10

Determinant	Units	Min Value	Max Value
>EC10-EC12	ug/l	<5	141
>EC12-EC16	ug/l	<10	810
>EC16-EC21	ug/l	<10	440
>EC21-EC35	ug/l	<10	<10
>EC35-EC40	ug/l	<10	<10
Total aromatics C5-40	ug/l	<10	1391
Total aliphatics and aromatics(C5-40)	ug/l	<10	1853
Total Phenols HPLC	mg/l	<0.15	5.06
Sulphate as SO4	mg/l	666.1	1414.1
Total Ammonia as N	mg/l	0.33	7.29
pH	pH units	6.99	7.56
2-Chlorophenol	ug/l	<1	<1
2-Methylphenol	ug/l	<0.5	11.76
2-Nitrophenol	ug/l	<0.5	<0.5
2,4-Dichlorophenol	ug/l	<0.5	<0.5
2,4-Dimethylphenol	ug/l	<1	48.5
2,4,5-Trichlorophenol	ug/l	<0.5	<0.5
2,4,6-Trichlorophenol	ug/l	<1	<1
4-Chloro-3-methylphenol	ug/l	<0.5	<0.5
4-Methylphenol	ug/l	<1	27.5
4-Nitrophenol	ug/l	<10	<10
Pentachlorophenol	ug/l	<1	<1
Phenol	ug/l	<1	6
2-Chloronaphthalene	ug/l	<1	<1
2-Methylnaphthalene	ug/l	<1	1
Bis(2-ethylhexyl) phthalate	ug/l	<5	<5
Butylbenzyl phthalate	ug/l	<1	<1
Di-n-butyl phthalate	ug/l	<1.5	<1.5
Di-n-Octyl phthalate	ug/l	<1	<1
Diethyl phthalate	ug/l	<1	1
Dimethyl phthalate	ug/l	<1	<1
1,2-Dichlorobenzene	ug/l	<1	<1
1,2,4-Trichlorobenzene	ug/l	<1	<1
1,3-Dichlorobenzene	ug/l	<1	<1
1,4-Dichlorobenzene	ug/l	<1	24
2-Nitroaniline	ug/l	<1	<1

Determinant	Units	Min Value	Max Value
2,4-Dinitrotoluene	ug/l	<0.5	<0.5
2,6-Dinitrotoluene	ug/l	<1	<1
3-Nitroaniline	ug/l	<1	<1
4-Bromophenylphenylether	ug/l	<1	<1
4-Chloroaniline	ug/l	<1	<1
4-Chlorophenylphenylether	ug/l	<1	<1
4-Nitroaniline	ug/l	<0.5	<0.5
Azobenzene	ug/l	<0.5	<0.5
Bis(2-chloroethoxy)methane	ug/l	<0.5	<0.5
Bis(2-chloroethyl)ether	ug/l	<1	<1
Carbazole	ug/l	<0.5	0.87
Dibenzofuran	ug/l	<0.5	0.9
Hexachlorobenzene	ug/l	<1	<1
Hexachlorobutadiene	ug/l	<1	<1
Hexachlorocyclopentadiene	ug/l	<1	<1
Hexachloroethane	ug/l	<1	<1
Isophorone	ug/l	<0.5	<0.5
N-nitrosodi-n-propylamine	ug/l	<0.5	<0.5
Nitrobenzene	ug/l	<1	<1
Surrogate Recovery 2-Fluorobiphenyl	%	5.75	111
Surrogate Recovery p-Terphenyl-d14	%	5.15	122
Dichlorodifluoromethane	ug/l	<2	<2
Methyl Tertiary Butyl Ether	ug/l	<0.1	<0.1
Chloromethane	ug/l	<3	<3
Vinyl Chloride	ug/l	0.1	>1200.5
Bromomethane	ug/l	<1	<1
Chloroethane	ug/l	<3	<3
Trichlorofluoromethane	ug/l	<3	<3
1,1-Dichloroethene (1,1 DCE)	ug/l	<3	72
Dichloromethane (DCM)	ug/l	<3	<3
trans-1-2-Dichloroethene	ug/l	<3	12
1,1-Dichloroethane	ug/l	4	60
cis-1-2-Dichloroethene	ug/l	<3	71
2,2-Dichloropropane	ug/l	<1	<1
Bromochloromethane	ug/l	<2	<2
Chloroform	ug/l	2	142

Determinant	Units	Min Value	Max Value
1,1,1-Trichloroethane	ug/l	<2	<2
1,1-Dichloropropene	ug/l	<3	<3
Carbon tetrachloride	ug/l	<2	<2
1,2-Dichloroethane	ug/l	12	>2115
Benzene	ug/l	<0.5	10.4
Trichloroethene (TCE)	ug/l	<3	80
1,2-Dichloropropane	ug/l	<2	<2
Dibromomethane	ug/l	<3	<3
Bromodichloromethane	ug/l	<2	<2
cis-1-3-Dichloropropene	ug/l	<2	<2
Toluene	ug/l	<5	<5
trans-1-3-Dichloropropene	ug/l	<2	<2
1,1,2-Trichloroethane	ug/l	<2	98
Tetrachloroethene (PCE)	ug/l	<3	18
1,3-Dichloropropane	ug/l	<2	<2
Dibromochloromethane	ug/l	<2	<2
1,2-Dibromoethane	ug/l	<2	<2
Chlorobenzene	ug/l	<2	<2
1,1,1,2-Tetrachloroethane	ug/l	<2	<2
Ethylbenzene	ug/l	<1	<1
m/p-Xylene	ug/l	<2	2
o-Xylene	ug/l	<1	<1
Styrene	ug/l	<2	<2
Bromoform	ug/l	<2	<2
Isopropylbenzene	ug/l	<3	<3
1,1,2,2-Tetrachloroethane	ug/l	<4	<4
Bromobenzene	ug/l	<2	<2
1,2,3-Trichloropropane	ug/l	<3	<3
Propylbenzene	ug/l	<3	<3
2-Chlorotoluene	ug/l	<3	<3
1,3,5-Trimethylbenzene	ug/l	<3	<3
4-Chlorotoluene	ug/l	<3	<3
tert-Butylbenzene	ug/l	<3	<3
1,2,4-Trimethylbenzene	ug/l	<3	<3
sec-Butylbenzene	ug/l	<3	<3
4-Isopropyltoluene	ug/l	<3	<3

Determinant	Units	Min Value	Max Value
1,3-Dichlorobenzene	ug/l	<3	<3
1,4-Dichlorobenzene	ug/l	<3	28
n-Butylbenzene	ug/l	<3	<3
1,2-Dichlorobenzene	ug/l	<3	<3
1,2-Dibromo-3-chloropropane	ug/l	<2	<2
1,2,4-Trichlorobenzene	ug/l	<3	<3
Hexachlorobutadiene	ug/l	<3	<3
Naphthalene	ug/l	<2	<2
1,2,3-Trichlorobenzene	ug/l	<3	<3
Surrogate Recovery Toluene D8	%	99	102
Surrogate Recovery 4-Bromofluorobenzene	%	94	102

6.2.3 Ground gas monitoring and results

A summary of the ground gas pollutant concentrations for samples analysed from the August 2022 ground investigation is presented in Table 11. If further site investigations and ground gas monitoring is undertaken prior to the commencement of operations at the site, Table 11 will be updated.

Table 11: Summary of ground gas monitoring results

Determinant	Units	Min Value	Max Value
Methane	%v/v	0.1	8.7
Carbon dioxide	%v/v	0.1	11.2
Oxygen	%v/v	0.1	20.6
Carbon monoxide	ppm	1	1000
Hydrogen sulphide	ppm	1	3

7 Ongoing Management

Any additional data obtained on the ground conditions at the Site, either prior to commencement of construction, or through the construction phase, will be collated within this Site Condition Report. This Site Condition Report will be updated following completion of any additional site investigations, groundwater monitoring or ground gas monitoring, and will be maintained throughout the lifetime of the Facility.

During the lifetime of the permit, the Site Condition Report will be updated to take into account the following:

- any changes to the permitted activities or the Installation Boundary;
- any measures taken to protect the underlying land and groundwater;
- any pollution incidents that may have had an impact on land and associated remediation; and
- any soil, gas or groundwater monitoring (where undertaken).

At the end of the operational life of the Facility, the Site Condition Report will be updated to include for decommissioning and site closure. It will be demonstrated that all sources of pollution risk have been removed and whether decommissioning has had any impact on the land. Any required remedial works will be documented and incorporated into the report. A statement of site condition will be made to confirm that:

- the permitted activities have stopped;
- decommissioning is complete, and the pollution risk has been removed; and
- the land is in a satisfactory condition.

8 Conclusions

This report has identified the historical and current condition of land, the activities to be permitted at the Facility, and detail on the reagents and residues to be involved with the operations undertaken at the Facility.

The Ground Investigation (Appendix B) concludes that elevated concentrations of PAHs including Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Dibenzo(ah)anthracene and Benzo(b)fluoranthene), TPHs including >EC16-EC21 and >EC21-EC35 and VOCs including vinyl chloride, 1-2 Dichloroethane and 1-2-4 trimethylbenzene have been identified in the Made Ground at the site. Furthermore, elevated concentrations of 1-3-5 trimethylbenzene, Secbutylbenzene, 4-isopropyltoulene, Butylbenzene and Chloronapthalene have been detected.

In addition, elevated concentrations in groundwater for heavy metals (mercury, nickel and zinc), non-metallic compounds (phenols, sulphate as SO4 and total ammonia as N), PAH (naphthalene, anthracene, fluoranthene and benzo(a)pyrene), TPH (aromatic fractions EC10 to EC12, EC12 to EC16 and EC16 to EC21), and VOCs (vinyl chloride, 1,1-dichloroethane, chloroform, 1,2-dichloroethane, benzene, and sum of trichloroethene (TCE) plus tetrachloroethene (PCE)) are reported.

The Ground Investigation report acknowledges the industrial setting of the site, with the site and immediate surrounding area having an industrial history associated with railway sidings, a chemical plant, an ammonia soda works and chemical works with associated tanks and structures. It considers it likely that such works account for the chemical concentrations measured in Made Ground and groundwater beneath the site.

The site will be covered in hardstanding, and underlying superficial deposits are clay rich in nature with generally low permeability and represent unproductive strata. This will help to inhibit the vertical downward migration of contaminants from surface in percolating water.

The results of ground gas monitoring have characterised the site as a very low risk scenario. Notwithstanding this, the Ground Investigation report recommends that ground gas protection measures should potentially be considered in the construction of the Facility.

During the Operational phase of the Facility, any records which demonstrate how the land and groundwater have been protected will be maintained. This information will include inspection records of site infrastructure, pollution/incident reports, records of any ground investigations undertaken, and any monitoring records of soil, gas and/or water during the life of the permit. Where it is identified that pollution has occurred, records will be maintained to demonstrate any pollution incidents that may have affected the land or groundwater. These records will be retained to be used at Permit Surrender.

Appendices

A Tier Consult, Preliminary Risk Assessment Report for Hillhouse Business Park, Thornton Cleveleys, Version 1, July 2022

B Tier Consult, Ground Investigation Report for Hillhouse Business Park, Thornton Cleveleys, Version 2, November 2022

ENGINEERING CONSULTING

FICHTNER

Consulting Engineers Limited

Kingsgate (Floor 3), Wellington Road North,
Stockport, Cheshire, SK4 1LW,
United Kingdom

t: +44 (0)161 476 0032
f: +44 (0)161 474 0618

www.fichtner.co.uk