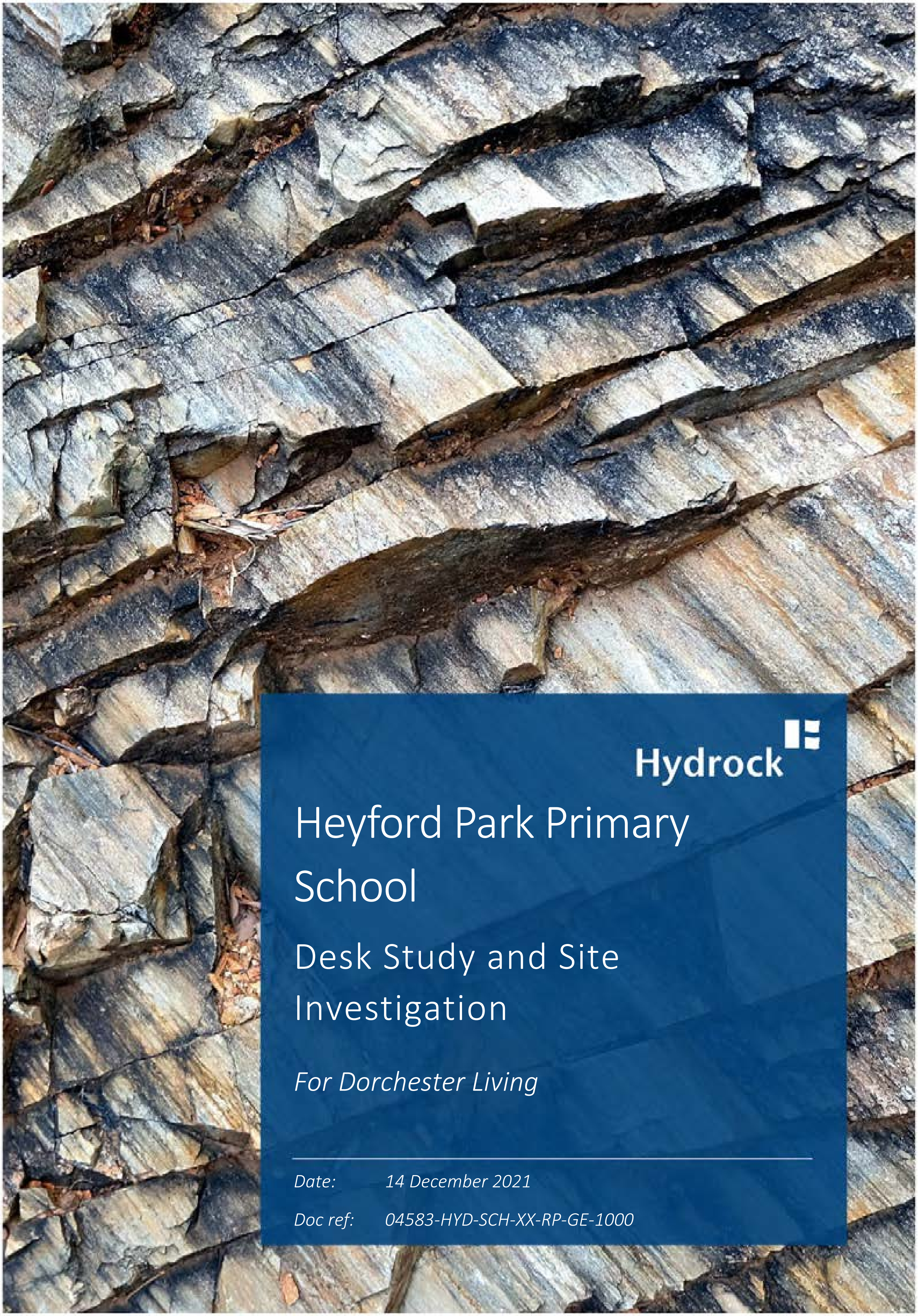

Hydrock

Heyford Park Primary School

Desk Study and Site Investigation

For Dorchester Living

Date: *14 December 2021*

Doc ref: *04583-HYD-SCH-XX-RP-GE-1000*

DOCUMENT CONTROL SHEET

Issued by	Hydrock Consultants Limited Over Court Barns Over Lane Almondsbury Bristol BS32 4DF United Kingdom	T +44 (0)1454 619533 F +44 (0)1454 614125 E bristol@hydrock.com www.hydrock.com
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Prepared by		Daniel Gadsby BSc (Hons) / Dickon Morris BSc MSc FGS
Checked by		Rebecca Price MSci MIEnvSc
Approved by		Karen Southern BSc (Hons) MSc FGS

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P01	S2	09/09/2021	First issue.
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Executive Summary

SITE INFORMATION AND SETTING	
Objectives	To support the planning and to identify key geo-environmental and geotechnical risks to the proposed development.
Client	Dorchester Living
Site name and location	Heyford Park, Bicester, OX25 5LJ. The site is located in the former RAF Upper Heyford base within Parcel 31, located on the northern side of Camp Road. The national grid reference for the approximate centre of the site is: 451602E, 226423N.
Proposed development	The site development proposals are understood to comprise a primary school, a soft outdoor PE area, a hard outdoor PE area and a car park.
GROUND MODEL	
Desk study summary	The site currently consists of a building, four open military hangars, a car park and an electricity sub-station. Some areas of grass/ vegetation are located to the south of the site. The site is approximately 2.4 ha in area and gently slopes down from the north of the site to the south, at approximate levels between 120 - 125m above Ordnance Datum (OD). The current building and open military hangars appear to have used potentially asbestos containing building materials in their construction. Review of historical Ordnance Survey mapping indicates: • The site was open land until 1915, when construction of what was to become the former RAF Upper Heyford airbase was concluded. • It was leased to the United States Air Force from the 1950s to 1994. • Due to the military use, the historical maps show limited information. A specialist UXO risk assessment indicates that the site poses a low risk of UXO. However, specific procedures, training, briefings and permitting are required for all excavation works. The geology at the site consists of the White Limestone Formation across the entirety of the site area. There are no superficial deposits present. Localised Made Ground is likely to be present due to the current and former development of the site. Several historical limestone quarries / pits have been noted within the vicinity of the site. However, these are small in nature and are likely to have been backfilled. The White Limestone Formation is a Principal Aquifer. The site is not within a Source Protection Zone and there is one active licensed groundwater abstraction within 1km of the site. The Gallos Brook flows from north to south, approximately 250m south-east of the site.
Ground and groundwater conditions encountered by investigation	The ground conditions as proven by the investigation undertaken at the site comprise: • Topsoil or concrete surfacing from ground level to 0.25m bgl (topsoil) or 0.5m bgl (concrete surfacing); over • Made Ground – from ground level or underlying the concrete surfacing to depths of between 0.3m and 1.9m below ground level (bgl), comprising SILT / CLAY, SAND or GRAVEL representing reworked weathered limestone locally with concrete, brick, metal, plastic and slag; over • Weathered White Limestone Formation – to between 0.35m and >3.4m bgl, comprising a wide variety of materials including sandy gravelly CLAY, silty gravelly SAND and sandy GRAVEL with the gravel consisting of limestone; over • White Limestone Formation – to at least 10.0m bgl (unproven), comprising very strong LIMESTONE interbedded with extremely weak MUDSTONE. Groundwater was encountered at depths between 1.6m bgl and 3.4m bgl during the investigation.

	Water levels recorded post-fieldwork ranged from 1.34m bgl to 1.80m bgl (121.90m OD to 122.58m OD). There is shallow groundwater within the White Limestone Formation generally confined by the more cohesive overlying weathered material.
GEOTECHNICAL CONCLUSIONS	
Conclusions of geotechnical assessment	Obstructions associated with former development and existing buildings to be demolished, including foundations, floor slabs, external concrete slabs and services, should be anticipated. Excavation to proposed founding depth generally should be readily achievable with standard excavation plant. Heavy duty excavation plant/breaking equipment may be required to excavate the buried concrete obstructions. Excavations during investigation were generally stable, although slight spalling should be expected from the Made Ground. Water seepages into excavations are likely to be adequately controlled by sump pumping. Foundations are recommended to comprise shallow trench fill foundations taken below any Made Ground and to a depth of at least 1.5m bgl Allowable net bearing pressure of 100 kN/m² should be available for these foundations provided they are reinforced at the top and bottom of the strip. Suspended floor slabs are recommended due to presence of soils of medium volume change potential. A design CBR of 5 % is recommended. Soakaway drainage is considered probably suitable for this site but will require detailed design due to the variable infiltration rates across the site. Design Sulfate Class - DS-1 and ACEC Class AC-1. Equivalent to Design Chemical Class DC-1 for a 50 year design life.
GEO-ENVIRONMENTAL CONCLUSIONS	
Conclusions of contamination Generic risk assessment	Human health: • PAH contamination in the Made Ground. • Asbestos containing materials (ACM) within existing hangers which are to be retained. • ACM fragments within shallow soil around hangers. Controlled Waters: • The risk to controlled waters is considered to be low and further action is not required. Ground gases or vapours: • Low risk from ground gases and CS1 conditions apply. Radon: • The site is in a Radon Affected Area (1 to 3% of existing homes affected). Construction materials: • Plastic or bitumastic products may be at risk from high concentrations of PAH. Water supply pipes: • Brownfield site with organic contamination and barrier pipe is considered suitable for this site. However, confirmation should be sought from the water supply company at the earliest opportunity.
Proposed mitigation measures	The mitigation measures proposed to remove unacceptable risks include: • Either excavation and replacement of the PAH hotspot around TP313 and WS305 or placement of an engineered cover system. This may be incorporated into the sports pitch requirements and an Options Appraisal is required to determine the most appropriate solution. • Import and placement of appropriate soils for the sports pitch and encapsulating PAH hotspots at TP309 and TP310. • Either:

	» Consultation with an asbestos in buildings specialist to assess the risk from the current ACM present within the retained Hanger 2004; » Encapsulation by coating or cladding the existing asbestos; or » Removal and replacement with non-asbestos containing materials. • Shallow scrape (circa 200mm) of soils around all hangars within the site boundary to 3m from the hangar and hand-pick all visible asbestos. Either further testing and confirmation of no asbestos fibres within the soils or off-site disposal. • Installation of basic radon protection is not essential but is recommended as good practice. The methodology for the remediation should be presented in a Remediation Strategy, which will need to be submitted to the warranty provider and the regulatory authorities for approval. In addition, the production of a Materials Management Plan and its approval by a Qualified Person will be required to allow reuse of suitable material at the site. Verification reports by a competent independent geo-environmental specialist will be required following completion of any remedial works and a verification report to demonstrate the MMP has been implemented will also be required.
Waste management	Excavated soils to be disposed of as waste, are likely to be classed according to the following scheme; • The natural uncontaminated subsoils are likely to be classified as 'inert' waste and subject to WAC testing should be able to be disposed of at an inert landfill. • The 'General' Made Ground is likely to be classified as non-hazardous waste. • The PAH hotspot at WS305 is preliminary classified as hazardous waste and will require WAC testing to determine which landfill it will be accepted at. • Any soils containing > 0.1% asbestos or visible asbestos containing materials would be considered as hazardous.
FUTURE CONSIDERATIONS	
Further work	Following the ground investigation works undertaken to date, the following further works will be required: • discussion and agreement with utility providers regarding the materials suitable for pipework; • discussions with regulatory bodies and the warranty provider regarding the conclusions of this report; • assessment of tree influence on foundations and design of foundations; • production of a Remediation Strategy and Verification Plan (and agreement with the regulatory bodies and the warranty provider); • production of a Materials Management Plan relating to reuse of soils at the site; • remediation and mitigation works; and • verification of the earthworks, remediation and mitigation works. • Verification of MMP.

This Executive Summary forms part of Hydrock Consultants Limited report number 04583-HYD-SCH-XX-RP-GE-1000 and should not be used as a separate document.

1. INTRODUCTION

1.1 Terms of reference

In July 2021, Hydrock Consultants Limited (Hydrock) was commissioned by Dorchester Living (the Client) to undertake site investigation, comprising a Phase 1 desk study review and Phase 2 ground investigation at Parcel 31, Heyford Park, Bicester, OX25 5LJ.

The site currently consists of a building, four open aircraft hangars, hardstanding and an electricity sub-station. The site is currently being used for car storage. Some areas of grass/ vegetation are located on the surrounds and in the south of the site.

Hydrock understands that the proposed development is to comprise a primary school, with the construction of a new school building, a sports pitch and the renovation of the former aircraft hangars. A proposed development layout is presented in Appendix A.

The works have been undertaken in accordance with Hydrock's proposal (ref. C-04583-C-FP-016 dated January 2021) and the Client's instructions to proceed (PO number HM-2999/0161 dated 15th July 2021).

1.2 Objectives

The works have been commissioned to assist with the design of the development and to assist with clearing anticipated planning conditions.

The objective of the Phase 1 Desk Study is to formulate a preliminary Ground Model and an Initial Conceptual Model of the site to identify and make a preliminary assessment of key geo-environmental and geotechnical risks to the proposed development.

The objective of the Phase 2 Ground Investigation is:

- to resolve uncertainties identified in the Phase 1 Desk Study by refining and updating the preliminary Ground Model, determining geo-environmental and geotechnical site conditions and identifying key contamination risks by updating and finalising the Conceptual Model in accordance with the principles of LCRM;
- to identify geo-environmental mitigation requirements to enable development; and
- to provide preliminary geotechnical recommendations for design.

1.3 Scope

The site investigation includes a Phase 1 Desk Study and a Phase 2 Ground Investigation.

The scope of the Phase 1 Desk Study comprises:

- a field reconnaissance (walkover) to determine the nature of the site and its surroundings including current and former land uses, topography and hydrology;
- review of previously acquired:
  - » historical Ordnance Survey maps, to identify former potentially contaminative uses shown at the site and immediately surrounding it, and an assessment of the associated contamination risks;

  - a third-party environmental report to identify flooding warning areas, local landfills, pollution incidents, abstractions, environmental permits etc. which may have had the potential to have environmental impact on the site;
  - topographical, geological and hydrogeological maps;
  - British Geological Survey (BGS) archive records;
  - regional UXB risk maps;
  - a site-specific specialist UXO Desk Top Study;
- a review of previous investigations carried out at the site;
- development of a preliminary Ground Model representing ground conditions at the site;
- development of an outline Conceptual Model (oCM), including identification of potential pollution linkages;
- a qualitative assessment of any geo-environmental risks identified; and
- identification of plausible geotechnical hazards.

The scope of the Phase 2 Ground Investigation comprises:

- a preliminary ground investigation including trial pitting, hand pitting, windowless sampling, rotary drilling and concrete coring, to:
  - obtain data on the ground and groundwater conditions of the site;
  - allow collection of samples for geotechnical and chemical laboratory analysis;
  - allow geotechnical field tests to be undertaken;
  - install gas and groundwater wells;
- gas concentration and groundwater level monitoring;
- groundwater sampling;
- geotechnical and chemical laboratory analysis;
- updating of the preliminary Ground Model;
- preparation of a geotechnical risk register;
- presentation of an initial geotechnical design recommendations;
- formulation of an updated Conceptual Site Model (CM), including identification of plausible pollution linkages;
- completion of a generic quantitative risk assessment of potential chemical contaminants to establish ‘suitability for use’ under the current planning regime;
- discussion of potential environmental liabilities associated with land contamination (soil, water and gas); and
- identification of outline mitigation requirements to ensure the site is ‘suitable for use’.

1.4 Available information

The following documents, reports etc have been provided to Hydrock by Dorchester Living for use in the preparation of this report:

- Waterman. May 2012. 'Preliminary Ground Investigation, New Settlement Area, Heyford Park'. Document ref. EED10658-13.2.2_FA.
- Vertase F.L.I. Limited. February 2012. Contract Completion Report – POL System – Clean and Make Safe. Report ref. 1246DOR.
- Waterman Energy, Environment and Design Ltd. September 2012. 'Remediation Strategy at New Settlement Area, Upper Heyford'. Ref. EED10658-109_S_12.2.2_FA.
- Waterman Energy, Environment & Design Ltd. September 2012. Controlled Water Detailed Quantitative Risk Assessment. Report ref. EED10658-14.1.7_FA.
- Waterman Energy, Environment & Design Ltd. March 2012. Hydrogeological Characterisation and Groundwater Quality Assessment. Report ref. EED10658-109_R_9.3.1_FA.
- ADP Oxford. June 2020. 'Heyford Park Proposed New Primary School'. No reference.
- Pegasus Design. 8th September 2020. 'Heyford Park – Composite Parameter Plan'. Dwg no. P16-0631_08 Rev AL.
- Santia. 12th August 2021. 'Asbestos Refurbishment/Demolition Survey Report'. Ref. AP001074-02-02.

The Client has commissioned or obtained assignment of the above documents and Hydrock and Hydrock is entitled to full reliance upon their contents.

The following documents have been provided by Hydrock for use in preparation of this report:

- Hydrock. February 2020. 'Heyford Masterplan - Ground Conditions Desk Study'. Report no. HEY-HYD-XX-DS-RP-GE-1000-S2-P3.

The provided desk study (Hydrock, February 2020) is included in Appendix B and the content is summarised in Section 2. Due to the size of the document the appendices of this document have not been included but will be provided on request). This content has been used to formulate the preliminary Conceptual Site Model as the basis for preparing the preliminary geo-environmental exposure model and the preliminary geotechnical hazard identification presented in Section 3.3.

1.5 Regulatory context and guidance

The investigation work has been carried out in general compliance with recognised best practice, including (but not limited to) BS 5930:2015+A1:2020, BS 10175:2011+A2:2017 and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The geo-environmental section of this report is written in broad accordance with BS 10175:2011+ A2:2017, 'Land Contamination: Risk Management' (LCRM, 2021) and the AGS (2006) 'Good Practice Guidelines for Site Investigations'.

The methods used follow a risk-based approach, the first stage of which is a Phase 1 desk study and field reconnaissance, with the potential geo-environmental risk assessed qualitatively using the 'source-pathway-receptor contaminant linkage' concept to assess risk as introduced in the Environmental Protection Act 1990 (EPA, 1990). Potential geotechnical risks are also assessed.

Phase 2 comprises intrusive ground investigation work and testing. The factual information from Phase 1 and Phase 2 are used to develop the Conceptual Model (CM). This CM is based on a ground model of the site physical conditions and an exposure model of the possible contaminant linkages. The CM forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines. This GQRA might lead to more Detailed Quantitative Risk Assessment (DQRA).

Professional judgement is then used to evaluate the findings of the risk assessments and to provide recommendations for the development.

The geotechnical section of this report is prepared in general accordance with BS EN 1997-1+A1: 2013, BS EN 1997-2:2007 and BS 8004:2015. This report constitutes a Ground Investigation Report (GIR) as described in Part 2 of Eurocode 7 (BS EN 1997-2) (EC7). However, it is not intended to fulfil the requirements of a Geotechnical Design Report (GDR) as specified in EC7.

The geo-environmental and geotechnical aspects are discussed in separate sections. Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. Designers should take all aspects of the investigation into account.

Remaining uncertainties and recommendations for further work are listed in Section 9 and Section 10.

2. PHASE 1 STUDY (DESK STUDY REVIEW AND FIELD RECONNAISSANCE)

2.1 Introduction

Hydrock carried out a Phase 1 Desk Study for the Heyford Masterplan, Heyford Park, Oxfordshire. This is provided in Appendix B. The proposed development outlined in Section 1.1 is within the scope of this previous study. The following section is a summary of the pertinent information presented in Hydrock's previous desk study, supplemented by additional information as required.

Hydrock have undertaken an updated field reconnaissance survey on the 15th July 2021 to visually assess potential geotechnical hazards, contaminant sources and receptors and ensure the site conditions as reported in the desk study are similar to current conditions. The weather during the updated field reconnaissance survey was clear. The locations of photographs taken during this walkover are indicated on the site walkover plan (Hydrock drawing 04583-HYD-XX-XX-DR-GE-1002) which is included in Appendix A.

2.2 Site location

The site is located in the former RAF Upper Heyford Base, Oxfordshire, 8km north-west of Bicester, close to the B4030 to the south and the A4260 to the west (National Grid Reference 451602E, 226423N).

The site is within Parcel 31 in the north of the development area of Heyford Park, on the southern edge of the flying field.

2.3 Site description

The site is approximately 2.4 ha in area and generally slopes gently down from an elevation of around 125m in the north of the site to 123m AOD in the south of the site.

The site currently consists of a building in the west, four open former aircraft hangars, hardstanding and an electricity sub-station. The site is currently used for car storage. Some areas of grass/ vegetation are located in the surrounds and in the south of the site.

The current building and aircraft hangars appear to contain potentially asbestos containing building materials in their construction.

2.4 Site history

Construction of what was to become the former RAF Upper Heyford airbase was concluded in 1915. Following the end of World War 2, the United States Air Force leased the site from the 1950's up until 1994, when the site was returned to the Ministry of Defence and subsequently closed. Due to the military use, the historical maps show limited information.

Current and historical potentially contaminative uses appear to be well documented and are mainly associated with the tanked storage of hydrocarbon substances. Whilst standards of housekeeping are currently high, this cannot be guaranteed to have been the case in the past and there is evidence of the effects of spillages and leaks. Whilst there are some uncertainties in respect of UXO, it is unlikely to be a significant development constraint.

2.5 Geology

There is no superficial geology present in the site area.

The solid geology comprises the White Limestone Formation, consisting of a pale grey to off-white or yellowish limestone, some recrystallised limestone, with rare sandy limestone, argillaceous limestone, marl and mudstone or clay.

An inferred fault is present starting approximately 35m to the east of the site, and trends eastwards.

Borehole logs from the BGS archive were reviewed as part of the previous desk study. These include SP52NW17 (located 700m to the south-west of the site) and SP52NW116A, B and C (550m to the west). The following can be surmised about the underlying geology:

- Topsoil to between 0.45m and 0.5m below ground level (bgl); over
- Silty sandy clay with limestone gravel (White Limestone Formation) to between 1.60m and 1.95m bgl; over
- Limestone interbedded with clay, shale, sandstone (White Limestone Formation) to 19.00m bgl.

2.6 Hydrogeology

The White Limestone Formation is classified by the Environment Agency as a Principal Aquifer. Hydraulic continuity and water storage is high due to the fractured and fissured nature of the limestone.

There is one active licensed groundwater abstraction within 1km of the site, located 650m to the south-east from Thames Groundwater at Manor Farm, Middleton Stoney. The site is not in a groundwater Source Protection Zone.

The groundwater body beneath the site (Tackley Jurassic) is currently (2019) classified under the Water Framework Directive as ‘good’.

The majority of the site is covered by soils of high leaching potential.

The environmental data report indicates a potential for surface groundwater flooding.

2.7 Hydrology

The primary natural drainage features are Gallos Brook approximately 250m to the south-east of the site and the River Cherwell, which is just beyond the B4030 to the west of the site. Both flow southwards, with the River Cherwell joining the River Thames at Oxford, 25km south of the site.

Reference to the Environment Agency web site shows the site is located within the catchment of the Thames River Basin District, with the specific river water body being the Gallos Brook. The current (2019 cycle 2) overall status under the Water Framework Directive is ‘moderate’.

There are no licensed surface water abstractions within 1km of the site.

The site storm drainage system, including the location of interceptors and outfalls, is clearly defined from provided services information.

2.8 Flood risk

The desk study information indicates the proposed development is in Flood Zone 1 (with a low probability of flooding from rivers or the sea). As the site area is greater than 1 ha consultation with the Environment Agency is required with a Flood Risk Assessment (FRA).

No further consideration of flood risk is undertaken in this report. Specialist flood risk advice should be sought with regard to drainage and flooding.

2.9 Mining or mineral extraction

Several historical limestone quarries / pits have been noted within the vicinity of the site. However, these are small in nature and are likely to have been backfilled.

2.10 Natural ground instability

The existing desk study indicates that the site area is not directly underlain by soluble deposits, and that the only extraction activities in the area were surface excavations.

The geological fault noted approximately 35m to the east of the site is determined to be unlikely to cause any stability issues on site due to it not being mapped across the site area.

2.11 Waste management

The existing desk study indicates that there is one waste management site recorded within 250m of the site. It is a historical landfill located at Ardley Wood, Cherwell, to the north-east of the site. It was operated by Oxfordshire County Council and licensed between 1977 and 1985 for inert, industrial, household and commercial waste.

2.12 Regulatory information

Information provided in the previous desk study indicate the following significant regulatory controls in the general area of the site:

- There are records relating to the storage of radioactive materials by Oxford Bio-innovation Ltd, approximately 250m south of the site, between 2006 and 2015.
- There are no Local Authority Pollution Prevention and Controls, NIHHS sites or Planning Hazardous Substance consents or enforcements within 500m of the site.
- The Southern Bomb Store, located to the south of the site, between Parcels 11 and 32 east, is a current Upper Tier Control of Major Accidents Hazards (COMAH) Regulations 2015 site.
- In 2007, there was a Category 2 (significant impact) pollution incident to the south of the site towards the south-eastern corner of Parcel 18, relating to the leakage of final effluent sewage materials into the nearby water courses.

2.13 Natural soil chemistry

The previous desk study did not identify any significantly elevated naturally occurring elements that may present a risk to future site users.

2.14 Radon and ground gas

The previous desk study indicates that the site is in a Radon Affected Area where recorded radon levels in 1-3% of homes are above the action level but no radon protection measures are required for new buildings at this location in line with current guidance. However, consideration should be given to fitting basic protection measures on the ‘as low as reasonably practicable’ principle in view of advice given to householders and the legal responsibilities of rental landlords and employers with commercial properties.

2.15 Unexploded ordnance (UXO)

The previous desk study indicates further assessment is required with regard to UXO in relation to ground investigation.

The specialist UXO risk assessment (EOD Contracts, Reference: 161103 DTS Report 17023, dated November 2016), indicates:

- So far as is reasonably practicable, the site poses a low risk of UXO.
- Specific procedures, training, briefings and permitting is required for all excavation works. These are to comprise:
  - UXO safety awareness training of site personnel and project staff.
  - Awareness training by a competent person as part of the project safety induction.
  - Specific safety briefings and toolbox talks to individuals involved in conducting intrusive earthworks.
  - UXO recognition and safety procedures to be written and followed on discovery of a suspicious object or the alarm being sounded.
  - Emergency procedures to be to be followed in the event of an explosion. This should include evacuation routes, muster stations and accounting for personnel.
  - Work permits, works methodology and specific UXO risk mitigation methods are to be written and followed.
  - Post-incident inspections and returning to normal works procedures will need to be written.
- Prior to any intrusive piling or drilling commencing, UXO safety testing and appropriate clearance certification to sufficient depth into the ground to provide clearance from UXO is required.

The specialist UXO risk assessment is available on request.

2.16 Previous Site Investigations or Other Reports

The following previous ground investigations and other associated works have been undertaken at the site and wider site area and the main findings are summarised in Table 2.1. Reference to these reports should be made if further information is required.

Table 2.1: Summary of Previous Reports

Findings
Vertase F.L.I. Limited. February 2012. Contract Completion Report – POL System – Clean and Make Safe. Report ref. 1246DOR. This report details and confirms the decommissioning of the Petroleum Oil and Lubrication (POL) system at the former RAF airbase at Upper Heyford. All waters from tanks were pumped directly to mobile waste water treatment plants. Monitoring and validation of groundwater and soils in the vicinity of the works confirmed the works did not impact on residual site conditions. Tanks were filled with PFA with 1.5% OPC and 27% water. 99 tanks were decommissioned, of which 19 were not filled with PFA/OPC grout. Above ground storage tanks were not filled. The POL pipeline was cleaned, foam filled and broken in places to prevent migration pathways.
Waterman Energy, Environment & Design Ltd. March 2012. Hydrogeological Characterisation and Groundwater Quality Assessment. Report ref. EED10658-109_R_9.3.1_FA. This report covers the Flying Field at Heyford Park, which encompasses the site area. The works comprised 42 rotary cored boreholes, 5 rotary open hole boreholes and the installation of 46 monitoring wells. Ground conditions comprised:

- Topsoil or Made Ground to a maximum proven depth of 1.1m bgl.
- Natural Drift to a maximum depth of 2.8m bgl.
- Interbedded limestone, siltstone, mudstone and sandstone to a maximum proven depth of 40.0m bgl.
- Groundwater was found to comprise a layered system, with a shallow groundwater body and a deeper groundwater body. Vertical migration of water and contaminants is occurring from the shallow to the deeper groundwater body.

Waterman Energy, Environment & Design Ltd. May 2012. Preliminary Generic Quantitative Environmental Risk Assessment. Report ref. EED10658-13.2.2_FA.

This report covers the 'New Settlement Area' of Heyford Park, of which the Retained Commercial Area (RCA) covers an area around parcels 20, 19 and 11 of the site (located to the south and south-west of the site).

Overall, the works undertaken comprised 41 boreholes and 96 trial pits.

Ground conditions encountered:

- Made Ground to a maximum proven depth of 2.6m bgl.
- Weathered limestone becoming thickly bedded limestone to a maximum proven depth of 6.8m bgl.
- Interbedded siltstone and mudstone to a maximum proven depth of 10.0m bgl.
- Groundwater at between 107.6mAOD and 123.82mAOD.

Conclusions/Recommendations:

The RCA area is considered suitable for continued use commercial use with regards to soil contamination.

Ground gas levels indicate the RCA area can be classified as Characteristic Situation 2 for Situation A development.

Barrier pipe is recommending for water supply pipes.

Tank removal and hydrocarbon contamination associated with the tank was recommended to improve the groundwater quality. A DQRA was proposed to generate threshold values for the soils.

Waterman Energy, Environment & Design Ltd. September 2012. Controlled Water Detailed Quantitative Risk Assessment. Report ref. EED10658-14.1.7_FA.

A Controlled Waters DQRA was undertaken for the 'New Settlement Area' of Heyford, of which the Retained Commercial Area (RCA) covers an area around parcels 20, 19 and 11 (located to the south and south-west of the site).

Site Specific Remediation targets were derived using the Environment Agency's Remedial Targets Methodology model. Two sets of target values were derived for a compliance point at the site boundary, depending on the distance of the tank clusters to the site boundary.

Residual environmental liabilities are anticipated to be of low risk after implementation of the remediation strategy (below) using the target values.

Waterman Energy, Environment & Design Ltd. September 2012. Remediation Strategy. Report ref. EED10658-109_S_12.2.2_FA.

As above, this report covers the 'New Settlement Area' of Heyford Park, of which the Retained Commercial Area (RCA) covers an area around parcels 20, 19 and 11 (located to the south and south-west of the site).

The remediation activities include:

- Tank and impacted soil removal
- Backfill excavations with appropriate material
- Treatment and disposal of groundwater in excavations

The plan with the locations of underground tanks which were to be removed is not included.

3. OUTLINE CONCEPTUAL MODEL

3.1 Introduction

The outline Conceptual Model (oCM) incorporates evidence from the site walkover, the Desk Study and previous investigations carried out at the site. The formulation of an outline Conceptual Model is a key component of the LCRM methodology. The oCM incorporates a ground model of the site physical conditions and an exposure model of the possible contaminant linkages; it forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines.

3.2 Ground model

The preliminary ground model presented in Section 2 provides an understanding of the ground conditions and is the basis for preparing the preliminary geotechnical hazard assessment (Section 3.3) and the preliminary geo-environmental exposure model (Section 3.4).

3.3 Geotechnical hazard identification

3.3.1 Context

The preliminary geotechnical hazard identification has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622.

The following section sets out the identified geotechnical hazards and the development elements potentially affected (see Table I.1 in **Appendix I** for further information).

3.3.2 Plausible geotechnical hazards

Plausible geotechnical hazards identified at the site are:

- Uncontrolled Made Ground (variable strength and compressibility).
- Shrinkage / swelling of the clay fraction of soils under the influence of vegetation.
- Variable lateral and vertical changes in ground conditions.
- High sulfates present in the soils.
- Obstructions.
- Existing below ground structures to remain (on or off-site tunnels, foundations, basements, and adjacent sub-structures).
- Shallow groundwater.
- Changing groundwater conditions.
- Loose Made Ground, leading to difficulty with excavation and collapse of side walls.
- Slope stability issues – retaining walls.
- Dissolution (associated with "wet rock head").

3.3.3 *Potential development elements affected*

Development elements potentially affected by geotechnical hazards are:

- Buildings – foundations.
- Buildings – floor Slabs
- Roads and pavements.
- Sports pitches.
- Landscaping.
- Services.
- Retaining walls.
- Concrete below ground.
- Construction staff, vehicles and plant operators.

Health and safety risks to site Contractors and maintenance workers have not been assessed during these works and will need to be considered separately during design.

The above plausible geotechnical hazards and development elements affected have been carried forward for investigation and assessment. The investigation is presented in Section 5 and the assessment is presented in Section 6.

3.4 Geo-environmental exposure model

3.4.1 *Context*

The preliminary exposure model is used to identify geo-environmental hazards and to establish potential pollution linkages, based on the source-pathway-receptor (SPR) approach.

A viable pollution linkage requires all the components of an SPR to be present. If only one or two are present, there is no linkage and no further assessment is required.

3.4.2 *Potential contaminants*

For the purpose of this assessment the potential contaminants have been separated according to whether they are likely to have originated from an on-site or off-site source.

3.4.2.1 *Potential on-site sources of contamination*

- Made Ground, associated with historical construction activities and imported fill, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAH and petroleum hydrocarbons (S01).
- Hydrocarbon fuels, lubricants, and solvents associated with the former land use as an airfield (S02).
- Ground gases (carbon dioxide and methane) from organic materials in the Made Ground (S03).
- Hydrocarbon vapours from potential VOC and petroleum hydrocarbon spillages/leaks (S04).
- Ground gases (radon) from natural strata (S05).
- Asbestos fibres from insulation or asbestos containing materials (ACM) within the existing aircraft hangars and building in the west (S06).

3.4.2.2 Potential off-site sources of contamination

- Hydrocarbon fuels, lubricants, and solvents associated with underground storage tanks (S07).
- Ground gases (carbon dioxide and methane) from nearby landfill (S08).

3.4.3 Potential receptors

The following potential receptors in relation to the proposed land use have been identified.

- People (site end users and neighbours) (R01).
- Development end use (buildings, utilities and landscaping) (R02).
- Groundwater: Principal Aquifer status of the White Limestone Formation (R03).
- Surface water: Gallos Brook 250m to the south-east and River Cherwell to west (R04).

3.4.4 Potential pathways

The following potential pathways have been identified.

- Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).
- Ground gas ingress via permeable soils and/or construction gaps (P02).
- Radon ingress via permeable soils and/or construction gaps (P03).
- VOC and petroleum hydrocarbon vapour ingress via permeable soils and/or construction gaps (P04).
- Migration of contamination via leachate migration through the unsaturated zone in the White Limestone Formation and into the underlying Principal Aquifer (P05).
- Surface water via overland flow or drainage discharge (P06).
- Surface water via base flow from groundwater (P07).

Health and safety risks to site development contractors and maintenance workers have not been assessed as part of this study and will need to be considered separately.

The above sources, pathways and receptors have been considered as part of the Preliminary Risk Assessment in accordance with LCRM (2021), are considered to be plausible in the context of this site and have been carried forward for investigation and assessment. The investigation is presented in Section 5 and the assessment is presented in Section 6. An assessment of the Source – Pathway – Receptor linkages is undertaken following the assessment (Section 7) and is presented in Appendix J (Table J.2).

4. GROUND INVESTIGATIONS

4.1 Investigation rationale

The ground investigation rationale was based on the findings of the preliminary risk assessment and is summarised in Table 4.1.

Table 4.1: Investigation rationale

Location	Purpose
TP301 - 313	To investigate shallow ground conditions across the site. To allow the collection of samples for contamination testing and geotechnical characterisation.
TP302, 306 and 309	To enable infiltration testing.
BH301 - 302	To assess deeper ground conditions and to allow SPTs to be undertaken. To allow collection of samples for contamination testing and geotechnical characterisation. Installation of gas and groundwater monitoring and sampling wells. Undertaken within the footprints of the proposed buildings.
HP301 - 308	To assess existing foundations and founding material of the aircraft hangars. To assess contamination in immediate vicinity of buildings.
WS 301 - 306	To assess shallow ground conditions and to allow SPTs to be undertaken. To allow collection of samples for geotechnical characterisation. To allow collection of samples for contamination testing. Installation of gas and groundwater monitoring and sampling wells.
DCP301 - 305	To allow the derivation of CBR values in the uppermost 1m of the soil profile.
CBR301 - 305	To allow derivation of CBR values for near surface material.

4.2 Constraints

A large area near the centre of the site (note the gap on the exploratory hole plan) was not accessible at the time of the ground investigation due to the presence of parked cars. In addition, trial pits were not possible in any hardstanding due to the continued use of the site for car storage.

4.3 Site works

The fieldwork took place between 2nd and 5th August 2021 and is summarised in Table 4.2. The ground investigation locations were surveyed in using a Total Station GPS survey instrument and are shown on the Exploratory Hole Location Plan (Hydrock Drawing 04583-HYD-XX-XX-DR-GE-1001) in Appendix A.

The logs, including details of ground conditions, soil sampling, *in situ* testing and any installations, are also presented in Appendix D.

The weather conditions during the Hydrock fieldwork and for the previous week were warm and sunny.

Table 4.2: Summary of site works

Activity	Method	No.	Depth Range (m bgl)	In situ tests	Notes (e.g. installations)
Drilling, Pitting and Probing					
Boreholes	Rotary cored	3	5.0 – 10.0	SPT	50mm standpipes with gas taps in all holes.
	Windowless sampler	5	0.6 – 2.5	SPT	50mm standpipes with gas taps in two of the holes.
Trial pits	Machine (JCB 3X)	14	0.05 – 3.4	Hand shear vane (HSV) PID	Soakaway tests undertaken in TP302, 306 and 309.
	Hand-excavated	8	0.4 – 0.7	-	Foundation inspection pits.
Probes	TRL dynamic cone penetrometer	5	0.48 – 0.9	California Bearing Ratio (CBR)	
Other in situ testing or monitoring					
CBR plunger	Vehicle mounted	5	0.3	California Bearing Ratio (CBR)	
Infiltration	BRE 365 (TP306) / Indicative (TP302 and 309)	3	0.85 – 2.2		In TP302, 306 and 309

Wells for monitoring groundwater levels and ground gas concentrations, and to facilitate the sampling of groundwater, were installed in two of the windowless sampler boreholes and in all of the rotary cored boreholes. A summary of the monitoring well installations is presented in Table 4.3.

Table 4.3: Summary of monitoring installations

Location	Ground level (m OD)	Standpipe diameter	Screen top and base depth (m bgl)	Screen top and base elevation (m OD)	Strata targeted
BH301	123.48	50	1.0 – 6.0	122.48 – 117.48	White Limestone Formation
BH302	123.64	50	1.0 – 10.0	122.64 – 113.64	White Limestone Formation
BH303	123.91	50	1.0 – 5.0	122.91 – 118.91	White Limestone Formation
WS302	123.83	50	0.8 – 1.8	123.03 – 122.03	White Limestone Formation
WS305	124.38	50	1.25 – 2.5	123.13 – 121.88	White Limestone Formation

4.4 Geo-environmental testing

4.4.1 *Sampling strategy and protocols*

Exploratory hole positions were determined by reference to the site conditions and uncertainties identified in the Initial Conceptual Model.

The ground around the hangars (see Table 4.1) was targeted for specific investigation due to the possible presence of asbestos, but a reasonably even spacing was used for the remainder of the site.

No specific sampling statistics or grid were utilised in this instance.

Samples were taken, stored and transported in general accordance with BS 10175:2011+A2:2017.

4.4.2 Site screening tests

A photoionization detector (PID) (MiniRAE Lite 10.6eV) was used during the fieldwork to screen samples that appeared to have visual or olfactory evidence of hydrocarbon contamination. The PID readings are detailed in Appendix F.

4.4.3 Geo-environmental monitoring

Gas monitoring boreholes have been monitored on six occasions. The results are presented in Appendix F.

On the third visit low flow groundwater sampling was also undertaken on each of the installed boreholes.

4.4.4 Geo-environmental laboratory analyses

The chemical test certificates for testing undertaken by Hydrock are provided in Appendix G. Wherever possible, UKAS and MCERTS accredited procedures have been used.

The geo-environmental analyses undertaken on soils are summarised in Table 4.4.

Table 4.4: Geo-environmental analyses of soils or other solids

Determinand Suite	Made Ground	Topsoil	Weathered White Limestone Formation
Hydrock minimum suite of determinands for solids*	8	2	9
Speciated aliphatic and aromatic banding Total petroleum hydrocarbons by HS-GC/MS and GC/FID (Hydrock Tier 2 TPH Suite)	4	1	6
Asbestos Bulk Identification	2	-	-
Coal Tar test suites (speciated polynuclear aromatic hydrocarbons (PAH, by GC-FID), speciated phenols and speciated creosols)	1	-	-
*Hydrock minimum soil suite comprises: As, B (water soluble), Be, Cd, Cr (total), Cr (VI), Cu, Hg, Ni, Pb, S (elemental), Se, V, Zn, cyanide (total), sulfide, pH, asbestos fibres, speciated polynuclear aromatic hydrocarbons (PAH, by GC-FID), total phenols and fraction of organic carbon			

The soils chemical test data are interpreted and assessed in Sections 7.3 and 7.4.

The geo-environmental analyses undertaken on waters for testing undertaken by Hydrock are summarised in Table 4.5.

Table 4.5: Geo-environmental analyses of waters

Determinand Suite	Ground-water
Hydrock minimum suite of determinands for waters	5
Speciated aliphatic and aromatic banding Total petroleum hydrocarbons by HS-GC/MS and GC/FID (Hydrock Tier 2 TPH Suite)	5

The groundwater chemical test data are interpreted and assessed in Section 7.5.

4.5 Geotechnical testing

The geotechnical tests undertaken by Hydrock are summarised in Table 4.6 and the test certificates are provided in Appendix E. Wherever possible, UKAS accredited procedures have been used.

Table 4.6: Summary of sample numbers for geotechnical tests

Test	Made Ground	Weathered White Limestone Formation	White Limestone Formation
Natural moisture content	-	6	-
Atterberg limits	-	8	-
Particle size distribution (sieve)	-	2	-
Sulfate and aggressive chemical environment classification for buried concrete classification (full BRE SD1 suite)	-	4	-
Optimum Moisture Content / Maximum Dry Density Relationship (4.5kg rammer)	1	5	-
Uniaxial Compressive Strength (UCS)	-	-	3
Point Load Strength	-	-	5

The geotechnical test data are summarised in Section 5.6 and interpreted in Section 6.

5. GROUND INVESTIGATION RECORDS AND DATA

5.1 Physical ground conditions

5.1.1 Summary of strata encountered

The following presents a summary of the properties of the ground and groundwater conditions encountered, based on field observations, interpretation of the field data and laboratory test results, taking into account drilling, excavation and sampling methods, transport, handling and specimen preparation.

All relevant data from the Hydrock investigation discussed in Section 2 are used from this point forward.

Details of the Hydrock ground investigation works are provided in the logs in Appendix D , a summary of the ground model is presented in Table 5.1 and the individual strata are described in the sections below. A cross section (Hydrock drawing 04583-HYD-XX-XX-DR-GE-1003) is presented in Appendix A.

Table 5.1: Strata encountered

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Thickness (m) (range)	Thickness (m) (average)
Surface Covering – Concrete hardstanding	0.0	0.3 – 0.5	0.3 – 0.5	0.35
Topsoil	0.0	0.05 – 0.25	0.05 – 0.25	0.1
Made Ground*	0.0 – 0.5	0.3 – 1.9	0.3 – 1.9	0.6
Weathered White Limestone Formation	0.1 – 1.9	0.35 – >3.4	0.25 – 3.3	1.6
White Limestone Formation	0.35 – 3.4	>10.0	>7.7	Not proven

*Depth to base and thickness have only been used for pits where the base of the unit was proven. For example, a number of exploratory holes encountered Made Ground and then refused on concrete. The thickness of Made Ground encountered in these holes is not included in the values above as it does not represent the full thickness of Made Ground at those locations.

5.1.2 Surface covering

The following surface cover was identified during the field reconnaissance and the fieldworks:

- Concrete hardstanding, covering approximately 30% of the site (in a single area covering the centre of the site) and currently used for car parking.
- Existing buildings, covering approximately 5% of the site.
- Grass, covering the remaining 75% of the site.

5.1.3 Concrete

Concrete was encountered on the rectangular area of hardstanding currently in use for car parking at the centre of the site. It was described as a very strong grey CONCRETE with 50% aggregate, 45% matrix and 5% voids. The concrete was found to be directly underlain by a sandy GRAVEL subbase in all locations where it was encountered.

The majority of this area was not investigated due to the presence of the parked cars.

5.1.4 Made Ground

Below the surface covering, Made Ground was recorded across the majority of the site excluding some areas along the western side of the site where topsoil was encountered at the surface, as shown on the site zonation plan Hydrock Drawing 04583-HYD-XX-XX-DR-GE-1004 which is included in Appendix A.

The Made Ground was generally encountered as a silty gravelly SAND and locally as a sandy GRAVEL or sandy gravelly CLAY/SILT. The gravel was generally of limestone but locally included concrete, brick, metal, plastic and slag. In seven locations (shown on the site zonation plan) exploratory holes terminated on concrete obstructions within the Made Ground.

The Made Ground at the site is considered to be representative of weathered White Limestone Formation which has been reworked to varying degrees.

5.1.5 Topsoil

Where the Made Ground was not encountered, generally on the western edge of the site, the exploratory holes encountered topsoil.

Topsoil was between 0.05m and 0.25m thick, with an average thickness of 0.1m. The topsoil comprised a silty gravelly SAND with rootlets.

For the purposes of this report, topsoil is defined as the upper layer of an in-situ soil profile, usually darker in colour and more fertile than the layer below (subsoil), which is a product of natural chemical, physical, biological and environmental processes, but does not imply compliance with BS 3882:2015. Reuse of topsoil as a growing medium at the site should be determined by the landscape architect or the landscape Contractors.

5.1.6 Weathered White Limestone Formation

Weathered White Limestone Formation was encountered underlying the Made Ground and/or topsoil in all exploratory holes that did not refuse in the Made Ground. The weathered White Limestone Formation is between 0.25m and 3.3m thick, with an average thickness of 1.6m.

The weathered White Limestone Formation was found to be highly variable, encompassing a spectrum of materials including sandy gravelly CLAY, silty gravelly SAND and sandy GRAVEL with the gravel consisting of limestone. The composition of the material is considered to be influenced by the degree of weathering as well as the composition of the original bedrock prior to weathering. The original bedrock consists of interbedded limestone and mudstone with the mudstone generally weathering to clay and the limestone weathering to gravel.

In three locations bands of medium strong to strong LIMESTONE between 0.2 and 0.3m thick were encountered within the weathered White Limestone Formation. Due to their thickness and the fact that they were sandwiched by weathered material these bands of material have been included as part of the weathered material. It may be that they are not in situ but it is more likely that they are simply bands of harder material that have not weathered to the same degree as the surrounding material.

5.1.7 White Limestone Formation

The White Limestone Formation was encountered underlying the weathered White Limestone Formation across the entire site and is at least 7.7m thick (unproven).

The White Limestone Formation generally consists of very strong fine to coarse grained locally fossiliferous LIMESTONE interbedded with extremely weak MUDSTONE. The mudstone is the dominant unit making up around two thirds of the total rock mass in bands up to 1.5m thick. The limestone bands are up to around 0.9m thick.

5.2 Obstructions

Obstructions were encountered in a number of trial pits and boreholes during the investigation. These intrusive locations are summarised in Table 5.2.

Table 5.2: Obstructions encountered

Stratum	Location	Depth (m bgl)	Description
Made Ground	WS301	0.3	Refused at 0.3m bgl. Presumed to be concrete obstruction.
	WS301a	0.6	Refused at 0.6m bgl. Presumed to be concrete obstruction.
	TP303	0.05	Refused on concrete slab.
	TP308	0.4	Refused on concrete slab.
	TP312	0.4	Refused on concrete slab.
	TP312a	0.4	Refused on concrete slab.
	TP313	0.7	Refused on concrete slab.

5.3 Visual and olfactory evidence of contamination (soil)

In addition to the more common man-made constituents (metal, plastic and slag), described above in Section 5.1.4, visual and olfactory evidence of contamination was noted in a number of locations, summarised in Table 5.3, with this information presented on the Site Zonation Plan in Appendix A.

Table 5.3: Visual and olfactory evidence of contamination - soils

Stratum	Location	Depth (m bgl)	Description
Weathered White Limestone Formation	WS302	1.0 – 2.0	Strong hydrocarbon odour
Made Ground	WS305	0.55 – 0.72	Strong hydrocarbon odour
Weathered White Limestone Formation	TP309	2.0 – 2.2	Hydrocarbon odour
Made Ground	HP302	0.10	Asbestos cement fragment
Made Ground	HP303	0.06	Asbestos cement fragment

5.4 Groundwater

5.4.1 *Groundwater observations and levels*

Groundwater encountered during the investigation is listed in

Table 5.4. A groundwater observation represents the depth at which groundwater was first observed and is likely to be deeper than the actual water table level at that location. Groundwater observations were not possible in the boreholes due to the drilling flush used.

Table 5.4: Groundwater occurrence

Stratum	Date	Location	Fieldwork		Comment
			Groundwater observation (m bgl)	Rose to after 20 mins (m bgl)	
White Limestone Formation	04/08/21	TP302	1.6	-	Seepage at base of trial pit.
Weathered White Limestone Formation	04/08/21	TP309	2.2	-	Minor seepage at base of trial pit.
	05/08/21	TP310	3.4	3.2	Seepage at base of trial pit.
	05/08/21	TP311	2.2	2.0	Seepage at base of trial pit.
	02/08/21	WS302	2.0	1.5	Groundwater struck at base of borehole.

Groundwater levels recorded during post-fieldwork monitoring are summarised in Table 5.5.

Table 5.5: Groundwater level data summary

Stratum	Date range	Location	Post-fieldwork monitoring	
			Depth to groundwater (range) (m bgl)	Groundwater elevation (range) (m OD)
White Limestone Formation (Weathered and unweathered)	18/08/21 – 27/10/21	BH301	1.34 - 1.86	121.62 - 122.14
		BH302	1.34 – 1.70	121.94 - 122.30
		BH303	1.54 - 1.71	122.20 - 122.37
		WS302	1.20 - 1.40	122.43 - 122.63
		WS305	1.63 - 1.80	122.58 - 122.75

5.4.2 Infiltration tests

The results of the infiltration testing undertaken are summarised in Table 5.6. The results sheets are presented in Appendix D.

Testing was carried out in accordance with Hydrock's 1-day assessment methodology. This is in general accordance with BRE Digest 365 (BRE DG 2016) where infiltration rates allow three test runs during a working day (or where there is no infiltration), but where low infiltration rates were encountered the available time may not have been sufficient to fully comply with the BRE test method (i.e. three runs of the test).

Table 5.6: Infiltration test results

Stratum	Location	Depth to base of pit (m bgl)	Infiltration rate (m/s)			
			Run 1	Run 2	Run 3	Range
White Limestone Formation	TP302	1.6	1.34×10^{-5}	-	-*	1.34×10^{-5} - 5.32×10^{-5}
	TP306	0.85	5.32×10^{-5}	3.77×10^{-5}	3.60×10^{-5}	

Stratum	Location	Depth to base of pit (m bgl)	Infiltration rate (m/s)			
			Run 1	Run 2	Run 3	Range
Weathered White Limestone Formation	TP309	2.2	No infiltration			-

*Where less than three tests were possible in a particular location the results provided should be considered indicative only and should not be used for design purposes. If infiltration is critical to the development of the site, multi-day infiltration testing should be undertaken.

5.4.3 *Groundwater summary*

In general, shallow groundwater was encountered within the White Limestone Formation. It was encountered at the base of the weathered material and appeared to be partially confined by the weathered material rising in the exploratory holes when struck.

It is considered that the groundwater is concentrated within discontinuities in the White Limestone Formation.

Within the White Limestone Formation, recorded infiltration rates were between 1.34 x 10^{-5} and 5.32 x 10^{-5}m/s. One infiltration test was undertaken in the weathered White Limestone Formation with no infiltration recorded.

5.5 Ground gases (carbon dioxide and methane)

Records from the gas monitoring boreholes are presented in Appendix F and summarised in Table 5.7.

Six visits have been undertaken and the monitoring program is complete. The data are assessed in Section 7.5.1.

Table 5.7: Range of ground gas data

Stratum	Methane (%)	Carbon dioxide (%)	Oxygen (%)	Steady flow rate (l/hr)	Comment
White Limestone Formation (Weathered and Unweathered)	0.0- 0.1	0.1 – 4.7	7.4 – 21.3	0.0 – 0.3	All carbon dioxide readings below 5%. All methane readings below 1%.

5.6 Geotechnical data

5.6.1 *Introduction*

Laboratory test results are contained in Appendix E with *in situ* test results shown on the relevant exploratory hole log or datasheet in Appendix D. The following sections summarise the main findings and provide interpretation where appropriate.

5.6.2 *Plasticity*

The volume change potentials in terms of NHBC Standard (Chapter 4.2) with respect to building near trees have been determined from the results of plasticity index tests on samples of soil. These are summarised in Table 5.8.

Table 5.8: Volume change potential

Stratum	No. of tests	Plasticity Index			Modified Plasticity Index			Plasticity designation	Volume Change Potential
		Min.	Max.	Av.	Min.	Max.	Av.		
Weathered White Limestone Formation	8	13	28	21	11	26	18	Low to High	Low to Medium

5.6.3 *Particle size distribution*

Particle Size Distribution test (PSDs) results are summarised in Table 5.9 and summary descriptions and PSD plots of the material analysed are presented in Appendix E. Note that the composition of the Weathered White Limestone Formation was very variable and these results are not considered to be representative of the material as a whole.

Table 5.9: PSD results summary

Stratum	No. of tests	Silt/Clay %	Sand %	Gravel %	General description
Weathered White Limestone Formation	2	39 - 51	31 - 40	8 - 30	Gravelly sandy CLAY

5.6.4 *Soil strength*

Table 5.10 summarises information pertaining to the shear strength of the soils according to geological stratum. Factual results are summarised for laboratory tests, field tests (e.g. hand shear vane) and uncorrected Standard Penetration Tests (SPT). Where the SPT is used to infer shear strength by published correlation, this is also tabulated.

Table 5.10: Soil strength results and derived values

Stratum	No. of tests	SPT (N-value) (range)	c_u (kPa)	phi’ (°)	Method
Weathered White Limestone Formation	3	22 – 29	120 – 160*	35	SPT – rotary boreholes.
	3	12 – 22#	70 – 120*	32	SPT – windowless sampler boreholes.
	3	-	30 – 107	-	Hand shear vane
* Correlation with Stroud (1975) based on ‘average’ plasticity # One value removed due to refusal, presumed to have been representative of buried rock. In the Weathered White Limestone Formation geotechnical parameters are given for both cohesive and granular material as the material was described as both and is considered to be close dividing line between the two.					

The strength of the Weathered White Limestone Formation is highly variable due to variations in the degree of weathering and the fact that some of the material is derived from weathered mudstone and some from weathered limestone. The value of 30 kPa is considered to be isolated and unrepresentative of the stratum.

However, it should be noted that in the footprint of the proposed building (where the rotary boreholes were located) the strength was relatively consistent with SPT N values around 25. The three tests in the footprint of the building were all undertaken at depths of either 1.0 or 1.5m bgl.

5.6.5 *Compressibility*

Table 5.11 presents a summary of the derived parameters for coefficient of consolidation and compressibility. The data indicates that the material is generally of medium compressibility.

Table 5.11: Summary of compressibility

Stratum	No. of tests / results	Method	Pressure range (kN/m²)	Coefficient of volume compressibility (m_v) (m²/MN)	Coefficient of consolidation (C_v) (m²/yr)
Weathered White Limestone Formation	6	Correlation with SPT*	-	0.15 – 0.06	-
* An f_2 value of 0.55 has been used based on a plasticity index of 20. (Tomlinson (2001), after Stroud)).					

5.6.6 *Compaction and moisture content*

Table 5.12 presents a summary of the moisture content tests and compaction studies undertaken at the site.

Table 5.12: Compaction study results

Stratum	No. tests	Method	Natural moisture content (%) (range)	Optimum moisture content (%) (range)	Particle density (Mg/m³) (range)	Maximum dry density (Mg/m³) (range)
Made Ground	1	4.5kg Rammer	13	13	2.65*	1.94
Weathered White Limestone Formation	4	4.5kg Rammer	6.6 - 27	11 - 19	2.65 – 2.75*	1.75 – 2.00
*assumed						

5.6.7 *Subgrade stiffness*

The subgrade stiffness (CBR) results are summarised in Table 5.13.

Table 5.13: CBR results and derived values

Stratum	No. tests	Method	CBR (%) (Range)
Weathered White Limestone Formation	5*	*in situ* CBR rig	7.5 – 31.6
	5 positions	TRL Dynamic Cone Penetrometer	12 - 79
*Test depth 300mm			

5.6.8 *Sulfate content*

In accordance with BRE (Special Digest 1), the Design Sulfate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification are presented in

Table 5.14. The assessment summary sheets are presented in Appendix E.

Table 5.14: Aggressive chemical environment concrete classification

Stratum	No. tests	DS	ACEC
Made Ground	1	DS-1	AC-1
Weathered White Limestone Formation	8	DS-1	AC-1

5.6.9 *Intact material strength – rock*

Table 5.15 summarises information pertaining to the strength of the intact rock material (not rock mass) according to geological stratum and, if applicable, weathering zones or other variations within particular strata.

Factual results are summarised for laboratory and field tests. Where point load index tests are used to infer unconfined compressive strength (UCS), this is also tabulated. Rock strength terms follow the method of BS EN ISO 14689-1:2003.

Care should be exercised in using these assumed rock strength parameters for any purpose beyond the scope of this report because it may be that additional sampling and testing is required for certain purposes. The reader should refer to the original test results in Appendix E. Note also that rock mass properties, rather than intact rock material properties, may be more suitable for design purposes.

Table 5.15: Intact rock strength results and derived values

Stratum	No. of tests	Point load index (Range)		Intact shear strength (range)		UCS (MPa) (range)	Method
		Is	Is($_{50}$)	c’ (MPa)	phi’(°)		
White Limestone Formation	5	0.96 – 4.22	1.04 – 4.54	-	-	-	Axial point load
	3	-	-	-	-	31.3 – 37.1	UCS test

6. GEOTECHNICAL ASSESSMENT

6.1 Geotechnical categorization of the proposed development

Eurocode 7, Section 2 advocates the use of geotechnical categorization of the proposed structures to establish the design requirements.

The proposed development is to comprise a low-rise primary school, with associated hard and soft scaping and infrastructure. An initial review of the proposed finished levels indicates minimal cut to fill or retaining is required. In addition, the review indicates the surface water drainage strategy shows surface water will be retained in oversize pipes and storage crates, without the requirement for a surface water attenuation pond.

Based on the above, for the purposes of this investigation, the proposed structures have been classed as Geotechnical Category 1.

Following ground investigation and as part of the assessment provided in the following section, the preliminary geotechnical hazard identification undertaken in Section 3.3 has been updated.

Assessment has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The preliminary Geotechnical Risk Register following investigation is provided in Appendix I (Table I.3) and will need to be updated during future design works.

6.2 Characteristic design values

For design of Category 1 structures in accordance with BS EN ISO 1997-1 (EC 7), the geotechnical parameters given in Table 6.1 can be used for design.

These values have been determined from laboratory testing, *in situ* testing and by professional judgement using published data together with knowledge and experience of the ground conditions. Care should be exercised in using these assumed soil strength parameters for any purpose beyond the scope of this report because it may be that additional sampling and testing is required for certain purposes. The reader should refer to the original test results summarised in Section 5 and provided in Appendix D and Appendix E.

Table 6.1: Geotechnical parameters recommended for design of Geotechnical Category 1 Structures (EC7)

Parameter	Bulk unit weight kN/m^3	Effective angle of internal friction °	Effective cohesion kN/m^2	Undrained shear strength kN/m^2	Coefficient of compressibility m^2/MN
Stratum	γ [a]	ϕ' [b c]	c'	c_u [d]	m_v [d]
Weathered White Limestone Formation	18	33	0	75	0.133

a) Based on the recommendations of BS 8004-2015.
b) Internal friction (ϕ') values for the granular in situ material derived from SPT data following the recommendations of Peck et al., (1967).
c) Internal friction (ϕ') values for the cohesive in-situ material derived from BS 8004-2015, where ϕcv' is derived from plasticity index. The use of ϕcv' in the analysis is considered to provide a conservative estimate of ϕ'.
d) Site measurements and laboratory data.

6.3 Groundwork

6.3.1 Site preparation

The redevelopment will involve demolition of the two existing buildings (Building 357 and the sub-station) but excluding the hangers which are to be utilised as part of the development. This should be undertaken to an appropriate Specification to ensure any asset materials generated are geotechnically suitable for use.

Buried obstructions were encountered during this investigation in the form of buried concrete slabs and there is a possibility of further such obstructions being encountered.

Topsoil should be removed from beneath all building and hardstanding areas.

6.3.2 Groundworks

Following breaking out of hardstanding obstructions, excavation of the Made Ground and Weathered White Limestone Formation should be readily undertaken by conventional plant and equipment. However, excavation through any buried concrete and competent rock layers may require the use of hydraulic breaking equipment.

Trial pit faces were noted to remain generally vertical without collapse. The faces of shallow, near vertically sided excavations put down at the site are likely to remain stable for short periods of time.

Temporary trench support, or battering of excavation sides, is recommended for all excavations that are to be left open for any length of time and will definitely be required where man entry is required. Particular attention should be paid to excavation at, or close to, site boundaries and buildings to be retained, where collapse of excavation faces could have a disproportionate effect.

A risk assessment of the stability of any open excavation should be undertaken by a competent person and appropriate measures adopted to ensure safe working practise in and around open excavations. Further guidance on responsibilities and requirements for working near, and in, excavations can be obtained from the Construction Design and Management Regulations (2015); Construction Information Sheet 47: Inspections and Reports (2005) and HSG47: Avoiding Danger from Underground Services.

To ensure no loads are imposed on the sides of the excavation, spoil should not be placed immediately adjacent to the excavation. Spoil should be placed a suitable distance from the side of the excavation (as assessed by a competent person).

Based on site observations, the rate of water ingress to the proposed excavations is likely to be slow. In these circumstances, groundwater control by sump pumping is likely to be sufficient.

However, it should be recognised that groundwater levels may vary from those at the time of the investigation, for example in response to seasonal fluctuations and the timing of construction may dictate the extent of groundwater control required.

Any water pumped from excavations may need to be passed via settlement tanks (to reduce suspended solids) before being discharged to the sewer. Discharge consents may also be required.

6.3.3 Earthworks/reuse of site-won materials

At this stage, Hydrock is not aware of proposals for earthworks at the site.

Should earthworks be required, supplementary earthworks testing and an earthworks Specification will be necessary to ensure the appropriate management and reuse of the existing soils.

If significant earthworks are required, the works may be Category 2 in accordance with BS EN ISO 1997-1 (EC 7) and further geotechnical design may be necessary. Once site proposals have been further defined more specific consideration will need to be given to the reuse of materials and reference should be made back to this office.

6.4 Retaining walls

Two retaining walls are proposed at the site, one for Hangar 2007 to retain cut soils and another for the external nursery area to retain placed soils in the southwest of the site. These are shown as blue lines on the ADP Illustrative Site Plan presented in Appendix A.

At the current time there are no specific design or development proposals for the retaining walls.

It is recommended that all retaining walls are individually designed using site specific design criteria, assessed as part of the required geotechnical design. Associated as-built records will be required for verification purposes.

Allowance should be made in the design of the retaining walls for adequate drainage behind the structure, or for water seepage through the face of the wall. The overall stability of the retaining wall is not considered in this report. The stability of the retaining wall should be considered in the design process.

6.5 Foundations

This section provides recommendations for the proposed new school building which is shown on the ADP Illustrative Site Plan presented in Appendix A. If development proposals are changed the foundation assessment below will require updating as the ground conditions across the site vary significantly.

The school building proposed for the site is considered to be Geotechnical Category 1. Preliminary foundation recommendations for the foundations of the school in this section are based on the geotechnical parameters provided in Section 6.2.

The safe bearing pressures for foundations quoted for Category 1 structures in this report take into consideration traditional factors of safety against the risk of shear failure of the ground and should prevent undue or excessive total and differential settlement from the anticipated structural loadings.

Strip or trench fill foundations are considered suitable for the school building and should be founded below any Made Ground and to a depth of at least 1.5m bgl in the Weathered White Limestone Formation, which comprises a firm (or better) clay or medium dense (or better) sands and gravels at this depth. If the location of the proposed school building changes this recommendation may change.

A safe net bearing pressure of 125kN/m^2 is considered appropriate provided that the bottom of each strip is reinforced to span any soft spots that may exist in layers of weathered mudstone at depth as demonstrated by the isolated incidence of soft clay discussed in Section 5.6.4.

If enlarging the foundations is considered (for example because loads are such that the quoted safe net bearing pressure is inadequate for a standard strip foundation up to 1.0m wide) this could lead to increased settlements and the above recommendations should be reviewed.

Where foundation depths are stepped, for instance to match changes in depths due to trees or changes in ground conditions, the steps should be designed in accordance with the requirements of the NHBC Standards.

If trees are to be removed, the roots should be grubbed out and foundations extended to below the zone of disturbance created by this activity and to below any remaining root hairs. In addition, deepening of foundations in accordance with NHBC Standards will be required where strip or trench fill foundations are within the zone of influence of existing, removed or proposed trees and proposed shrub planting. A tree survey should be undertaken by an arboriculturist in accordance with BS 5837:2012 to identify the type, and height of existing trees on the site and including any off-site trees, which could have an effect on foundation design.

Where foundations are within the zone of potential desiccation from trees and are deeper than 1.5m bgl, a suitable compressible material or void former will be required on the inside faces of foundations to external walls and beneath ground bearing floor slabs.

Foundation formations should be inspected by a geotechnical engineer or other suitably competent person to ensure the founding conditions are suitable and as indicated in this report. Any formation materials deemed as unsuitable should be excavated and replaced with lean mix concrete or deepened to suitable strata. If this is not possible, alternative solutions (such as piling) should be undertaken.

As the ground conditions at formation level are likely to be of variable type and stiffness, it is recommended that foundation concrete should be reinforced with mesh, installed at the top and bottom of the foundation, across the zone of variable soil conditions. This will also protect against differential settlement caused by any isolated soft spots at depth of which one was encountered during the ground investigation (although not in the footprint of the proposed building).

Foundation excavations should be protected from rainfall, inflow of surface water, frost and freezing conditions. They should also be protected from drying out in hot dry weather.

Groundwater monitoring indicates a sporadic, low flow groundwater table. Any water that collects at the base of the foundation excavations should be removed by pumping from a sump in the base.

6.6 Ground floor slabs

As clay soils of medium volume change potential are present at the site, it is recommended that suspended floor slabs with a void be adopted.

Slabs without a void (ground bearing or suspended cast *in situ* onto the ground) may be used if all of the following criteria are satisfied:

- the foundation depth (such as due to the influence of trees) is less than 1.5m;
- any fill is suitable, well-compacted granular material and less than 600mm thick;
- it is demonstrated that the soils are not desiccated and are at their equilibrium moisture content; and
- ground floor construction is not undertaken when the surface soils are seasonally desiccated (i.e. during summer and autumn), unless NHBC is satisfied the soil is not desiccated.

Based upon the ground conditions encountered at the site and the low volume change potential of the site soils it is considered that a ground bearing floor slab may be appropriate.

Prior to the pouring of the floor slab it is essential that any soft spots are removed and replaced with well compacted granular material. Made Ground must also be removed and replaced.

Ground floor slabs should be designed to incorporate any gas mitigation measures that may be required, as discussed later within this report.

6.7 Roads and pavements

Based on the test results and subject to *in situ* testing during construction, it is considered likely an equilibrium CBR of 5% will be achievable over the majority of the site.

Proof rolling of the formation level will be required and any loose or soft spots should be removed and replaced with an engineered fill, in accordance with a suitable Specification. The formation level will also need to be protected during inclement weather from deterioration; all slopes should be trimmed to falls to shed rain water and the surface sealed to limit infiltration.

Prior to the placement of the founding materials and the construction of the road pavement, the sub-formation and formation will need to be inspected and checked in accordance with a suitable specification to ensure the ground conditions are as expected. All testing should be carried out in accordance with DMRB IAN 73/06 to confirm that the ground conditions at time of construction are consistent with the previous design parameters.

6.8 Drainage

Indicative infiltration rates for the ground investigation are presented in Appendix E and are summarised in Table 5.6.

While favourable infiltration rates were recorded this was only the case in some locations and in one location no infiltration was recorded. It should also be noted that groundwater is relatively high at the site (recorded at less than 1.5m bgl during post investigation groundwater monitoring) and that the data that we have is from late summer which is one of the driest periods of the year.

It is therefore considered that soakaways may be suitable for the site and will assist with attenuation as part of a Sustainable Urban Drainage System (SUDS). However, detailed design is require taking into account the variable infiltration rates and the high groundwater table.

6.9 Buried concrete

Based on guidelines provided in BRE Special Digest 1 (BRE 2005) and the information presented in Section 5.6.8 (

Table 5.14) the shallow soils (Made Ground and Weathered White Limestone Formation) can be classified as Design Sulfate Class DS-1 and ACEC Class AC-1. This equates to a Design Chemical Class[1] of DC-1.

The designer should check and confirm the classification of concrete using the information presented in Appendix D and Appendix E during the design.

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[1] The calculated ACEC class can be used in accordance with BS 8500-1+A2 (2019), Table A.9 to select the Designated Concrete (DC) class for an intended working life of 50 years. However, the designer is referred to BS 8500-1+A2 (2019), for full details and notes to Table A.9, including any Additional Protective Measures (APMs).

7. GEO-ENVIRONMENTAL ASSESSMENT

7.1 Updated conceptual model

7.1.1 Updated ground model

The preliminary ground model developed from the desk study and field reconnaissance survey (Section 2) has been updated using the findings of the ground investigation and is presented in Section 5. This ground model is the basis for the geo-environmental assessment presented in this section.

7.1.2 Updated exposure model

Following the ground investigation, the plausible contaminant sources, receptors and pathways identified in the preliminary geo-environmental exposure model (Section 3), have been updated or confirmed as follows.

7.1.2.1 Sources

No potential sources have been removed from, or added to, the exposure model.

7.1.2.2 Receptors

No potential receptors have been removed from, or added to, the exposure model.

7.1.2.3 Pathways

No pathways have been removed from, or added to, the exposure model.

Using the updated ground model and updated exposure model, generic risk assessment is undertaken as presented below.

7.2 Risk assessment approach

Generic risk assessments have been undertaken in accordance with the principles of LCRM (Environment Agency, 2021) using the CM that has been updated following the ground investigation.

Firstly, the risks associated with the identified potential contaminant linkages have been estimated using standardised methods (typically involving comparison of site data with published 'screening values'). Secondly, where screening values are exceeded, the result has been evaluated in an authoritative review of the findings with other pertinent information to determine whether or not the exceedance is, or is not acceptable in the site-specific circumstances.

The data sets used in the assessment comprise the analytical results obtained by Hydrock as listed in Section 4.

In cases where unacceptable risks are indicated, actions such as more advanced stages of risk assessment or remediation are proposed in Section 7.9.

7.3 Human health risk assessment

This is a Tier 2 assessment using soil screening values applicable to the residential without plant uptake CLEA land use scenario.

There are no soil screening values for use in assessing the school land use and in this instance a conservative screening option has been adopted by using the residential without plant uptake scenario.

The soil screening values used are generic assessment criteria (GAC). It should be noted that Category 4 Screening Levels (C4SL) for lead have been used as there is no recognised GAC for lead and the use of the term 'GAC' in this report includes the C4SL for lead.

Statistical testing is used where data sets are suitable. The critical issue is sample numbers. For data sets with low sample numbers, individual sample test results are compared directly with the screening values. Larger and non-targeted data sets are subject to statistical testing.

The phrase 'further assessment required' is used to denote soil concentrations that are equal to, or exceed, a GAC. This does not necessarily mean that the soil is 'contaminated' or not otherwise suitable for use. The assessment and any mitigation required are to ensure the site does not pose an 'unacceptable risk'.

The results of the assessment are presented in Appendix G.

7.3.1 Averaging areas

The 'averaging area' used in this report is based on the conceptual model and the proposed development, and is taken to be the entire area of the site, with the data separated into Made Ground / Topsoil and natural soils.

7.3.2 Risk estimation (without statistical testing)

7.3.2.1 Hydrock default list of determinands

Based on individual test results that exceed the GAC, the chemicals of potential concern which require further assessment are summarised in Table 7.1.

Table 7.1: Chemicals of potential concern for which further assessment is required (human health)

Chemical of potential concern	Generic criterion (mg/kg)	Basis for generic criterion	No. samples	Min. (mg/kg)	Max. (mg/kg)	Location of samples exceeding generic criterion
Made Ground						
Benzo(a)anthracene	7.8	LQM/CIEH + CLEA 1.07	8	0.42	47	TP313
Benzo(a)pyrene	1.6			0.61	32	WS305, TP309, TP310, TP313
Benzo(b)fluoranthene	11			0.61	40	TP313
Benzo(k)fluoranthene	16			0.23	18	TP313
Chrysene	16			0.52	37	TP313
Dibenz(a,h)anthracene	1.4			0.05	5.6	TP313
Indeo(1,2,3,cd)pyrene	6.6			0.38	22	TP313

There are no exceedances of the GAC for chemicals of potential concern recorded in samples of the Topsoil or natural soils.

7.3.2.2 Asbestos

There is visual evidence of Asbestos Containing Materials (ACM) in two exploratory hole locations (HP302 and HP303) adjacent to the aircraft hangars.

The presence of Asbestos Containing Materials requires further consideration.

7.3.2.3 Petroleum Hydrocarbons

Petroleum hydrocarbon odours and staining were noted in exploratory hole locations WS302, WS305 and TP309. Chemical testing was undertaken and the samples did not record speciated hydrocarbons above the relevant GAC. No further consideration is required with respect to risk to human health.

7.3.3 Coal Tar

Laboratory chemical testing confirmed the absence of coal tar in the asphalt layer found in TP313 at 0.60-0.70m bgl.

7.3.4 Risk evaluation

The screening exercise has identified benzo(a)pyrene in the Made Ground across the site and other polycyclic aromatic hydrocarbons (PAH) species in the Made Ground within TP313. ACM has also been recorded in the Made Ground around the aircraft hangars. These are considered further here to assess if the exceedance may be acceptable with respect to the proposed development. The phrase 'further assessment' does not necessarily mean that the soil is 'contaminated' or not fit for use.

Benzo(a)pyrene

The seven exceedances of different PAH compounds noted in TP313 are at 0.30m. These exceedances are likely related to the asphalt layer present at 0.60m bgl. This is considered to be an unacceptable risk that will require mitigation.

In addition to TP313, three other exploratory hole locations recorded elevated benzo(a)pyrene above the GAC of 1.6mg/kg. TP309 and TP310 recorded slightly elevated concentrations of 1.8mg/kg to 2.9mg/kg and WS305 recorded a concentration of 10mg/kg.

For TP309 and TP310, in addition to being only a slight exceedance, the values are significantly below the C4SL for benzo(a)pyrene (maximum of 2.9mg/kg vs. 5.3mg/kg). Whilst the GAC represents minimal risk, the C4SL represents a low level of risk but is still highly protective of human health. The Defra (March 2014) policy document states that the C4SLs were developed so they could be used under the planning regime. '*It is anticipated that, where they exist, C4SLs will be used as generic screening criteria that can be used within a GQRA, albeit describing a higher level of risk than the currently or previously available SGVs*.' The DCLG Planning Policy Guidance (Reference ID: 33-007-20140612 Land affected by contamination, dated 12 June 2014) endorses this by stating that '*Defra has published a policy companion document considering the use of 'Category 4 Screening Levels' in providing a simple test for deciding when land is suitable for use and definitely not contaminated land*.' This was made clear in a letter to all local authorities from Lord de Mauley, Defra Parliamentary Under Secretary on 3 September 2014. It is Hydrock's advice that the C4SL is likely to indicate suitability for use, but this must be confirmed with the Environmental Health Officer (EHO).

In conclusion, subject to EHO approval, Hydrock consider the risk from benzo(a)pyrene to be:

- A low risk to site end users in TP309 and TP310 as the concentrations are only a slight exceedance of the GAC and the concentrations are significantly below the C4SL; and
- A potential risk to site end users in WS305 and TP313 and mitigation measures will be required;

Subject to the sports pitch requirements, there is no appropriate subsoil/Topsoil material present at the site and this will need to be imported for the sports pitch, which will further reduce exposure pathways for TP309 and TP310.

Asbestos

The existing aircraft hangers at the site have mainly been constructed with ACM, including asbestos cement, cloth, bitumen and mastic. Further details are provided in Santia's Asbestos Refurbishment / Demolition Report, ref; AP001074-02-02 which is presented in Appendix G.

Two of the hand pits (HP302 and HP303) excavated adjacent to Hangar 2004 and Hangar 2005 encountered cement bound asbestos which was identified as chrysotile at the laboratory.

The ACM within Hangar 2004, which is to be redeveloped as part of the school as a covered play area, is a potential risk to end users as it is likely fragments have fallen off previously such as those encountered in HP302 and HP303. The age and weathering of the ACM may also release airborne fibres, although no fibres have been identified within soil samples and so the risk of fibres is thought to be lower.

It is recommended one of the following options is undertaken:

- Asbestos in buildings specialist assesses the long-term risk from the ACM within the building as it is with limited redevelopment.
- Encapsulate all asbestos within the building e.g., coatings such as ET150/ET110, cladding with boards or plaster.
- Remove all asbestos from building and replace with suitable non-asbestos containing materials.

If asbestos is left within the hangar an Asbestos Management Plan will be required and the duty holder of the school will have a duty to maintain the management of the asbestos.

It is recommended the shallow soils around the hangars are remediated to remove any fragments of ACM that have fallen from the hangars.

7.4 Plant life risk assessment

7.4.1 Risk estimation

Priority phytotoxic chemical concentrations have been screened against published values to determine the likely risk to plant growth and the findings presented in Appendix G. As with human health, statistical testing is used where data sets are suitable, otherwise individual sample test results are compared directly with the screening values.

No exceedances have been recorded and no mitigation measures will be required.

It is likely a suitable growing medium will be required for the sports pitch and landscaped areas where Topsoil is not currently present.

7.5 Pollution of controlled waters risk assessment

7.5.1 Risk estimation

The risks to groundwater and surface water from contaminants on site have been assessed in accordance with the Environment Agency (2006) Remedial Targets Methodology (RTM).

Site contaminant loadings are compared with relevant screening values (Water Quality Targets), which are linked to the Conceptual Model.

Acceptable WQT are defined for protection of human health (based on Drinking Water Standards (DWS)) and for protection of aquatic ecosystems (Environmental Quality Standards (EQS)).

As related specifically to this site, the data are compared with criteria selected in accordance with the Hydrock methodology. This methodology involves selecting which of several alternative risk scenarios apply in this case. The assessment is presented in Table 7.2 below, with the justification for the scenarios selected explained in the following text:

- The site is directly underlain by a Principal Aquifer with the nearest groundwater abstraction located approximately 650m to the south east.
- The nearest surface water body is Gallos Brook which is located approximately 250m to the south east of the site. Given the principal aquifer status of the underlying bedrock it is considered likely that this will be in hydraulic connectivity with the groundwater beneath the site.

Table 7.2: Summary of water quality risk assessment protocol

Hydrock scenario	Water body receptors	Secondary receptors	Example contaminant linkages	RTM level and data used	Water quality targets
D	Groundwater. Surface water.	Human health (abstraction). Aquatic ecosystem.	Contaminants from site leach or seep into a groundwater body that feeds inland surface water by base flow. The surface water may be used for human consumption and is an aquatic ecosystem.	RTM Level 2 - Groundwater. Direct comparison of surface water samples	DWS EQS (inland)
Notes: Some EQS are water hardness dependent. This is measured either in the receiving surface water or in groundwater (if it is part of the pathway), or is estimated from national maps. Inland waters EQS applicable to freshwater, 'other' waters EQS applicable to coastal or transitional waters. This table and the results of the assessment are considered as a first screening for potential risks of pollution of Controlled Waters. More specific requirements may be stipulated by the relevant Agency.					

The results of the screening assessment are presented in Appendix G and are summarised in Table 7.4.

There are no WQT for petroleum hydrocarbon fractions in water. However, because of the sensitivity of the water environment to petroleum hydrocarbons, an initial screening exercise is also included in Table 7.3 irrespective of the assessment scenario(s) stated in Table 7.2.

In some instances, the reporting limit (or detection limit) quoted by the laboratory may be greater than the WQT that it is being assessed against. As the current exercise is an initial screening assessment, further assessment of these elements has not been undertaken.

Table 7.4: Chemicals of potential concern for which further assessment is required (controlled waters)

Chemical of potential concern	Water quality target (WQT) (µg/l)	Basis for water quality target	No. samples	No. samples above LoD	Min. (µg/l)	Max. (µg/l)	No. samples exceeding WQT and above LoD
Groundwater (White Limestone Formation)							
Copper	1	EQS†	5	5	1.4	3.8	5
Manganese	50 123	DWS EQS†	5	5	7.7	150	2 1

<table>
<tr><th>Chemical of potential concern</th><th>Water quality target (WQT) (µg/l)</th><th>Basis for water quality target</th><th>No. samples</th><th>No. samples above LoD</th><th>Min. (µg/l)</th><th>Max. (µg/l)</th><th>No. samples exceeding WQT and above LoD</th></tr>
<tr><td colspan="8">Note: the maximum recorded value is compared with the water quality target.
* The Water Supply Regulations 1989 and the Private Water Supply Regulations 1991 both contained a prescribed concentration of 10 µg/l for ‘dissolved or emulsified hydrocarbons (after extraction with petroleum ether); mineral oils’. This was removed when these Regulations were updated in 2000 (consolidated 2007) and 2009, respectively. However, 10 µg/l is used in this report as an initial screening assessment as it is frequently the preferred approach of the Environment Agency.
† The EQS for these substances represents a bioavailable concentration, which will be a proportion of the actual dissolved concentrations in water. No site-specific bioavailability testing was able to be undertaken at the site and therefore the EQS bioavailable represents a conservative screening approach.</td></tr>
</table>

7.5.2 Risk evaluation

The DWS for manganese are exceeded in two of the water samples with values of 62 and 150µg/l against a DWS of 50 µg/l. A single manganese value also exceeds the EQS screening value of 123µg/l. All results for copper exceed the EQS screening value of 1µg/l but none exceed the DWS.

Whilst there are exceedances of the water quality targets, these exceedances are considered not to represent a significant risk of pollution of Controlled Waters from an on-site source as they are not significantly elevated above the screening values and there is no apparent on-site source for these exceedances (high concentrations of PAH were noted in the soil samples but were not elevated for metals). The risk to surface waters and groundwater abstractions is considered to be low given their distance from the site and the marginal exceedances recorded.

Furthermore, the inland waters EQSs for copper, manganese, nickel, lead and zinc are based on the bioavailable fraction and because bioavailability has not been calculated for these metals the assessment is conservative as it assumes 100% bioavailability.

It would be technically challenging and probably disproportionately costly to remove these natural contaminants from the water or to prevent further infiltration.

Whilst there are concentrations of Chemicals of Potential Concern elevated above the water quality criteria, based on the investigation works undertaken to date and subject to agreement with the Environment Agency, Hydrock does not believe the site poses a significant risk to Controlled Water.

7.6 Ground gases risk assessment

7.6.1 Data

It is judged from the available evidence that the gas generation potential at the site is moderate (due to previous site uses and nearby former landfill sites) and that the sensitivity of the development is moderate. Consequently, and in accordance with CIRIA C665 (Table 5.5a and 5.5b), an appropriate minimum monitoring regime is six readings over three months, provided other monitoring requirements are also met, such as prevailing atmospheric pressure conditions (for example, BS 8485:2015 +A1:2019 suggests monitoring should include a period of falling atmospheric pressure).

Hydrock has undertaken the six readings required and the monitoring program is complete. The following conclusions are therefore considered to be final.

7.6.2 Assessment

The risks associated with the ground gases methane (CH_4) and carbon dioxide (CO_2) have been assessed using BS 8485:2015 +A1:2019, which cites the guidelines published by CIRIA (Wilson et al 2007) (known as Situation A).

There is an alternative assessment method described by the NHBC (Boyle and Witherington 2007) (known as Situation B). Whilst 'Situation B' may also be suitable for the assessment, it is Hydrock's opinion that the NHBC Guidelines are not at the current time fully aligned with current ground gas risk assessment principles (as described in BS 8485:2015 +A1:2019). As such, 'Situation A' has been chosen as the means by the gas risk will be assessed.

The assessment guidelines published by CIRIA are based on interpretation of the gas concentrations and the gas flow rates, amongst other variables, and are compliant with the model procedures of LCRM. The modified Wilson and Card assessment has been used by comparing the maximum gas concentrations and gas screening values (GSV[2]) in Appendix F with the published table (CIRIA Table 8.5) and the assessment is summarised in Table 7.5. The assessment is presented in Appendix F.

Table 7.5: Ground gas risk assessment

	Min	Max	Typical (i)	Comment
Steady Flow Rate (l/hr)	0.1	0.3	<0.5	-
Carbon Dioxide Concentration (%)	0.1	4.7	<5.0	All values below 5%
Methane Concentration (%)	0.0	0.1	<0.5	All values below 1%
Carbon Dioxide GSV based on Maximum Values (Site) (l/hr)	0.0001	0.014	<0.07	CS1
Methane GSV based on Maximum Values (Site) (l/hr)	0.0001	0.0003	<0.07	CS1

(i) Hydrock assume that values are considered to be atypical if 95% or more of the remaining data are less than the value under consideration

For the purposes of the calculation, where the recorded gas flow rate is below the manufacturer's limit of detection for the instrument used, the detection limit has been adopted for the gas flow rate.

As indicated in Table 7.5, the computed GSV for carbon dioxide and methane indicates CS1 conditions and methane and carbon dioxide at concentrations are 'typically' below 1% and 5% respectively. As such, the site is classified as Characteristic Situation 1 (Situation A). Subject to confirmation with the LPA and the warranty provider, no mitigation measures are required.

7.6.3 Off-site risks from carbon dioxide and methane

The National Planning Policy Framework requires that a developed site should be incapable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990. This position includes a consideration of the potential for off-site migration of ground gases that may impact on adjacent properties.

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[2] Note: GSV is synonymous with 'site characteristic hazardous gas flow rate' (Q_{hgs}) of BS 8485:2015 +A1:2019 Table.

Consequently, it may be necessary to consider the imposition of measures to protect adjacent, off-site receptors. In this case there is not considered to be a significant risk.

7.7 Construction materials risk assessment

7.7.1 Water pipelines

A formal water pipe investigation and risk assessment is beyond the scope of this report. However, the findings of this investigation have been compared to the threshold values in Water UK HBF (2014), Table 1 as far as is practicable, to give an indication of the possible restrictions to the use of plastic pipes for water supply to the site.

The site is brownfield and organic contamination (PAH) has been identified in exceedance of the threshold values and Hydrock considers barrier pipe is required. However, confirmation should be sought from the water supply company at the earliest opportunity.

7.7.2 Other construction materials

Plastic pipes for drains and sewers are manufactured from unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) or polyethylene (PE). These materials may be affected by the presence of organic compounds in the soil.

In accordance with the British Plastics Federation Guidance (August, 2018), as the concentrations of PAH are above 100mg/kg, the pipework manufacturer should be consulted with regard the suitability of the pipework.

The implications for buried concrete are discussed in Section 6.9.

7.8 Findings of the generic contamination risk assessments

The potential sources, pathways and receptors identified in the desk study (Section 2) have been investigated (Sections 0 and 0) and assessed (Sections 7.2 to 7.7). A Source-Pathway-Receptor linkage assessment has been undertaken and is presented in Appendix J (Table J.2).

A summary of the Source-Pathway-Receptor (SPR) contaminant linkages for which the risks may be unacceptable are discussed in

Table 7.6. The table may be updated on completion of the Controlled Water risk assessment.

Table 7.6: Residual risks following risk evaluation

Contaminant Linkage				Comments
Pollutant Linkage	Sources	Pathways	Receptors	
PL 1.	PAH contamination in the Made Ground.	Ingestion, inhalation or direct contact.	Human health.	Significant exceedance of the GAC in TP313 and exceedance of the GAC in WS305, TP309 and TP310. Mitigation required.
PL 2.	ACM within the existing hangars which are to be retained.	Inhalation of fugitive dust.	Human health.	Hangars are constructed with ACM. Mitigation measures required subject to further assessment.

Contaminant Linkage				Comments
Pollutant Linkage	Sources	Pathways	Receptors	
PL 3.	ACM fragments within shallow soil around hangars.	Inhalation of fugitive dust.	Human health.	ACM fragments fallen off hangars to shallow soils. Mitigation measures required.
PL 4.	Radon.	Migration through soils indoor air.	End users of new buildings.	The site is within an area where 1-3% of homes are above the radon action level and therefore basic radon protection measures are recommended as good practice but not strictly required.

7.9 Mitigation measures

The outline remediation strategy presented below is provided for guidance only, and does not represent a 'Remediation Options Appraisal', or a 'Remediation Strategy', prepared in accordance with LCRM (2021).

As shown in

Table 7.6 (and subject to regulatory agreement), Hydrock consider the following further works and mitigation is required to ensure the site is suitable for use for the proposed end use. The mitigation measures include:

- PL1: Either excavation and replacement of the PAH hotspot around TP313 and WS305 or placement of an engineered cover system. This may be incorporated into the sports pitch requirements and an Options Appraisal is required to determine the most appropriate solution.
- PL1: Import and placement of appropriate soils for the sports pitch and encapsulating PAH hotspots at TP309 and TP310.
- PL2: Either:
  - » Consultation with an asbestos in buildings specialist to assess the risk from the current ACM present within the retained Hanger 2004;
  - » Encapsulation by coating or cladding the existing asbestos; or
  - » Removal and replacement with non-asbestos containing materials.
- PL3: Shallow scrape (circa 200mm) of soils around all hangars within the site boundary to 3m from the hangar and hand-pick all visible asbestos. Either further testing and confirmation of no asbestos fibres within the soils or off-site disposal.
- PL4: Installation of basic radon protection is not essential under current guidance but is recommended as good practice.

The methodology for the remediation should be set out in a Remediation Strategy and Verification Plan (which will include the 'Implementation Plan', the 'Verification Plan' and the 'Long Term Monitoring and Maintenance Plan'), which will need to be submitted to the warranty provider and the regulatory authorities for approval.

In addition, the production of a Materials Management Plan and its approval by a Qualified Person may be required if reuse of suitable material if proposed at the site in accordance with waste regulations.

Verification reports by a competent independent geo-environmental specialist will be required following completion of any remedial works.

8. WASTE AND MATERIALS MANAGEMENT

8.1 Introduction

The Waste Framework Directive (WFD) (2009/98/EC) defines waste as '*any substance which the holder discards or intends to discard.*' In a geo-environmental context, the waste is most often 'soil' and the two main scenarios are offsite disposal of the material as a waste and/or reuse of the material on site. For cost and sustainability reasons, reuse is preferred to off-site disposal.

Section 8.2 below describes the key issues relating to off-site disposal to landfill and Section 8.3 considers requirements relating to reuse of soils and materials management.

8.2 Waste disposal

8.2.1 Principles

Based on the WFD, any material excavated on site may be classified as waste and it is the responsibility of the producer of a material to determine whether or not it is waste. Where off-site disposal is undertaken, the following guidance applies.

Classification is a staged process:

- A hazardous waste is defined under the WFD as one which possesses one or more of fifteen defined hazardous properties. If a waste is not defined as hazardous, then it is non-hazardous.
- Where the materials are soil, it is then be assigned using the 'List of Waste Codes', which classifies the material as either:
    - hazardous (17-05-03), which is defined as "*soil and stones containing hazardous substances*"; or
    - non-hazardous (17-05-04), which is defined as "*soil and stones other than those mentioned in 17-05-03*".
    - Hydrock utilise the proprietary assessment tool, HazWasteOnline™ to undertake this assessment.
- Waste Acceptance Criteria (WAC) testing is then undertaken if required, and are only applicable following classification of the waste, and only where the waste is destined for disposal to landfill. The WAC are both qualitative and quantitative. The WAC and the associated laboratory analyses (leaching tests) are not suitable for use in the determination of whether a waste is hazardous or non-hazardous.

It should be noted that some non-hazardous wastes may be suitable for disposal at an inert landfill as non-hazardous waste, subject to meeting the appropriate waste acceptance criteria.

It should be noted that classification must be undertaken on the waste produced, by the waste producer. Necessary sampling frequency to adequately characterise a soil population is defined within WM3.

Further discussion with regards to the characterisation process for different scenarios and waste types is provided below.

Topsoil and Peat

Topsoil and peat are biodegradable, therefore if they are surplus to requirements and cannot be re-used in accordance with a Materials Management Plan, they cannot be classified as inert. As such, topsoil and peat need to be classified by a staged assessment and sampling process and would either be classified as hazardous or non-hazardous, depending upon the results of the assessment.

Greenfield Sites

Waste from completely greenfield sites may be accepted at a landfill as inert waste if it meets the requirements of paragraph 10 (wastes acceptable without testing at landfills for inert waste) of the Landfill (England and Wales) (Amendment) Regulations (2005) ('the Regulations') can be met. Paragraph 10 of the Regulations states, "*soils may be able to be classified as inert waste without testing, if:*

- *they are single stream waste of a single waste type;*
- *there is no suspicion of contamination and they do not contain other material or substances such as metals, asbestos, plastics, chemicals, etc….."*

As such, where the site is greenfield and the waste producer is confident about the quality of a soil (i.e. naturally occurring and uncontaminated), further sampling and laboratory testing is not necessary for the Basic Characterisation and this can be undertaken on qualitative Waste Acceptance Criteria testing.

In this instance the waste producer can characterise the waste based on visual assessment and written description of the waste in addition to supporting evidence such as a desk study assessment of the greenfield status. However, it should be noted this characterisation is subject to agreement by the landfill operator who may require testing to be undertaken to confirm classification.

Contaminated or potentially contaminated sites

If the site is brownfield, contaminated or potentially contaminated, the waste must undergo an initial waste classification exercise using background information on the source and origin of the waste and assessment of chemical test data in accordance with Environment Agency Technical Guidance WM3.

If following the initial waste classification exercise, the soils are acceptable for disposal to a non-hazardous landfill, further qualitative Waste Acceptance Criteria (WAC) testing is not required.

However, if soils are potentially able to be disposed to an inert landfill as non-hazardous waste, or require testing to determine if they can be disposed of to a stable non-reactive hazardous or hazardous class of landfill, the next stage of assessment is to undertake qualitative WAC testing. This will determine the Basic Characterisation and the landfill category at which the soils can be accepted.

Hazardous material must be subjected to WAC testing to determine whether it requires treatment before it can be accepted at the hazardous landfill, while non-hazardous material can be tested to determine whether it may be suitable for placement in an inert landfill.

8.2.2 HazWasteOnline™ assessment

As the site is brownfield, in order to inform the preliminary waste characterisation process, Hydrock has undertaken an exercise using the proprietary web-based tool HazWasteOnline™. The output of the HazWasteOnline™ assessment is provided in Appendix H and a summary of the preliminary waste classification is provided below in Section 8.2.4.

8.2.3 WAC Testing

The site is brownfield. WAC testing has not been undertaken to date but will be required on the excavated soils that are to be disposed of, to assist with waste disposal options prior to disposal. A summary of the preliminary waste disposal options is provided below in Section 8.2.4.

8.2.4 Preliminary waste disposal options

The site is brownfield and based on the site history and the HazWasteOnline™ assessment, if suitable segregation of different types of waste is put in place, for soils to be disposed of, it is considered that:

- The natural uncontaminated subsoils are likely to be classified as 'inert' waste and subject to WAC testing should be able to be disposed of at an inert landfill.
- The 'General' Made Ground is likely to be classified as non-hazardous waste.
- The PAH hotspot at WS305 is preliminary classified as hazardous waste and will require WAC testing to determine which landfill it will be accepted at.
- Any soils containing > 0.1% asbestos or visible asbestos containing materials would be considered as hazardous.

Any soils containing > 0.1% asbestos or visible asbestos containing materials would be considered as hazardous.

8.2.5 General waste comments

It should be noted that:

- It is the waste producer's responsibility to segregate the waste at source and waste producers must not mix waste materials/streams or dilute hazardous components, for example by mixing with less or non-hazardous waste on site to meet WAC limit values.
- The above preliminary assessment has been made on the basis of the soils tested as part of the ground investigation, using the HazWasteOnline™ assessment. However, the formal classification of waste can only be undertaken on the material to be disposed of, and by the waste producer and the receiving landfill as license conditions vary from landfill to landfill.
- Basic Characterisation should be undertaken in accordance with Environment Agency guidance by the waste producer. Hydrock can assist if required and this report will assist the characterisation. However, Basic Characterisation does not form part of the current commission and would require further assessment and testing on the wastes actually to be disposed.
- Once the waste producer has undertaken an initial Basic Characterisation on each waste stream, they can manage the soils as part of the on-site processing programme (for example, stockpiling, treatment, screening and separation). The waste producer and landfill operator will then need to agree the suite of compliance testing for regularly generated waste to demonstrate compliance with the initial Basic Characterisation prior to disposal.

- At the time of disposal, additional testing on the excavated soils to be disposed of, will likely be necessary.
- Non-hazardous and hazardous soils require pre-treatment (separation, sorting and screening) prior to disposal.
- The costs for disposal of non-hazardous and hazardous soils are significant compared to disposal of inert material.
- In addition to disposal costs, landfill tax will be applicable. Non-hazardous and hazardous waste will generally be subject to the Standard Rate Landfill Tax. Inert or inactive waste will generally be subject to the Lower Rate Landfill Tax. The landfill tax value changes each April and can be found at https://www.gov.uk/government/publications/rates-and-allowances-landfill-tax/landfill-tax-rates-from-1-april-2013.
- Before a waste producer can move waste to a landfill site for disposal, they need to check the landfill site has the appropriate permit and must have completed the following[3]:
  - » Duty of care transfer note / Hazardous Waste consignment note, including comment as to if pre-treatment has been undertaken; and
  - » Basic Characterisation of the waste, to include: description of the waste; waste code (using list of wastes); composition of the waste (by testing, if necessary) and; WAC testing (if required).

8.3 Materials management

8.3.1 Introduction

Soils that are to remain on site, should be managed and reused in accordance with a Materials Management Plan (MMP), prepared in accordance with 'The Definition of Waste: Development Industry Code of Practice', Version 2 (CL:AIRE), known as the DoWCoP. Where all aspects of the DoWCoP are followed the soils are considered not to be waste, because they were never discarded in the first place.

Version 2 of the DoWCoP clearly sets out the principles and an outline of the requirements of an MMP. The following compliance criteria must be seen to apply to the MMP for the site:

- Factor 1: Protection of human health and protection of the environment.
- Factor 2: Suitability for use, without further treatment.
- Factor 3: Certainty of Use.
- Factor 4: Fixed Quantity of Material.

The reuse of soils at sites should be considered during the planning and development design process so that compliance with issues such as fixed quantity and certainty of use clearly relate to agreed site levels. Suitability of Use is normally evident from the remediation strategy or the design statement, which form an integral part of an MMP. However, some soils may need to be tested post-excavation to prove they are suitable for use.

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[3] ENVIRONMENT AGENCY. November 2010. Guidance on waste acceptance procedures and criteria. Waste acceptance at landfills. The Environment Agency.

Once the MMP is finalised, it must be declared by a Qualified Person (QP). The Declaration is an on-line submission as part of which the QP is required to confirm that the declaration is being made before the relevant works have commenced (i.e. it is not a retrospective application).

Once all material movements have been completed in accordance with the MMP a verification report must be produced, kept for 2 years and provided to the EA on request.

It should be noted that failure to comply with the requirements of the DoWCoP when re-using materials has potentially significant consequences for the waste holder. The risk is that the reused materials are still regarded as a waste that has been illegally deposited. From 1 April 2018, the scope of Landfill Tax has been extended to sites operating without the appropriate environmental disposal permit, and operators of illegal waste sites will now be liable for Landfill Tax. Further information is available at: https://www.gov.uk/government/publications/landfill-tax-disposals-not-made-at-landfill-sites/landfill-tax-disposals-not-made-at-landfill-sites.

If soils are excavated and reused on sites (or moved to another site) without a MMP, exemption, or appropriate Permit in place, anyone who knowingly facilitates the disposal may be '*jointly and severally liable'* to any assessment of tax, fines or prosecution.

8.3.2 Materials management scenarios

The materials management scenarios present on site are discussed below.

It should be noted that more than one scenario may apply, dependent upon where the soils are proposed for reuse.

8.3.2.1 Made Ground and other contaminated soils

On sites where Made Ground or contaminated soils are present, any soils excavated will be a waste as soon as they are excavated (even if they are clean, naturally occurring materials), unless they are subject to reuse in accordance with the DoWCoP. As such, for any brownfield site or a site where Made Ground is present and soils are being moved and reused, the materials could be deemed a waste, subject to either:

- a Materials Management Plan (MMP), to prevent the material being classified as a waste following reuse; or
- an exemption (for limited volumes); or
- an environmental permit, dependant on its status.

Other commonly occurring circumstances are:

If Made Ground is being moved between sites, it must be ensured that appropriate permits are in place to ensure the soils are not classified as a waste. Made Ground cannot be moved between sites under DoWCoP alone and would require relevant permits as part of the MMP documentation for the Hub site the material is being treated at.

8.3.2.2 Geotechnical improvement requirements

Construction activities carried out on uncontaminated soils solely for the purpose of improving geotechnical properties e.g. lime / cement modification, are not generally regarded as waste treatment operations and do not require a permit.

However, should processing be needed (such as screening, treatment or improvement), that would constitute a waste activity and require a mobile treatment permit. This may be as simple as removing oversize material with an excavator bucket, to using a riddle bucket to remove hardcore to full mechanical screening.

9. UNCERTAINTIES AND LIMITATIONS

9.1 Site-specific comments

The Ground Investigation was limited as a large area near the centre of the site (note the gap on the exploratory hole plan) was not accessible due to the presence of parked cars. In addition, trial pits were not possible in any hardstanding due to the continued use of the site for car storage.

The gas monitoring undertaken to date and included in this report is insufficient to fully characterise the site in accordance with CIRIA Report C665. Monitoring is ongoing and the conclusions of this report will be updated following completion of the scheduled monitoring.

Groundwater sampling is planned but has not yet been undertaken and therefore a controlled waters risk assessment is not possible at this stage.

9.2 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of Dorchester Living (the Client), by purchase order dated 15th July 2021 under the terms of appointment for Hydrock, for the sole and specific use of the Client and parties commissioned by them to undertake work where reliance is placed on this report. Any third parties who use the information contained herein do so at their own risk. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared or for use of the report by any parties not defined in Hydrock’s appointment.

This report details the findings of work carried out in August 2021. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed.

Hydrock has used reasonable skill, care and diligence in the design of the investigation of the site and in its interpretation of the information obtained. The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths of trial pits and boreholes at the time of the investigation. At intermediate locations, conditions can only be inferred.

Groundwater data are only representative of the dates on which they were obtained and both levels and quality may vary.

Unless otherwise stated, the recommendations in this report assume that ground levels will remain as existing. If there is to be any re-profiling (e.g. to create development platforms or for flood alleviation) then the recommendations may not apply.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock cannot guarantee its accuracy or completeness.

Where the existing report(s) prepared by others have been provided by the Client, it is assumed that these have been either commissioned by the Client, or can be assigned to the Client, and can be relied upon by Hydrock. Should this not be the case Hydrock should be informed immediately as additional work may be required. Hydrock is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or later activities.

The work has been carried out in general accordance with recognised best practice. Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance. Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

The chemical analyses reported were scheduled for the purposes of risk assessment with respect to human health, plant life and controlled waters as discussed in the report. Whilst the results may be useful in applying the Hazardous Waste Assessment Methodology given in Environment Agency Technical Guidance WM3, they are not primarily intended for that purpose and additional analysis will be required at the time of disposal to fully classify waste. Discussion and comment with regards to waste classification are preliminary and do not form the requirements of 'Basic Characterisation' as required.

Assessment and testing for the presence of coal tar has only been completed at the locations of exploratory holes undertaken for risk assessment purposes. This investigation is not designed to provide a definitive assessment of the risk from coal tar, nor the waste classification for bituminous bound pavement arisings at the site.

Unless otherwise stated, at the time of this investigation the future routes of water supply pipes had not been established. This investigation and sampling strategy may not be fully compliant with UKWIR recommendations. Consequently, a targeted investigation and specific sampling and chemical testing may be required at a later date once the routes of the supply pipes are known. In addition, it is recommended that the relevant water supply company be contacted at an early stage to confirm its requirements for assessment, which may not necessarily be the same as those recommended by UKWIR.

Whilst the preliminary risk assessment process has identified potential risks to construction workers, consideration of occupational health and safety issues is beyond the scope of this report.

The non-specialist UXO screening has been undertaken for the purposes of ground investigation only (i.e. low risk activity in accordance with CIRIA Report C681). Further assessment should be undertaken with regards to other higher risk activities e.g. construction.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential constraints and specialist advice should be sought.

Any site boundary line depicted on plans does not imply legal ownership of land.

10. RECOMMENDATIONS FOR FURTHER WORK

Following the ground investigation works undertaken to date, the following further works will be required:

- discussion and agreement with utility providers regarding the materials suitable for pipework;
- discussions with regulatory bodies and the warranty provider regarding the conclusions of this report;
- assessment of tree influence on foundations and design of foundations;
- production of a Remediation Strategy and Verification Plan (and agreement with the regulatory bodies and the warranty provider);
- production of a Materials Management Plan relating to reuse of soils at the site;
- remediation and mitigation works; and
- verification of the earthworks, remediation and mitigation works.
- Verification of the implementation of the MMP.

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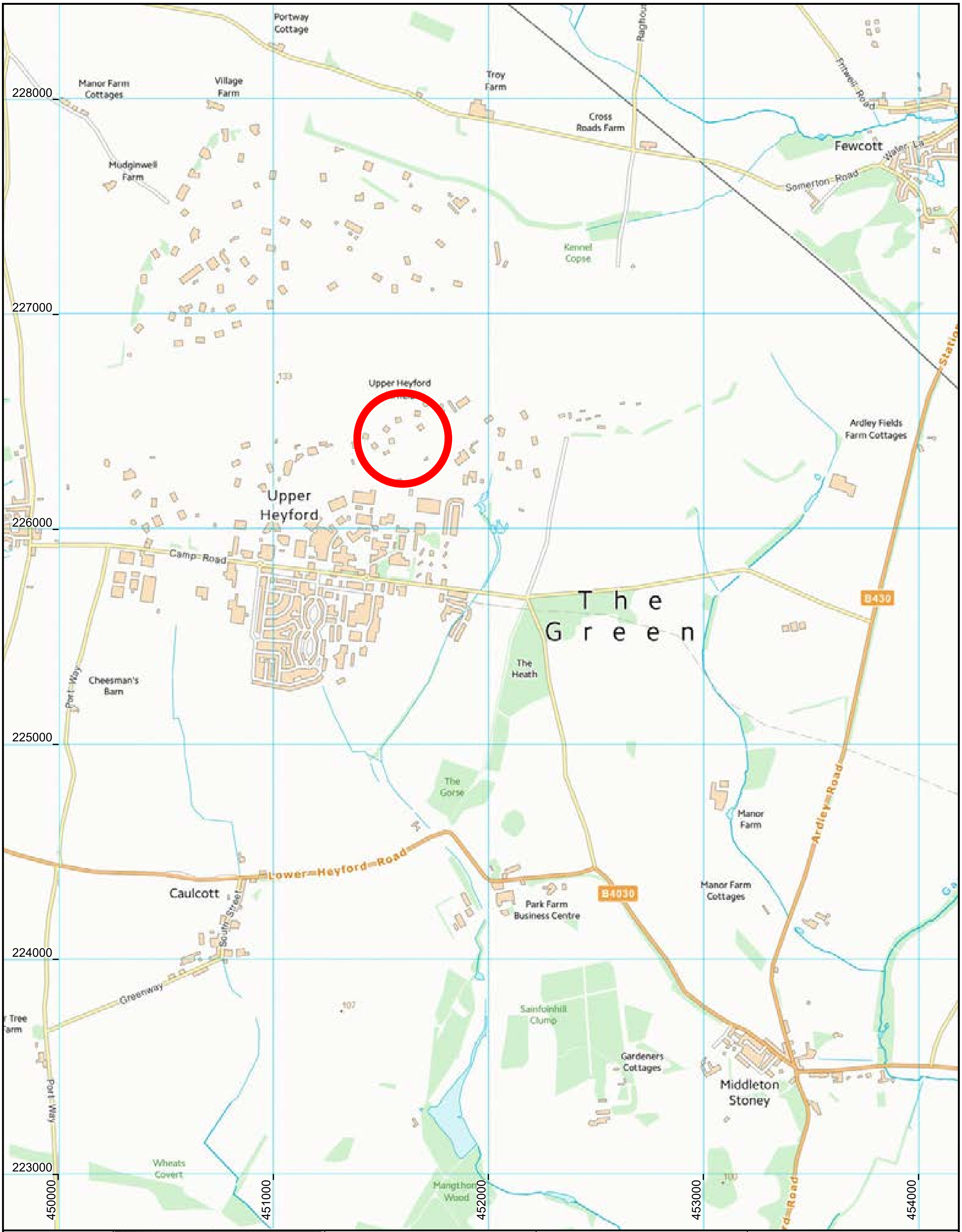
Appendix A Drawings



OS NORTH

Site Ref: SP52

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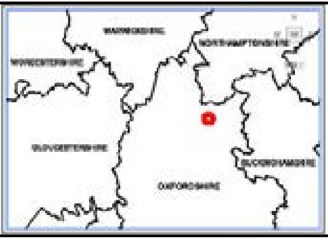
Metres



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Hydrock
Over Court Barns
Over Lane
Almondsbury, Bristol BS32 4DF
TEL: 01454 619 533
FAX: 01454 614 125
E-Mail: bristol@hydrock.com
or visit www.hydrock.com

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PRIMARY SCHOOL, HEYFORD PARK

TITLE
SITE LOCATION PLAN

HYDROCK PROJECT NO.
C-04583-C

SCALE @ A4
1:25,000

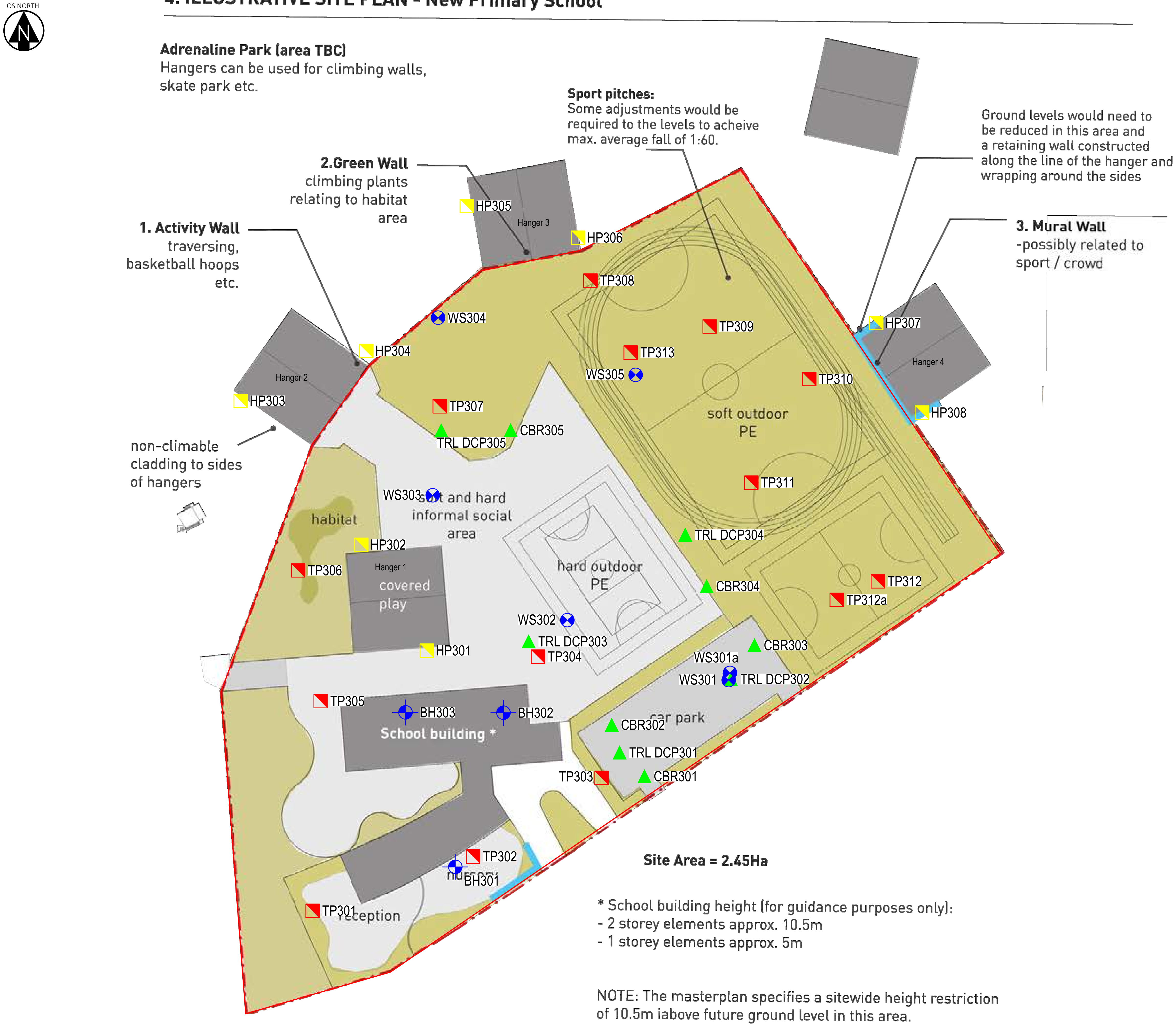
PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
04583-HYD-XX-XX-DR-GE-1000

REVISION
P1

4. ILLUSTRATIVE SITE PLAN - New Primary School



Adrenaline Park (area TBC)
Hangers can be used for climbing walls, skate park etc.

Sport pitches:
Some adjustments would be required to the levels to acheive max. average fall of 1:60.

Ground levels would need to be reduced in this area and a retaining wall constructed along the line of the hanger and wrapping around the sides

2.Green Wall
climbing plants relating to habitat area

1. Activity Wall
traversing, basketball hoops etc.

3. Mural Wall
-possibly related to sport / crowd

non-climable cladding to sides of hangers

Site Area = 2.45Ha

* School building height (for guidance purposes only):
- 2 storey elements approx. 10.5m
- 1 storey elements approx. 5m

NOTE: The masterplan specifies a sitewide height restriction of 10.5m iabove future ground level in this area.

KEY

	🟥	Approx. Site Boundary
WS	●	Window Sample Borehole
BH	⊕	Rotary Borehole
TP	🟥	Trial Pit
HP	🟨	Hand Dug Trial Pit
TRL DCP or CBR	▲	TRL DCP or CBR Test

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information:
Illustrative site layout.

P01	FIRST ISSUE					
	EP	12/08/21	DG	12/08/21	DG	12/08/21
REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock
Over Court Barns
Over Lane
Almondsbury, Bristol BS32 4DF
TEL: 01454 619 533
FAX: 01454 614 125
E-Mail: bristol@hydrock.com
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CLIENT
DORCHESTER LIVING

PROJECT
PRIMARY SCHOOL, HEYFORD PARK

TITLE
EXPLORATORY HOLE LOCATION PLAN

HYDROCK PROJECT NO.
C-04583-C

SCALE @ A3
1:1000

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
04583-HYD-XX-XX-DR-GE-1001

REVISION
P01

4. ILLUSTRATIVE SITE PLAN - New Primary School

OS NORTH

Adrenaline Park (area TBC)
Hangers can be used for climbing walls, skate park etc.

Sport pitches:
Some adjustments would be required to the levels to acheive max. average fall of 1:60.

2.Green Wall
climbing plants relating to habitat area

1. Activity Wall
traversing, basketball hoops etc.

Ground levels would need to be reduced in this area and a retaining wall constructed along the line of the hanger and wrapping around the sides

3. Mural Wall
-possibly related to sport / crowd

non-climable cladding to sides of hangers

Site Area = 2.45Ha

* School building height (for guidance purposes only):
- 2 storey elements approx. 10.5m
- 1 storey elements approx. 5m

NOTE: The masterplan specifies a sitewide height restriction of 10.5m iabove future ground level in this area.

KEY

Approx. Site Boundary

Photo location and reference

NOTES

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3. This drawing has been based on the following drawings and information: Illustrative site layout.

REV.	REVISION NOTES/COMMENTS					
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P01	FIRST ISSUE					
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Hydrock
Over Court Barns
Over Lane
Almondsbury, Bristol BS32 4DF
TEL: 01454 619 533
FAX: 01454 614 125
E-Mail: bristol@hydrock.com
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CLIENT
DORCHESTER LIVING

PROJECT
PRIMARY SCHOOL, HEYFORD PARK

TITLE
SITE WALKOVER PLAN

HYDROCK PROJECT NO.
C-04583-C

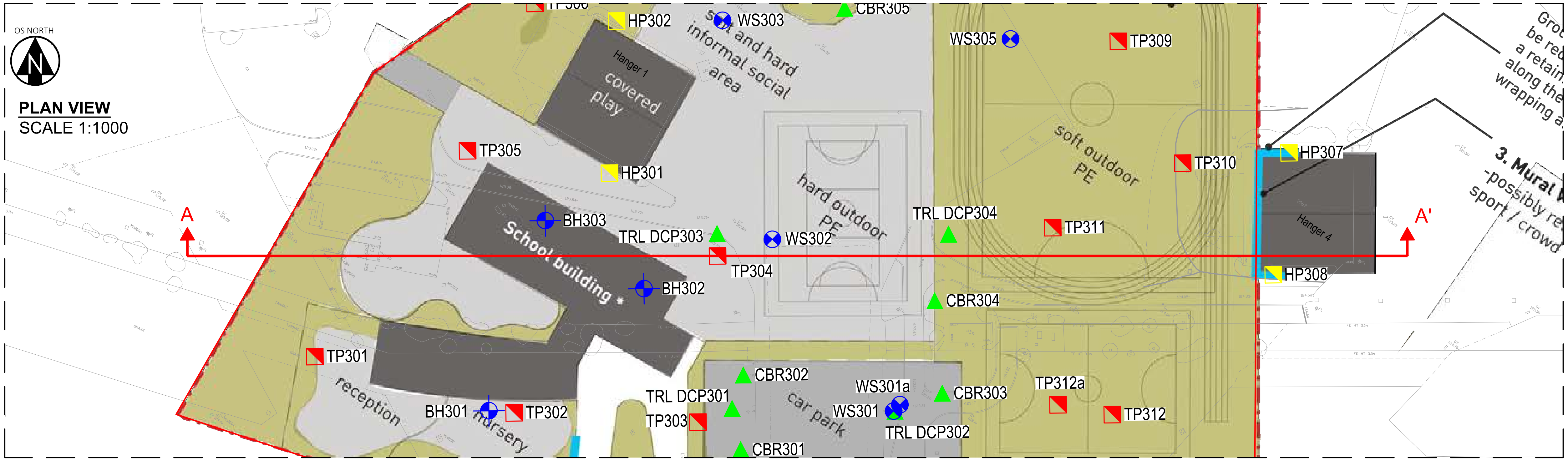
SCALE @ A3
1:1000

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
04583-HYD-XX-XX-DR-GE-1002

REVISION
P01



SECTION A - A'

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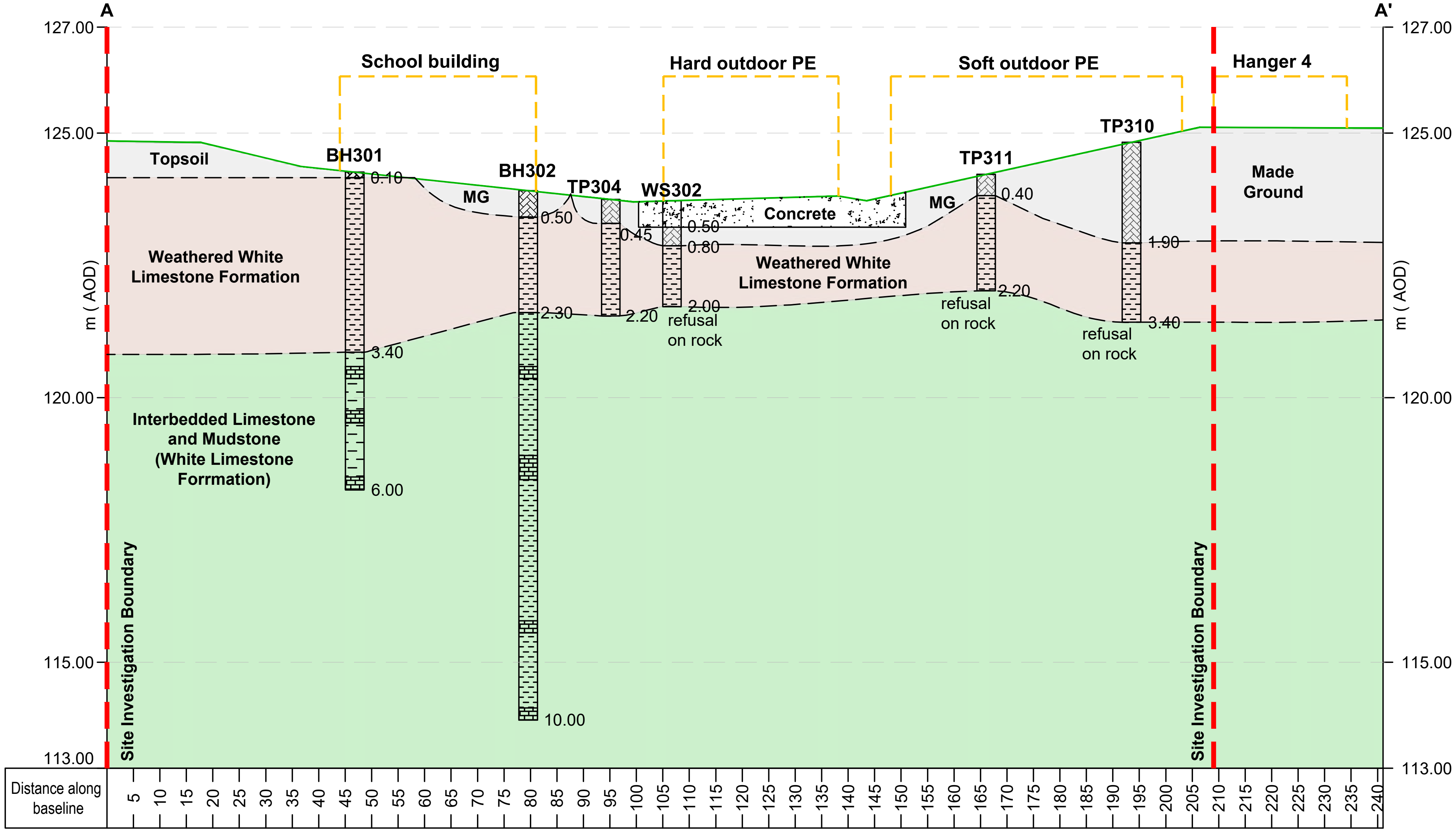
Scale Vertical 1:100



KEY

Plan View

	Approx. Site Boundary
WS	Window Sample Borehole
BH	Borehole
TP	Trial Pit
HP	Hand Dug Trial Pit
TRL DCP or CBR	TRL DCP or CBR Test
	Line of Cross Section

Section A-A'

Existing ground profile
Conjectural geological boundary
Site Investigation Boundary
Topsoil
Made Ground
Weathered White Limestone Formation
White Limestone Formation

NOTES

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3. This drawing has been based on the following drawings and information:
Illustrative site layout.

P01	FIRST ISSUE					
	EP	18/08/21	SW	18/08/21	SW	18/08/21
REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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Over Court Barns
Over Lane
Almondsbury, Bristol BS32 4DF
TEL: 01454 619 533
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CLIENT

DORCHESTER LIVING

PROJECT

PRIMARY SCHOOL, HEYFORD PARK

TITLE

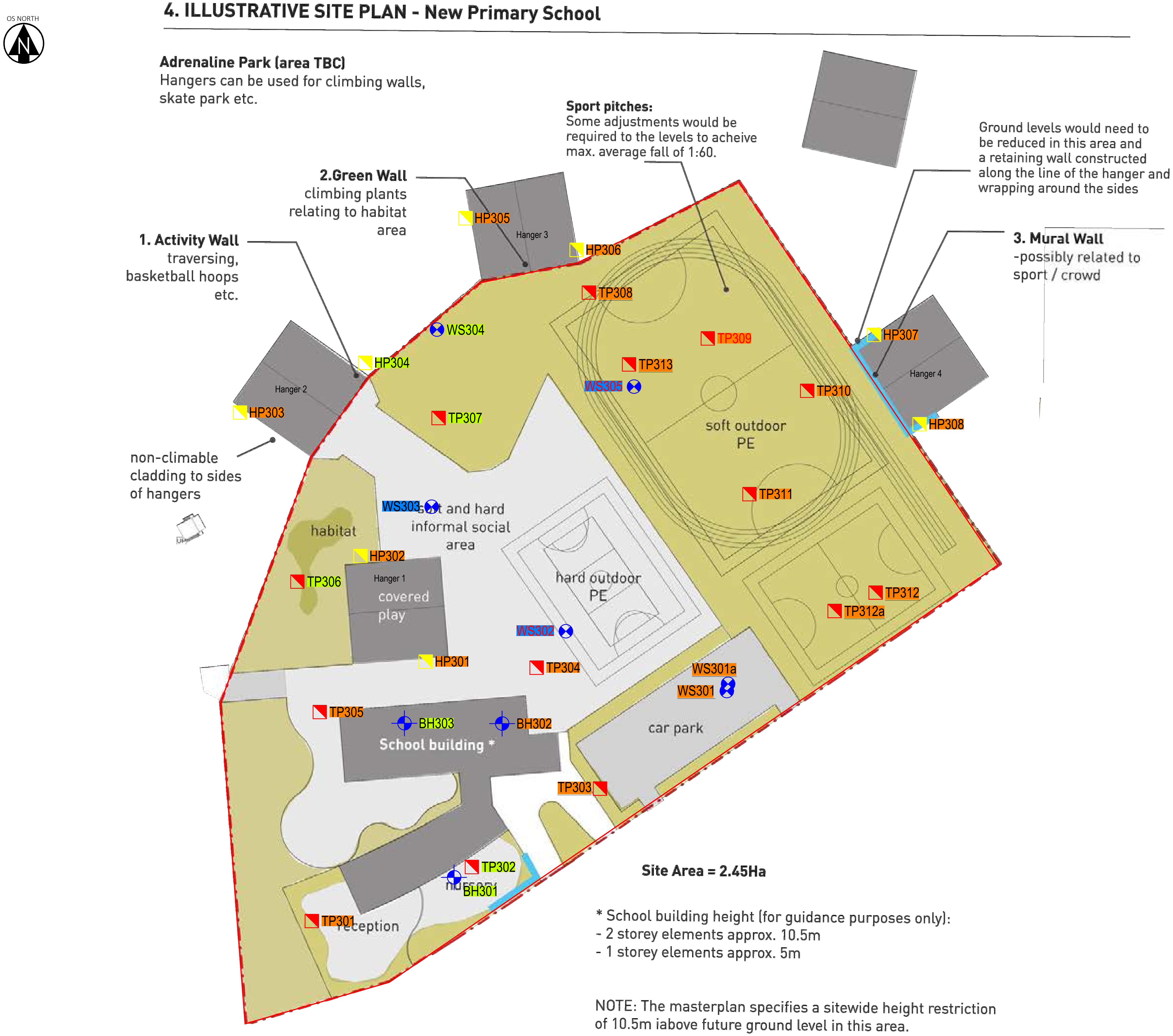
PLAN VIEW
& CROSS SECTION A-A'

HYDROCK PROJECT NO.	SCALE @ A3
C-04583-C	1:1000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
04583-HYD-XX-XX-DR-GE-1003	P01

4. ILLUSTRATIVE SITE PLAN - New Primary School



Site Area = 2.45Ha

* School building height (for guidance purposes only):
- 2 storey elements approx. 10.5m
- 1 storey elements approx. 5m

NOTE: The masterplan specifies a sitewide height restriction of 10.5m iabove future ground level in this area.

KEY

	▭	Approx. Site Boundary
WSXX	⊗	Concrete encountered at surface
BHXX	⊕	Topsoil encountered at surface
HPXX	◩	Made Ground encountered at surface
TPXX	◩	Refused on concrete or suspected concrete obstruction in upper 0.7m
TPXX	◩	Hydrocarbon odour noted

NOTES

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Illustrative site layout.

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P01	FIRST ISSUE					
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Over Court Barns
Over Lane
Almondsbury, Bristol BS32 4DF
TEL: 01454 619 533
FAX: 01454 614 125
E-Mail: bristol@hydrock.com
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CLIENT
DORCHESTER LIVING

PROJECT
PRIMARY SCHOOL, HEYFORD PARK

TITLE
SITE ZONATION PLAN

HYDROCK PROJECT NO.
C-04583-C

SCALE @ A3
1:1000

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
04583-HYD-XX-XX-DR-GE-1004

REVISION
P01

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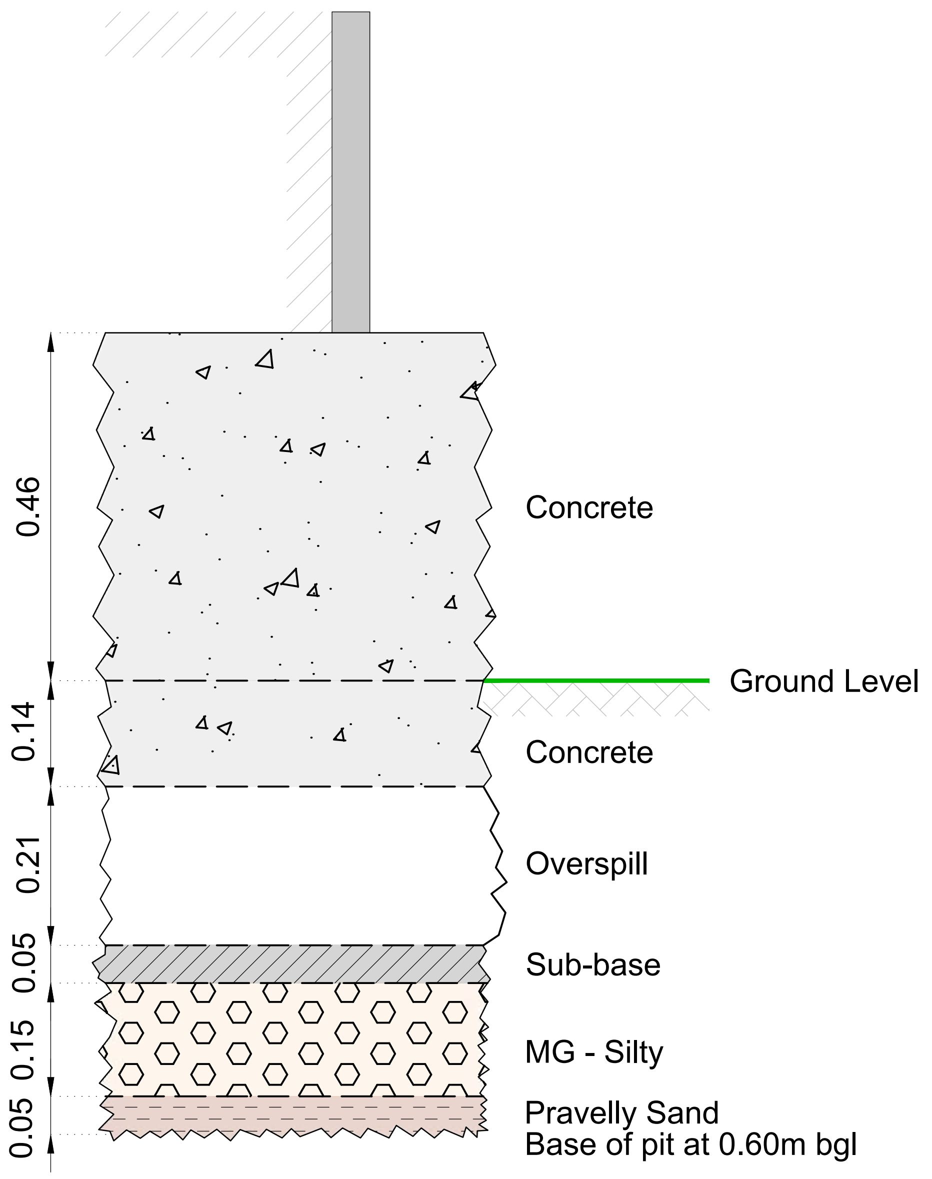

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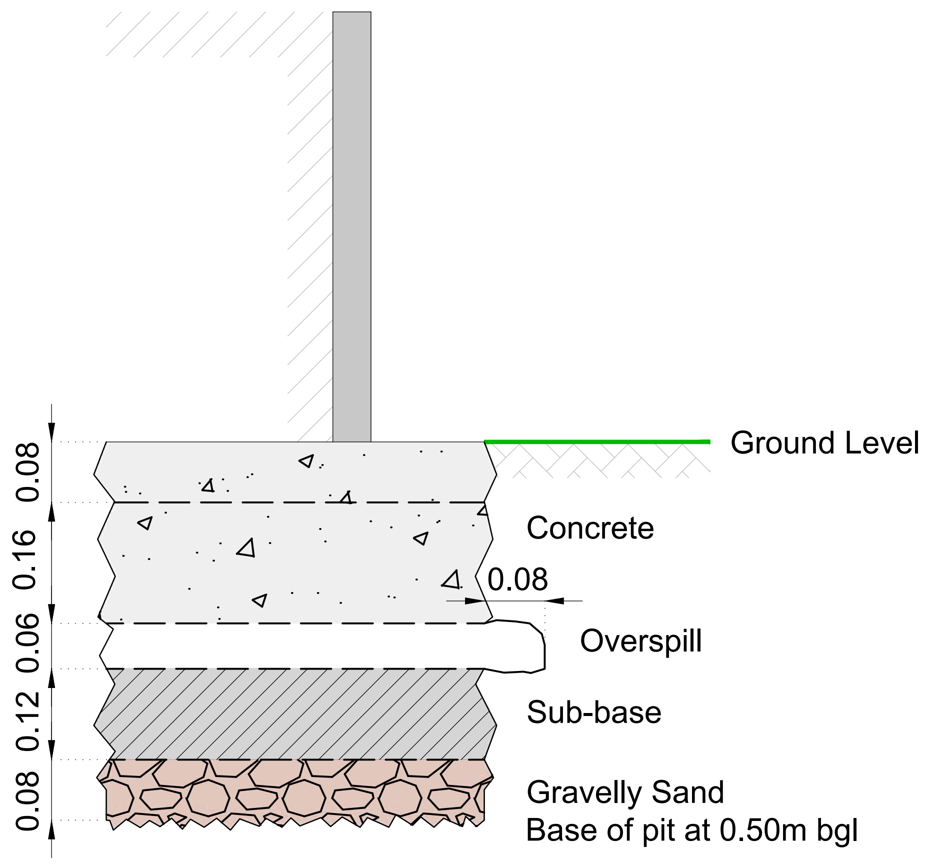

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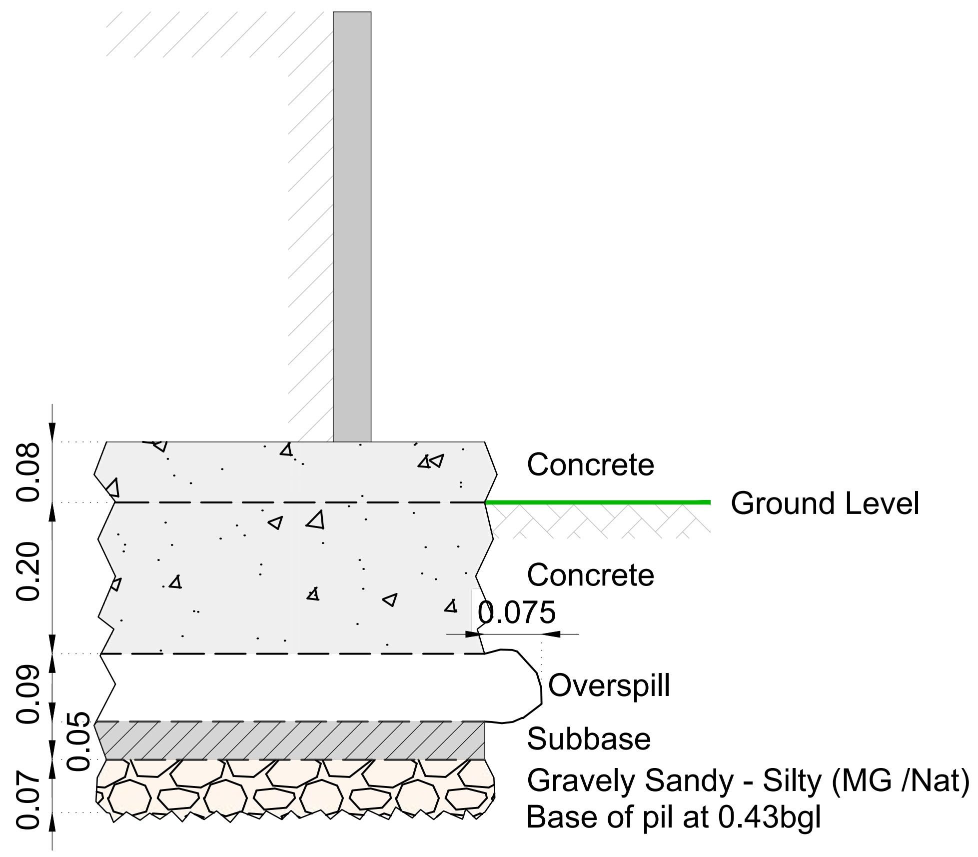

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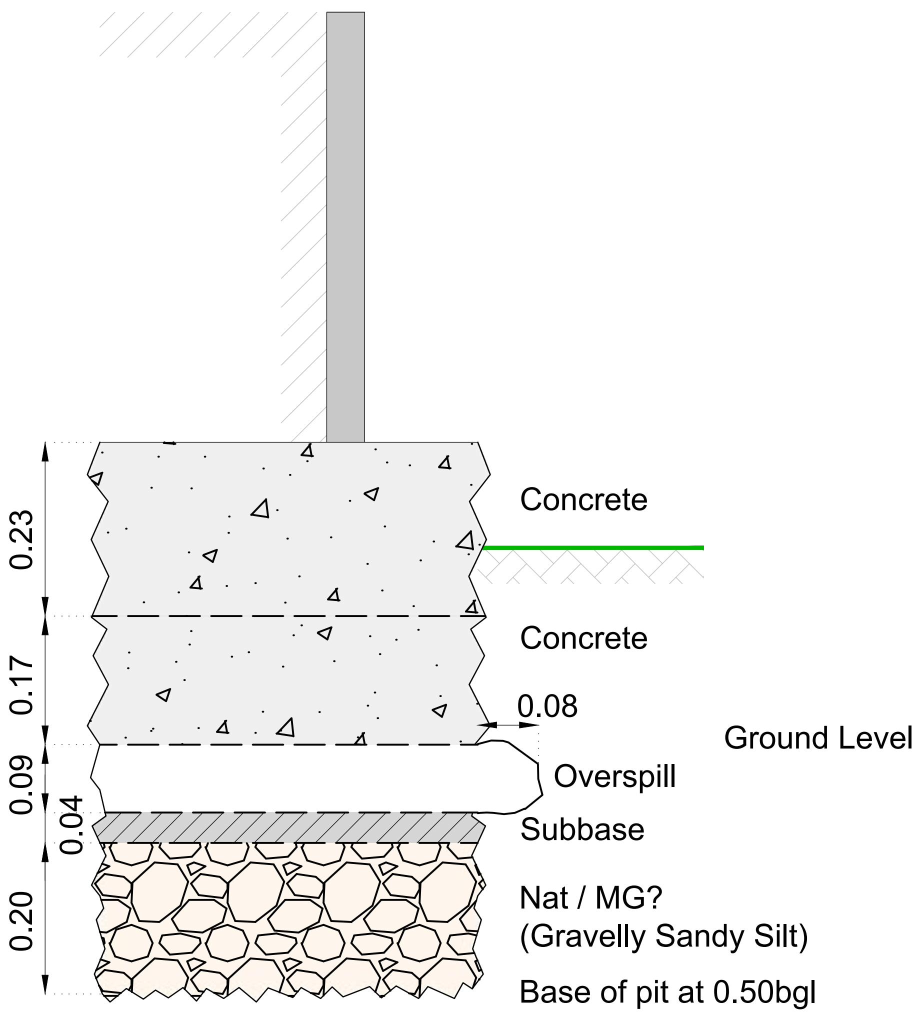

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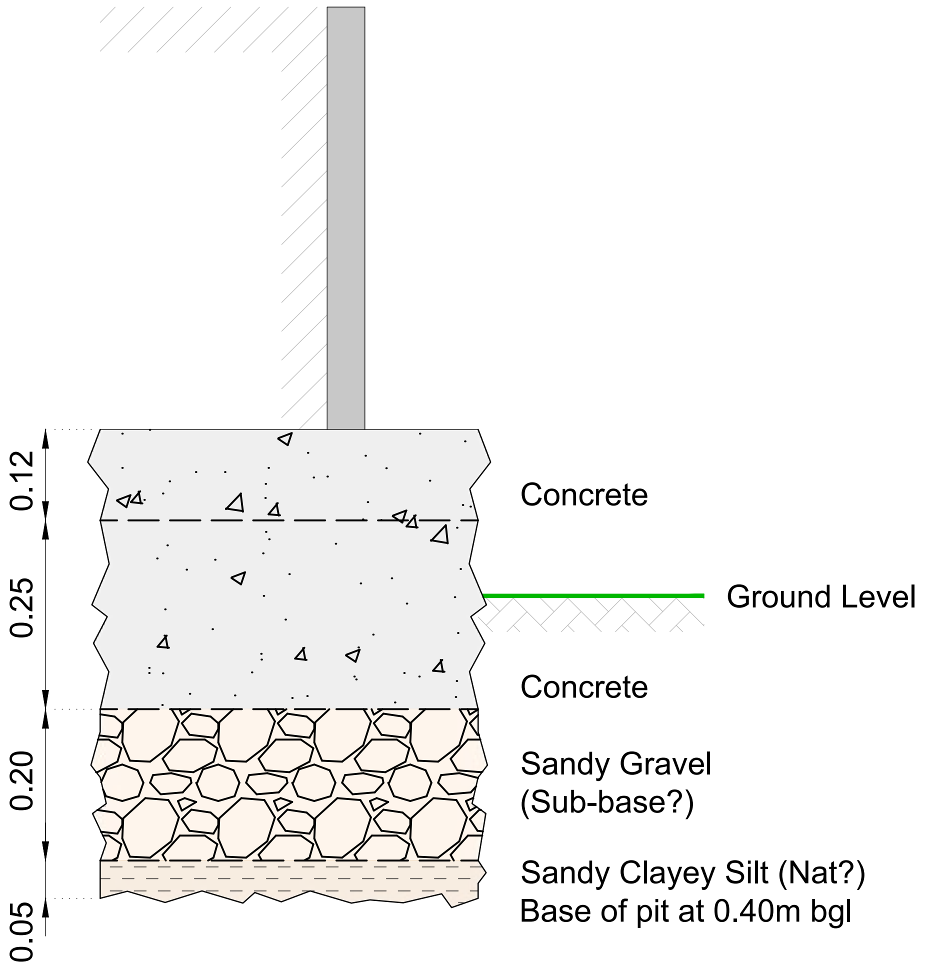

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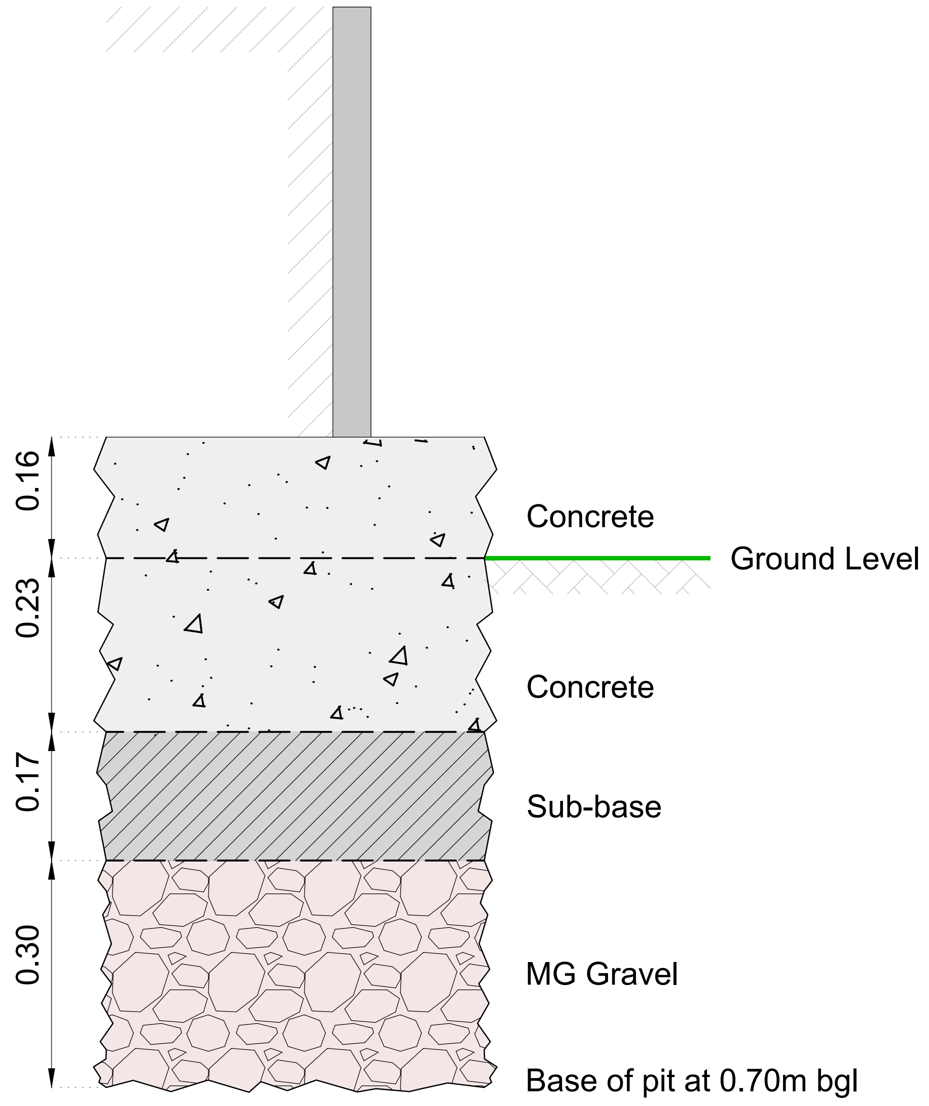

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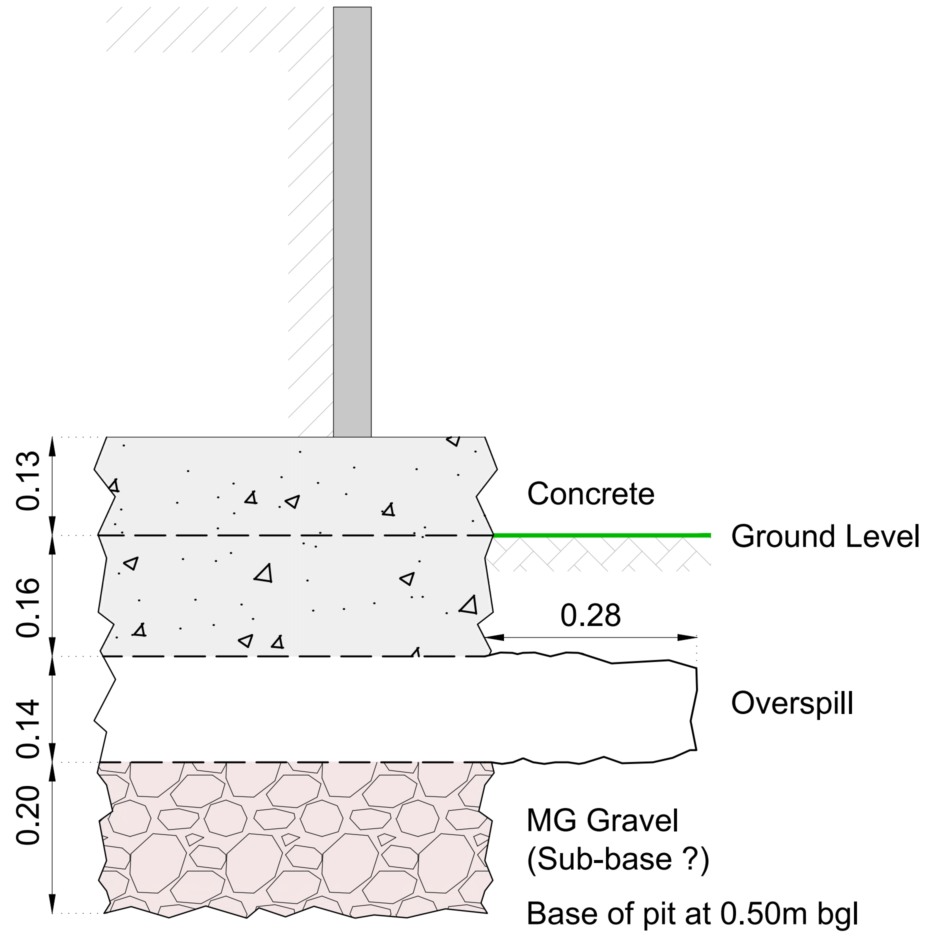

HP308
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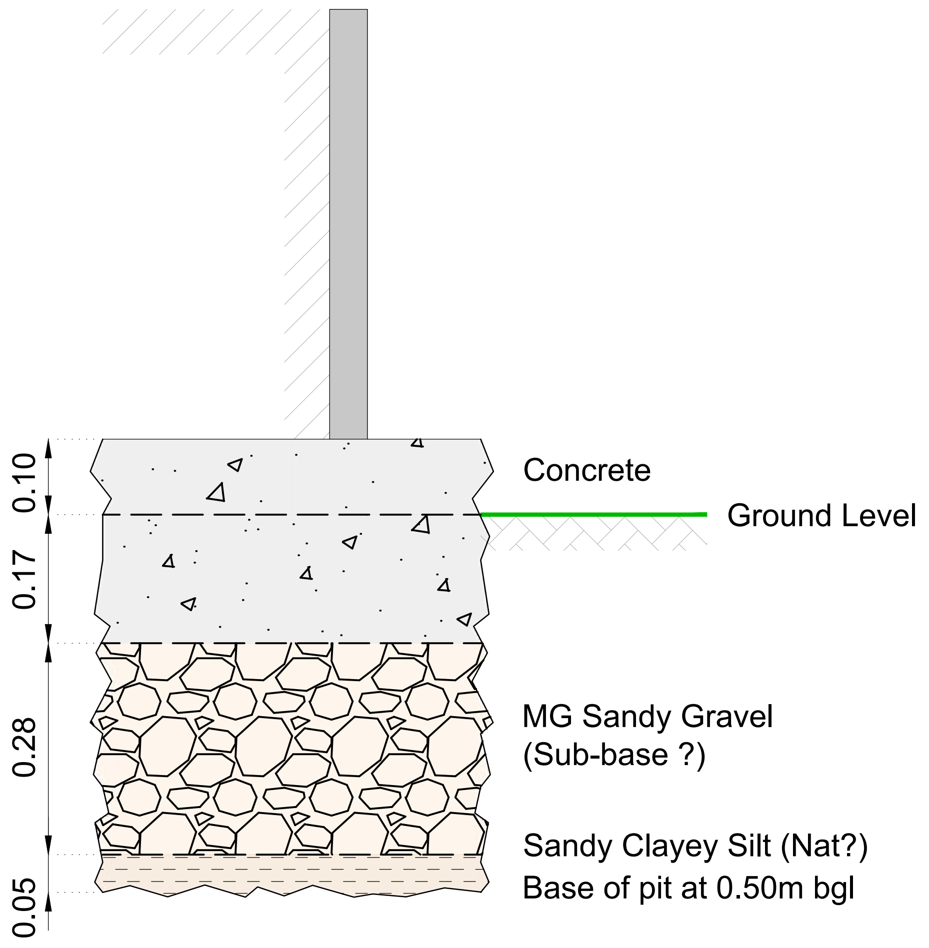

KEY

NOTES

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2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information: xxxxxxx

REV.	REVISION NOTES/COMMENTS					
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Hydrock

Over Court Barns
Over Lane
Almondsbury, Bristol BS32 4DF
TEL: 01454 619 533
FAX: 01454 614 125
E-Mail: bristol@hydrock.com
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CLIENT
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PROJECT
PRIMARY SCHOOL, HEYFORD PARK

TITLE
HAND PITS SKETCHES

HYDROCK PROJECT NO.
C-04583-C

SCALE @ A2
1:100

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
04583-HYD-XX-XX-DR-GE-1005

REVISION
P1

4. ILLUSTRATIVE SITE PLAN - New Primary School

Adrenaline Park (area TBC)
Hangers can be used for climbing walls, skate park etc.

Sport pitches:
Some adjustments would be required to the levels to acheive max. average fall of 1:60.

2.Green Wall
climbing plants relating to habitat area

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Site Area = 2.45Ha

* School building height (for guidance purposes only):
- 2 storey elements approx. 10.5m
- 1 storey elements approx. 5m

NOTE: The masterplan specifies a sitewide height restriction of 10.5m iabove future ground level in this area.

non-climable cladding

Weldmesh fencing 2.4m high to perimeter of school boundary

1. Activity Wall

non-climable zone

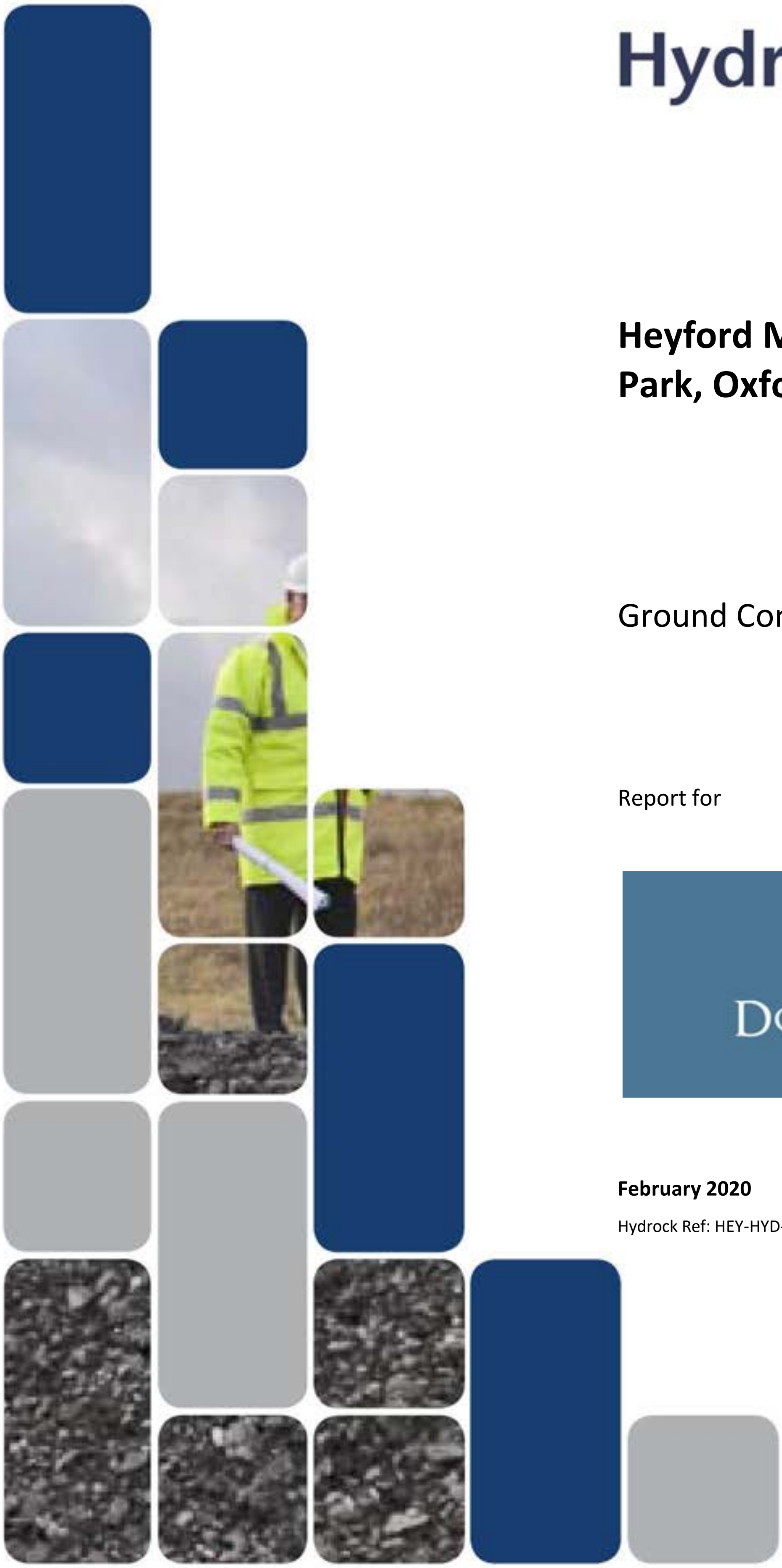
Opportunity for projection / back drop for performance?

2. Green Wall (infilled sold wall with non - climable vertical wire trellis system)

3. Mural Wall

Appendix B Hydrock Desk Study

Hydrock



Heyford Masterplan, Heyford Park, Oxfordshire

Ground Conditions Desk Study

Report for

DORCHESTER
LIVING

February 2020

Hydrock Ref: HEY-HYD-XX-DS-RP-GE-1000

DOCUMENT CONTROL SHEET

Issued by: Hydrock Consultants Limited
22 Long Acre
London
WC2E 9LY

Tel: 020 3846 8456

www.hydrock.com

Client: Dorchester Living

Project: Heyford Masterplan, Heyford Park

Title: Ground Conditions Desk Study Report

Status: Final

Date: February 2020

Document Production Record

Status:	**2**	**Name**	**Signature**
Revision:	**3**		
Prepared		**Rebecca Price** MSci FGS	
Checked		**Wayne Lewis** BSc FGS	
Approved		**Paul Shelley** BSc MSc IEMA	

Document Revision Record

Issue number	**Date**	**Revision details**
1	October 2017	Original issue.
2	March 2018	Update Parcel numbers.
3	February 2020	Updated Masterplan.

Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

Contents

Appendices

Executive Summary and Conceptual Site Model

SITE INFORMATION AND SETTING	
Report Purpose	Phase 1 desk study and preliminary risk assessment.
Client	Dorchester Living.
Site Name and Location	Heyford Masterplan, Heyford Park. The site is located in the former RAF Upper Heyford base, with parcels located either side of Camp Road, Heyford Park. The grid reference for the approximate centre of the site is 451390E, 226434N.
Proposed Development	The proposed development is to comprise residential and commercial buildings and commercial and recreational areas. An area in the south of the main site will be used for car processing.
PHASE 1 (DESK STUDY + WALK-OVER)	
Current Land Use and Description	The site is in the former RAF Upper Heyford airbase. The site is 455.4 ha and comprises many different parcels for development. The southernmost areas are agricultural fields. The southern/central areas are currently developed with warehouses, tanks and other buildings. The northern area is the air field. Several former aircraft shelters and bunkers surround the air field. Cars are stored on the hardstanding to the south of the air field.
Site History	The airbase was first constructed in 1915 for the RAF. It was leased to the United States Air Force from the 1950s to 1994. Due to the military use, the historical maps show limited information. A sewage works was constructed in the south of parcel 17 between the 1950s and the 1970s.
Unexploded Ordnance	In general accordance with CIRIA Report C681 (Stone et al 2009) non-specialist UXO screening exercise has been carried out for the site. Screening against the Zetica regional bomb risk map (Oxfordshire) indicates the site to be in an area where the bomb risk is low. As the site was in military use a full UXO desk top study is recommended.
Geology	The available geological sources indicate the site to be underlain by the White Limestone Formation. The Horsehay Sand Formation may outcrop at the western edge of the site. Head may be present in the far east of the site. Made Ground is anticipated due to the current and former development of the site.
Ground Stability	A fault is shown on the geological mapping approximately 35m east of the site, and it appears that this fault has caused the outcropping of the Rutland Formation (an older geology) in the White Limestone Formation 70m east of the site. However, this fault is not mapped on to the site and it is unlikely that it will cause any stability issues on site.
Hydrogeology	The White Limestone Formation is classified by the Environment Agency as a Principal aquifer. The site is not within a groundwater Source Protection Zone.
Hydrology	The nearest surface water feature is Gallos Brook, which runs along the western boundary of parcel 16. Several other unnamed streams run from the east, northeast and west of the site. The River Cherwell and Oxford Canal flow north to south 600m west of the site.
Flood Risk	The site is in Flood Zone 1. No further consideration of flood risk is undertaken in this report.
Previous Site Data	A report confirming the completion of the removal of the Petroleum Oil and Lubrication system at RAF Upper Heyford was issued in 2012. A ground investigation, hydrogeological characterisation assessment, Controlled Waters DQRA and remediation strategy was undertaken by Waterman Energy, Environment & Design Ltd in 2012 for the Flying Field and 'New Settlement Area' of Heyford Park which includes parcels 11, 19 and 20. A ground investigation and remediation strategy was undertaken by Hydrock in 2017 for parcels 10 and 16.

<table>
<tr><td>Radon</td><td colspan="2">No radon protective measures are necessary according to current guidance but the site is in a Radon Affected Area (1-3%) and consideration should be given to fitting basic measures. A site specific radon report is recommended.</td></tr>
<tr><td>Natural Soil Chemistry</td><td colspan="2">Indicative natural concentration (estimated values) (mg/kg):
Arsenic 15-25; Cadmium <1.8; Chromium 60-90; Lead <100; Ni 15-30.</td></tr>
<tr><td>Geotechnical Hazards from Desk Study</td><td colspan="2">• Uncontrolled Made Ground – excessive settlement (creep and inundation settlement or differential settlement of foundations, roads and infrastructure elements).
• Attack of buried concrete by aggressive ground conditions – the development site may contain unknown Made Ground.
• Shrink/swell of clay – settlement/heave of foundations when located within the influence of trees and vegetation.</td></tr>
<tr><td rowspan="8">Possible Contaminant Linkages of Moderate or Greater Risk Level - From Desk Study</td><td colspan="2">The possible pollutant linkages on un-remediated areas of the determined by desk study are summarised below for risk levels of moderate or greater.</td></tr>
<tr><td colspan="2">Source(s) ◄ potential Impact on ► Receptor(s)</td></tr>
<tr><td>Metals and other in-organics within Made Ground.</td><td>Site end users
Neighbours
Groundwater</td></tr>
<tr><td>Asbestos fibres and ACM from Made Ground.</td><td>Site end users
Neighbours</td></tr>
<tr><td>Petroleum hydrocarbons from tanks and Made Ground.</td><td>Site end users
Plant life
Groundwater
Surface water</td></tr>
<tr><td>PCBs from former transformers</td><td>Site end users</td></tr>
<tr><td>Ground gases from Made Ground, quarry backfill and nearby landfills</td><td>Site end users
Neighbours
Buildings (methane only)</td></tr>
<tr><td>Radon</td><td>Site end users</td></tr>
<tr><td colspan="3">ASSESSMENT AND CONCLUSIONS</td></tr>
<tr><td>Conclusions</td><td colspan="2">Based on historic land uses and its current operational use, the overall risk from land contamination at the site is considered to be low for the current development. For areas previously investigated and remediated the risk is considered to be low. However, areas of the site not previously investigated and remediated may be considered a moderate risk, prior to confirmation by investigation, and remediation if required.
It is considered that it is unlikely that the site would be classified as Contaminated Land under Part 2A of the EPA 1990.</td></tr>
<tr><td colspan="3">FUTURE CONSIDERATIONS</td></tr>
<tr><td>Uncertainties and Limitations</td><td colspan="2">Further assessment of the data from previous investigations, investigation of the areas of the site not previously investigated, and confirmation that remediation has been undertaken is recommended in line with the proposed end use for each parcel.</td></tr>
<tr><td>Further Work</td><td colspan="2">In order to confirm the actual risks to receptors and confirm the ground conditions with respect to potential geotechnical and geo-environmental risks, an appropriate intrusive investigation for areas not</td></tr>
</table>

🟩	previously investigated will need to be undertaken. Based on the current data, this site investigation is proposed to comprise: • obtain site-specific radon report; • obtain a full UXO desk top study; • the excavation of trial pits to allow collection of samples for geotechnical and chemical analysis, to assess trench stability, over break potential and “diggability” and allow soil infiltration rate testing to be undertaken; • the undertaking of soil infiltration rate testing; • rotary cored boreholes to allow collection of samples for geotechnical and chemical analysis of deeper soils and allow in-situ testing (SPTs) to be undertaken to assess density of the natural rock strata to allow foundation design, and allow the installation of gas and groundwater monitoring wells; • gas and groundwater monitoring installations to allow gas concentrations and groundwater levels to be monitored; • gas concentration and groundwater level monitoring; • geotechnical testing of soils and rock; and • contamination analyses of soil and groundwater. In addition, areas where investigation and remediation has been undertaken, remediation verification should be sought and confirmed that the proposed end use has not changed. Where the proposed end use has changed, further assessment of the investigation and/or verification data should be carried out to confirm the risk to end users will continue to be low.

This Executive Summary forms part of Hydrock Consultants Limited report number HEY-HYD-XX-DS-RP-GE-1000-S2-P3 and should not be used as a separate document.

1.0 INTRODUCTION

1.1 Terms of Reference

In January 2017, Hydrock Consultants Limited (Hydrock) was commissioned by Pegasus Group on behalf of Dorchester Living to undertake a desk study for the Heyford Masterplan, Heyford Park, Oxfordshire.

The site covers approximately 455.4 ha and is comprises the former RAF Upper Heyford and currently developed area of Heyford Park.

The proposed development is to comprise residential and commercial buildings and commercial and recreational areas. An area in the south of the main site will be used for car processing.

A Composite Parameter Plan indicating proposed development areas is presented in Appendix A.

1.2 Objectives

The objectives of this investigation are to assess the readily available information on the likely ground conditions at the site and to provide information to support the planning application for the Heyford Masterplan.

1.3 Scope

The scope of work for this commission comprises:

- a desk study to determine the nature of the site and its surroundings including current and former land uses, geology, hydrogeology, hydrology and geo-environmental data. A summary of previous investigations carried out at the site is also included; and
- reporting on findings.

See Appendix D for detailed reporting methodology.

1.4 Provided Information

The following has been used by Hydrock in the preparation of this report:

- Pegasus Design. 25th August 2017. 'Heyford Park – Application Boundary'. Dwg no. P16-0631_33 Rev. O.
- Pegasus Design. 2nd February 2018. 'Heyford Park – Composite Parameter Plan'. Drwg no. P16-0631_08 Rev I.
- Hydrock. February 2017. 'Hydrock Park – Western Development, Phase 9, 10, 16 and 16A, Desk Study and Ground Investigation Report'. Report no. HPW-HYD-MS-ZZ-RP-G-0001-S2-P1.
- Hydrock. April 2017. 'Hydrock Park – Western Development, Phase 9, 10, 16 and 16A, Remediation Method Statement'. Report no. HPW-HYD-MS-ZZ-RP-G-3000-S2-P1.

- Waterman. May 2012. ‘Preliminary Ground Investigation, New Settlement Area, Heyford Park’. Document ref. EED10658-13.2.2_FA.
- Vertase F.L.I. Limited. February 2012. Contract Completion Report – POL System – Clean and Make Safe. Report ref. 1246DOR.
- Waterman Energy, Environment and Design Ltd. September 2012. ‘Remediation Strategy at New Settlement Area, Upper Heyford’. Ref. EED10658-109_S_12.2.2_FA.
- Waterman Energy, Environment & Design Ltd. September 2012. Controlled Water Detailed Quantitative Risk Assessment. Report ref. EED10658-14.1.7_FA.
- Waterman Energy, Environment & Design Ltd. March 2012. Hydrogeological Characterisation and Groundwater Quality Assessment. Report ref. EED10658-109_R_9.3.1_FA.

1.5 Approach

The work has been carried out in general accordance with recognised best practice as detailed in guidance documents such as the CLR 11 *Model Procedures* (Environment Agency 2004). The technical details of the approach and the methodologies adopted are given in Appendix D.

A recognised phased approach has been followed and this Phase 1 desk study and walk-over provides a preliminary assessment of the site conditions and the important factors that may require further investigation to reduce uncertainty. Recommendations for further work are listed at the end.

2.0 PRELIMINARY INVESTIGATION (PHASE 1 STUDY)

A number of desk study sources have been used to assemble the following information, including a proprietary environmental data report[1] which has been obtained for the site (dated 4th September 2017) and is presented in Appendix C.

2.1 Site Referencing

The site is referenced in Table 2.1.

Table 2.1: Site Referencing Information

Item	Brief Description
Site name	Heyford Masterplan, Heyford Park.
Site location and grid reference	The site is located in the former RAF Upper Heyford base, with parcels located either side of Camp Road, Heyford Park. The grid reference for the approximate centre of the site is 451390E, 226434N.

2.2 Site Description

A basic site description is presented in Table 2.2.

Table 2.2: Site Description

Item	Brief Description
Site access	Via Camp Road.
Site area	Approximately 455.4 ha.
Elevation, topography and any geomorphic features	The site generally slopes upwards from the south to the north, at approximate levels between 125m and 135m AOD. To the west of the site, the topography slopes down towards the River Cherwell and Oxford Canal approximately 600m west of the site.
Present land use	The site is the former RAF Upper Heyford and can be split into several different development parcels as indicated on the Composite Parameter Plan in Appendix A. These parcels are numbered 10 through 13, 16 through 34, 36 and 38 through 40. Areas between these parcels are not numbered and are not being developed. The parcels are described below and start from the southernmost parcels and continue north. To the south of Camp Road are Parcels 16, 17 and 18 of generally arable fields. Parcel 36 comprises the sewage treatment works to the south of Parcel 18. Parcel 32 West is a sports field with a football pitch and tennis/netball courts. Parcel 38 is currently an open space used for construction storage. Parcel 39 comprises the Heyford Stores and a church. North of Camp Road lies Parcel 10, currently of open ground and includes three large above ground fuel tanks, known as POL 21. Parcel 20 comprises two buildings. Parcel 32 East comprises the Heyford Park Free School. Parcel 40 comprises one large building with external hardstanding. Parcel 19 is currently a warehouse with external hardstanding and landscaping. In the east, Parcel 13 is a thin area of open, grassed land and hardstanding. Parcel 15 is a grassed area on the central east of the site. Parcel 33 is Chilgrove Drive running up the east of the site.

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[1] The environmental data report covers the survey area from the Environmental Statement submitted in 2018 and is not to be referenced for the current submission boundary.

Item	Brief Description
	Parcel 11 currently houses four thin, long buildings. The rest of the parcel is concrete hardstanding and landscaped areas. In the centre of the site, Parcels 12, 21, 22 and 23 are currently used for car storage. Parcel 22 houses six former RAF aircraft shelters and several former RAF buildings. Parcel 24 comprises many former RAF bunkers. Parcels 25, 31, and 29 comprise car storage and several former RAF warehouses. Parcels 30, 28 and Parcel 27 East are part of the former Flying Field. Parcel 27 West currently houses nine former RAF aircraft shelters. Parcel 26 is eight former RAF aircraft shelters across the north of the site. The rest of the site is the former airfield, with various former RAF buildings, aircraft shelters and storage.
General site sensitivity	The site is within the rural area of north Oxfordshire. Upper Heyford village is approximately 250m west of the site. There are two Sites of Special Scientific Interest in the vicinity of the site, Ardley Cutting and Quarry, the cutting running southeast to northwest 120m northeast of the site and the quarry 230m northeast of the site, and Ardley Trackways approximately 1km southeast of the site. An Environmentally Sensitive Area is from 350m west of the site and comprises the River Cherwell, part of the Upper Thames Tributaries and the area around it.
Site boundaries and surrounding land	The site area is generally bound by agricultural fields. The current Heyford Park development, of residential and commercial use, are along the southern boundary of the site area and to the east of Parcels 16 and 32, and to the north and west of Parcels 17 and 18.

2.3 Site History

A study of historical Ordnance Survey maps (Appendix B) has been undertaken to identify any former land uses at the site and surrounding areas which may have geotechnical or geo-environmental implications for the proposed development and is summarised in Table 2.3.

Note that it is common for military sites not to be shown on Ordnance Survey maps and so details of sites with military or security significance may not be picked up in this review.

Table 2.3: Key Features from Historical Mapping

Map Edition and Scale	Key Features on Site	Key Features off Site
1875-1881 1:2,500 1875-1880 1:10,560	A drain/stream runs north-south through parcel 32 west and along the western boundary of parcel 16. Parcels 17 and 18 are open fields. Parcel 11 is covered with gorse. Ballard’s copse is in parcel 27. A building named Halls Barn is also in parcel 27.	A quarry is to the southwest of parcel 16. The River Cherwell and Oxford Canal are approximately 600m west of the site.
1900 1:2,500 1898 1:10,560	A Roman Road runs north-south through the western end of the site.	Springs are noted 500m west of the site.
1922 1:2,500 1818-1923 1:10,560	No significant change.	The quarry has been extended southwest of parcel 16. A railway line has been constructed 150m northeast of the site. Another spring is noted 450m west of the site.

Map Edition and Scale	Key Features on Site	Key Features off Site
1954	The site has been left blank and is labelled Airfield.	
1973-1975 1:2,500	Tanks are shown on the northern boundary of parcel 16. The drain now starts from these tanks and along the western boundary of parcel 16. A running track has been constructed around parcel 32 west. A sewage works with filter beds has been constructed in parcel 36, along the southeastern boundary of parcel 18. Infrastructure associated with the airbase has been constructed across the rest of the site.	Upper Heyford American High School has been constructed 50m north of parcel 16 and 50m west of parcel 32 west. Residential housing and other associated buildings have been constructed to the south of the main site area. The quarry to the southwest of parcel 16 has been backfilled.
1982 1:2,500 1979-1981 1:10,000	A baseball pitch, tennis courts, a tank and a substation have been constructed in parcel 32 west. Ballard's Copse and Halls Barn are no longer in parcel 27.	There is only one spring 500m west of the site. A water works has been constructed 600m west. A sewage works has been constructed 750m southwest.
1994 1:2,500	No significant change.	No significant change.
2002-2014 1:10,000	No significant change.	Water works have been demolished 600m west.

Online sources indicate the airbase was constructed in 1915 and was used by the RAF. Following World War 2 the United States Air Force leased the site until 1994, when the site was returned to the Military of Defence and closed.

2.4 Unexploded Ordnance/Bombs

In general accordance with CIRIA Report C681 (Stone *et al* 2009) non-specialist UXO screening exercise has been carried out for the site. Screening against the Zetica regional bomb risk map (Oxfordshire) indicates the site to be in an area where the bomb risk is low. A copy of the map is presented in Appendix C. However, the site was in military use between 1915 and 1994 and a specialist Desk Top Study is recommended for the site.

2.5 Geology

The general geology of the site area is shown on the 1:50,000 geological map of Chipping Norton (Sheet 218) and is summarised in Table 2.4.

Table 2.4: Geology

Location	Age	Stratigraphic Name	Description
In the far eastern corner of site	Quaternary	Head	Essentially comprises sand and gravel, with lenses of clay and silt depending on upslope source and distance from source.

Location	Age	Stratigraphic Name	Description
On site	Jurassic	White Limestone Formation (Great Oolite Group)	A pale grey to off-white or yellowish limestone, some recrystallised limestone, with rare sandy limestone, argillaceous limestone, marl and mudstone or clay.
At western edge of site	Jurassic	Horsehay Sand Formation (Great Oolite Group)	Pale grey and brown to off-white, medium- to fine-grained, quartzose sand, locally cemented into calcareous or weakly ferruginous sandstone with thin dark grey mudstone and siltstone beds in places.

The majority of the site is noted as being ‘landscaped’ on the geological map.

An inferred fault is noted in the environmental data report, starting 35m east of the site running towards the east. An outcrop of the Rutland Formation 70m east and Head Deposits on site are associated with this fault line.

2.6 Mining or Mineral Extraction

Several limestone quarries/pits are noted on the historical map on site or on the boundaries of the site. However, these appear to be small in nature and are likely to have been backfilled.

2.7 Ground Stability

The site is not directly underlain by soluble deposits, and the only extraction activities in the area were surface excavations.

A fault is shown on the geological mapping approximately. 35m east of the site, and it appears that this fault has caused the outcropping of the Rutland Formation (an older geology) in the White Limestone Formation 70m east of the site. However, this fault is not mapped on to the site and it is unlikely that it will cause any stability issues on site.

2.8 Hydrogeology

The aquifer designations given in Table 2.5 are based on the Environment Agency interactive aquifer designation map. Additional information on the hydraulic characteristics of the geological units has been abstracted from Allen *et al* (1997).

Table 2.5: Hydraulic Characteristics of Strata

Stratum	Aquifer Designation	Hydraulic Characteristics
Head	Secondary (undifferentiated) Aquifer	Variable characteristics depending on composition of deposits.
White Limestone Formation	Principal Aquifer	Hydraulic conductivity and water storage is high due to the fractured and fissured nature of the limestone. Hydraulic conductivity is linked to porosity, and where marls, mudstones, and clays are present porosity is lower and hence lowers the hydraulic conductivity. However, the thickness of the marls etc. are not so great to affect the overall conductivity of the aquifer in this area.

Stratum	Aquifer Designation	Hydraulic Characteristics
Horsehay Sand Formation	Secondary (A) Aquifer	Where this outcrops it is likely to be in hydraulic continuity with the White Limestone Formation, however, will have lower porosity but similar hydraulic continuity values.

Reference to the Environment Agency web site shows the following groundwater bodies beneath the site and their current status (Table 2.6).

Table 2.6: Groundwater Bodies

Category	Main site area	Western edge of site
Waterbody ID	GB40601G603100	GB40602G600200
Waterbody name	Tackley Jurassic	Banbury Jurassic
River basin district	Oxon Ray	Cherwell
Current quantitative quality	Good	Good
Current chemical quality	Good	Poor
Objectives	N/A	Good by 2027
Protected area	Yes (Drinking Water Protected Area and Nitrates Directive)	Yes (Drinking Water Protected Area and Nitrates Directive)

The site is not within a within a groundwater Source Protection Zone (SPZ). There is one active licensed groundwater abstraction within 1km of the site. It is 650m southeast of the site, from the Thames Groundwater at Manor Farm, Middleton Stoney.

The majority of the site is covered by soils of high leaching potential.

2.9 Hydrology and Flooding

The surface water features in the vicinity of the site are listed in Table 2.7.

Table 2.7: Surface Water Features

Feature	Location Relative to Site
Gallos Brook	Starts at the northwestern boundary of parcel 16 and flows south.
Unnamed stream	Starts at the southern boundary of parcel 22 and flows south past the southeastern boundary of parcels 17 and 18. This joins Gallos Brook approximately 4km south of the site.
Unnamed stream	Starts at the northeastern boundary of parcel 27 and flows northeast.
Unnamed streams	Two streams start within 500m southeast of the site and flow southeast to join a larger stream. Seven streams spring in a line between 1km and 500m west of the site and flow into the River Cherwell.

Feature	Location Relative to Site
River Cherwell and Oxford Canal	Approximately 600m west of the site, flowing generally north to south. This joins the River Thames at Oxford, approximately 25km south of the site.

There are no surface water abstractions within 1km of the site.

The desk study information indicates the proposed development is in Flood Zone 1 (with low probability of flooding) and the area is greater than 1 ha so consultation with the Environment Agency is required with a Flood Risk Assessment (FRA).

The environmental data report indicates a potential for surface groundwater flooding.

No further consideration of flood risk is undertaken in this report. Specialist flood risk advice should be sought with regards to drainage and flooding.

2.10 Waste Management and Hazardous Substances

There is one waste management site recorded within 250m of the site. It is a historical landfill at Ardley Wood, Cherwell, approximately 180m northeast of the site. It was licensed between 1977 and 1985 for inert, industrial, commercial and household waste and was operated by Oxfordshire County Council.

There are records relating to the storage of radioactive materials on site by Oxford Bio-innovation Ltd between 2006 and 2015. However, as long as these have been stored and operated in accordance with any applicable licence, no impact on the site is envisaged.

There are no records of prosecutions relating to authorised processes in the vicinity of the site.

There is no Local Authority Pollution Prevention and Controls, NIHHS sites or Planning Hazardous Substance consents or enforcements within 500m of the site.

The Southern Bomb Store between Parcels 11 and 32 east is a current Upper Tier Control of Major Accidents Hazards (COMAH) Regulations 2015 site. COMAH sites are subject to Regulations because certain dangerous substances are present at these sites and all activities must be managed to reduce the risk from to workers and the public. The Southern Bomb Store is used for general manufacture and/or storage and/or distribution of energetic materials that could potentially cause fire/explosion. It is assumed that the Southern Bomb Store operates all activities to the Regulations.

Depending on the sensitivity of the development, the HSE will advise against granting planning permission for developments within particular zones of a COMAH site. This advice is only provided to Local Planning Authorities (LPA) via the PADHI+ software decision support tool (planning advice for developments near hazardous installations). PADHI can be used to obtain HSE’s advice on pre-planning enquiries (PPEs) in a similar way as formal consultation on planning applications, provided sufficient information is available. Hydrock recommends the LPA is contacted at the earliest opportunity.

2.11 Previous Evidence of Known Contamination Events

The environmental data report indicates there was a Category 2 (significant impact) pollution incident on site in 2007, relating to the leakage of final effluent sewage materials into the water course on the southeastern edge of the site.

2.12 Natural Soil Chemistry

Information contained within the environmental data report (Appendix C) gives indicative natural concentration values (estimated) for the natural soils at the site for a selection of Contaminants of Potential Concern (CoPC). These have been reproduced in Table 2.8 below.

Table 2.8: Natural Soil Chemistry

Element	Arsenic	Cadmium	Chromium	Lead	Nickel
Concentration (mg/kg)	15 - 25	<1.8	60 - 90	<100	15 - 30

2.13 Radon

The radon risk has been reported in the environmental data report. This indicates that the site is in a Radon Affected Area where 1-3% of homes are above the action level and no radon protection measures are required for new buildings at this location in line with current guidance. However, consideration should be given to fitting basic protection measures on the “as low as reasonably practicable” principle in view of advice given to householders and the legal responsibilities of rental landlords and employers with commercial properties (see Appendix D for further details).

2.14 BGS Borehole Archive

A number of borehole logs from the BGS archive have been reviewed:

- SP52NW17 located on site.
- SP52NW116A, B and C, located on site.

These identified the following geology beneath the site:

- Topsoil to between 0.45m and 0.50m below ground level (bgl); over
- Silty sandy clay with limestone gravel (White Limestone Formation) to between 1.60m and 1.95m bgl; over
- Limestone interbedded with clay, shale, sandstone (White Limestone Formation) to 19.00m bgl; over
- Estuarine Series and Northampton Sand Formation to 30m bgl; over
- Upper Lias Clay (now Whitby Mudstone Formation) to 50m bgl; over
- Marlstone Rock Formation to 56m bgl; over
- Middle and Lower Lias Clay (now Dyrham Formation and Charmouth Mudstone Formation) to 75m bgl.

2.15 Previous Site Investigations or Other Reports

The following previous ground investigations and other associated works have been undertaken at the site and wider site area and the main findings are summarised in Table 2.9. Reference to these reports should be made if further information is required.

Table 2.9: Summary of Previous Reports

Findings
Vertase F.L.I. Limited. February 2012. Contract Completion Report – POL System – Clean and Make Safe. Report ref. 1246DOR. This report details and confirms the decommissioning of the Petroleum Oil and Lubrication (POL) system at the former RAF airbase at Upper Heyford. All waters from tanks were pumped directly to mobile waste water treatment plants. Monitoring and validation of groundwater and soils in the vicinity of the works confirmed the works did not impact on residual site conditions. Tanks were filled with PFA with 1.5% OPC and 27% water. 99 tanks were decommissioned, of which 19 were not filled with PFA/OPC grout. Above ground storage tanks were not filled. The POL pipeline was cleaned, foam filled and broken in places to prevent migration pathways.
Waterman Energy, Environment & Design Ltd. March 2012. Hydrogeological Characterisation and Groundwater Quality Assessment. Report ref. EED10658-109_R_9.3.1_FA. This report covers the Flying Field at Heyford Park. The works comprised 42 rotary cored boreholes, 5 rotary open hole boreholes and the installation of 46 monitoring wells. Ground conditions comprised: • Topsoil or Made Ground to a maximum proven depth of 1.1m bgl. • Natural Drift to a maximum depth of 2.8m bgl. • Interbedded limestone, siltstone, mudstone and sandstone to a maximum proven depth of 40.0m bgl. Groundwater was found to comprise a layered system, with a shallow groundwater body and a deeper groundwater body. Vertical migration of water and contaminants is occurring from the shallow to the deeper groundwater body. **<u>Conclusions/Recommendations:</u>** The shallow groundwater has been marginally impacted from historical site use. TPH concentrations were more elevated in the south of the Flying Field. Works including tanks and pipes being emptied and cleaned were being undertaken at the time of the investigation. Following these it was recommended a groundwater monitoring programme of sampling every quarter and testing for speciated TPH and a further review to determine if supplementary works in the most contaminated area of the site would be required.
Waterman Energy, Environment & Design Ltd. May 2012. Preliminary Generic Quantitative Environmental Risk Assessment. Report ref. EED10658-13.2.2_FA. This report covers the 'New Settlement Area' of Heyford Park, of which the Retained Commercial Area (RCA) covers an area around parcels 20, 19 and 11 of the site. Overall the works undertaken comprised 41 boreholes and 96 trial pits. Ground conditions encountered: • Made Ground to a maximum proven depth of 2.6m bgl. • Weathered limestone becoming thickly bedded limestone to a maximum proven depth of 6.8m bgl. • Interbedded siltstone and mudstone to a maximum proven depth of 10.0m bgl. Groundwater at between 107.6mAOD and 123.82mAOD.

Findings

Conclusions/Recommendations:

The RCA area is considered suitable for continued use commercial use with regards to soil contamination.

Ground gas levels indicate the RCA area can be classified as Characteristic Situation 2 for Situation A development.

Barrier pipe is recommending for water supply pipes.

Tank removal and hydrocarbon contamination associated with the tank was recommended to improve the groundwater quality. A DQRA was proposed to generate threshold values for the soils.

Waterman Energy, Environment & Design Ltd. September 2012. Controlled Water Detailed Quantitative Risk Assessment. Report ref. EED10658-14.1.7_FA.

A Controlled Waters DQRA was undertaken for the ‘New Settlement Area’ of Heyford, of which the Retained Commercial Area (RCA) covers an area around parcels 20, 19 and 11 of the site.

Site Specific Remediation targets were derived using the Environment Agency’s Remedial Targets Methodology model. Two sets of target values were derived for a compliance point at the site boundary, depending on the distance of the tank clusters to the site boundary.

Residual environmental liabilities are anticipated to be of low risk after implementation of the remediation strategy (below) using the target values.

Waterman Energy, Environment & Design Ltd. September 2012. Remediation Strategy. Report ref. EED10658-109_S_12.2.2_FA.

As above, this report covers the ‘New Settlement Area’ of Heyford Park, of which the Retained Commercial Area (RCA) covers an area around parcels 20, 19 and 11 of the site.

The remediation activities include:

- Tank and impacted soil removal
- Backfill excavations with appropriate material
- Treatment and disposal of groundwater in excavations

The plan with the locations of underground tanks which were to be removed is not included, but the following tanks are noted on site or at the boundaries of this site; UGNSA 13-15, 22 and 23. The following tanks are near to or adjacent to site boundaries; UGNSA 26-30.

Hydrock. Desk Study and Ground Investigation Report. February 2017. Report ref. HPW-HYD-MS-ZZ-RP-G-0001.

This report covers Parcels 10 and 16.

In parcel 10 the works comprised six cable percussion boreholes, nine trial pits and two soakaway tests. In parcel 16 the works comprised two cable percussion boreholes, 28 trial pits and three soakaway tests.

Across the parcels the ground conditions encountered comprised:

- Made Ground across parcel 10 to depths between 0.15m and 0.30m bgl; and
- Topsoil across parcel 16 to depths between 0.15m and 0.30m bgl; over
- Great Oolite Group (White Limestone Formation) below Made Ground or Topsoil to a maximum depth of 8.00m bgl.

Groundwater was encountered in one trial pit at 2.60m bgl in parcel 10. Subsequent monitoring recorded levels generally between 2.00m and 3.50m bgl, although a reading of 1.00m bgl was recorded in parcel 10 and a reading of 1.00m bgl was recorded in parcel 16, adjacent to Gallos Brook.

Conclusions/Recommendations:

Environmental – residential end use

Pervasive PAH, TPH and VOCs in the Made Ground in parcel 10, when compared to residential end use GACs. However, likely to be elevated compared to commercial GACs.

No risk identified to Controlled Waters (subject to regulatory approval).

Parcel 10 can be classified as Characteristic Situation 2 for Situation A development with regards to ground gases.

Findings
Geotechnical Strip/trench fill foundations can give an allowable net bearing pressure of 100kN/m2 on natural soils, and at least 250kN/m2 on natural rock quality strata. Ground bearing floor slabs. <2.5% CBR on Made Ground, 3% CBR on natural fine soils, 5% CBR on natural coarse soils. Soakaways may be possible. Further infiltration rate testing is required. Sulphate classification – DS-1, ACEC-1 and DC-1 for a 50-year design life.
Hydrock. Remediation Method Statement. April 2017. Report ref. HPW-HYD-MS-ZZ-RP-G-3000. This report covers Parcels 10 and 16. The following remediation strategy was proposed: • Asbestos survey of former buildings • Asbestos removal • Controlled decommissioning, decontamination and demolition of site buildings and ancillary structures • Removal of slabs, tanks, existing drainage system and pipework • Excavation of hotspots around tanks etc. • Ex situ remediation of hydrocarbon impacted soils • Installation of barrier pipe for potable water supply • Installation of ground gas protection measures in parcel 10 • Installation of engineered cover system in parcel 10. • Validation and verification of above.

2.15.1 Evaluation of Previous Reports

Site investigation and remediation has been undertaken for several parcels of the site to date. From these works it can be concluded that the groundwater has been marginally impacted by petroleum hydrocarbons from the historical site use as a RAF/USAF airbase in the vicinity of former underground storage tanks. Site specific remedial targets were calculated and a strategy of betterment by removal of tanks and pipework and hydrocarbon impacted soils was recommended for the Flying Field and the central area of the site. Groundwater in the south of the site, away from underground storage tanks, had not been impacted. However, soils in the developed areas of the site may pose a risk to human health, depending on the proposed end use.

2.15.2 Suitability of Previous Data

Chemical Test Data

Chemical test data from the Waterman investigations should not be used in future assessments, due to the time scale since being undertaken. Chemical test data from Hydrock investigations can be used in future risk assessments, where appropriate.

Groundwater Data

Groundwater levels fluctuate seasonally and across the various parcels. Review of specific data should be undertaken for each plot to facilitate design.

Ground Gas Data

Ground gas data from both investigations can be used in future assessment. Review of specific data should be undertaken for each plot to facilitate design.

Geotechnical Data

All geotechnical data can be used in future assessment where appropriate.

3.0 PRELIMINARY CONCEPTUAL SITE MODEL

3.1 Physical Setting

The preliminary ground model of the site is the basis of the understanding of the ground conditions that will inform the geo-environmental exposure model and the geotechnical hazard assessment.

3.2 Geo-environmental Exposure Model

The preliminary exposure model is used for geo-environmental hazard identification and establishing potential contaminant linkages based on the contaminant-pathway-receptor approach.

3.2.1 Potential Contaminants

For the purpose of this assessment the potential contaminants have been separated according to whether they are likely to have originated from on-site or off-site sources.

Potential On-Site Sources of Contamination

- Made Ground possibly including metals, metalloids, asbestos, PAH and petroleum hydrocarbons.
- Hydrocarbon fuels associated with the former land use as an airfield and underground storage tanks.
- VOCs and SVOCs associated with former land use.
- PCBs associated with former transformers.
- Ground gases (gases carbon dioxide and methane) from organic materials present in the Made Ground.
- Ground gases (radon) from natural strata.

Potential Off-Site Sources of Contamination

- Hydrocarbon fuels associated with the former land use as an airfield and underground storage tanks.
- Quarry backfill adjacent to the southern boundary of Phase 16A possibly including metals, metalloids, asbestos, PAH and petroleum hydrocarbons.
- Ground gas (carbon dioxide and methane) from nearby landfills.

3.2.2 Potential Receptors

- Humans (site end users, neighbours).
- Development end use (buildings, utilities and landscaping).
- Groundwater: Principal Aquifer status of the White Limestone Formation.
- Surface water: Gallos Brook and other unnamed streams.

It should be noted that health and safety risks to site contractors and maintenance workers have not been assessed during these works and will need to be considered separately.

3.2.3 Potential Pathways

- Humans: ingestion, skin contact, inhalation of dust and outdoor air.
- Buildings: methane ingress via permeable soils and/or construction gaps.
- Plant life: root uptake.
- Plant uptake: methane ingress to the root zone.
- Underlying groundwater: migration of contaminant via leachate dispersion through the unsaturated zone in the White Limestone Formation.
- Underlying groundwater: migration of contaminant into the White Limestone Formation aquifer.
- Surface water: overland flow.
- Surface water: base flow from groundwater.

3.2.4 Summary of Potential Contaminant Linkages

Table 3.1 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in CLR 11 and additional risk assessment is required.

Linkages has been assessed in general accordance with guidance in CIRIA Report C552 (Rudland *et al* 2001) but with the addition of a ‘no linkage’ category. More details are given in Appendix D including descriptions of typical examples of probability and consequences.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table 3.1: Exposure Model – Preliminary Risk Assessment of Source-Pathway-Receptor Contaminant Linkages

Source(s)	Possible Pathway(s)	Receptor(s)	Probability	Consequence	Risk Level	Comments
Metals, metalloids and PAH from Made Ground.	Ingestion, inhalation, direct contact.	Site end users.	Likely	Medium	Moderate	Made Ground is known to be present beneath parcels in previously developed areas of the site. Further investigation is required in areas where investigation has not been undertaken to assess the risk from Made Ground.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood.	Medium.	Low/ moderate.	
	Root uptake.	Plant life.	Likely.	Minor.	Low.	
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Low likelihood.	Medium.	Low/ moderate.	A Controlled Waters Detailed Risk Assessment has been undertaken for the groundwater beneath the site, and metals, metalloids and PAH were not considered to pose a risk to Controlled Waters at the site.
	Surface run-off, base flow from contaminated groundwater.	Aquatic ecosystems. Surface water and possible abstractors.	Likely.	Mild.	Low.	Made Ground is known to be present beneath the developed areas of the site and it is possible contaminants will leach into run-off and into the streams flowing offsite.
Asbestos fibres from insulation or asbestos-containing materials in the Made Ground	Fugitive dust.	Site end users.	Likely.	Medium.	Moderate.	Made Ground is known to be present beneath the developed areas of the site and could contain asbestos containing materials. Further investigation is required in areas where investigation has not been undertaken to assess the risk from asbestos.
		Neighbours.	Low likelihood.	Medium.	Low/ moderate.	

Source(s)	Possible Pathway(s)	Receptor(s)	Probability	Consequence	Risk Level	Comments
Petroleum hydrocarbons, VOCs and SVOCs in Made Ground and from storage tanks.	Ingestion, inhalation, direct contact.	Site end users.	Likely.	Medium.	Moderate.	Petroleum hydrocarbons, VOCs and SVOCs have been identified across areas of the site previously. It is likely additional petroleum hydrocarbon contamination will be encountered on areas not previously investigated. The Remediation Strategy produced for Parcels 16 and 10 (HPW-HYD-MS-ZZ-RP-G-3000) and for Parcels 11, 19 and 20 (EED10658-109_S_12.2.2_FA) should be reviewed and further investigation may be required to confirm if these remediation measures have been or should be undertaken on parcels not covered previously.
	Root uptake.	Plant life.	Likely.	Mild.	Low/ moderate.	
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Likely.	Medium.	Moderate.	
	Surface run-off, base flow from contaminated groundwater.	Aquatic ecosystems. Surface water and possible abstractors.	Likely.	Mild.	Low/ moderate.	
PCBs from former transformers in electricity substations.	Ingestion, inhalation, direct contact.	Site end users.	Low likelihood.	Medium.	Low/ moderate.	Electricity substations are present on site and could contain PCBs from former transformers. The areas around these electricity substations should be investigated.
Carbon dioxide from Made Ground, backfill of quarry or nearby landfills.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation).	Low likelihood.	Severe.	Moderate.	Previous investigations have determined that parcels 10, 11, 19 and 20 are classified as Characteristic Situation 2 (low to moderate risk) for ground gases. Investigation is required for areas not investigated to determine the risk from ground gases across the rest of the site.
		Users of off-site properties (asphyxiation).	Low likelihood.	Severe.	Moderate.	

Source(s)	Possible Pathway(s)	Receptor(s)	Probability	Consequence	Risk Level	Comments
Methane from Made Ground, backfill of quarry or nearby landfills.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation or explosion).	Low likelihood.	Severe.	Moderate.	Previous investigations have determined that parcels 10, 11, 19 and 20 are classified as Characteristic Situation 2 (low to moderate risk) for ground gases. Investigation is required for areas not investigated to determine the risk from ground gases across the rest of the site.
		Users of off-site properties (asphyxiation or explosion).	Low likelihood.	Severe.	Moderate.	
		New buildings (damage by explosion).	Low likelihood.	Severe.	Moderate.	
		Neighbouring properties (damage by explosion).	Low likelihood.	Severe.	Moderate.	
Radon	Migration through soils or groundwater to indoor air.	End users of new buildings.	Low likelihood.	Medium.	Low/ moderate.	BR 211 (2007) radon advice indicates no radon protection measures are required, but considering the site is in a Radon Affected area (1-3%) consideration should be given to basic protection measures. A site specific radon report is recommended.

3.3 Geotechnical Hazard Identification

Potential geotechnical hazards based on the expected ground conditions are listed below.

- Uncontrolled Made Ground – excessive settlement (creep and inundation settlement or differential settlement of foundations, roads and infrastructure elements).
- Attack of buried concrete by aggressive ground conditions – the development site may contain unknown Made Ground.
- Shrink/swell of clay – settlement/heave of foundations when located within the influence of trees and vegetation.

4.0 DESK STUDY CONCLUSIONS

Table 3.1 is a summary of the geo-environmental risks identified and the overall risk associated with the site has been designated using qualitative judgement according to the risk categories given in Table 4.1.

Based on historic land uses and its current operational use, the overall risk from land contamination at the site is considered to be low for the current development. For areas previously investigated and remediated the risk is considered to be low. However, areas of the site not previously investigated and remediated may be considered a moderate risk, prior to confirmation by investigation, and remediation if required.

It is considered that it is unlikely that the site would be classified as Contaminated Land under Part 2A of the EPA 1990.

Table 4.1: Assessed Overall Risk Categories for the Site from Land Contamination

Risk Category	Definition
Very High Risk	A significant contaminant linkage, including actual evidence of significant harm or significant possibility and significant harm, is clearly identifiable at the site (e.g. from visual or documentary evidence) under current conditions, with potential for legal and/or financial consequences for the site owner or other Responsible Person. Remediation advisable based on acute impacts being likely. Immediate action should be considered.
High Risk	A contaminant linkage is identifiable at the site under current and future use conditions. Although likely, there is no obvious actual evidence of significant harm or significant possibility and significant harm under current conditions. Extent of risk is therefore subject to confirmation by investigation and risk assessment and most likely to be deemed significant. Realisation of the risk is likely to present a substantial liability to the site owner or other Responsible Person. Remediation required for redevelopment and may also be required under Part 2A for existing receptors.
Moderate Risk	A contaminant linkage is identifiable at the site under current and future use conditions. However, it is not likely to be a significant linkage under current conditions. It is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Actual extent of risk subject to confirmation by additional investigation and risk assessment and most likely to lie between no possibility of harm (under current conditions) and significant possibility of significant harm (under conditions created by new use). Remediation may be required for redevelopment.
Low Risk	Potential pathways and receptors exist but history of contaminative use or site conditions indicates that contamination is likely to be of limited extent and below the level of possibility of harm. It is unlikely that the site owner or other Responsible Person would face substantial liabilities from such a risk. Precautionary investigations and risk assessment advisable on change of use. Any subsequent remedial works are likely to be relatively limited.
Very Low Risk	No contaminant linkage likely to exist under current or future conditions, but this cannot be completely discounted. If harm is realised, it is likely at worst to be mild or minor. Site not capable of being determined under Part 2A where the Local Authority inspects the site. Precautionary investigations and risk assessment advisable on change of use. Otherwise no further action recommended.
No Risk	No contaminant linkage exists.

5.0 UNRESOLVED ISSUES, UNCERTAINTIES AND LIMITATIONS

5.1 Site-Specific Comments

Further assessment of the data from previous investigations, investigation of the areas of the site not previously investigated, and confirmation that remediation has been undertaken is recommended in line with the proposed end use for each parcel.

5.2 General Comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of Dorchester Living, under the terms of appointment for Hydrock. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared and provided. Should the Client require to pass copies of the report to other parties for information, the whole of the report should be so copied, but no professional liability or warranty shall be extended to other parties by Hydrock in this connection without the explicit written agreement thereto by Hydrock. The report may be assigned by the Client by way of absolute legal agreement to a purchaser of all or part of the site to which the report refers (“The Site”) without the consent of Hydrock being required and such assignment shall be effective upon written notice thereof being given to Hydrock. No further assignments shall be permitted, unless expressly agreed in writing by Hydrock. In the event of the Client entering into a legal joint venture to develop The Site, the report can be regarded as having been issued by Hydrock jointly in favour of the Client and the joint venture partner, and in respect of the report Hydrock would owe the joint venture partner the same duty of care that Hydrock owed to the Client when Hydrock was instructed to prepare the report subject to all the matters contained or referred to in the report.

This report details the findings of work carried out in October 2017. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, all potential environmental constraints or liabilities associated with the site may not have been revealed.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock cannot guarantee its accuracy or completeness. It is assumed that previous reports provided have been assigned to the Client and can be relied upon. Should this not be the case Hydrock should be informed immediately as additional work may be required.

The work has been carried out in general accordance with recognised best practice. The various methodologies used are explained in Appendix D. Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance. Where the phrase ‘suitable for use’ is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

The preliminary risk assessment process may identify potential risks to site demolition and redevelopment workers. However, consideration of occupational health and safety issues is beyond the scope of this report.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds such as Japanese knotweed, this report does not constitute a formal survey of these potential hazards.

Any site boundary line depicted on plans does not imply legal ownership of land.

6.0 RECOMMENDATIONS FOR FURTHER WORK

In order to confirm the actual risks to receptors and confirm the ground conditions with respect to potential geotechnical and geo-environmental risks, appropriate intrusive investigation for areas not previously investigated will need to be undertaken. Based on the current data, this site investigation is proposed to comprise:

- obtain site-specific radon report;
- obtain a full UXO desk top study;
- the excavation of trial pits to allow collection of samples for geotechnical and chemical analysis, to assess trench stability, over break potential and “diggability” and allow soil infiltration rate testing to be undertaken;
- the undertaking of soil infiltration rate testing;
- rotary cored boreholes to allow collection of samples for geotechnical and chemical analysis of deeper soils and allow in-situ testing (SPTs) to be undertaken to assess density of the natural rock strata to allow foundation design, and allow the installation of gas and groundwater monitoring wells;
- gas and groundwater monitoring installations to allow gas concentrations and groundwater levels to be monitored;
- gas concentration and groundwater level monitoring;
- geotechnical testing of soils and rock; and
- contamination analyses of soil and groundwater.

In addition, areas where investigation and remediation has been undertaken, remediation verification should be sought and confirmed that the proposed end use has not changed. Where the proposed end use has changed, further assessment of the investigation and/or verification data should be carried out to confirm the risk to end users will continue to be low.

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Appendix C Field Reconnaissance Photographs

Desk Study Photograph 1	
Date: 15/07/2021	
Direction Photograph Taken: Northwest	
Description: Existing aircraft hangar.	

Desk Study Photograph 2	
Date: 15/07/2021	
Direction Photograph Taken: Southeast	
Description: Looking across hardstanding in centre of site.	

Desk Study Photograph 3	
Date: 15/07/2021	
Direction Photograph Taken: South	
Description: Looking across hardstanding in centre of site.	

Desk Study Photograph 4	
Date: 15/07/2021	
Direction Photograph Taken: East	
Description: Looking across eastern part of the site.	

Desk Study Photograph 5	
Date: 15/07/2021	
Direction Photograph Taken: Northeast	
Description: Looking across northeast part of the site.	

Desk Study Photograph 6	
Date: 15/07/2021	
Direction Photograph Taken: North	
Description: Looking across northern part of the site.	

Desk Study Photograph 7	
Date: 15/07/2021	
Direction Photograph Taken: Southwest	
Description: Looking across western part of the site.	

Desk Study Photograph 8	
Date: 15/07/2021	
Direction Photograph Taken: Southwest	
Description: Looking towards hangar in centre of site (to be retained as covered play).	

Desk Study Photograph 9	
Date: 15/07/2021	
Direction Photograph Taken: Southeast	
Description: Looking across southern part of the site.	

Appendix D Exploratory Hole Logs and Photographs

Exploratory Hole Logs

Hydrock

Project: Heyford Park

Borehole No
BH301
Page No. 1 of 1

Method: Rotary Cored
Date(s): 05/08/2021
Logged By: SW / DG
Drilled By: TOR
Client: Dorchester Living
Co-ords: 451557.44, 226333.68
Checked By: RP
Flush: Air mist
Hydrock Project No: 04583
Ground Level: 123.48m OD
Scale: 1:50

Sample/Core Run (m)	Samples / Tests Depth (m)	Type	Results	Mechanical Log TCR	SCR	RQD	If: Min Mean Max	Water-Strikes
	0.20 - 0.60	B						
0.60 - 1.50				98	0	0		
	0.80 - 1.20	B						
1.50 - 3.00	1.50	SPT	N=29 (14,11,9,4,6,10)	36	0	0		
	2.92 - 3.00	C						
3.00 - 4.50	3.00	SPT	50/30mm (4,21,50)	73	73	73		
	3.76 - 3.95	C						
	4.36 - 4.50	D						
4.50 - 6.00	4.50	SPT	N=34 (3,4,4,6,8,16)	98	98	98		
	5.01 - 5.13	C						
	5.89 - 6.00	C						
	6.00	SPT	50/30mm (6,19,50)					

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular of limestone. (TOPSOIL)	0.10	(0.10)	123.38
Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular of limestone. Cobbles are very angular to sub angular of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	0.60	(0.50)	122.88
Grey sandy very angular to sub angular fine to coarse GRAVEL of limestone. Sand is fine to coarse. (WEATHERED WHITE LIMESTONE FORMATION)	0.80	(0.20)	122.68
Brown clayey fine to coarse SAND. (WEATHERED WHITE LIMESTONE FORMATION) *... 1.23m-1.29m: Limestone cobble.*	1.40	(0.60)	122.08
Grey sandy very angular to sub angular fine to coarse GRAVEL of limestone. Sand is fine to coarse. (WEATHERED WHITE LIMESTONE FORMATION)	1.50	(0.10)	121.98
Minimal core recovery. Recovered as clayey very angular to sub angular fine to coarse GRAVEL and cobbles of limestone. (WEATHERED WHITE LIMESTONE FORMATION) *... 1.50m-2.46m: Assumed zone of core loss.*	3.00	(1.50)	120.48
Assumed zone of core loss.	3.40	(0.40)	120.08
Extremely weak dark grey MUDSTONE. (WHITE LIMESTONE FORMATION)	3.54	(0.14)	119.94
Very strong grey fossiliferous fine to coarse grained LIMESTONE. (WHITE LIMESTONE FORMATION)	4.00	(0.46)	119.48
Strong dark grey arenaceous LIMESTONE. (Transitional zone). (WHITE LIMESTONE FORMATION)	4.13	(0.13)	119.35
Extremely weak dark grey MUDSTONE. (WHITE LIMESTONE FORMATION)	5.01	(0.88)	118.47
Extremely weak greenish grey sandy MUDSTONE. Sand is fine to medium. (WHITE LIMESTONE FORMATION)	5.13	(0.12)	118.35
Very strong jointed grey to dark grey fine to coarse grained LIMESTONE. (WHITE LIMESTONE FORMATION)	6.00	(0.87)	117.48

End of Borehole at 6.00m

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
	05/08	1030	0.00	0.00			Air mist	
	05/08	1630	6.00	0.00			Air mist	

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1. CAT & Genny scan prior to excavation. 2. Hole moved due to concrete base being found in hand pit. 3. No olfactory or visual evidence of contamination recorded. 4. Due to drilling technique, groundwater was unable to be monitored. 5. Hole terminated at 6.0m. 6. Monitoring well installed with response zone from 1.0 - 6.0m bgl.

Logged in general accordance with BS5930:2015

Hydrock	Project: Heyford Park			Borehole No BH302 Page No. 1 of 2
Method: Rotary Cored	Date(s): 03/08/2021 - 04/08/2021	Logged By: SW / DG		Drilled By: TOR
Client: Dorchester Living	Co-ords: 451578.65, 226375.77	Checked By: RP		Flush: Air mist
Hydrock Project No: 04583	Ground Level: 123.64m OD			Scale: 1:50

Sample/Core Run (m)	Depth (m)	Type	Results
	0.20 - 0.50	B	
0.50 - 1.50			
1.50 - 3.00	1.50	SPT	N=28 (10,15,12,5,5,6)
	2.65 - 2.74	C	
3.00 - 4.50	3.00	SPT	50/35mm (18,7,50)
	3.19 - 3.42	C	
	4.30 - 4.50	C	
4.50 - 6.00	4.50	SPT	50/235mm (1,1,3,8,31,8)
	5.45 - 5.83	C	
6.00 - 7.50	6.00	SPT	N=47 (2,9,12,11,12,12)
	7.09 - 7.19	C	
7.50 - 8.50	7.50	SPT	50/155mm (4,8,7,20,23)
	8.15 - 8.50	C	
8.50 - 10.00	8.50	SPT	50/235mm (3,6,12,17,2,19)
	8.54 - 8.71	C	
	9.75 - 10.00	C	

Mechanical Log

Core Run (m)	TCR	SCR	RQD	If: Min Mean Max	Water-Strikes
0.50 - 1.50	30	0	0		
1.50 - 3.00	47	13	0		
3.00 - 4.50	91	91	91		
4.50 - 6.00	95	95	95		
6.00 - 7.50	64	64	64		
7.50 - 8.50	95	95	95		
8.50 - 10.00	99	99	99		

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over brown silty gravelly fine to coarse SAND.	0.10	(0.10)	123.54
Gravel is sub angular to sub rounded fine to medium of limestone. (MADE GROUND)	0.50	(0.40)	123.14
Off white silty gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND) Minimal core recovery. Recovered as silt and very strong brownish grey sub angular fine to coarse GRAVEL of limestone. (WEATHERED WHITE LIMESTONE FORMATION) *... 0.50m-1.20m: Assumed zone of core loss.*	1.50	(1.00)	122.14
Assumed zone of core loss.	2.30	(0.80)	121.34
Very strong light grey fine to coarse grained LIMESTONE. (WHITE LIMESTONE FORMATION)	2.80	(0.50)	120.84
Extremely weak dark grey gravelly MUDSTONE. Gravel is sub angular medium to coarse of limestone. (WHITE LIMESTONE FORMATION)	3.00	(0.20)	120.64
Assumed zone of core loss.	3.14	(0.14)	120.50
Extremely weak dark grey MUDSTONE. (WHITE LIMESTONE FORMATION)	3.19	(0.05)	120.45
Very strong grey fossiliferous fine to coarse grained LIMESTONE. (WHITE LIMESTONE FORMATION)	3.61	(0.42)	120.03
Interbedded extremely weak dark grey sandy MUDSTONE and very strong dark grey fine to coarse grained LIMESTONE. Sand is fine to coarse. (WHITE LIMESTONE FORMATION)	3.93	(0.32)	119.71
Extremely weak dark grey MUDSTONE. (WHITE LIMESTONE FORMATION) *... 4.25m-4.30m: Thin bed of very strong fine to coarse grained limestone.* *... 4.50m-4.57m: Assumed zone of core loss.*	5.17	(1.24)	118.47
Very strong grey arenaceous fine to coarse grained LIMESTONE. (WHITE LIMESTONE FORMATION) *... 5.83m-5.90m: Thin bed of extremely weak dark grey mudstone.*	6.00	(0.83)	117.64
Assumed zone of core loss.	6.54	(0.54)	117.10
Extremely weak dark grey MUDSTONE. (WHITE LIMESTONE FORMATION) *... 6.54m-6.60m: Sub angular fine to coarse gravel of limestone.*	6.75	(0.21)	116.89
Extremely weak grey locally mottled black sandy MUDSTONE with occasional pockets of light grey silt. Sand is fine to medium. (WHITE LIMESTONE FORMATION) *... 7.50m-7.55m: Assumed zone of core loss.*	7.76	(1.01)	115.88
Very strong fine to coarse grained LIMESTONE. (WHITE LIMESTONE FORMATION) *... 8.15m-8.50m: Fossiliferous.*	8.50	(0.74)	115.14
Extremely weak dark grey MUDSTONE. (WHITE LIMESTONE FORMATION) *... 8.91m-8.94m: Thin bed of very strong grey limestone.* *... 9.05m-9.09m: Thin bed of very strong grey limestone.* *... 9.60m-9.70m: Thin bed of very strong grey limestone.*	10.00	(1.50)	113.64

Continued on Next Sheet

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
	03/08	0800	0.00	0.00			Air mist	
	03/08	1715	0.00	0.00			Air mist	
	04/08	0815	7.50	0.00		1.50	Air mist	
	04/08	1415	10.00	6.00			Air mist	

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1. CAT & Genny scan prior to excavation. 2. No olfactory or visual evidence of contamination recorded. 3. Due to drilling technique, groundwater was unable to be monitored. 4. Hole terminated at 10.0m. 5. Monitoring well installed with response zone from 1.0 to 9.0m bgl.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Borehole No
BH302
Page No. 2 of 2

Method: Rotary Cored	Date(s): 03/08/2021 - 04/08/2021	Logged By: SW / DG	Drilled By: TOR
Client: Dorchester Living	Co-ords: 451578.65, 226375.77	Checked By: RP	Flush: Air mist
Hydrock Project No: 04583	Ground Level: 123.64m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	If: Min Mean Max							
	10.00	SPT	50/175mm (12,13,19,20,11)						End of Borehole at 10.00m					

11
12
13
14
15
16
17
18
19
20

Progress and Observations									Chiselling		
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)

General Remarks:
1. CAT & Genny scan prior to excavation. 2. No olfactory or visual evidence of contamination recorded. 3. Due to drilling technique, groundwater was unable to be monitored. 4. Hole terminated at 10.0m. 5. Monitoring well installed with response zone from 1.0 to 9.0m bgl.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Borehole No
BH303
Page No. 1 of 1

Method: Rotary Cored	Date(s): 04/08/2021 - 05/08/2021	Logged By: SW / DG	Drilled By: TOR
Client: Dorchester Living	Co-ords: 451553.32, 226375.85	Checked By: RP	Flush: Air mist
Hydrock Project No: 04583	Ground Level: 123.91m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests Depth (m)	Type	Results	Mechanical Log TCR	SCR	RQD	If: Min Mean Max	Water-Strikes
	0.10 - 0.20	B						
0.20 - 1.50	0.50 - 1.00	B		63	0	0		
	1.00	SPT	N=22 (25,14,1,5,2)					
1.50 - 2.50				36	0	0		
2.50 - 4.00	2.50	SPT	50/10mm (2,23,50)	83	83	83		
	3.38 - 3.70	C						
	3.88 - 4.00	C						
4.00 - 5.00	4.00	SPT	N=34 (3,6,9,9,9,7)	73	73	73		
	4.90 - 5.00	C						
	5.00	SPT	50/230mm (6,10,13,12,18,7)					

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular of limestone. (TOPSOIL)	0.10	(0.10)	123.81
Brown silty gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.20	(1.10)	122.71
Firm brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is very angular to sub angular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)	1.50	(0.30)	122.41
Minimal core recovery. Recovered as very angular to sub angular fine to coarse GRAVEL of limestone. (WEATHERED WHITE LIMESTONE FORMATION) *... 1.50m-2.14m: Assumed zone of core loss.*	2.50	(1.00)	121.41
Assumed zone of core loss.	2.76	(0.26)	121.15
Extremely weak dark grey MUDSTONE. (WHITE LIMESTONE FORMATION) *... 2.76m-2.83m: Thin bed of very strong limestone.*	3.26	(0.50)	120.65
Very strong grey fossiliferous fine to coarse grained LIMESTONE. (WHITE LIMESTONE FORMATION)	3.70	(0.44)	120.21
Weak to medium strong dark grey MUDSTONE with abundant Bivalve shells. (WHITE LIMESTONE FORMATION)	4.00	(0.30)	119.91
Assumed zone of core loss.	4.27	(0.27)	119.64
Extremely weak dark grey MUDSTONE. (WHITE LIMESTONE FORMATION)	4.66	(0.39)	119.25
Weak to medium strong grey sandy MUDSTONE. Sand is fine to medium. (WHITE LIMESTONE FORMATION)	5.00	(0.34)	118.91

End of Borehole at 5.00m

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
	04/08	1445	0.00	0.00			Air mist	
	04/08	1715	4.00	1.50			Air mist	
	05/08	0815	4.00	1.50			Air mist	
	05/08	1000	5.00	1.50			Air mist	

Chiselling

From (m)	To (m)	Duration (HH:MM)

General Remarks:
1. CAT & Genny scan prior to excavation. 2. No olfactory or visual evidence of contamination recorded. 3. Due to drilling technique, groundwater was unable to be monitored. 4. Hole terminated at 5.0m. 5. Monitoring well installed with response zone from 1.0 to 5.0m bgl.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
HP301
Page No. 1 of 1

Method: Hand-dug Pit
Date(s): 03/08/2021
Logged By: DG
Checked By: RP
Client: Dorchester Living
Co-ords: 451558.86, 226391.85
Stability: Stable
Dimensions: 1.00m × 0.50m
Scale: 1:10
Hydrock Project No: 04583
Plant: Hand Tools

Samples / Tests								
Depth (m)	Type	Results	Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
0.10	ASB			Grass over dark brown silty fine to medium SAND with abundant rootlets. (MADE GROUND)	0.05	(0.05)		▨
				Brown silty gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND) *... Low cobble content of limestone and concrete.*	0.35	(0.30)		▨
				Dark brown sandy sub angular to sub rounded fine to coarse GRAVEL of limestone. Sand is fine to coarse. (MADE GROUND)	0.40	(0.05)		▨
				Soft dark brown slightly gravelly sandy SILT. Sand is fine to medium. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND)	0.55	(0.15)		▨
				Light brown to brownish white gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	0.60	(0.05)		░
				Base of Excavation at 0.60m				

1

2

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Hand excavated to 0.60m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Hand pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Heyford Park		Trialpit No HP302 Page No. 1 of 1
Method: Hand-dug Pit	Date(s): 03/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451541.94, 226419.22	Stability: Stable	Dimensions: 1.00m 0.50m Scale: 1:10
Hydrock Project No: 04583		Plant: Hand Tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown silty fine to medium SAND with abundant rootlets. (MADE GROUND)	0.05	(0.05)		▨
				Light brown silty slightly gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND)	0.30	(0.25)		▨
				Light brown sandy sub angular to sub rounded fine to coarse GRAVEL of flint and limestone. Sand is fine to coarse. (MADE GROUND)	0.42	(0.12)		▨
				Light brown to brownish white gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	0.50	(0.08)		⁘
				Base of Excavation at 0.50m				
					1			
					2			

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Hand excavated to 0.50m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Hand pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
HP303
Page No. 1 of 1

Method: Hand-dug Pit	Date(s): 03/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451510.73, 226456.38	Stability: Stable	Dimensions: 1.00m × 0.50m / Scale: 1:10
Hydrock Project No: 04583		Plant: Hand Tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over brown silty fine to medium SAND. (MADE GROUND)	0.05	(0.05)		▩
				Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of limestone. Cobbles of limestone and concrete. (MADE GROUND)	0.31	(0.26)		▩
				Greyish brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub angular to sub rounded fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	0.43	(0.12)		░
				Base of Excavation at 0.43m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Hand excavated to 0.43m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Hand pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No

HP304

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Method: Hand-dug Pit	Date(s): 03/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451543.20, 226469.30	Stability: Stable	Dimensions: 1.00m × 0.50m
Hydrock Project No: 04583		Plant: Hand Tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over brown silty fine to medium SAND with abundant rootlets. (TOPSOIL)	0.08	(0.08)		▨
				Off white to greyish brown gravelly sandy SILT. Sand is fine to medium. Gravel is sub angular to sub rounded fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION) *... Low cobble content of limestone.*	0.50	(0.42)		░
				Base of Excavation at 0.50m				
					1			
					2			

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Hand excavated to 0.50m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Hand pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
HP305
Page No. 1 of 1

Method: Hand-dug Pit
Date(s): 04/08/2021
Logged By: DG
Checked By: RP
Client: Dorchester Living
Co-ords: 451569.17, 226506.76
Stability: Stable
Dimensions: 1.00m × 0.50m
Scale: 1:10
Hydrock Project No: 04583
Plant: Hand Tools

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over brown silty fine to medium SAND with abundant rootlets. (MADE GROUND)	0.10	(0.10)		▨
				Light brown sandy sub angular to sub rounded fine to coarse GRAVEL of limestone. Sand is fine to coarse. (MADE GROUND)	0.35	(0.25)		▨
				Off white to brownish white sandy clayey SILT. Sand is fine to medium. (WEATHERED WHITE LIMESTONE FORMATION)	0.40	(0.05)		✕
				Base of Excavation at 0.40m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Hand excavated to 0.40m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Hand pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
HP306
Page No. 1 of 1

Method: Hand-dug Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451597.95, 226498.55	Stability: Stable	Dimensions: 1.00m × 0.50m Scale: 1:10
Hydrock Project No: 04583		Plant: Hand Tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Brown silty gravelly fine to medium SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND) ... *Low cobble content of limestone.*	0.23	(0.23)		▩
				Light brown sandy sub angular to sub rounded fine to coarse GRAVEL of flint and limestone. Sand is fine to coarse. (MADE GROUND)	0.40	(0.17)		▩
				Dark grey to greyish black slightly sandy sub angular to sub rounded fine to coarse GRAVEL of limestone, flint and coal. Sand is fine to coarse. (MADE GROUND) ... *Low cobble content of limestone.*	0.70	(0.30)		▩
				Base of Excavation at 0.70m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Hand excavated to 0.70m bgl. 3. No olfactory or visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Hand pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock	Project: Heyford Park		Trialpit No HP307 Page No. 1 of 1
Method: Hand-dug Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451675.03, 226476.52	Stability: Stable	Dimensions: 1.00m × 0.50m Scale: 1:10
Hydrock Project No: 04583		Plant: Hand Tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Light brown silty slightly gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND)	0.16	(0.16)		▨
				Light brown sandy sub angular to sub rounded fine to coarse GRAVEL of limestone with a low cobble content. Sand is fine to coarse. Cobbles are angular of limestone. (MADE GROUND)	0.50	(0.34)		▨
				Base of Excavation at 0.50m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Hand excavated to 0.50m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Hand pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
HP308
Page No. 1 of 1

Method: Hand-dug Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451686.85, 226453.35	Stability: Stable	Dimensions: 1.00m × 0.50m
Hydrock Project No: 04583		Plant: Hand Tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown silty fine to medium SAND with abundant rootlets. (MADE GROUND)	0.10	(0.10)		▨
				Light brown sandy sub angular to sub rounded fine to coarse GRAVEL of limestone with a low cobble content. Sand is fine to coarse. Cobbles are angular of limestone. (MADE GROUND)	0.45	(0.35)		▨
				Off white to brownish white sandy clayey SILT. Sand is fine to medium. (WEATHERED WHITE LIMESTONE FORMATION)	0.50	(0.05)		× ×
				Base of Excavation at 0.50m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Hand excavated to 0.50m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Hand pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock	Project: Heyford Park	Trialpit No TP301 Page No. 1 of 1		
Method: Trial Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP	
Client: Dorchester Living	Co-ords: 451529.34, 226324.63	Stability: Stable	Dimensions: 2.00m 0.60m	Scale: 1:25
Hydrock Project No: 04583	Ground Level: 124.15m OD	Plant: JCB 3CX		

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20 - 0.40	B			Light brown silty gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of flint and limestone. (MADE GROUND)	0.55	(0.55)	123.60	▩
				Base of Excavation at 0.55m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 0.55m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. Unknown cable uncovered at 0.55m. 5. Trial pit terminated after uncovering cable. 6. Trial pit backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock	Project: Heyford Park	Trialpit No TP302 Page No. 1 of 1

Method: Trial Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451570.81, 226338.62	Stability: Stable	Dimensions: 2.50m 0.60m
Hydrock Project No: 04583	Ground Level: 123.22m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests		
Depth (m)	Type	Results
0.10	D	
0.10	ES	
0.20 - 0.50	B	
0.50	ES	
0.80 - 1.00	B	
0.90	ES	
1.20	ES	
1.20 - 1.40	B	
1.40 - 1.60	B	

Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
	Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to medium of limestone. (TOPSOIL)	0.15	(0.15)	123.07	
	Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular fine to coarse of limestone. Cobbles are very angular to sub angular of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	0.75	(0.60)	122.47	
	Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to medium. Gravel is sub rounded fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.05	(0.30)	122.17	
	Light brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is sub angular to sub rounded fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.40	(0.35)	121.82	
▼	Strong grey fine to coarse grained LIMESTONE. Recovered as very angular to sub angular fine to coarse gravel and cobbles. (WHITE LIMESTONE FORMATION)	1.60	(0.20)	121.62	
	Base of Excavation at 1.60m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 1.60m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. Groundwater seepage noted at base of pit. 5. Trial pit terminated due to refusal on rock after progressing with toothed bucket.. 6. Soakaway test conducted within pit. 7. Soakaway remained stable during soakaway testing. 8. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No

TP303

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Method: Trial Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451604.03, 226358.96	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: 04583	Ground Level: 122.91m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to medium of limestone. (MADE GROUND)	0.05	(0.05)	122.86	▨
				Base of Excavation at 0.05m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 0.05m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Trial pit terminated due to refusal on concrete. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
TP304
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Method: Trial Pit
Date(s): 05/08/2021
Logged By: DG
Checked By: RP
Client: Dorchester Living
Co-ords: 451587.60, 226390.27
Stability: Stable
Dimensions: 2.50m × 0.60m
Scale: 1:25
Hydrock Project No: 04583
Ground Level: 123.82m OD
Plant: JCB 3CX

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.10	D		
0.10	ES		
0.20 - 0.40	B		
0.30	ES		
0.50	ES		
0.50 - 0.60	B		
0.70 - 0.80	B		
1.30 - 1.50	B		
1.50 - 1.70	B		
1.60	HSV	30kPa	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Brown silty gravelly fine to coarse SAND with abundant rootlets. Gravel is sub angular to sub rounded fine to coarse of limestone, brick and concrete. (MADE GROUND)	0.15	(0.15)	123.67	▨
Light brown silty gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to medium of limestone. (MADE GROUND)	0.45	(0.30)	123.37	▨
Off white to brownish white silty gravelly fine to coarse SAND with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of limestone. Cobbles are sub angular of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	0.63	(0.18)	123.19	▒
Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is sub angular to sub rounded fine to medium of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.25	(0.62)	122.57	▤
Strong grey fine to coarse grained LIMESTONE. Recovered as very angular to sub angular fine to coarse gravel and cobbles. (May not have been in-situ). (WHITE LIMESTONE FORMATION)	1.50	(0.25)	122.32	▦
Soft light blueish grey mottled brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub rounded fine of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	2.20	(0.70)	121.62	▤

Base of Excavation at 2.20m

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 2.20m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Trial pit terminated due to refusal on rock after progressing with toothed bucket. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No

TP305

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Method: Trial Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451531.40, 226378.79	Stability: Stable	Dimensions: 2.00m 0.60m
Hydrock Project No: 04583	Ground Level: 124.39m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.05	D		
0.05	ES		
0.10 - 0.40	B		
0.20	ES		
0.60	ES		
0.60 - 1.10	B		

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to medium of limestone. (MADE GROUND)	0.10	(0.10)	124.29	▨
Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular fine to coarse of limestone, plastic and metal. Cobbles are very angular to sub angular of limestone. (MADE GROUND)	0.50	(0.40)	123.89	▨
Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular fine to coarse of limestone. Cobbles are very angular to sub angular of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.10	(0.60)	123.29	⁙
Base of Excavation at 1.10m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 1.10m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Trial pit terminated due to refusal on rock after progressing with toothed bucket.. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
TP306
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Method: Trial Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451525.59, 226412.56	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: 04583	Ground Level: 124.40m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.10	ES		
0.10 - 0.25	B		
0.30 - 0.70	B		
0.50	ES		
0.70 - 0.85	B		

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to medium of limestone. (TOPSOIL)	0.25	(0.25)	124.15	▨
Light brownish white clayey sandy fine to coarse very angular to sub angular fine to coarse GRAVEL and cobbles of limestone. Sand is fine to coarse. (WEATHERED WHITE LIMESTONE FORMATION)	0.70	(0.45)	123.70	░
Strong light grey fine to coarse grained LIMESTONE. Recovered as very angular to sub angular fine to coarse gravel and cobbles. (WHITE LIMESTONE FORMATION)	0.85	(0.15)	123.55	▦

Base of Excavation at 0.85m

1

2

3

4

5

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 0.85m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Trial pit terminated due to refusal on rock after progressing with toothed bucket.. 6. Soakaway test conducted within pit. 7. Soakaway remained stable during soakaway testing. 8. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
TP307
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Method: Trial Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451562.18, 226454.96	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: 04583	Ground Level: 124.38m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.05	D		
0.05	ES		
0.10 - 0.20	B		
0.30	ES		
0.50	ES		
0.50 - 1.00	B		

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to medium of limestone. (TOPSOIL)	0.10	(0.10)	124.28	▨
Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular fine to coarse of limestone. Cobbles are very angular to sub angular of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	0.35	(0.25)	124.03	░
Strong grey fine to coarse grained LIMESTONE. Recovered as very angular to sub angular fine to coarse gravel and cobbles. (WHITE LIMESTONE FORMATION)	1.10	(0.75)	123.28	▦

Base of Excavation at 1.10m

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 1.10m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Trial pit terminated due to refusal on rock after progressing with toothed bucket.. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Project: Heyford Park

Trialpit No
TP308
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Method: Trial Pit
Date(s): 05/08/2021
Logged By: DG
Checked By: RP
Client: Dorchester Living
Co-ords: 451601.15, 226487.47
Stability: Stable
Dimensions: 2.00m 0.60m
Scale: 1:25
Hydrock Project No: 04583
Ground Level: 124.71m OD
Plant: JCB 3CX

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 - 0.30	B			Dark brown silty slightly gravelly fine to medium SAND. Gravel is sub angular to sub rounded fine limestone (MADE GROUND)	0.10	(0.10)	124.61	▨
0.20	ES			Brown silty gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND)	0.40	(0.30)	124.31	▨
				Base of Excavation at 0.40m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 0.40m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Trial pit terminated due to refusal on concrete. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No

TP309

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Method: Trial Pit

Date(s): 04/08/2021

Logged By: DG

Checked By: RP

Client: Dorchester Living

Co-ords: 451631.95, 226475.59

Stability: Stable

Dimensions: 2.50m × 0.60m

Scale: 1:25

Hydrock Project No: 04583

Ground Level: 124.33m OD

Plant: JCB 3CX

Samples / Tests			Water-Strikes
Depth (m)	Type	Results	
0.05	D		
0.05	ES		
0.20 - 0.70	B		
0.40	ES		
0.70 - 1.00	B		
0.80	HSV	55kPa	
0.90	ES		
1.20	ES		
1.50 - 2.00	B		
1.50	HSV	107kPa	
2.00 - 2.20	B		
2.10	ES		
			▼

Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to medium of limestone and plastic. (MADE GROUND)	0.10	(0.10)	124.23	
Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular fine to coarse of limestone. Cobbles are very angular to sub angular of limestone. (MADE GROUND)	0.70	(0.60)	123.63	
Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to medium. Gravel is sub rounded fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.15	(0.45)	123.18	
Firm to stiff light grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is very angular to sub angular fine to medium of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	2.00	(0.85)	122.33	
Soft light grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is very angular to sub angular fine to medium of limestone. (Hydrocarbon odour). (WEATHERED WHITE LIMESTONE FORMATION)	2.20	(0.20)	122.13	

Base of Excavation at 2.20m

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 1.60m bgl. 3. Hydrocarbon odour noted at 2.0m bgl. 4. Minor groundwater seepage at 2.20m. 5. Trial pit terminated due to refusal on rock after progressing with toothed bucket.. 6. Soakaway test conducted within pit. 7. Soakaway remained stable during soakaway testing. 8. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No

TP310

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Method: Trial Pit	Date(s): 05/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451657.70, 226462.02	Stability: Stable	Dimensions: 2.50m × 0.60m
Hydrock Project No: 04583	Ground Level: 125.16m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20 - 0.60 0.50 1.00 1.00 - 1.40	B ES ES B			Grass over brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular fine to coarse of limestone, brick and plastic. Cobbles are angular of brick and limestone. (MADE GROUND)	1.40	(1.40)	123.76	▩
1.40 - 1.60 1.50	B ES			Soft to firm friable brown slightly sandy slightly gravelly CLAY with a low cobble content. Sand is fine to medium. Gravel is sub angular to sub rounded fine to coarse of limestone, brick and plastic. Cobbles are of brick and limestone. (MADE GROUND)	1.90	(0.50)	123.26	▩
1.90 - 2.10 2.00	B ES			Firm brown slightly sandy CLAY. Sand is fine to medium. (WEATHERED WHITE LIMESTONE FORMATION)	2.30	(0.40)	122.86	▤
2.30 - 2.60 2.50	B ES			Firm grey mottled light brown slightly sandy gravelly CLAY with a low cobble content. Sand is fine to medium. Gravel is very angular to subangular fine to coarse of limestone. Cobbles are of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	2.60	(0.30)	122.56	▤
2.70 - 3.00 3.00 - 3.40	B B		▼	Firm grey mottled brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is very angular to sub angular fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	3.40	(0.80)	121.76	▤
				Base of Excavation at 3.40m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 3.40m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. Groundwater seepage at 3.40m. 5. Trial pit terminated due to refusal on rock after progressing with toothed bucket.. 6. Hole remained stable. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
TP311
Page No. 1 of 1

Method: Trial Pit	Date(s): 05/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451642.74, 226435.24	Stability: Stable	Dimensions: 2.50m × 0.60m Scale: 1:25
Hydrock Project No: 04583	Ground Level: 123.74m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Brown silty gravelly fine to coarse SAND with abundant rootlets. Gravel is sub angular to sub rounded fine to coarse of limestone, brick and concrete. (MADE GROUND)	0.10	(0.10)	123.64	
0.10 - 0.40 0.20	B ES			Light brown silty gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to medium of limestone. (MADE GROUND)	0.40	(0.30)	123.34	
0.40 - 0.60 0.50	B ES			Off white to brownish white silty gravelly fine to coarse SAND with a low cobble content. Gravel is sub angular to sub rounded fine to coarse of limestone. Cobbles are sub angular of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	0.60	(0.20)	123.14	
0.80 - 1.40 1.00	B ES			Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is sub angular to sub rounded fine to medium of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.60	(1.00)	122.14	
1.60 - 1.90 1.70	B ES			Strong grey fine to coarse grained LIMESTONE. Recovered as very angular to sub angular fine to coarse gravel and cobbles. (May not be in-situ). (WHITE LIMESTONE FORMATION)	1.90	(0.30)	121.84	
1.90 - 2.20 2.00	B ES		▼ ▽	Soft light blueish grey mottled brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub rounded fine of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	2.20	(0.30)	121.54	

Base of Excavation at 2.20m

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 2.20m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. Groundwater seepage at 2.20m. 5. Trial pit terminated due to refusal on rock after progressing with toothed bucket.. 6. Hole remained stable. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No

TP312

Page No. 1 of 1

Method: Trial Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451675.45, 226409.73	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: 04583	Ground Level: 123.29m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to medium of limestone. (MADE GROUND)	0.05	(0.05)	123.24	▨
				Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular fine to coarse of limestone. Cobbles are very angular to sub angular of limestone. (MADE GROUND)	0.40	(0.35)	122.89	▨
				Base of Excavation at 0.40m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 0.40m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Trial pit terminated due to refusal on concrete. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No
TP312A
Page No. 1 of 1

Method: Trial Pit	Date(s): 04/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451664.81, 226404.96	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: 04583	Ground Level: 123.29m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Grass over dark brown silty slightly gravelly fine to coarse SAND. Gravel is very angular to sub angular fine to medium of limestone. (MADE GROUND)	0.05	(0.05)	123.24	▨
				Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular fine to coarse of limestone. Cobbles are very angular to sub angular of limestone. (MADE GROUND)	0.40	(0.35)	122.89	▨
				Base of Excavation at 0.40m				

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 0.40m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Trial pit terminated due to refusal on concrete. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Trialpit No

TP313

Page No. 1 of 1

Method: Trial Pit	Date(s): 05/08/2021	Logged By: DG	Checked By: RP
Client: Dorchester Living	Co-ords: 451611.54, 226468.86	Stability: Stable	Dimensions: 2.00m × 0.60m
Hydrock Project No: 04583	Ground Level: 124.33m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 - 0.50	B			Brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is very angular to sub angular of concrete, metal and brick. (MADE GROUND)				▨
0.30	ES					(0.60)		
					0.60		123.73	
0.65	ES			Asphalt. (MADE GROUND)	0.70	(0.10)	123.63	▨

Base of Excavation at 0.70m

General Remarks:
1. CAT and Genny scan prior to excavation. 2. Machine excavated to 0.70m bgl. 3. No olfactory of visual evidence of contamination recorded. 4. No groundwater encountered. 5. Hole remained stable. 6. Trial pit terminated due to refusal on concrete. 7. Trial pit backfilled with arisings on completion.

Logged in general accordance with BS5930:2015

Hydrock	Project: Heyford Park		Borehole No WS301 Page No. 1 of 1
Method: Window Sampler	Date(s): 02/08/2021	Logged By: DG / SW	Drilled By: TopDrill
Client: Dorchester Living	Co-ords: 451636.86, 226384.18	Checked By:	Rig:
Hydrock Project No: 04583	Ground Level: 123.39m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Grass over brown silty fine to coarse SAND with abundant rootlets. (MADE GROUND)	0.05	(0.05)	123.34	■	▨
			0.20	ES			Light brown to brownish white silty gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND)	0.30	(0.25)	123.09	▨	▨
							End of Borehole at 0.30m					
								1				
								2				
								3				
								4				
								5				
								6				

General Remarks:
1. CAT & Genny scan prior to excavation. 2. No olfactory or visual evidence of contamination recorded. 3. No groundwater encountered. 4. Hole terminated due to refusal at 0.3m. 5. Window sample backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Borehole No
WS301A
Page No. 1 of 1

Method: Window Sampler

Date(s): 02/08/2021

Logged By: DG / SW

Drilled By: TopDrill

Client: Dorchester Living

Co-ords: 451637.20, 226387.05

Checked By:

Rig:

Hydrock Project No: 04583

Ground Level: 123.37m OD

Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
			0.10	ES			Grass over dark brown silty fine to medium SAND with abundant rootlets. (MADE GROUND)	0.10	(0.10)	123.27	▨	▨
			0.10 - 0.60	B			Light brown to brownish white slightly gravelly fine to coarse SAND. Gravel is sub angular to sub rounded fine to coarse of limestone. (Highly weathered). (MADE GROUND) ***... 0.30m-0.50m: Low cobble content of limestone.*** ***... 0.40m-0.60m: Relatively more silty.***	0.60	(0.50)	122.77	▨	▨
			0.50	ES								
			0.60	SPT	50/5mm (4,24,50)		End of Borehole at 0.60m					

General Remarks:
1. CAT & Genny scan prior to excavation. 2. No olfactory or visual evidence of contamination recorded. 3. No groundwater encountered. 4. Hole terminated due to refusal at 0.6m. 5. Window sample backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Borehole No

WS302

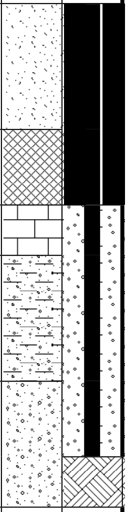
Page No. 1 of 1

Method: Window Sampler	Date(s): 02/08/2021	Logged By: DG / SW	Drilled By: TopDrill
Client: Dorchester Living	Co-ords: 451595.17, 226399.68	Checked By:	Rig:
Hydrock Project No: 04583	Ground Level: 123.83m OD		Scale: 1:30

Sample Run Info			Testing		
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results
			0.60	ES	
			0.60 - 0.80	B	
0.80 - 1.00	101mm	100%	0.80	SPT	N=13 (3,4,4,3,3,3)
1.00 - 2.00	89mm	100%	0.80 - 1.00	B	
			1.00	ES	
			1.00 - 1.50	B	
			1.50 - 2.00	B	
			1.80	ES	
			2.00	SPT	50/10mm (10,14,50)

Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD
	Very strong grey coarse aggregate CONCRETE. Aggregate is 50%, matrix is 45%, voids are 5%. (CONCRETE)	0.50	(0.50)	123.33
	Brown sandy sub angular to sub rounded fine to coarse GRAVEL of flint and limestone. (MADE GROUND)	0.80	(0.30)	123.03
	Medium strong white fine to coarse grained LIMESTONE. (WEATHERED WHITE LIMESTONE FORMATION)	1.00	(0.20)	122.83
	Stiff grey mottled light grey / white slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is very angular to sub angular fine to medium of limestone. (Strong hydrocarbon odour). (WEATHERED WHITE LIMESTONE FORMATION)	1.50	(0.50)	122.33
▼	Greyish white sandy sub angular fine to coarse GRAVEL of limestone. Sand is fine to coarse. (Strong hydrocarbon odour). (WEATHERED WHITE LIMESTONE FORMATION)	2.00	(0.50)	121.83

End of Borehole at 2.00m



General Remarks:
1. CAT & Genny scan prior to excavation. 2. Hydrocarbon odour between 1.0 and 2.0m bgl. 3. Groundwater struck at 2.0m. 4. Hole terminated due to refusal at 2.0m. 5. Monitoring well installed with response zone from 0.8 to 1.8m bgl.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park		Borehole No WS303 Page No. 1 of 1

Method: Window Sampler	Date(s): 02/08/2021	Logged By: DG / SW	Drilled By: TopDrill
Client: Dorchester Living	Co-ords: 451560.34, 226431.96	Checked By:	Rig:
Hydrock Project No: 04583	Ground Level: 124.43m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
							Very strong grey coarse aggregate CONCRETE. Aggregate is 50%, matrix is 45%, voids are 5%. (CONCRETE)	0.32	(0.32)	124.11		
			0.35 0.41 - 0.56	ES B			Brown sandy sub angular to sub rounded fine to coarse GRAVEL of flint and limestone with a low cobble content. Sand is fine to coarse. Cobbles are sub angular of limestone. (MADE GROUND)	0.41	(0.09)	124.02		
			0.50 0.60 0.60	ES SPT D	 50/150mm (7,24,42,8)		Soft friable greyish brown very sandy SILT. Sand is fine to medium. (MADE GROUND)	0.62	(0.21)	123.81		
							End of Borehole at 0.62m					

General Remarks:
1. CAT & Genny scan prior to excavation. 2. No olfactory or visual evidence of contamination recorded. 3. No groundwater encountered. 4. Hole terminated due to refusal at 0.62m. 5. Window sample backfilled with arisings.

Logged in general accordance with BS5930:2015

Project: Heyford Park			Borehole No WS304 Page No. 1 of 1
Method: Window Sampler	Date(s): 02/08/2021	Logged By: DG / SW	Drilled By: TopDrill
Client: Dorchester Living	Co-ords: 451561.76, 226477.85	Checked By:	Rig:
Hydrock Project No: 04583	Ground Level: 124.73m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrum-entation / Backfill
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results							
			0.05	ES			Grass over brown silty fine to medium SAND with abundant rootlets. (TOPSOIL)	0.05	(0.05)	124.68		
			0.05 - 0.35	B			Off white to brownish white silty gravelly fine to coarse SAND with a low cobble content. Gravel is sub angular to sub rounded fine to coarse limestone. Cobbles are sub angular of limestone. (WEATHERED WHITE LIMESTONE FORMATION)		(0.55)			
			0.30	ES								
			0.50	ES								
			0.60	SPT	50/75mm (4,21,50)		End of Borehole at 0.60m	0.60		124.13		

General Remarks:
1. CAT & Genny scan prior to excavation. 2. No olfactory or visual evidence of contamination recorded. 3. No groundwater encountered. 4. Hole terminated due to refusal at 0.60m. 5. Window sample backfilled with arisings.

Logged in general accordance with BS5930:2015

Hydrock

Project: Heyford Park

Borehole No
WS305
Page No. 1 of 1

Method: Window Sampler	Date(s): 02/08/2021	Logged By: DG / SW	Drilled By: TopDrill
Client: Dorchester Living	Co-ords: 451612.82, 226463.09	Checked By:	Rig:
Hydrock Project No: 04583	Ground Level: 124.38m OD		Scale: 1:30

Sample Run Info			Testing			Water-Strikes
Sample Run	Run Ø	Recovery	Depth (m)	Type	Results	
			0.30 - 0.40	B		
			0.35	ES		
			0.40 - 0.55	B		
			0.45	ES		
			0.55 - 0.72	B		
0.86 - 1.00	101mm	100%	0.60	ES		
1.00 - 2.00	89mm	100%	0.72 - 0.83	B		
			0.75	ES		
			0.86	SPT	N=12 (5,5,3,3,3,3)	
			0.90	ES		
			1.00 - 1.30	B		
			1.10	ES		
			1.30 - 1.43	B		
			1.43 - 1.65	B		
2.00 - 2.50	89mm	100%	1.65 - 2.00	B		
			1.90	ES		
			2.00	SPT	N=22 (1,2,3,3,4,12)	
			2.00 - 2.45	D		
			2.00 - 2.50	B		
			2.50	SPT	0/0mm (50)	

Stratum Description	Depth mbgl	Thickness (m)	Level m OD
Very strong light grey to grey coarse aggregate CONCRETE. Aggregate is 50%, matrix is 45%, voids are 5%. (CONCRETE)	0.30	(0.30)	124.08
Brown sandy sub angular fine to coarse GRAVEL of flint and limestone. Sand is fine to medium. (MADE GROUND)	0.40	(0.10)	123.98
Soft light brown slightly gravelly very sandy SILT. Sand is fine to medium. Gravel is sub angular fine to coarse limestone. (MADE GROUND)	0.55	(0.15)	123.83
Soft greyish brown slightly gravelly sandy SILT. Sand is fine to medium. Gravel is sub angular fine to coarse of limestone. (Strong hydrocarbon odour). (MADE GROUND)	0.72	(0.17)	123.66
Dark grey sandy clayey sub angular to sub rounded fine to coarse GRAVEL of asphalt and slag. Sand is fine to coarse. (MADE GROUND)	0.86	(0.14)	123.52
Firm brown slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of limestone. (MADE GROUND)	1.00	(0.14)	123.38
Soft brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub angular fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.30	(0.30)	123.08
Firm light brown slightly gravelly CLAY. Gravel is very angular to sub angular fine to medium of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	1.43	(0.13)	122.95
Light brown to brownish white sandy very angular to sub angular fine to coarse GRAVEL. Sand is fine to coarse. (WEATHERED WHITE LIMESTONE FORMATION)	1.65	(0.22)	122.73
Stiff brown mottled light grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is very angular to sub angular fine to coarse of limestone. (WEATHERED WHITE LIMESTONE FORMATION)	2.50	(0.85)	121.88

End of Borehole at 2.50m

General Remarks:
1. CAT & Genny scan prior to excavation. 2. Strong hydrocarbon odour at 0.55m bgl. 3. No groundwater encountered. 4. Hole terminated due to refusal at 2.5m. 5. Monitoring well installed with response zone from 1.25 to 2.5m bgl.

Logged in general accordance with BS5930:2015

Exploratory Hole Photographs

Site Investigation Photograph 1

Date: 06/08/2021

Direction Photograph Taken: n/a.

Description: BH301 0.6 – 1.5m bgl

Site Investigation Photograph 2

Date: 06/08/2021

Direction Photograph Taken: n/a.

Description: BH301 1.5 – 3.0m bgl

<table>
<tr><td>Site Investigation Photograph 3</td><td rowspan="4">
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<tr><td>Date: 06/08/2021</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: BH301 3.0 – 4.5m bgl</td></tr>
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<table>
<tr><td>Site Investigation Photograph 4</td><td rowspan="4">
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<tr><td>Date: 06/08/2021</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: BH301 4.5 – 6.0m bgl</td></tr>
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Site Investigation Photograph 5

Date: 06/08/2021

Direction Photograph Taken: n/a.

Description: BH302 0.5 – 1.5m bgl

Site Investigation Photograph 6

Date: 06/08/2021

Direction Photograph Taken: n/a.

Description: BH302 1.5 – 3.0m bgl

Site Investigation Photograph 7

Date: 06/08/2021

Direction Photograph Taken: n/a.

Description: BH302 4.5 – 6.0m bgl

Site Investigation Photograph 8

Date: 06/08/2021

Direction Photograph Taken: n/a.

Description: BH302 7.5 – 8.5m bgl

<table>
<tr><td>Site Investigation Photograph 9</td><td rowspan="4"> </td></tr>
<tr><td>Date: 06/08/2021</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: BH302 8.5 – 10.0m bgl</td></tr>
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<table>
<tr><td>Site Investigation Photograph 10</td><td rowspan="4"> </td></tr>
<tr><td>Date: 06/08/2021</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: BH303 0.2 – 1.0m bgl</td></tr>
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Site Investigation Photograph 11

Date: 06/08/2021

Direction Photograph Taken: n/a.

Description: BH303 1.0 – 2.5m bgl

Site Investigation Photograph 12

Date: 06/08/2021

Direction Photograph Taken: n/a.

Description: BH303 2.5 – 4.0m bgl

Site Investigation Photograph 13

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: TP301

Site Investigation Photograph 14

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: TP302

Site Investigation Photograph 15	
Date: 04/08/2021	
Direction Photograph Taken: n/a.	
Description: TP303	

Site Investigation Photograph 16	
Date: 05/08/2021	
Direction Photograph Taken: n/a.	
Description: TP304	

Site Investigation Photograph 17

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: TP305

Site Investigation Photograph 18

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: TP306

<table>
<tr><td>Site Investigation Photograph 19</td><td rowspan="4"></td></tr>
<tr><td>Date: 04/08/2021</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: TP307</td></tr>
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Site Investigation Photograph 20	
Date: 04/08/2021	
Direction Photograph Taken: n/a.	
Description: TP309	

Site Investigation Photograph 21	
Date: 05/08/2021	
Direction Photograph Taken: n/a.	
Description: TP310	

Site Investigation Photograph 22

Date: 05/08/2021

Direction Photograph Taken: n/a.

Description: TP311

Site Investigation Photograph 23

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: TP312

Site Investigation Photograph 24

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: TP312a

Heyford Park Primary School
Dorchester
04583
TP312a
04/08/21
0.00
0.90

Site Investigation Photograph 25

Date: 05/08/2021

Direction Photograph Taken: n/a.

Description: TP313

Heyford Park Primary School
Dorchester
04583
TP313
05/08/21
0.00
0.70

<table>
<tr><td>Site Investigation Photograph 26</td><td rowspan="4"></td></tr>
<tr><td>Date: 04/08/2021</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: Arisings TP301</td></tr>
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<tr><td>Site Investigation Photograph 27</td><td rowspan="4"></td></tr>
<tr><td>Date: 04/08/2021</td></tr>
<tr><td>Direction Photograph Taken: n/a.</td></tr>
<tr><td>Description: Arisings TP302</td></tr>
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Site Investigation Photograph 28

Date: 05/08/2021

Direction Photograph Taken: n/a.

Description: Arisings TP304

Site Investigation Photograph 29

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: Arisings TP305

Site Investigation Photograph 30	
Date: 04/08/2021	
Direction Photograph Taken: n/a.	
Description: Arisings TP306	

Site Investigation Photograph 31	
Date: 04/08/2021	
Direction Photograph Taken: n/a.	
Description: Arisings TP307	

Site Investigation Photograph 32

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: Arisings TP309

Site Investigation Photograph 33

Date: 05/08/2021

Direction Photograph Taken: n/a.

Description: Arisings TP310

Site Investigation Photograph 34

Date: 05/08/2021

Direction Photograph Taken: n/a.

Description: Arisings TP311

Site Investigation Photograph 35

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: Arisings TP312

Site Investigation Photograph 36	
Date: 04/08/2021	
Direction Photograph Taken: n/a.	
Description: Arisings TP312a	

Site Investigation Photograph 37	
Date: 05/08/2021	
Direction Photograph Taken: n/a.	
Description: Arisings TP313	

Site Investigation Photograph 38

Date: 03/08/2021

Direction Photograph Taken: n/a.

Description: HP301

Site Investigation Photograph 39

Date: 03/08/2021

Direction Photograph Taken: n/a.

Description: HP302

Site Investigation Photograph 40	
Date: 03/08/2021	
Direction Photograph Taken: n/a.	
Description: HP303	

Site Investigation Photograph 41	
Date: 03/08/2021	
Direction Photograph Taken: n/a.	
Description: HP304	

Site Investigation Photograph 42

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: HP305

Hydrock
www.hydrock.com
PROJECT NAME Heyford Park Primary School
CLIENT Dorchester
PROJECT NO. 04583
HOLE ID HP305
DATE 04/08/21
DEPTH FROM 0.00 m TO 0.40 m

Site Investigation Photograph 43

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: HP306

Hydrock
www.hydrock.com
PROJECT NAME Heyford Park Primary School
CLIENT Dorchester
PROJECT NO. 04583
HOLE ID HP306
DATE 04/08/21
DEPTH FROM 0.00 m TO 0.70

Site Investigation Photograph 44

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: HP307

Site Investigation Photograph 45

Date: 04/08/2021

Direction Photograph Taken: n/a.

Description: HP308

Appendix E Geotechnical Test Results and Geotechnical Plots

Geotechnical Laboratory Test Results

UKAS TESTING
4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client:	Hydrock Consultants Ltd	Client Reference:	4583
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	21-93690
		Date Sampled:	05/08/2021
		Date Received:	11/08/2021
Contact:	Rebecca Price	Date Tested:	25/08/2021
Site Address:	Heyford Park Primary School	Sampled By:	Client

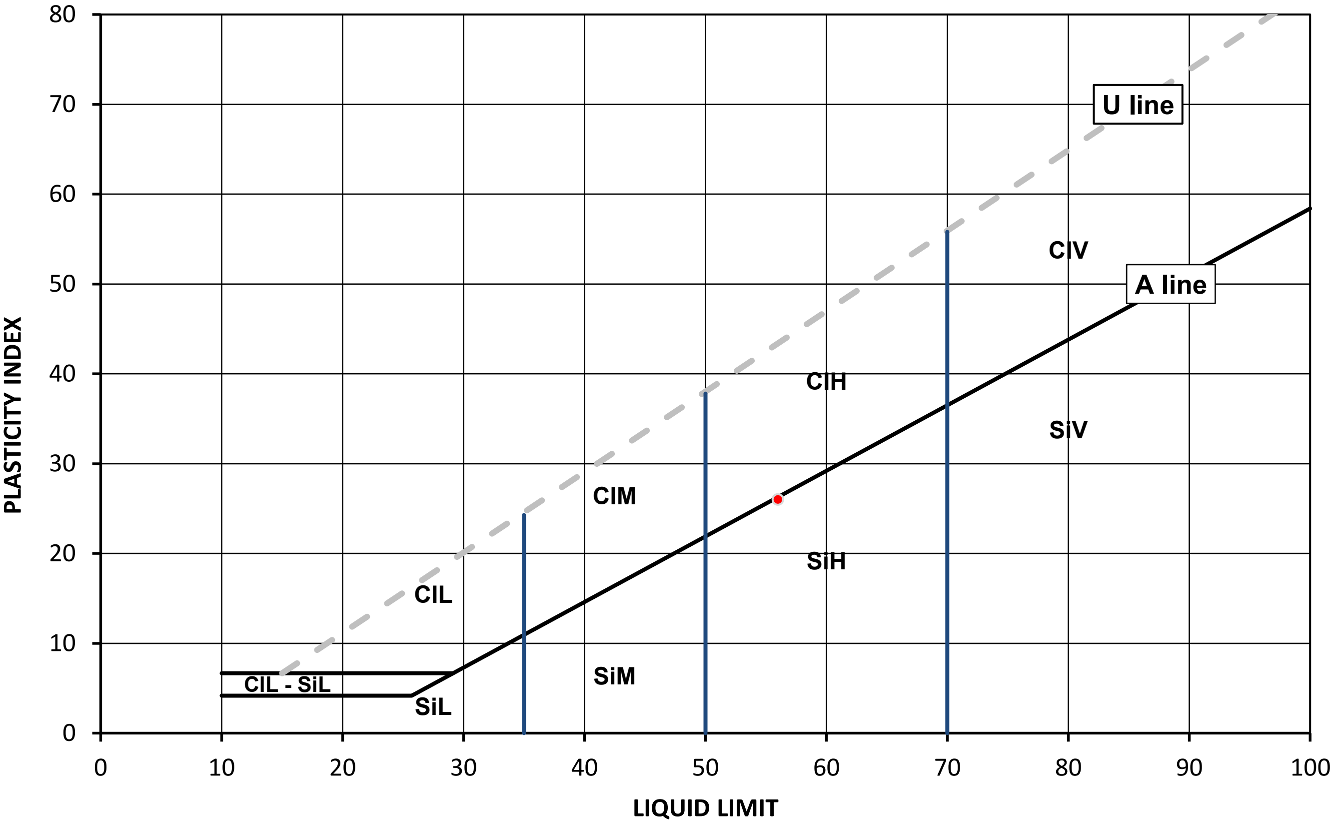
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1977323	Depth Top [m]:	0.80
Hole No.:	TP311	Depth Base [m]:	1.40
Sample Reference:	3B	Sample Type:	B
Sample Description:	Brown slightly gravelly slightly sandy CLAY		

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425μm BS Test Sieve
20	56	30	26	88



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

GF 236.11

UKAS TESTING 4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD

Contact: Rebecca Price

Site Address: Heyford Park Primary School

Client Reference: 4583
Job Number: 21-93690
Date Sampled: 04/08/2021
Date Received: 11/08/2021
Date Tested: 23/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

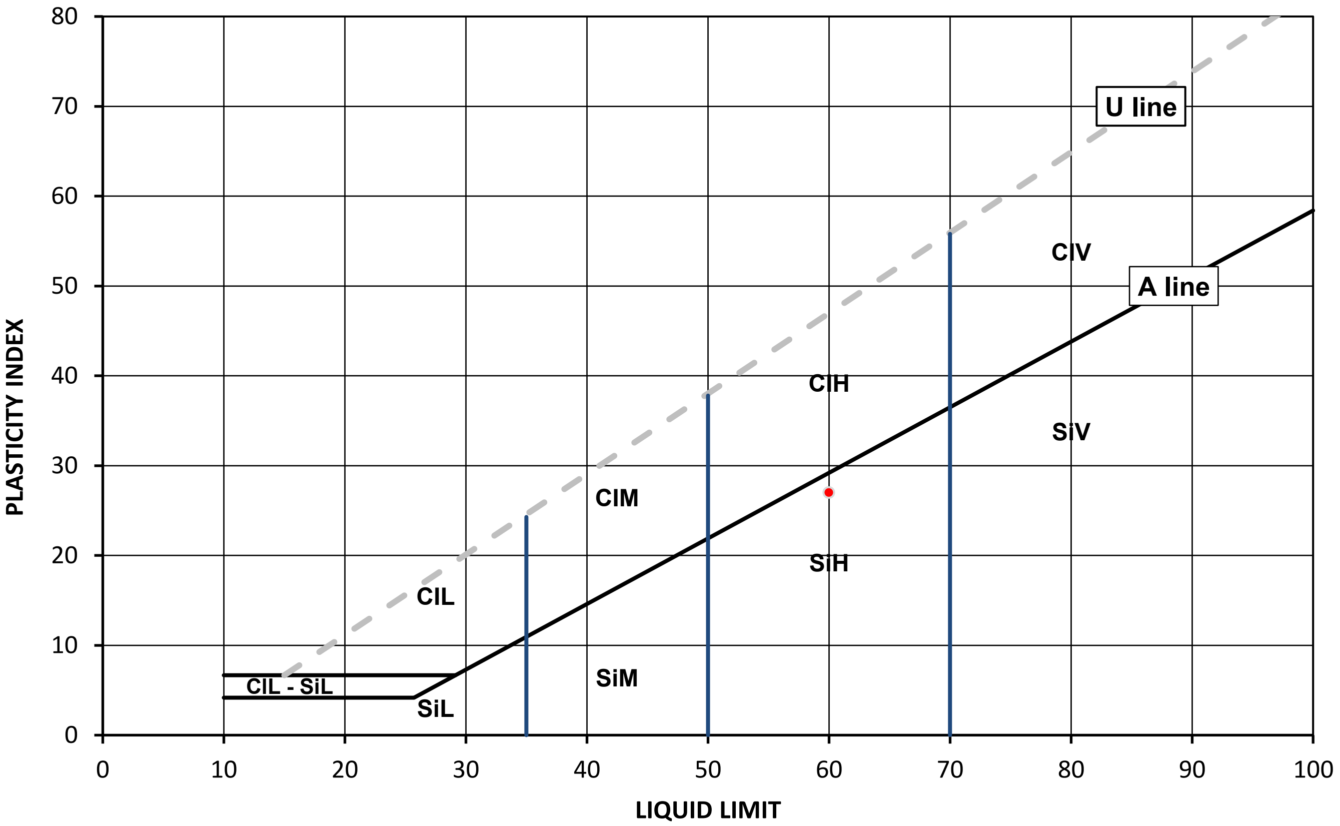
Test Results:

Laboratory Reference: 1977324
Hole No.: TP309
Sample Reference: 3B
Sample Description: Yellowish brown slightly gravelly slightly silty CLAY

Depth Top [m]: 0.70
Depth Base [m]: 1.00
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
27	60	33	27	96



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

UKAS TESTING
4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD

Contact: Rebecca Price

Site Address: Heyford Park Primary School

Client Reference: 4583
Job Number: 21-93690
Date Sampled: 04/08/2021
Date Received: 11/08/2021
Date Tested: 25/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

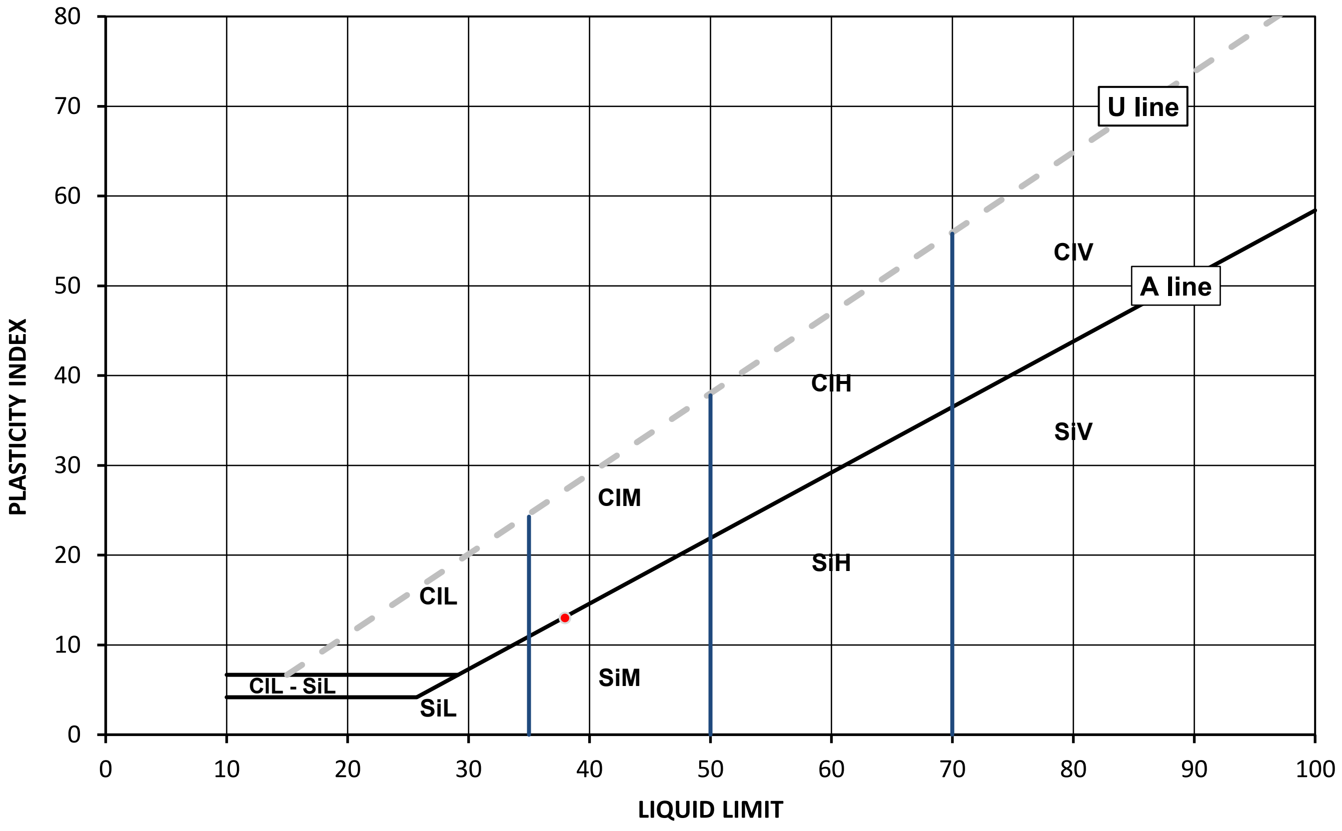
Test Results:

Laboratory Reference: 1977326
Hole No.: TP302
Sample Reference: 3B
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 0.80
Depth Base [m]: 1.00
Sample Type: B

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425μm BS Test Sieve
17	38	25	13	86



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

UKAS TESTING
4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD
Contact: Rebecca Price
Site Address: Heyford Park Primary School

Client Reference: 4583
Job Number: 21-93690
Date Sampled: 04/08/2021
Date Received: 11/08/2021
Date Tested: 25/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

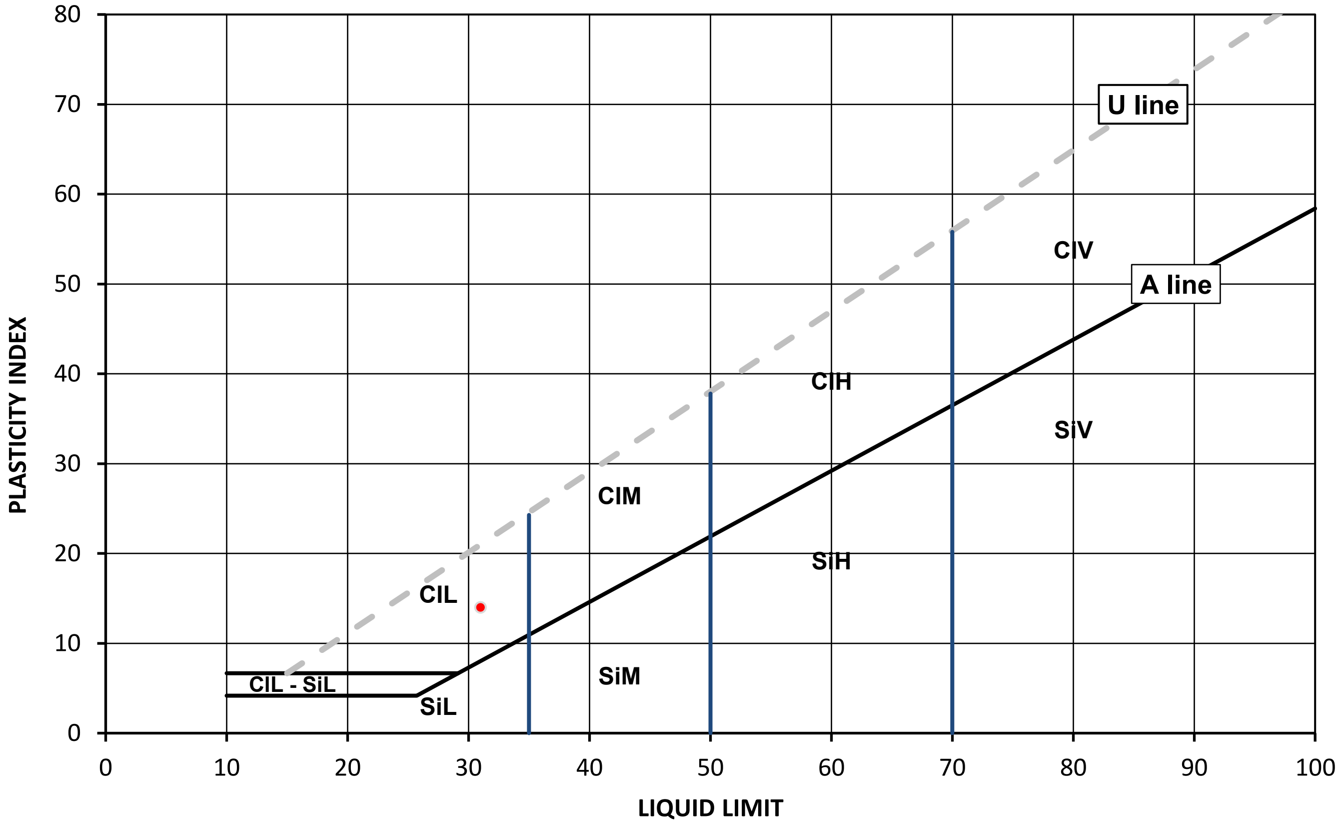
Test Results:

Laboratory Reference: 1977327
Hole No.: TP302
Sample Reference: 3B
Sample Description: Yellowish brown slightly gravelly very sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: 1.40
Sample Type: B

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	31	17	14	90



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

UKAS TESTING 4041

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD
Contact: Rebecca Price
Site Address: Heyford Park Primary School

Client Reference: 4583
Job Number: 21-93690
Date Sampled: 04/08/2021
Date Received: 11/08/2021
Date Tested: 25/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

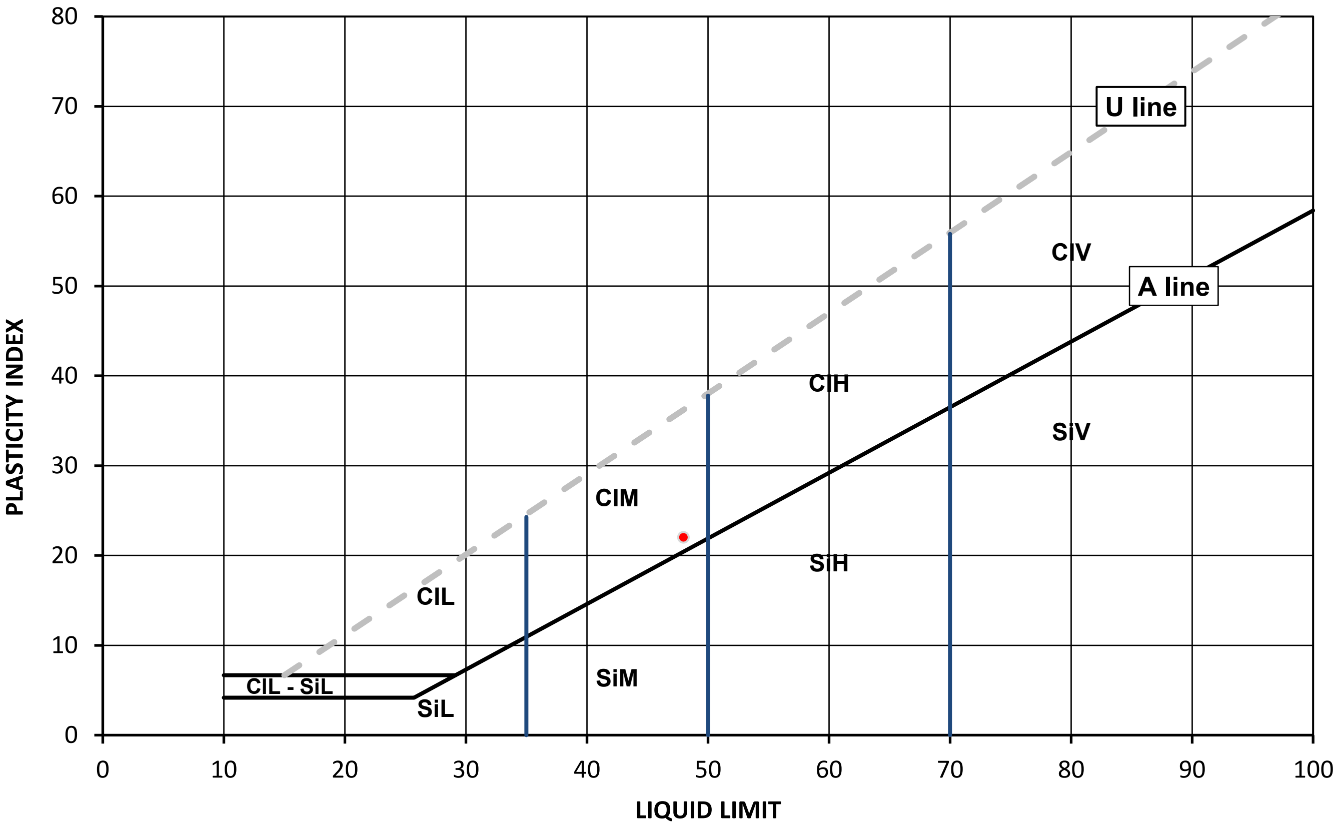
Test Results:

Laboratory Reference: 1977330
Hole No.: TP305
Sample Reference: 3B
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 0.60
Depth Base [m]: 1.10
Sample Type: B

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
13	48	26	22	79



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl	Clay	Plasticity		Liquid Limit
Si	Silt	L	Low	below 35
		M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg CIHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Hydrock Consultants Ltd
Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD
Contact: Rebecca Price
Site Address: Heyford Park Primary School

Client Reference: 4583
Job Number: 21-93690
Date Sampled: 05/08/2021
Date Received: 11/08/2021
Date Tested: 23/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

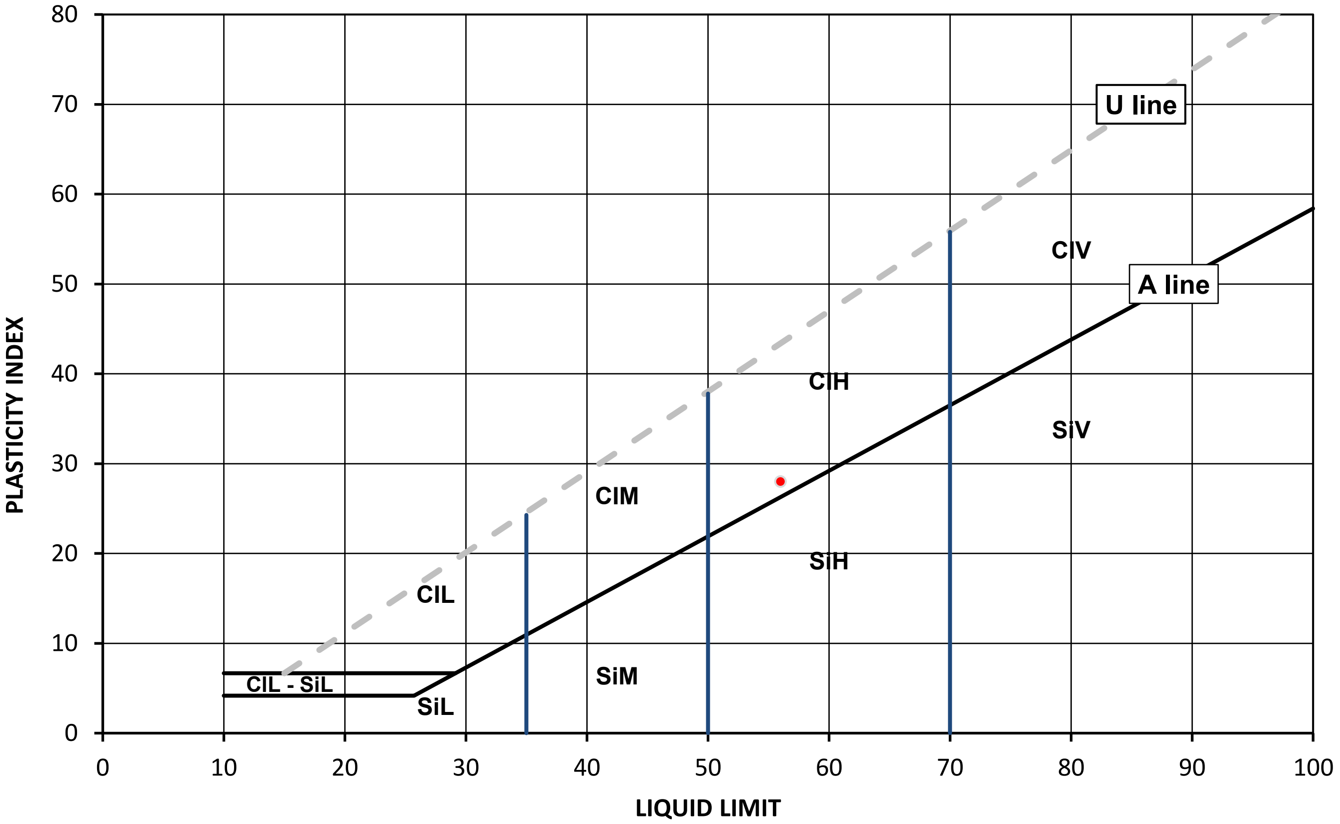
Test Results:

Laboratory Reference: 1977332
Hole No.: TP304
Sample Reference: 4B
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 0.70
Depth Base [m]: 0.80
Sample Type: B

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
16	56	28	28	67



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

			Plasticity	Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client:	Hydrock Consultants Ltd	Client Reference:	4583
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	21-93690
		Date Sampled:	05/08/2021
		Date Received:	11/08/2021
Contact:	Rebecca Price	Date Tested:	23/08/2021
Site Address:	Heyford Park Primary School	Sampled By:	Client

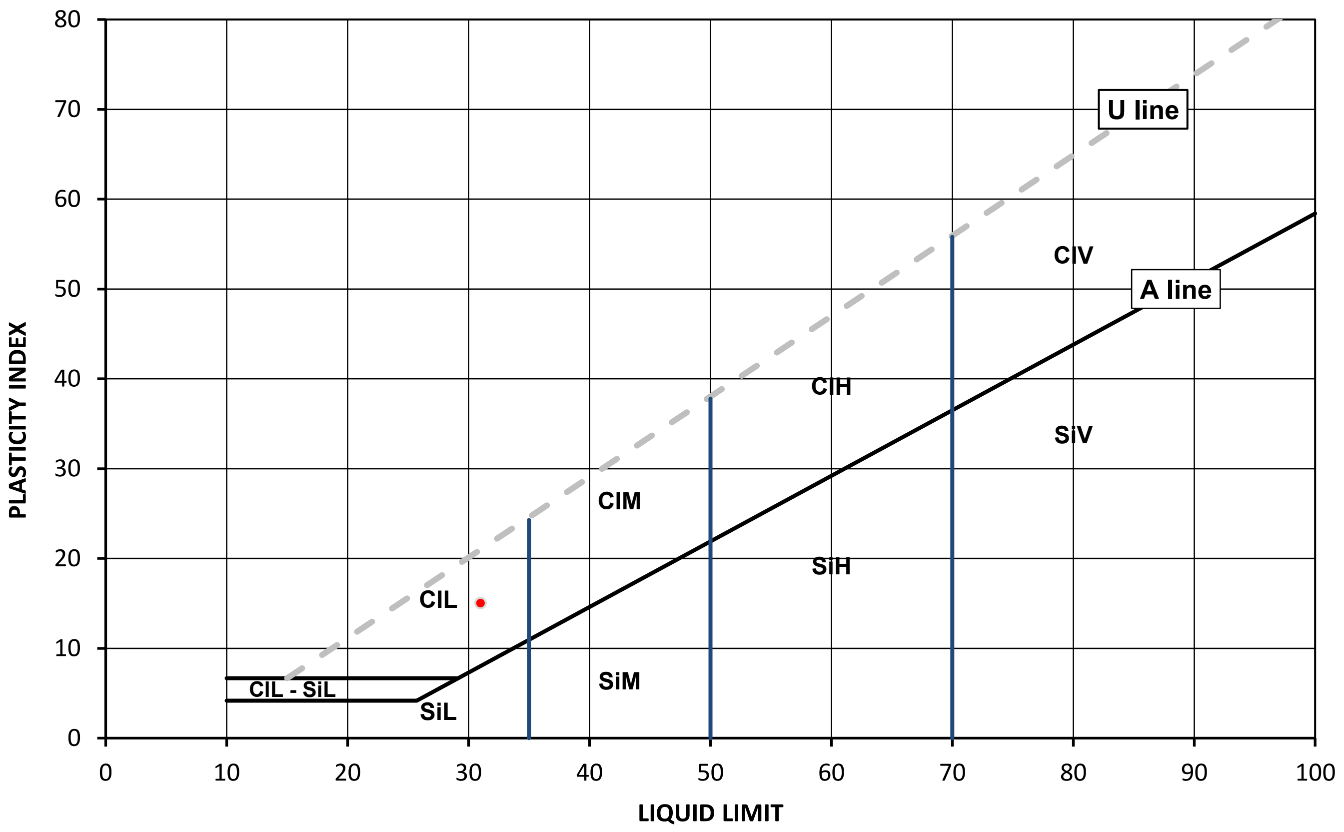
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1977333	Depth Top [m]:	1.50
Hole No.:	TP304	Depth Base [m]:	1.70
Sample Reference:	6B	Sample Type:	B
Sample Description:	Light brown slightly gravelly very sandy CLAY		

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	31	16	15	88



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg CIHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client: Hydrock Consultants Ltd
Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD
Contact: Rebecca Price
Site Address: Heyford Park Primary School

Client Reference: 4583
Job Number: 21-93690
Date Sampled: 06/08/2021
Date Received: 11/08/2021
Date Tested: 23/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

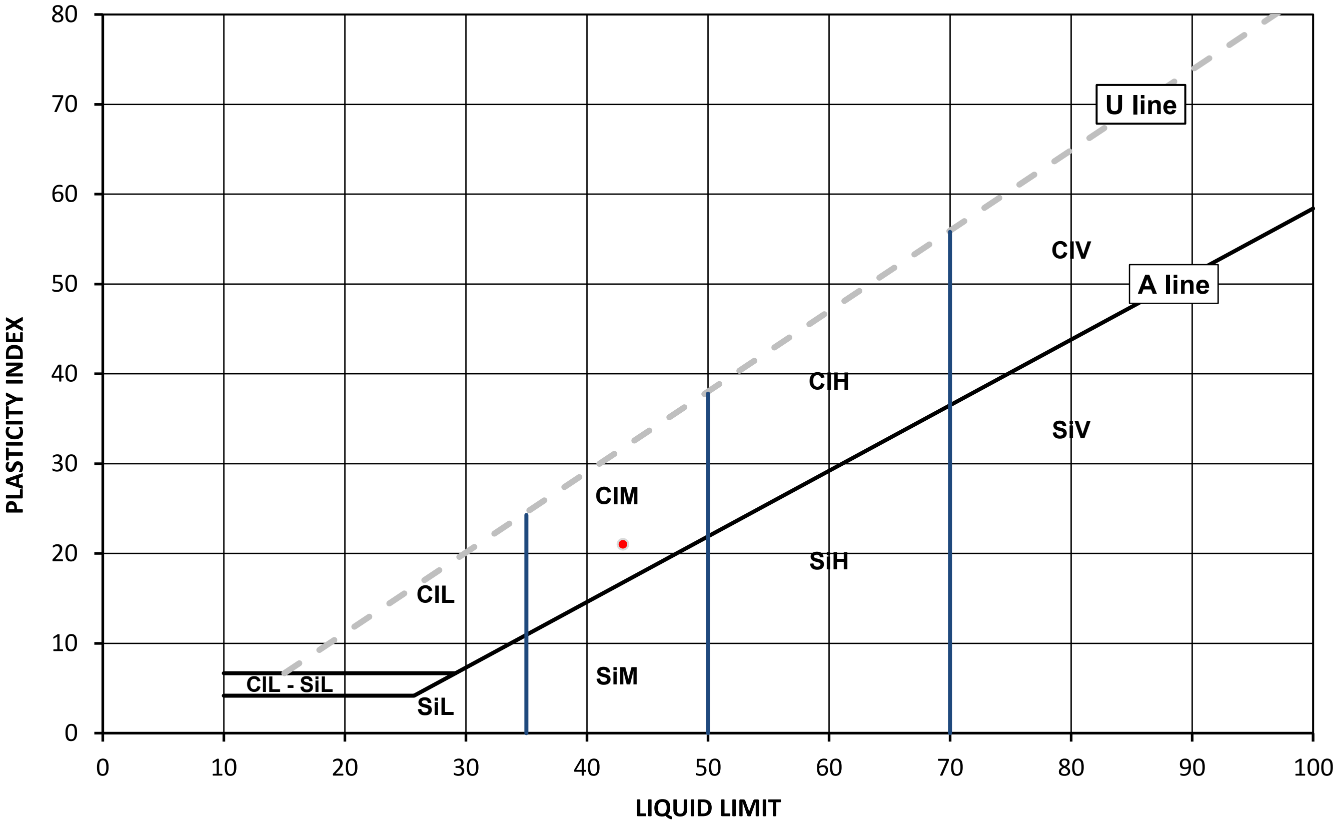
Test Results:

Laboratory Reference: 1977339
Hole No.: BH301
Sample Reference: 2B
Sample Description: Brown gravelly very sandy CLAY

Depth Top [m]: 0.80
Depth Base [m]: 1.20
Sample Type: B

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	43	22	21	87



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Tested in Accordance with:

Moisture Content by BS 1377-2: 1990: Clause 3.2; Water Content by BS EN 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD

Contact: Rebecca Price

Site Address: Heyford Park Primary School

Client Reference: 4583

Job Number: 21-93690

Date Sampled: 04/08 - 06/08/2021

Date Received: 11/08/2021

Date Tested: 23/08 - 25/08/2021

Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Moisture Content [W]	Water Content [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
1977339	BH301	2B	0.80	1.20	B	Brown gravelly very sandy CLAY	Atterberg 4 Point	19		87	43	22	21						
1977326	TP302	3B	0.80	1.00	B	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	17		86	38	25	13						
1977327	TP302	3B	1.20	1.40	B	Yellowish brown slightly gravelly very sandy CLAY	Atterberg 4 Point	17		90	31	17	14						
1977332	TP304	4B	0.70	0.80	B	Brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	16		67	56	28	28						
1977333	TP304	6B	1.50	1.70	B	Light brown slightly gravelly very sandy CLAY	Atterberg 4 Point	17		88	31	16	15						
1977330	TP305	3B	0.60	1.10	B	Brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	13		79	48	26	22						
1977324	TP309	3B	0.70	1.00	D	Yellowish brown slightly gravelly slightly silty CLAY	Atterberg 4 Point	27		96	60	33	27						
1977323	TP311	3B	0.80	1.40	B	Brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	20		88	56	30	26						

Note: # Non accredited; NP - Non plastic

Comments:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

UKAS TESTING
4041

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Analytical i2 Environmental Science

Client:	Hydrock Consultants Ltd
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD
Contact:	Rebecca Price
Site Address:	Heyford Park Primary School

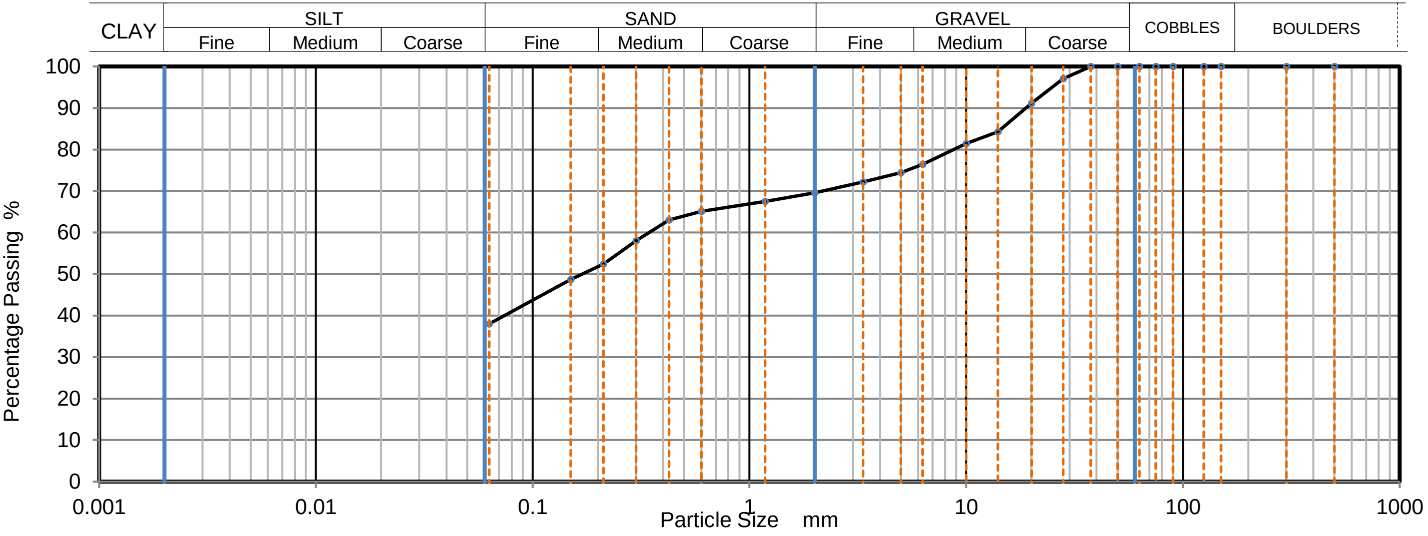
Client Reference:	4583
Job Number:	21-93690
Date Sampled:	06/08/2021
Date Received:	11/08/2021
Date Tested:	23/08/2021
Sampled By:	Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1977337
Hole No.:	BH303
Sample Reference:	2B
Sample Description:	Brown very gravelly very sandy CLAY
Sample Preparation:	Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]:	1.20
Depth Base [m]:	1.50
Sample Type:	B



Sieving	
Particle Size mm	% Passing
500	100
300	100
150	100
125	100
90	100
75	100
63	100
50	100
37.5	100
28	97
20	91
14	84
10	81
6.3	76
5	74
3.35	72
2	70
1.18	68
0.6	65
0.425	63
0.3	58
0.212	52
0.15	49
0.063	39

Sedimentation	
Particle Size mm	% Passing

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	31
Fines <0.063mm	39

Grading Analysis		
D100	mm	37.5
D60	mm	0.345
D30	mm	
D10	mm	
Uniformity Coefficient		> 5.5
Curvature Coefficient		

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

UKAS TESTING 4041

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD

Contact: Rebecca Price

Site Address: Heyford Park Primary School

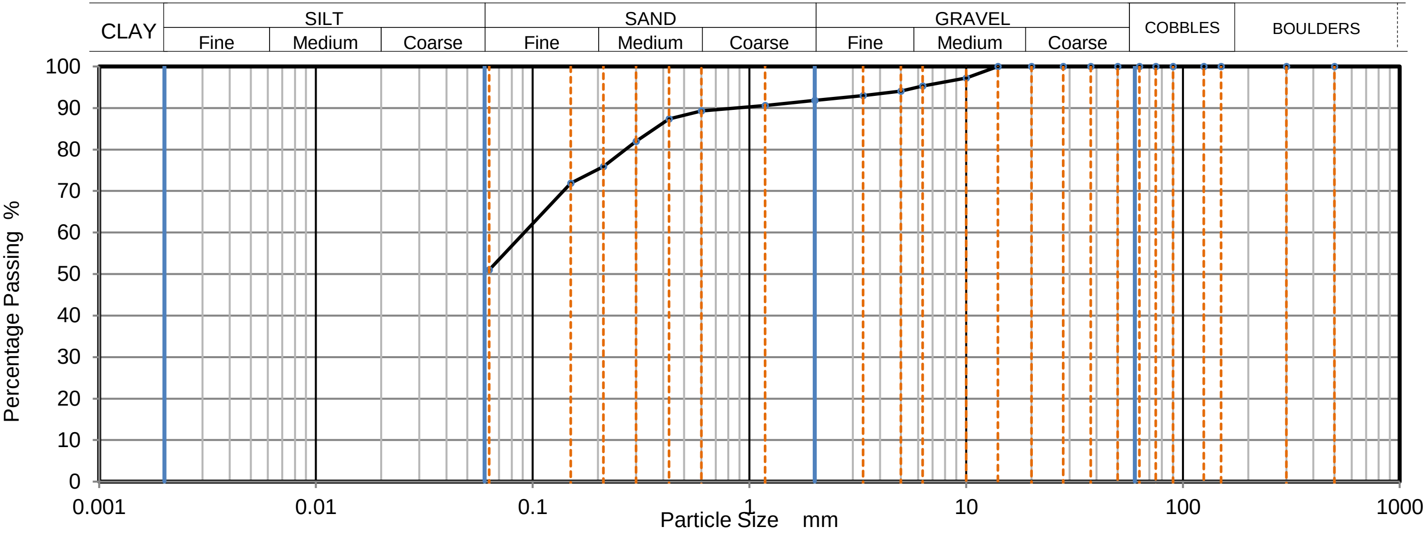
Client Reference: 4583
Job Number: 21-93690
Date Sampled: 06/08/2021
Date Received: 11/08/2021
Date Tested: 23/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 1977339
Hole No.: BH301
Sample Reference: 2B
Sample Description: Brown gravelly very sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]: 0.80
Depth Base [m]: 1.20
Sample Type: B



Sieving	
Particle Size mm	% Passing
500	100
300	100
150	100
125	100
90	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	97
6.3	95
5	94
3.35	93
2	92
1.18	91
0.6	89
0.425	87
0.3	82
0.212	76
0.15	72
0.063	51

Sedimentation	
Particle Size mm	% Passing

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	40
Fines <0.063mm	51

Grading Analysis		
D100	mm	14
D60	mm	0.0906
D30	mm	
D10	mm	
Uniformity Coefficient		> 1.4
Curvature Coefficient		

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Heavy Compaction

Tested in Accordance with:
BS 1377-4: 1990

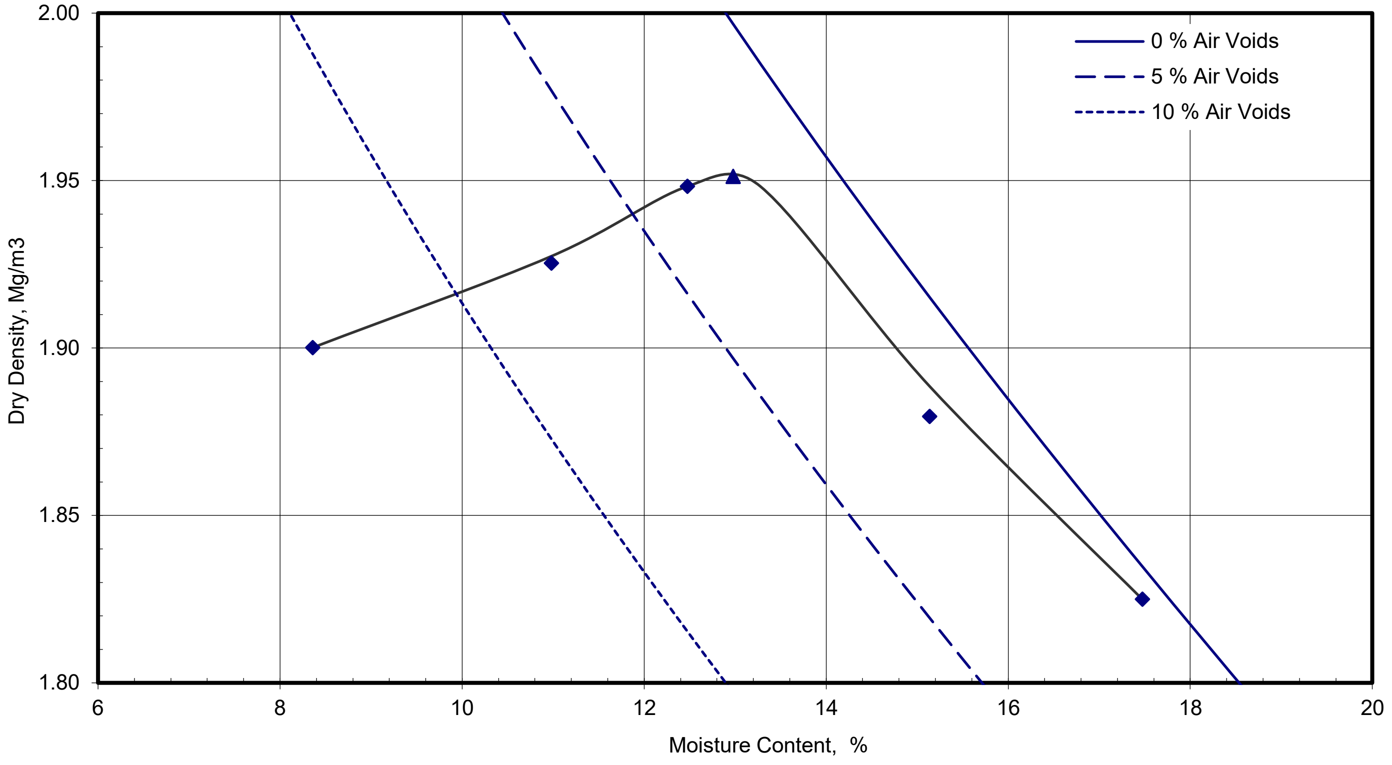
i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client:	Hydrock Consultants Ltd	Client Reference:	4583
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	21-93690
		Date Sampled:	05/08/2021
		Date Received:	11/08/2021
Contact:	Rebecca Price	Date Tested:	27/08/2021
Site Address:	Heyford Park Primary School	Sampled By:	Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1977322	Depth Top [m]:	0.40
Hole No.:	TP311	Depth Base [m]:	0.60
Sample Reference:	2B	Sample Type:	D
Sample Description:	Light brown gravelly sandy CLAY		
Sample Preparation:	Sample was quartered and broken down by hand. Material used was natural.		



Compaction Point No.		1	2	3	4	5
Moisture Content	%	8.4	11	12	15	17
Dry Density	Mg/m³	1.90	1.93	1.95	1.88	1.82

Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	25
Particle Density - Assumed	Mg/m³	2.70
As received Moisture Content	%	11
Maximum Dry Density	Mg/m³	**1.95**

Optimum Moisture Content	%	**13**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.6 using 4.5kg [heavy] Rammer

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Heavy Compaction

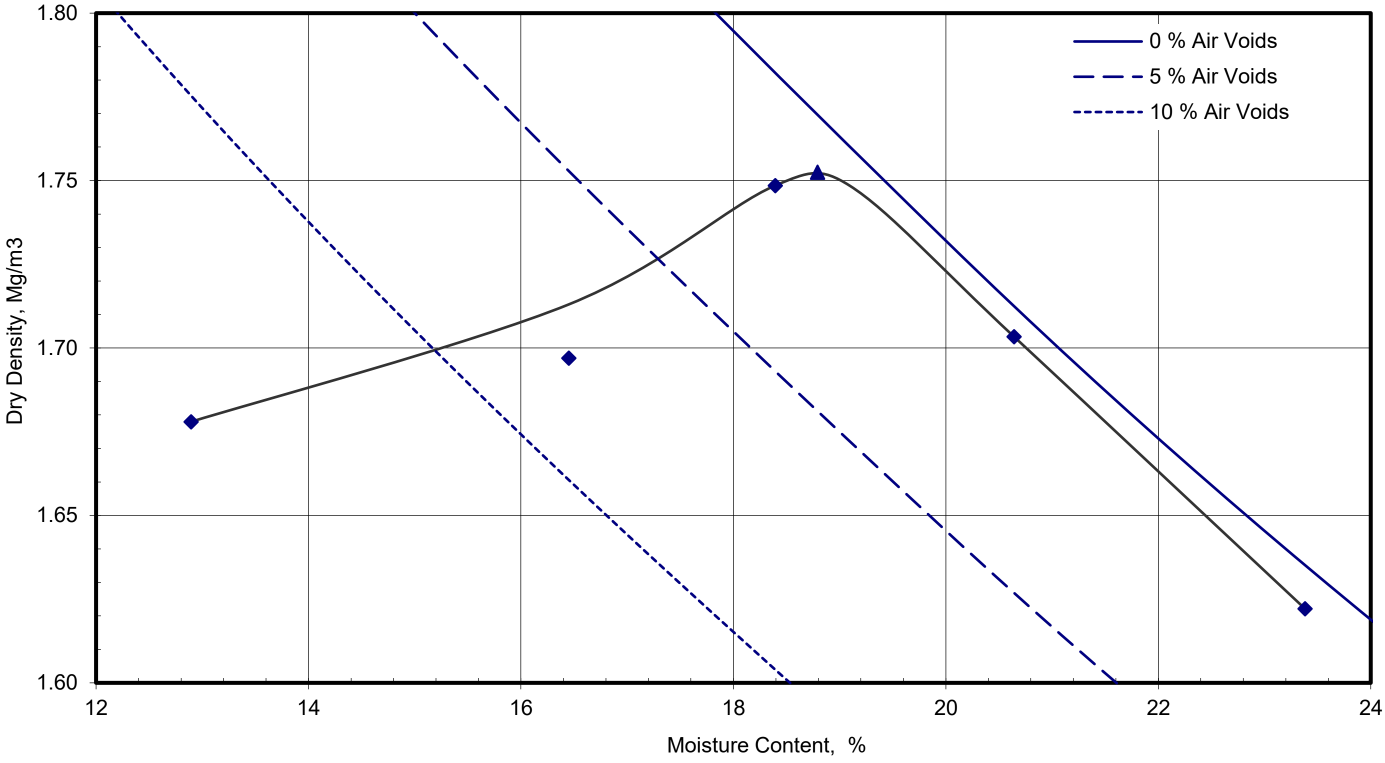
Tested in Accordance with:
BS 1377-4: 1990

Client:	Hydrock Consultants Ltd	Client Reference:	4583
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	21-93690
		Date Sampled:	04/08/2021
		Date Received:	11/08/2021
Contact:	Rebecca Price	Date Tested:	27/08/2021
Site Address:	Heyford Park Primary School	Sampled By:	Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1977324	Depth Top [m]:	0.70
Hole No.:	TP309	Depth Base [m]:	1.00
Sample Reference:	3B	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly slightly silty CLAY		
Sample Preparation:	Sample was quartered and broken down by hand. Material used was natural.		



Compaction Point No.		1	2	3	4	5
Moisture Content	%	13	16	18	21	23
Dry Density	Mg/m³	1.68	1.70	1.75	1.70	1.62

Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	25
Maximum Dry Density	Mg/m³	**1.75**

Optimum Moisture Content	%	**19**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.6 using 4.5kg [heavy] Rammer

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Heavy Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD

Contact: Rebecca Price

Site Address: Heyford Park Primary School

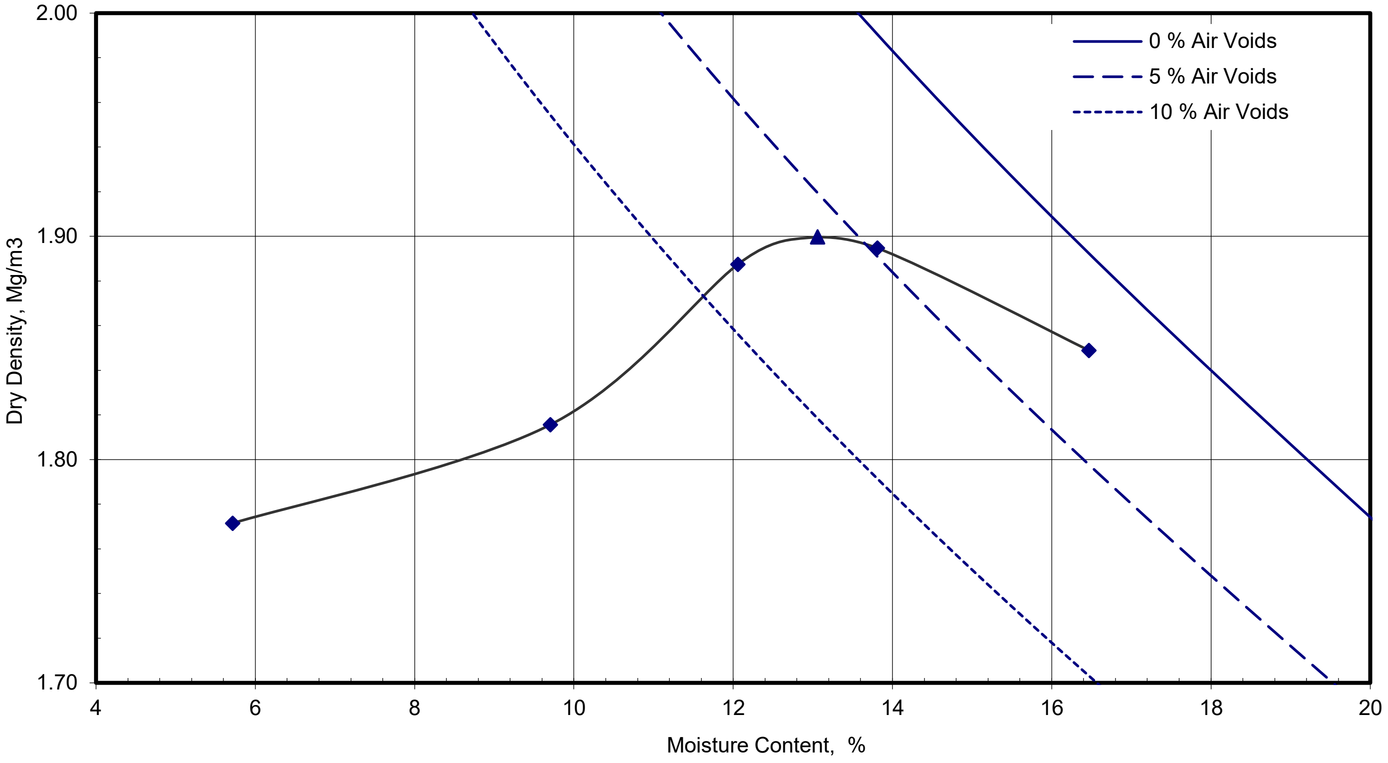
Client Reference: 4583
Job Number: 21-93690
Date Sampled: 04/08/2021
Date Received: 11/08/2021
Date Tested: 27/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 1977325
Hole No.: TP302
Sample Reference: 2B
Sample Description: Yellowish brown slightly gravelly CLAY
Sample Preparation: Sample was quartered and broken down by hand. Material used was natural.

Depth Top [m]: 0.20
Depth Base [m]: 0.50
Sample Type: D



Compaction Point No.		1	2	3	4	5
Moisture Content	%	5.7	9.7	12	14	16
Dry Density	Mg/m³	1.77	1.82	1.89	1.89	1.85

Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	2
Particle Density - Assumed	Mg/m³	2.75
As received Moisture Content	%	27
Maximum Dry Density	Mg/m³	**1.90**

Optimum Moisture Content	%	**13**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.6 using 4.5kg [heavy] Rammer

Remarks:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Heavy Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD

Contact: Rebecca Price

Site Address: Heyford Park Primary School

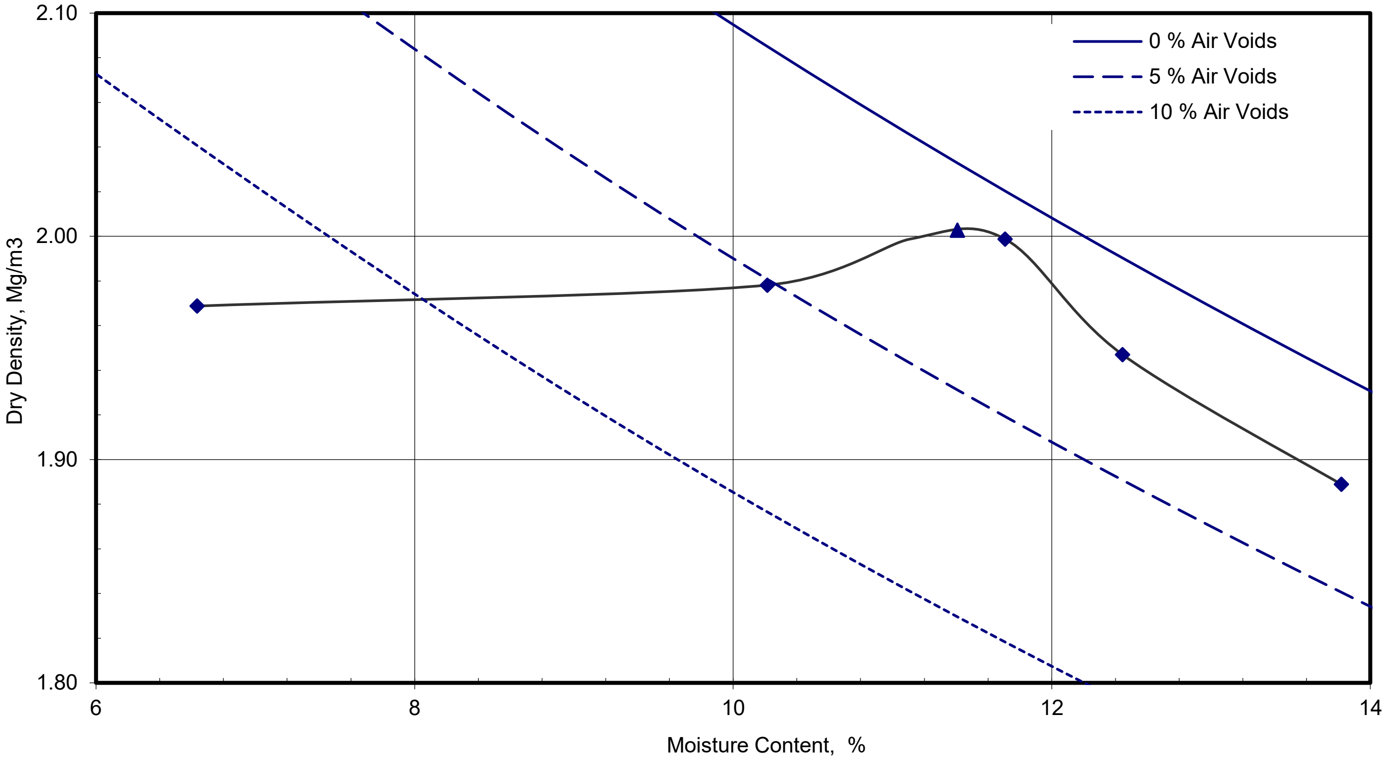
Client Reference: 4583
Job Number: 21-93690
Date Sampled: 05/08/2021
Date Received: 11/08/2021
Date Tested: 27/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 1977331
Hole No.: TP304
Sample Reference: 3B
Sample Description: Light brown slightly gravelly sandy CLAY
Sample Preparation: Sample was quartered and broken down by hand. Material used was natural.

Depth Top [m]: 0.50
Depth Base [m]: 0.60
Sample Type: D



Compaction Point No.		1	2	3	4	5
Moisture Content	%	6.6	10	12	12	14
Dry Density	Mg/m³	1.97	1.98	2.00	1.95	1.89

Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	16
Material Retained on 20.0 mm Sieve	%	28
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	6.6
Maximum Dry Density	Mg/m³	**2.00**

Optimum Moisture Content	%	**11**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.6 using 4.5kg [heavy] Rammer

Remarks: Zone X - test carried out as per client request

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Heavy Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

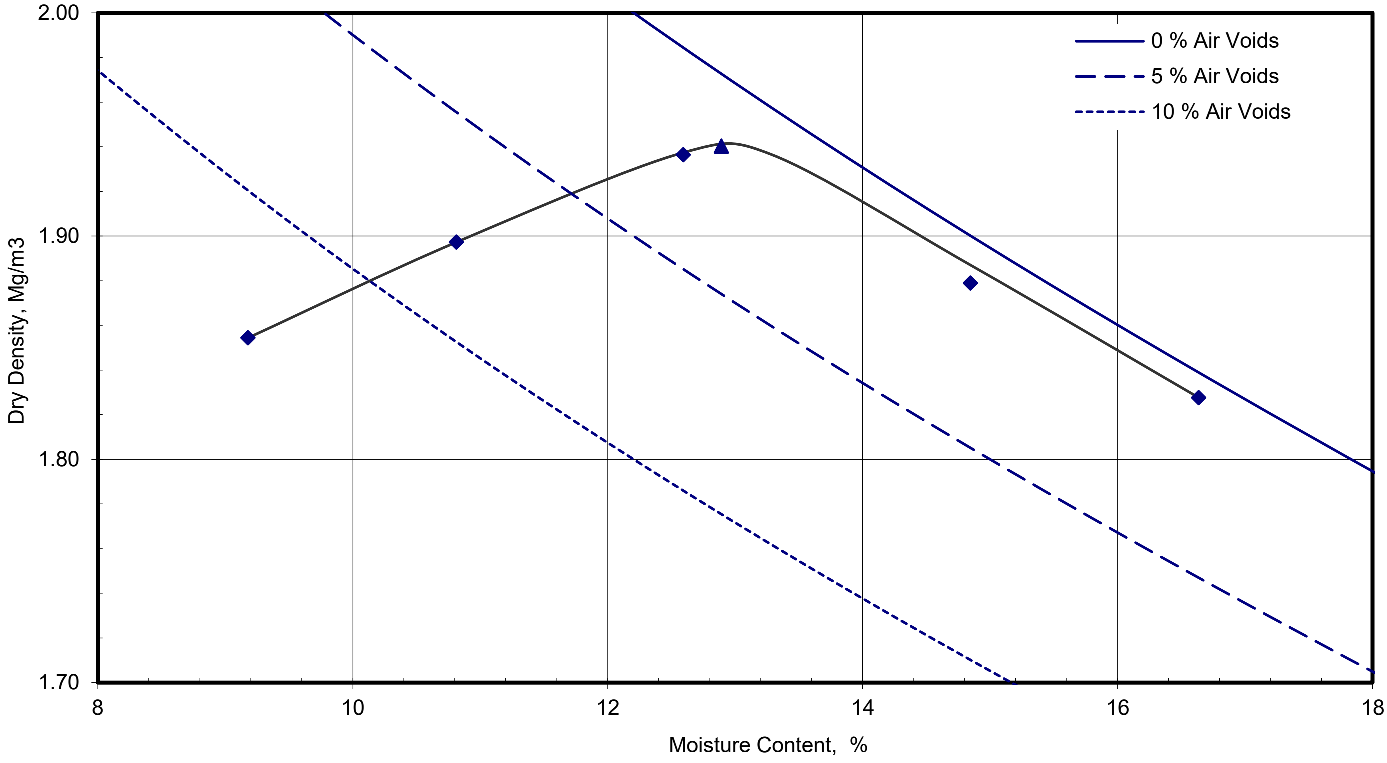
Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	4583
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	21-93690
		Date Sampled:	05/08/2021
		Date Received:	11/08/2021
Contact:	Rebecca Price	Date Tested:	27/08/2021
Site Address:	Heyford Park Primary School	Sampled By:	Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1977334	Depth Top [m]:	1.00
Hole No.:	TP310	Depth Base [m]:	1.40
Sample Reference:	2B	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly sandy CLAY		
Sample Preparation:	Sample was quartered and broken down by hand. Material used was natural.		



Compaction Point No.		1	2	3	4	5
Moisture Content	%	9.2	11	13	15	17
Dry Density	Mg/m³	1.85	1.90	1.94	1.88	1.83

Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	12
Material Retained on 20.0 mm Sieve	%	24
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	13
Maximum Dry Density	Mg/m³	**1.94**

Optimum Moisture Content	%	**13**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.6 using 4.5kg [heavy] Rammer

Remarks: Zone X - test carried out as per client request

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

SUMMARY REPORT

UKAS TESTING
4041

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

i2 Analytical Environmental Science

Summary of Point Load Strength Index Tests Results

Tested in Accordance with: ISRM: 2007, pages 125-132

Client:	Hydrock Consultants Ltd
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD
Contact:	Rebecca Price
Site Address:	Heyford Park Primary School

Client Reference:	4583
Job Number:	21-93690
Date Sampled:	04/08 - 06/08/2021
Date Received:	11/08/2021
Date Tested:	26/08/2021
Sampled By:	Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

		Sample							Test Type see ISRM			Dimensions						Point Load Strength Index	
Laboratory Reference	Hole No.	Reference	Depth Top m	Depth Base m	Type	Description	Remarks # (including water content if measured)	Specimen Reference	Type (D, A, I, B)	Direction (L, P or U)	Failure Valid (Y/N)	Lne mm	W mm	Dps mm	Dps' mm	Force P kN	Equivalent diameter, De mm	Is MPa	Is(50) MPa
1977340	BH301	3C	2.92	3.00	C	Brownish grey LIMESTONE	WC = 3.4%	1	I	U	YES	47.6	79.1	39.0	35.0	3.4	59.4	0.96	1.04
1977335	BH302	2C	2.65	2.74	C	Light grey LIMESTONE	WC = 1.6%	1	I	U	YES	54.4	78.8	66.0	59.0	8.8	76.9	1.48	1.79
1977328	TP302	5B	1.40	1.60	B	Light brown LIMESTONE	WC = 5.0%	1	I	U	YES	52.2	69.9	38.0	29.0	8.1	50.8	3.14	3.16
1977321	TP306	3B	0.70	0.85	B	Light brown LIMESTONE	WC = 2.8%	1	I	U	YES	63.4	81.7	38.0	33.0	14.5	58.6	4.22	4.54
1977329	TP307	3B	0.50	1.00	B	Light brown LIMESTONE	WC = 2.9%	1	I	U	YES	57.5	68.9	49.0	40.0	10.9	59.2	3.09	3.34

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Comments:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

4041

SUMMARY REPORT

Summary of Uniaxial Compression Test on Rock Test Results

Tested in Accordance with: ISRM, 2007, p153, part 1

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road,
Spratton, Northamptonshire,
NN6 8LD

Contact: Rebecca Price

Site Address: Heyford Park Primary School

Client Reference: 4583
Job Number: 21-93690
Date Sampled: 06/08/2021
Date Received: 11/08/2021
Date Tested: 26/08/2021
Sampled By: Client

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Specimen Dimensions (2)				Bulk density (2)	Water Content (1)	Uniaxial Compression (3)			
		Reference	Depth Top	Depth Base	Type			Diameter	Length	H/D	Orientation of sample			Condition	Stress Rate	Mode of failure	UCS
			m	m				mm	mm			Mg/m3	%		Mpa/s		Mpa
1977341	BH301	4C	3.76	3.95	C	Light grey LIMESTONE	Sample is below recommended length to diameter ratio.	78.9	156.5	2.0	Vertical	2.59	1.7	as received	0.1022	MS + AC	32.4
1977336	BH302	3C	3.19	3.40	C	Grey LIMESTONE	Sample is below recommended length to diameter ratio.	78.8	133.9	1.7	Vertical	2.59	3.3	as received	0.1026	MS + AC	37.1
1977338	BH303	3C	3.38	3.70	C	Grey LIMESTONE	Sample is below recommended length to diameter ratio.	79.0	188.3	2.4	Vertical	2.60	1.8	as received	0.1021	MS + AC	31.3

Note: 1 - ISRM p87 test 1, water content at 105 ± 3 oC, specimen as tested for UCS, 2 - ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density, 3 - ISRM p153 part 1, determination of Uniaxial Compressive Strength (UCS) of Rock Materials, above notes apply unless annotated otherwise in the remarks. Compaction machine: VJ Tech AUTOCON - VJT 51-3011; Mode of failure legend: S - Single shear, MS - multiple shear, AC - Axial cleavage, F - Fragmented

Comments:

[redacted]

Anna Wieczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 30/08/2021

Rebecca Price
Hydrock Consultants Ltd
Over Court Barns
Over Lane
Bristol
BS32 4DF

t: 01454 619533
f: 01454 614125
e: Group Bristol cc engineer

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 : 21-92431

Project / Site name:	Heyford Park	**Samples received on:**	06/08/2021
Your job number:	4583	**Samples instructed on/ Analysis started on:**	11/08/2021
Your order number:	PO09241	**Analysis completed by:**	18/08/2021
Report Issue Number:	1	**Report issued on:**	18/08/2021
Samples Analysed:	5 soil samples		

Signed: [redacted]

Agnieszka Czerwińska
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 21-92431
Project / Site name: Heyford Park

Lab Sample Number				1969469	1969470	1969471	1969472	1969473
Sample Reference				TP309	TP302	TP302	TP305	TP310
Sample Number				104	103	104	103	103
Depth (m)				1.20	0.90	1.20	0.60	1.50
Date Sampled				04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	12	13	8.5	12
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.2	1.3	1.3

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6	8.4	8.6	8.5	8.3
Total Sulphate as SO4	mg/kg	50	MCERTS	930	750	750	700	840
Total Sulphate as SO4	%	0.005	MCERTS	0.093	0.075	0.075	0.070	0.084
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0038	0.0035	0.0028	0.0041	0.0051
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	3.8	3.5	2.8	4.1	5.1
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	1.8	1.9	1.8	3.9	1.9
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	0.9	1.0	0.9	2.0	1.0
Total Sulphur	mg/kg	50	MCERTS	390	380	390	370	360
Total Sulphur	%	0.005	MCERTS	0.039	0.038	0.039	0.037	0.036
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	2.7	3.7	2.6	4.8	5.1
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

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

Analytical Report Number : 21-92431
Project / Site name: Heyford Park

* 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 *
1969469	TP309	104	1.2	Light brown clay and sand with gravel.
1969470	TP302	103	0.9	Brown clay and loam with gravel and vegetation.
1969471	TP302	104	1.2	Brown clay and loam with gravel and vegetation.
1969472	TP305	103	0.6	Brown loam and clay with gravel and vegetation.
1969473	TP310	103	1.5	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 21-92431
Project / Site name: Heyford Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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.

Rebecca Price
Hydrock Consultants Ltd
2-4 Hawthorne Park
Holdenby Road
Spratton
Northamptonshire
NN6 8LD

t: 01604842888
f: 01604842666
e: rebeccaprice@hydrock.com

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 : 21-93944

Project / Site name:	Heyford Park Primary School	**Samples received on:**	11/08/2021
Your job number:	4583	**Samples instructed on/ Analysis started on:**	13/08/2021
Your order number:	PO09241	**Analysis completed by:**	27/08/2021
Report Issue Number:	1	**Report issued on:**	27/08/2021
Samples Analysed:	4 soil samples		

Signed: [redacted]

Joanna Wawrzeczko
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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.

Analytical Report Number: 21-93944
Project / Site name: Heyford Park Primary School
Your Order No: PO09241

Lab Sample Number				1978832	1978833	1978834	1978835
Sample Reference				WS302	TP304	BH303	BH301
Sample Number				3B	6B	2B	2B
Depth (m)				1.00-1.50	1.50-1.70	1.20-1.50	0.80-1.00
Date Sampled				02/08/2021	05/08/2021	06/08/2021	06/08/2021
Time Taken				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
Moisture Content	%	0.01	NONE	13	11	10	16
Total mass of sample received	kg	0.001	NONE	0.50	0.40	0.40	0.30

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.5	8.5	8.4	8.1
Total Sulphate as SO4	mg/kg	50	MCERTS	780	1000	1200	920
Total Sulphate as SO4	%	0.005	MCERTS	0.078	0.101	0.117	0.092
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.026	0.029	0.041
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.5	25.5	28.8	41.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	2.6	2.3	1.6	2.5
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.3	1.1	0.8	1.3
Total Sulphur	mg/kg	50	MCERTS	370	370	420	510
Total Sulphur	%	0.005	MCERTS	0.037	0.037	0.042	0.051
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	< 2.0	< 2.0	9.3	15
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	7.2

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	< 2.5	< 2.5

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

Analytical Report Number : 21-93944
Project / Site name: Heyford Park Primary School

* 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 *
1978832	WS302	3B	1.00-1.50	Brown clay and sand.
1978833	TP304	6B	1.50-1.70	Brown clay and sand.
1978834	BH303	2B	1.20-1.50	Brown clay and sand.
1978835	BH301	2B	0.80-1.00	Brown clay and loam with gravel.

Analytical Report Number : 21-93944
Project / Site name: Heyford Park Primary School

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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.

Geotechnical Plots

Client
Dorchester Living
Project
Heyford Park Primary School
Job number
C-04583-C

Location or material to which this assessment applies
Made Ground

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	1	1	0
No. tests in 20% data set	0	0	
No. tests with suspected pyrite		0	
Maximum value	5.1	0.1	
Mean of highest two values	5	0	
Mean of highest 20%			
Characteristic Value	**5.1**	**0.1**	

	[no pyrite]	[pyrite suspected]
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value **(Maximum Level)**	0	0

DS Class

pH data

	Soil	Water
Number of tests	1	0
No. tests in 20% data set	0	
Lowest pH	8.3	
Mean of lowest 20%		
Characteristic value	**8.3**	
Design value	**8.3**	

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground
Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

Client
Dorchester Living
Project
Heyford Park Primary School
Job number
C-04583-C

Location or material to which this assessment applies
Weathered White Limestone Formation

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	8	8	0
No. tests in 20% data set	2	2	
No. tests with suspected pyrite		0	
Maximum value	41	0.2	
Mean of highest two values	35	0	
Mean of highest 20%			
Characteristic Value	**35**	**0**	

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value **(Maximum Level)**	0	0

DS Class

pH data

	Soil	Water
Number of tests	8	0
No. tests in 20% data set	2	
Lowest pH	8.1	
Mean of lowest 20%	8.3	
Characteristic value	**8.3**	
Design value	**8.3**	

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground
Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

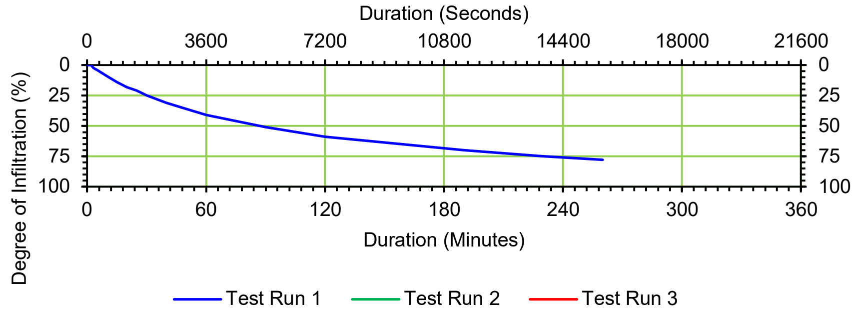
1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: 04583: Heyford Park Primary School
Client: Dorchester Living
Test Location TP302 **Date of start** 04/08/2021 **Date at end** 04/08/2021

Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	2.500m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	0.600m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	1.600m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	12.06	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	12.10	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	0.600m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	1.000m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	1.500m^3	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit		Gravel used to backfill Test Pit	
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	1.500m^3	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway				**Time to soakaway**				**Time to soakaway**			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	12.100	0.600	0								
1	12.110	0.600	60								
1	12.120	0.600	120								
1	12.130	0.620	180								
1	12.140	0.630	240								
1	12.150	0.640	300								
1	12.200	0.690	600								
1	12.250	0.740	900								
1	12.300	0.780	1200								
1	12.350	0.810	1500								
1	12.400	0.850	1800								
1	12.500	0.910	2400								
1	13.000	0.960	3000								
1	13.100	1.010	3600								
1	13.400	1.110	5400								
1	14.100	1.190	7200								
1	15.200	1.300	11400								
1	16.000	1.350	13800								
1	16.300	1.380	15600								
			15600								
			15600								
			15600								
			15600								

25% water loss (75% full)	0.850m	**25% water loss (75% full)**	-	**25% water loss (75% full)**	-
50% water loss (50% full)	1.100m	**50% water loss (50% full)**	-	**50% water loss (50% full)**	-
75% water loss (25% full)	1.350m	**75% water loss (25% full)**	-	**75% water loss (25% full)**	-
25% time (seconds)	1860 sec	**25% time (seconds)**	-	**25% time (seconds)**	-
75% time (seconds)	14025 sec	**75% time (seconds)**	-	**75% time (seconds)**	-
Vp 75-25	0.750m^3	**Vp 75-25**	-	**Vp 75-25**	-
ap 50 (Actual area from test)	4.600m^3	**ap 50 (Actual area from test)**	-	**ap 50 (Actual area from test)**	-
tp 75 - 25	12165 sec	**tp 75 - 25**		**tp 75 - 25**	
Soil Infiltration Rate	**1.34E-05m/s**	**Soil Infiltration Rate**	-	**Soil Infiltration Rate**	-



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	DATE	04/08/2021
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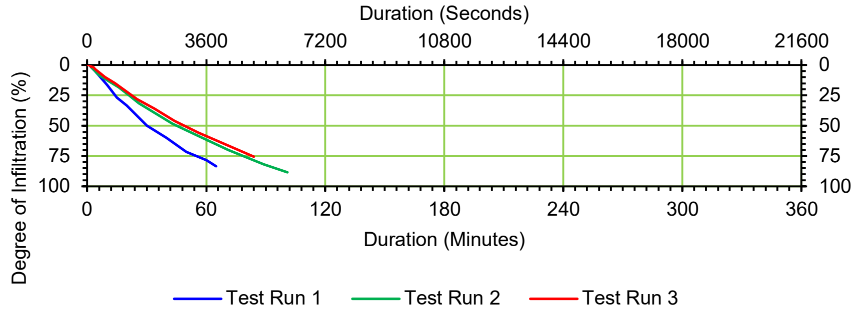
1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: 04583: Heyford Park Primary School
Client: Dorchester Living
Test Location TP306 **Date of start** 04/08/2021 **Date at end** 04/08/2021

Test Run 1		**Test Run 2**		**Test Run 3**	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	2.000m	Trial Pit Length (L)	2.000m	Trial Pit Length (L)	2.000m
Trial Pit Breadth / Width (B)	0.600m	Trial Pit Breadth / Width (B)	0.600m	Trial Pit Breadth / Width (B)	0.600m
Effective Depth (D)	0.850m	Effective Depth (D)	0.850m	Effective Depth (D)	0.850m
Time at Start of Filling	9.37	Time at Start of Filling	11.31	Time at Start of Filling	13.18
Time at End of Filling	9.40	Time at End of Filling	11.34	Time at End of Filling	13.21
Depth from Surface to Water (D_{TW})	0.250m	Depth below Surface to Water (D_{TW})	0.250m	Depth below Surface to Water (D_{TW})	0.240m
Water Depth (W_D)	0.600m	Water Depth (W_D)	0.600m	Water Depth (W_D)	0.610m
Maximum Fill Volume (V_W)	0.720m³	Maximum Fill Volume (V_W)	0.720m³	Maximum Fill Volume (V_W)	0.732m³
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	0.720m³	Corrected Water Volume (V_{WC})	0.720m³	Corrected Water Volume (V_{WC})	0.732m³

Time to soakaway				**Time to soakaway**				**Time to soakaway**			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	9.400	0.250	0	1	11.340	0.250	0	1	13.210	0.240	0
1	9.410	0.250	60	1	11.350	0.250	60	1	13.220	0.240	60
1	9.420	0.260	120	1	11.360	0.260	120	1	13.230	0.250	120
1	9.430	0.270	180	1	11.370	0.270	180	1	13.240	0.250	180
1	9.440	0.280	240	1	11.380	0.280	240	1	13.250	0.260	240
1	9.450	0.290	300	1	11.390	0.290	300	1	13.300	0.300	540
1	9.500	0.350	600	1	11.400	0.300	360	1	13.350	0.330	840
1	9.550	0.410	900	1	11.450	0.330	660	1	13.460	0.410	1500
1	10.000	0.450	1200	1	11.500	0.360	960	1	13.550	0.460	2040
1	10.050	0.500	1500	1	11.550	0.400	1260	1	14.050	0.520	2640
1	10.100	0.550	1800	1	12.000	0.440	1560	1	14.170	0.580	3360
1	10.200	0.610	2400	1	12.170	0.540	2580	1	14.450	0.700	5040
1	10.300	0.680	3000	1	12.320	0.610	3480				5040
1	10.400	0.720	3600	1	12.450	0.670	4260				5040
1	10.450	0.750	3900	1	13.030	0.740	5340				5040
			3900	1	13.150	0.780	6060				5040
			3900				6060				5040
			3900				6060				5040
			3900				6060				5040
			3900				6060				5040
			3900				6060				5040
			3900				6060				5040
			3900				6060				5040

25% water loss (75% full)	0.400m	**25% water loss (75% full)**	0.400m	**25% water loss (75% full)**	0.393m
50% water loss (50% full)	0.550m	**50% water loss (50% full)**	0.550m	**50% water loss (50% full)**	0.545m
75% water loss (25% full)	0.700m	**75% water loss (25% full)**	0.700m	**75% water loss (25% full)**	0.698m
25% time (seconds)	850 sec	**25% time (seconds)**	1260 sec	**25% time (seconds)**	1356 sec
75% time (seconds)	3300 sec	**75% time (seconds)**	4723 sec	**75% time (seconds)**	5005 sec
Vp 75-25	0.360m³	**Vp 75-25**	0.360m³	**Vp 75-25**	0.366m³
ap 50 (Actual area from test)	2.760m³	**ap 50 (Actual area from test)**	2.760m³	**ap 50 (Actual area from test)**	2.786m³
tp 75 - 25	2450 sec	**tp 75 - 25**	3463 sec	**tp 75 - 25**	3649 sec
Soil Infiltration Rate	**5.32E-05m/s**	**Soil Infiltration Rate**	**3.77E-05m/s**	**Soil Infiltration Rate**	**3.60E-05m/s**



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1 DAY INFILTRATION ASSESSMENT - WORKSHEET

Site: 04583: Heyford Park Primary School

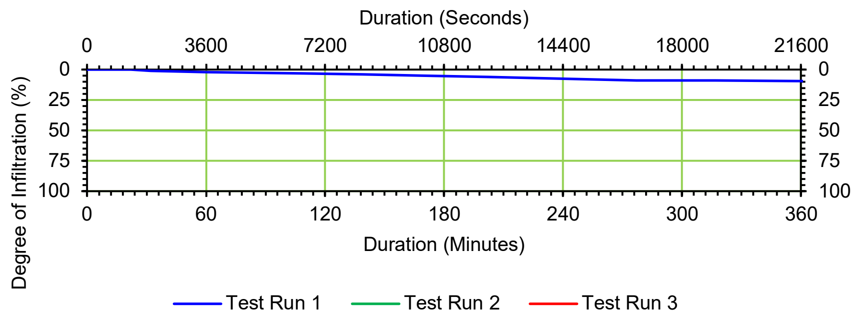
Client: Dorchester Living

Test Location TP309 **Date of start** 04/08/2021 **Date at end** 05/08/2021

Test Run 1		**Test Run 2**		**Test Run 3**	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	2.500m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	0.600m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	2.200m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	10.48	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	10.53	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	1.180m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	1.020m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	1.530m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit		Gravel used to backfill Test Pit	
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	1.530m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway				**Time to soakaway**				**Time to soakaway**			
Time		Depth to water	Duration	Time		Depth to water	Duration	Time		Depth to water	Duration
Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds	Day	Time	(m bgl)	Seconds
1	10.530	1.180	0								
1	10.540	1.180	60								
1	10.550	1.180	120								
1	10.560	1.180	180								
1	10.570	1.180	240								
1	10.580	1.180	300								
1	10.590	1.180	360								
1	11.000	1.180	420								
1	11.050	1.180	720								
1	11.100	1.180	1020								
1	11.150	1.180	1320								
1	11.250	1.190	1920								
1	11.530	1.200	3600								
1	12.420	1.210	6540								
1	13.120	1.220	8340								
1	13.420	1.230	10140								
1	14.150	1.240	12120								
1	15.300	1.270	16620								
1	16.100	1.270	19020								
2	8.300	1.390	77820								
2	9.450	1.400	82320								
2	11.150	1.410	87720								
2	12.300	1.420	92220								

25% water loss (75% full)	1.435m	**25% water loss (75% full)**	-	**25% water loss (75% full)**	-
50% water loss (50% full)	1.690m	**50% water loss (50% full)**	-	**50% water loss (50% full)**	-
75% water loss (25% full)	1.945m	**75% water loss (25% full)**	-	**75% water loss (25% full)**	-
25% time (seconds)	-	**25% time (seconds)**	-	**25% time (seconds)**	-
75% time (seconds)	-	**75% time (seconds)**	-	**75% time (seconds)**	-
Vp 75-25	0.765m³	**Vp 75-25**	-	**Vp 75-25**	-
ap 50 (Actual area from test)	4.662m³	**ap 50 (Actual area from test)**	-	**ap 50 (Actual area from test)**	-
tp 75 - 25		**tp 75 - 25**		**tp 75 - 25**	
Soil Infiltration Rate	-	**Soil Infiltration Rate**	-	**Soil Infiltration Rate**	-



Form completed by		
Tested By	PRINT	Daniel Gadsby
	SIGN	DG
	DATE	04/08/2021 - 05/08/2021
Calculated By	PRINT	Daniel Gadsby
	SIGN	DG
	DATE	09/08/2021
Checked by	PRINT	
	SIGN	
	DATE	

TEST CERTIFICATE

Determination of the in-situ California Bearing Ratio (CBR)

Tested in Accordance with BS 1377 : Part 9 :1990, clause 4.3

UKAS TESTING 4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd.

Client Address: Over Court Barn, Over Lane,
Almondsbury
Bristol

Postcode: BS32 4DF

Contact: Scott Williams

Client Ref: PO08532

Job Number: 21-90324_1

Date Tested: 03/08/2021

Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

Test Results:

Sample Description: Brown sandy CLAY with Flint and Stone

Location: CBR 301

Test Reference: 1

Test Depth: 300

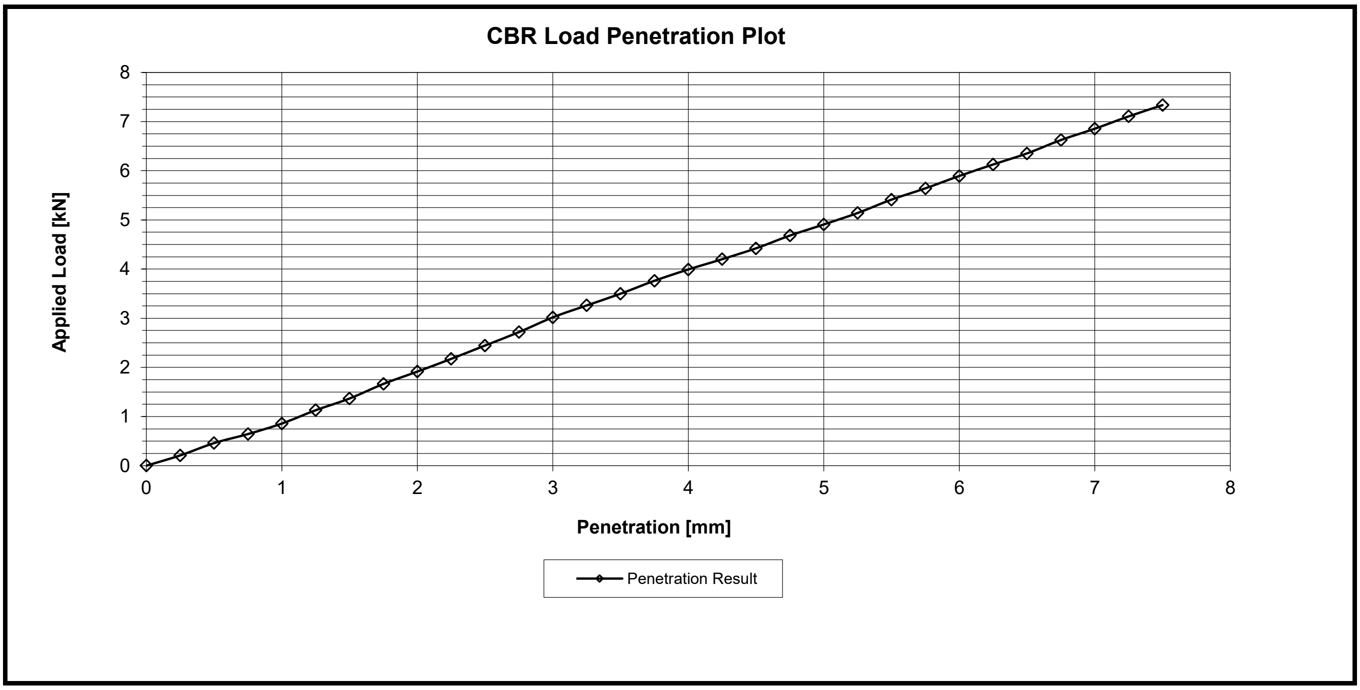
Weather: Sunny

Moisture Content: 6%

Applied Surcharge:

Applied Seating Load: 12 N

CBR Value: **24.5%**



Comments: The CBR value for a given soil depends upon its dry density and moisture content, therefore the CBR value reported is related to the soil moisture content at time of test.

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator

SSF80.3

Date Reported: 04/08/2021 Page: 1 of 1

TEST CERTIFICATE

Determination of the in-situ California Bearing Ratio (CBR)

Tested in Accordance with BS 1377 : Part 9 :1990, clause 4.3

4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Environmental Science

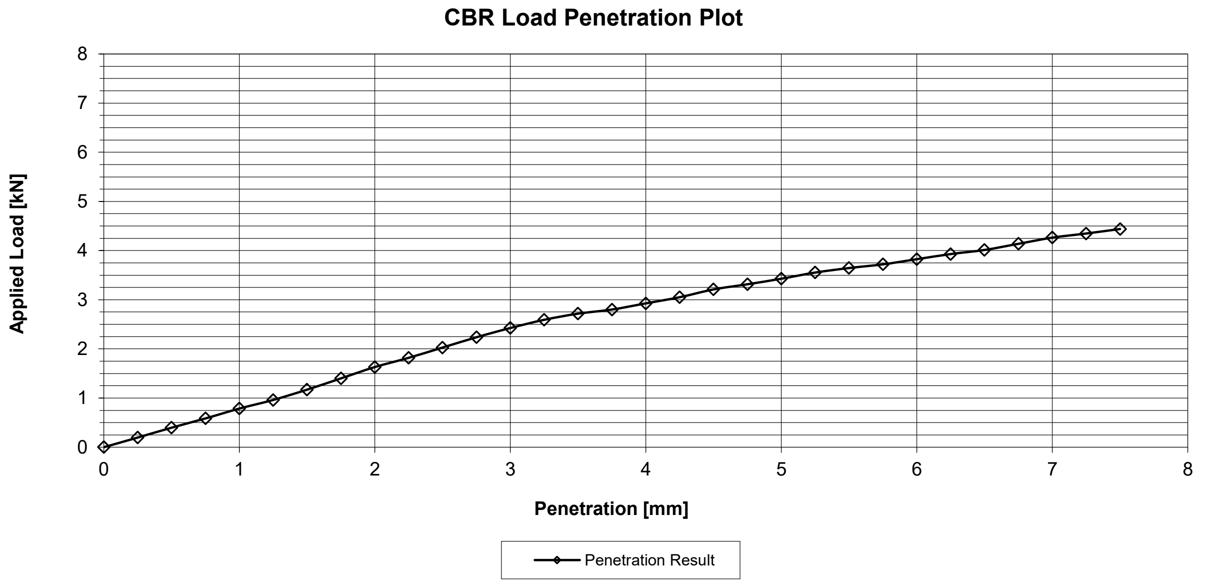
Client:	Hydrock Consultants Ltd.	Client Ref:	PO08532
Client Address:	Over Court Barn, Over Lane, Almondsbury Bristol	Job Number:	21-90324_2
		Date Tested:	03/08/2021
Postcode:	BS32 4DF		
Contact:	Scott Williams		

Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

Test Results:

Sample Description:	Brown sandy CLAY with Flint and Limestone	Test Depth:	300
Location:	CBR 302	Weather:	Sunny
Test Reference:	2		
Moisture Content:	7%	Applied Surcharge:	
		Applied Seating Load:	12 N

CBR Value: **17.1%**



Comments: The CBR value for a given soil depends upon its dry density and moisture content, therefore the CBR value reported is related to the soil moisture content at time of test.

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator

SSF80.3

Date Reported: 04/08/2021

UKAS TESTING
4041

TEST CERTIFICATE

Determination of the in-situ California Bearing Ratio (CBR)

Tested in Accordance with BS 1377 : Part 9 :1990, clause 4.3

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Analytical i2 Environmental Science

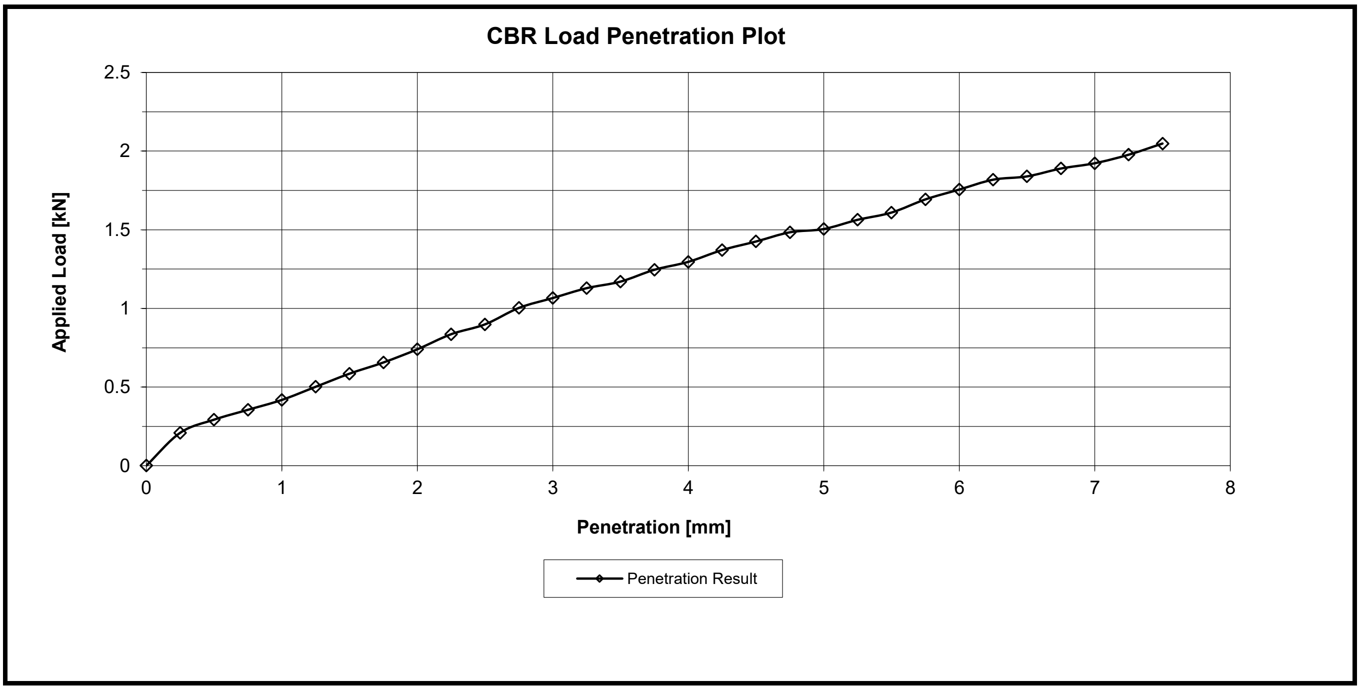
Client:	Hydrock Consultants Ltd.	Client Ref:	PO08532
Client Address:	Over Court Barn, Over Lane, Almondsbury Bristol	Job Number:	21-90324_3
		Date Tested:	03/08/2021
Postcode:	BS32 4DF		
Contact:	Scott Williams		

Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

Test Results:

Sample Description:	Brown sandy CLAY with stone	Test Depth:	300
Location:	CBR 303	Weather:	Sunny
Test Reference:	3		
Moisture Content:	11%	Applied Surcharge:	
		Applied Seating Load:	12 N

CBR Value: **7.5%**



Comments: The CBR value for a given soil depends upon its dry density and moisture content, therefore the CBR value reported is related to the soil moisture content at time of test.

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator

SSF80.3

Date Reported: 04/08/2021 Page: 1 of 1

TEST CERTIFICATE

Determination of the in-situ California Bearing Ratio (CBR)

Tested in Accordance with BS 1377 : Part 9 :1990, clause 4.3

UKAS TESTING 4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

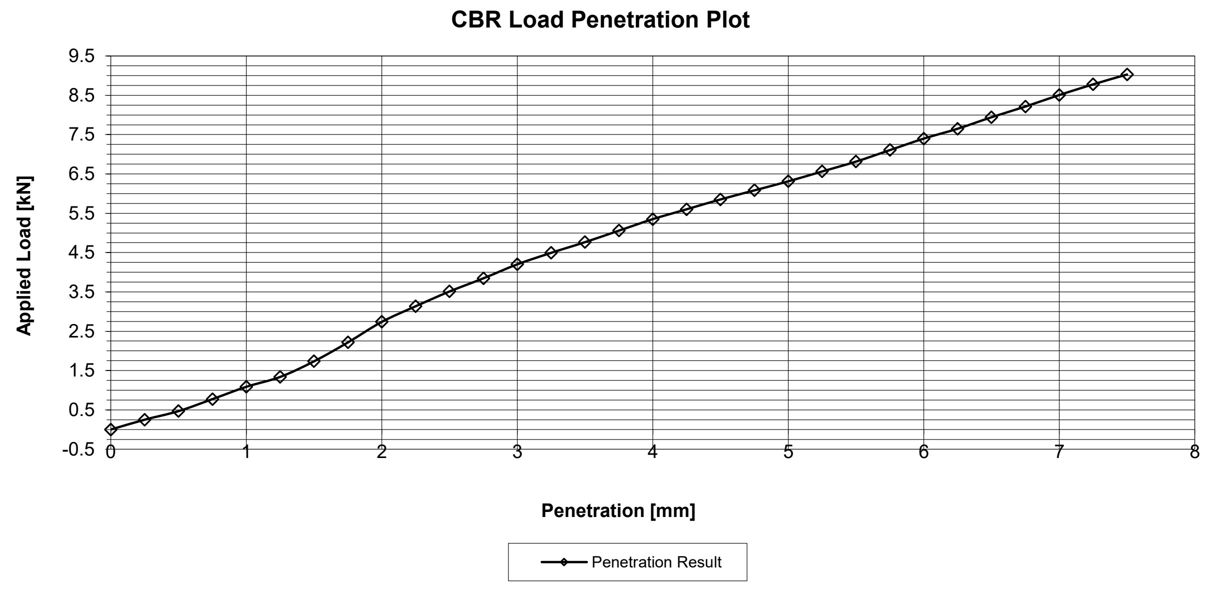
Client:	Hydrock Consultants Ltd.	Client Ref:	PO08532
Client Address:	Over Court Barn, Over Lane, Almondsbury Bristol	Job Number:	21-90324_4
		Date Tested:	03/08/2021
Postcode:	BS32 4DF		
Contact:	Scott Williams		

Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

Test Results:

Sample Description:	Brown sandy CLAY with Limestone	Test Depth:	300
Location:	CBR 304	Weather:	Sunny
Test Reference:	4		
Moisture Content:	8%	Applied Surcharge:	
		Applied Seating Load:	12 N

CBR Value: **31.6%**



Comments: The CBR value for a given soil depends upon its dry density and moisture content, therefore the CBR value reported is related to the soil moisture content at time of test.

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator

SSF80.3

Date Reported: 04/08/2021 Page: 1 of 1

TEST CERTIFICATE

Determination of the in-situ California Bearing Ratio (CBR)

Tested in Accordance with BS 1377 : Part 9 :1990, clause 4.3

UKAS TESTING 4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Client: Hydrock Consultants Ltd.
Client Address: Over Court Barn, Over Lane,
Almondsbury
Bristol
Postcode: BS32 4DF
Contact: Scott Williams

Client Ref: PO08532
Job Number: 21-90324_5
Date Tested: 03/08/2021

Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

Test Results:

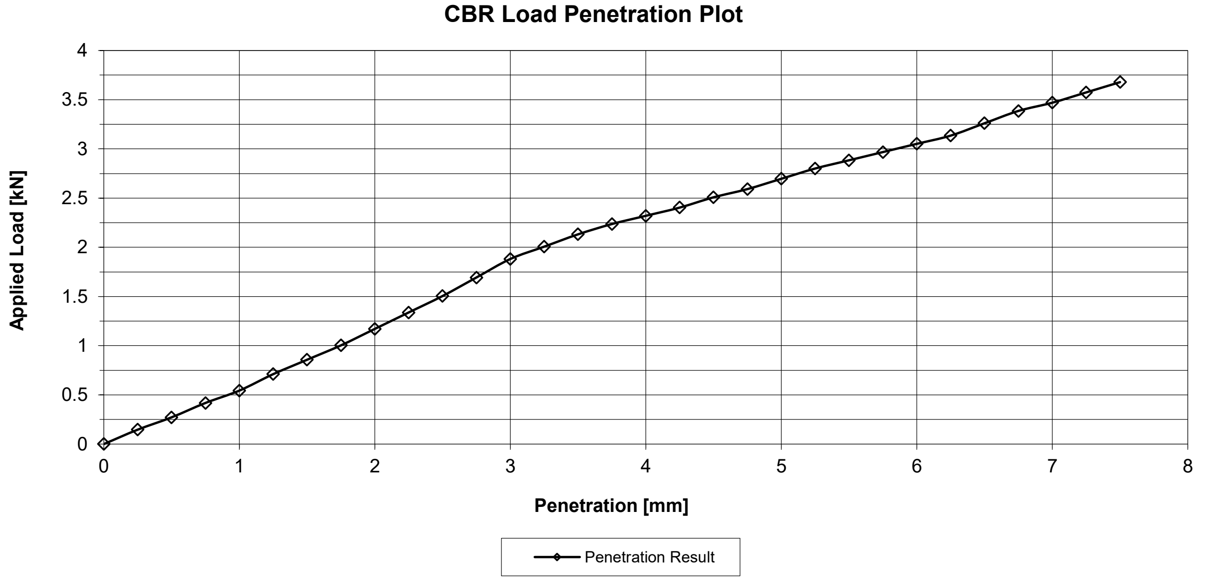
Sample Description: Brown CLAY with stone
Location: CBR 305
Test Reference: 5

Test Depth: 300
Weather: Sunny

Moisture Content: 9%

Applied Surcharge:
Applied Seating Load: 12 N

CBR Value: **13.5%**



Comments: The CBR value for a given soil depends upon its dry density and moisture content, therefore the CBR value reported is related to the soil moisture content at time of test.

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator

SSF80.3

Date Reported: 04/08/2021

Page: 1 of 1

UKAS TESTING
4041

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd
Client Address: Over Court Barn, Over Lane,
Almondsbury, Bristol BS32 4DF

Contact: Scott Williams
Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

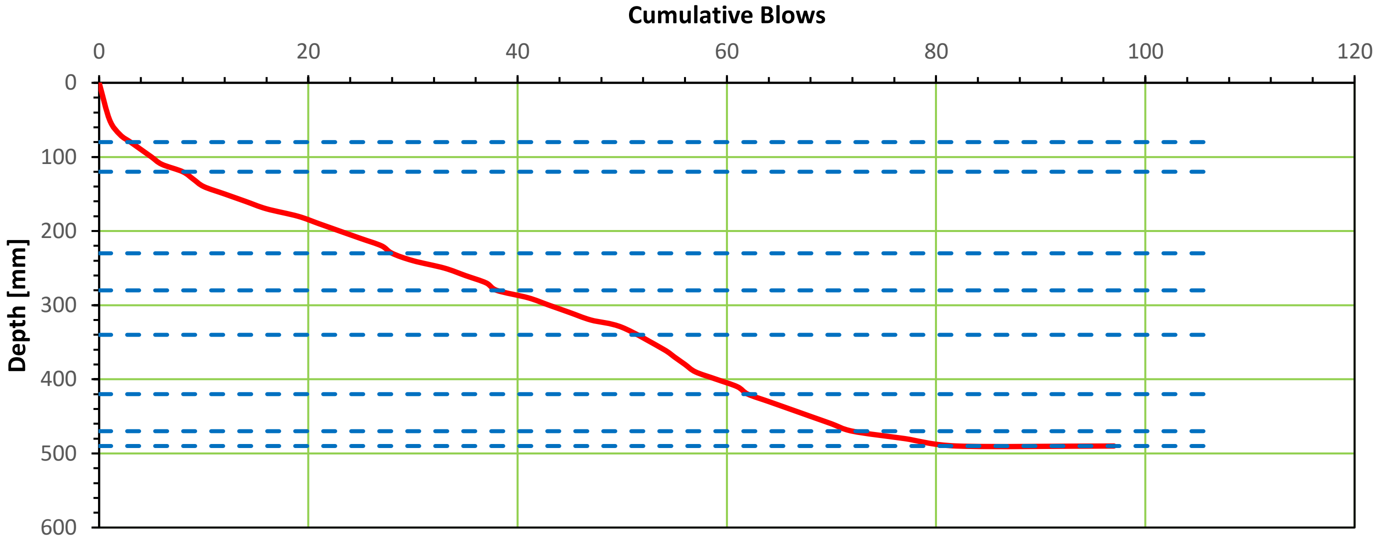
Client Reference:
Job Number: 21-90324_6
Date Sampled: 03/08/2021
Date Received: 03/08/2021
Date Tested: 03/08/2021
Sampled By: KW

Test Results

Laboratory Reference: 1
Location N/A
Sample Reference: DCP 305
Sample Description: Topsoil/Grass
Start Depth [mm]: 0

DCP Offset [mm]: 120

Layer	No of Blows	Cumulative Blows	CBR %	Layer Thickness mm	Total Depth mm
1	3	3	9	80	80
2	5	8	34	40	120
3	20	28	50	110	230
4	10	38	55	50	280
5	13	51	60	60	340
6	11	62	37	80	420
7	10	72	55	50	470
8	25	97	>100	20	490



Notice: SHW Series 800 Clause 882 Equation 8/1 : Log10(CBR) = 2.480 - 1.057 x Log10(Strength)

Remarks:

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator
for and on behalf of i2 Analytical Ltd

SSF82.5
Date Reported: **04/08/2021**

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Client: Hydrock Consultants Ltd
Client Address: Over Court Barn, Over Lane,
Almondsbury, Bristol BS32 4DF

Contact: Scott Williams
Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

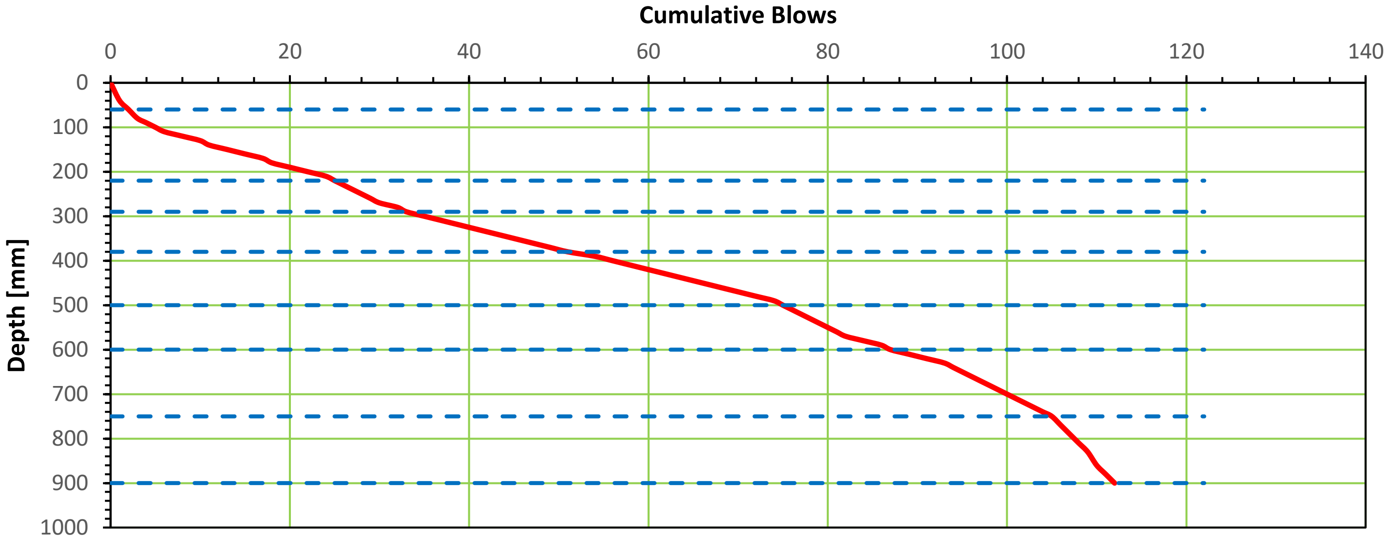
Client Reference:
Job Number: 21-90324_7
Date Sampled: 03/08/2021
Date Received: 03/08/2021
Date Tested: 03/08/2021
Sampled By: KW

Test Results

Laboratory Reference: 2
Location N/A
Sample Reference: DCP 304
Sample Description: Topsoil/Grass
Start Depth [mm]: 0

DCP Offset [mm]: 100

Layer	No of Blows	Cumulative Blows	CBR %	Layer Thickness mm	Total Depth mm
1	2	2	8	60	60
2	23	25	39	160	220
3	8	33	30	70	290
4	18	51	55	90	380
5	24	75	55	120	500
6	12	87	32	100	600
7	18	105	32	150	750
8	7	112	12	150	900



Notice: SHW Series 800 Clause 882 Equation 8/1 : Log10(CBR) = 2.480 - 1.057 x Log10(Strength)

Remarks:

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator
for and on behalf of i2 Analytical Ltd

SSF82.5
Date Reported: **04/08/2021**

UKAS TESTING
4041

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Analytical i2 Environmental Science

Client: Hydrock Consultants Ltd
Client Address: Over Court Barn, Over Lane,
Almondsbury, Bristol BS32 4DF

Contact: Scott Williams
Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

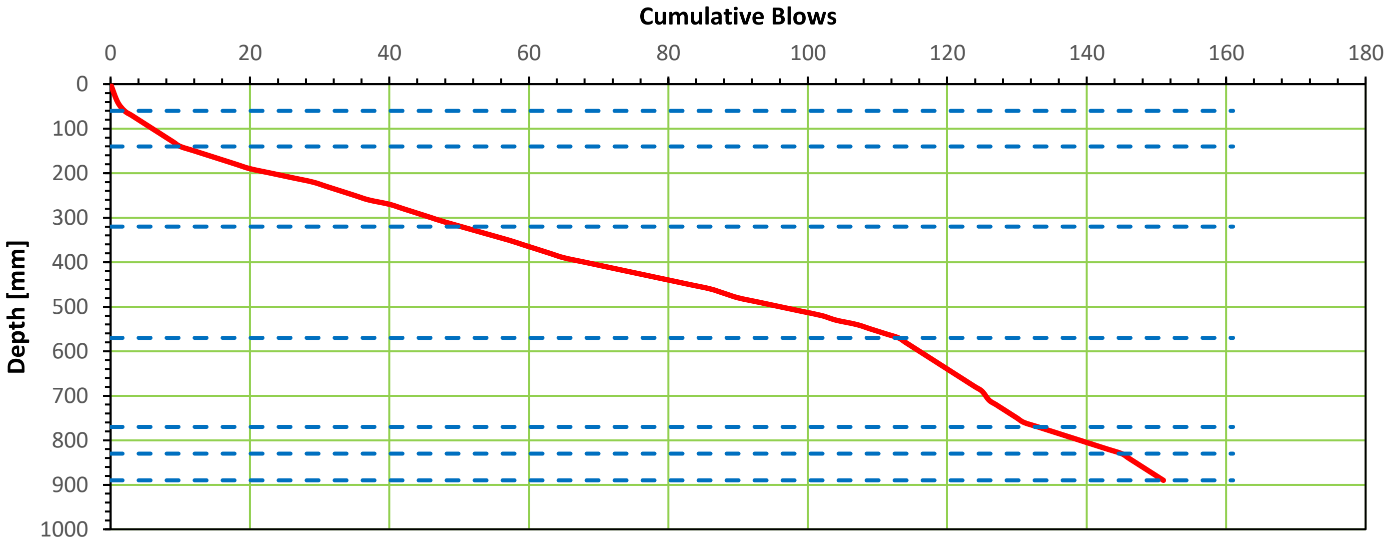
Client Reference:
Job Number: 21-90324_8
Date Sampled: 03/08/2021
Date Received: 03/08/2021
Date Tested: 03/08/2021
Sampled By: KW

Test Results

Laboratory Reference: 3
Location N/A
Sample Reference: DCP 303
Sample Description: Topsoil/Grass
Start Depth [mm]: 0

DCP Offset [mm]: 110

Layer	No of Blows	Cumulative Blows	CBR %	Layer Thickness mm	Total Depth mm
1	2	2	8	60	60
2	8	10	26	80	140
3	41	51	63	180	320
4	62	113	69	250	570
5	20	133	26	200	770
6	12	145	55	60	830
7	6	151	26	60	890



Notice: SHW Series 800 Clause 882 Equation 8/1 : Log10(CBR) = 2.480 - 1.057 x Log10(Strength)

Remarks:

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator
for and on behalf of i2 Analytical Ltd

SSF82.5
Date Reported: **04/08/2021**

UKAS TESTING 4041

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Client: Hydrock Consultants Ltd
Client Address: Over Court Barn, Over Lane,
Almondsbury, Bristol BS32 4DF

Contact: Scott Williams
Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

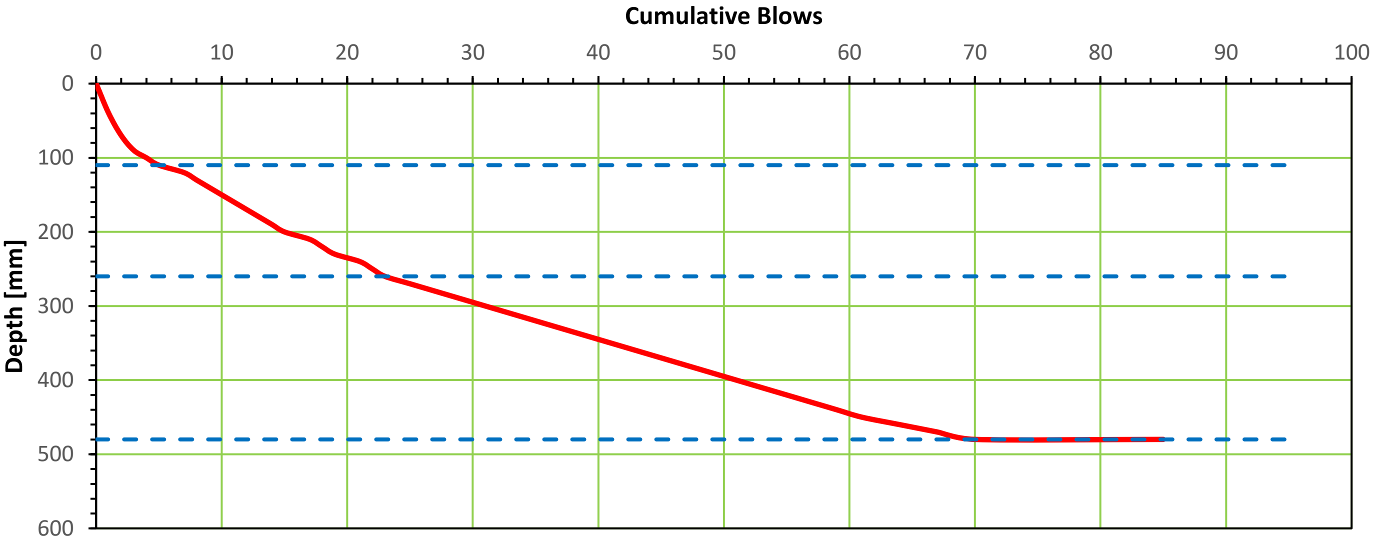
Client Reference:
Job Number: 21-90324_9
Date Sampled: 03/08/2021
Date Received: 03/08/2021
Date Tested: 03/08/2021
Sampled By: KW

Test Results

Laboratory Reference: 4
Location N/A
Sample Reference: DCP 302
Sample Description: Topsoil/Grass
Start Depth [mm]: 0

DCP Offset [mm]: 100

Layer	No of Blows	Cumulative Blows	CBR %	Layer Thickness mm	Total Depth mm
1	5	5	12	110	110
2	18	23	32	150	260
3	62	85	79	220	480



Notice: SHW Series 800 Clause 882 Equation 8/1 : Log10(CBR) = 2.480 - 1.057 x Log10(Strength)

Remarks:

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator

for and on behalf of i2 Analytical Ltd

SSF82.5
Date Reported: **04/08/2021**

4041

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Client: Hydrock Consultants Ltd
Client Address: Over Court Barn, Over Lane,
Almondsbury, Bristol BS32 4DF

Contact: Scott Williams
Testing Carried Out At: Heyford Park, Oxfordshire, OX25 5LJ

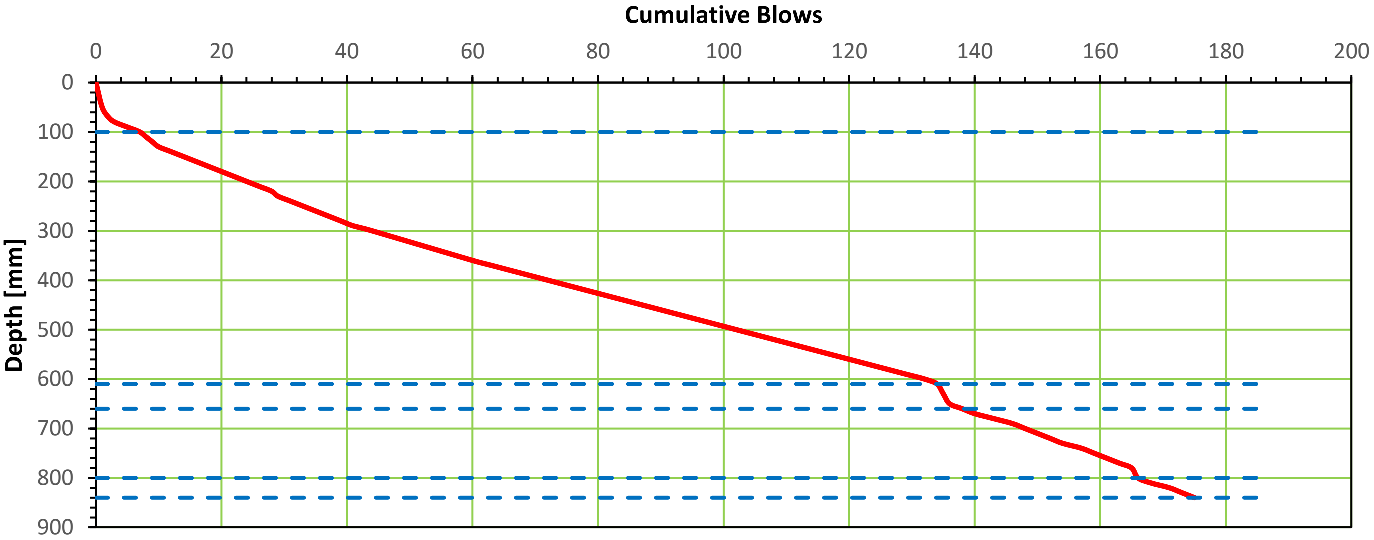
Client Reference:
Job Number: 21-90324_10
Date Sampled: 03/08/2021
Date Received: 03/08/2021
Date Tested: 03/08/2021
Sampled By: KW

Test Results

Laboratory Reference: 5
Location N/A
Sample Reference: DCP 301
Sample Description: Topsoil/Grass
Start Depth [mm]: 0

DCP Offset [mm]: 110

Layer	No of Blows	Cumulative Blows	CBR %	Layer Thickness mm	Total Depth mm
1	7	7	18	100	100
2	127	134	69	510	610
3	4	138	21	50	660
4	28	166	55	140	800
5	9	175	62	40	840



Notice: SHW Series 800 Clause 882 Equation 8/1 : Log10(CBR) = 2.480 - 1.057 x Log10(Strength)

Remarks:

Signed: [redacted]

Stephen Whitlock
Earthworks Project Coordinator
for and on behalf of i2 Analytical Ltd

SSF82.5
Date Reported: **04/08/2021**

Appendix F Site Monitoring Data and Ground Gas Risk Assessment

Site: Heyford Park Western Development
Job number: C-04583-C
Client: Dorchester Living

Gas analyser: GA5000
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: AH/DG

Notes on site conditions: 18.08.21 - Warm (23°C), sunny, dry and breezy. **02.09.21**- Cloudy / Overcast. **14.09.21** cloudy and breezy .**29.09.21** - overcast, breezy, light rain. **13.10.21** - mild, 19°C, dry, sunny intervals. **27.10.21** - mild 15°C, breezy, intermittent drizzle, overcast.

Notes: LEL = lower explosive limit = 5%v/v. * where the flow is less than the limit of detection of the instrument, the detection limit is reported. GSVs are rounded to 3 places.

Monitoring round		**Borehole details**						**Pressure and flow**					**Gas concentrations**									**GSV**		**Local conditions**
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	**Notes on condition of borehole and surrounding ground**
														Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
								Max. individual values:				**0.3**			**0.1**				**4.7**		**21.3**	**0.0002**	**0.0094**	
								Min. individual values:				0.0			0.0				0.1		7.4	0	0	**Summary statistics for this monitoring period.**
								Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:														**0.0003**	**0.0141**	
18.08.21	13:05	WS302	S	0.8 - 1.8	1.39		0.00519	1002	F	0.07	0.1	0.1		0.1	0.1			0.2	0.1	19.8	20.5	0.0001	0.0001	DTB = 1.74m bgl.
02.09.21	12:11	WS302	S	0.8 - 1.8	1.40		0.00522	1014	F	0.02	0.2	0.2		0	0			1.4	1.4	18.9	19.1	0	0.0028	DTB= 1.73m bgl.
14.09.21	11:25	WS302	S	0.8 - 1.8	1.25		0.00466	997	S	-0.22	0.1	0.1		0	0			0.1	1.1	20.7	18.3	0	0.0011	Low flow sampling & gas monitoring
29.09.21	13:35	WS302	S	0.8 - 1.8	1.27		0.00474	1008	R	0.04	0.1	0.1		0.1	0.1			1.5	1.6	19.3	16.0	0.0001	0.0016	DTB = 1.74m bgl.
13.10.21	15:00	WS302	S	0.8 - 1.8	1.26		0.00470	1014	S	0.02	0.1	0.1		0.1	0.1			0.1	1.3	21.3	16.9	0.0001	0.0013	DTB = 1.74m bgl.
27.10.21	14:15	WS302	S	0.8 - 1.8	1.20		0.00448	1003	F	0.05	0.1	0.1		0.1	0.1			0.6	1.2	17.5	16.4	0.0001	0.0012	DTB = 1.74m bgl.
18.08.21	12:45	WS305	S	1.25 - 2.50	1.80		0.00672	1003	F	0.05	0.0	0.0		0.1	0.1			1.4	3.2	19.0	16.7	0	0	DTB = 2.52m bgl.
02.09.21	11:42	WS305	S	1.25 - 2.50	1.79		0.00668	1014	F	-0.03	0.2	0.2		0	0			1.4	4.7	10.8	10.8	0	0.0094	DTB = 2.50m bgl.
14.09.21	11:38	WS305	S	1.25 - 2.50	1.70		0.00634	997	S	-0.22	0.0	0.0		0	0			0.1	2.7	20.7	13.4	0	0	Low flow sampling & gas monitoring
29.09.21	13:15	WS305	S	1.25 - 2.50	1.64		0.00612	1007	R	0.05	0.0	0.0		0.1	0.1			0.8	4.5	20.2	8.8	0	0	DTB = 2.52m bgl.
13.10.21	14:40	WS305	S	1.25 - 2.50	1.68		0.00627	1014	S	-0.04	0.1	0.1		0.1	0.1			0.5	3.6	20.1	7.4	0.0001	0.0036	DTB = 2.52m bgl.
27.10.21	13:55	WS305	S	1.25 - 2.50	1.63		0.00608	1003	F	0.09	0.2	0.2		0.1	0.1			1.2	3.7	20.0	7.4	0.0002	0.0074	DTB = 2.51m bgl.
18.08.21	13:25	BH301	S	1.0 - 6.0	1.47		0.00548	1003	F	0.05	0.2	0.2		0.1	0.1			1.7	2.4	16.4	8.5	0.0002	0.0048	DTB = 5.81m bgl.
02.09.21	14:20	BH301	S	1.0 - 6.0	1.58		0.00589	1013	F	0.05	0.2	0.2		0	0			1.5	3.4	15.9	15.9	0	0.0068	DTB = 5.83m bgl.
14.09.21	09:06	BH301	S	1.0 - 6.0	1.86		0.00694	997	S	-0.17	0.1	0.1		0	0			0.1	1.5	20.7	18.6	0	0.0015	Low flow sampling & gas monitoring
29.09.21	12:55	BH301	S	1.0 - 6.0	1.34		0.00500	1007	R	0.05	0.0	0.0		0.1	0.1			2.1	2.7	20.7	17.5	0	0	DTB = 5.73m bgl.
13.10.21	14:20	BH301	S	1.0 - 6.0	1.42		0.00530	1014	S	0.05	0.1	0.1		0.1	0.1			0.1	2.5	21.0	17.0	0.0001	0.0025	DTB = 5.71m bgl.
27.10.21	13:35	BH301	S	1.0 - 6.0	1.39		0.00519	1003	F	0.05	0.1	0.1		0.2	0.1			1.9	2.6	20.0	16.7	0.0001	0.0026	DTB = 5.71m bgl.
18.08.21	13:45	BH302	S	1.0 - 10.0	1.34		0.00500	1002	F	0.04	0.2	0.2		0.1	0.1			0.9	0.3	18.8	20.3	0.0002	0.0006	DTB = 8.80m bgl. Initial CO 9ppm fell to 5ppm over 2 mins.
02.09.21	12:33	BH302	S	1.0 - 10.0	1.41		0.00526	1013	F	0.03	0.2	0.2		0	0			0.2	0.1	20.9	21.3	0	0.0002	DTB = 9.05m bgl.
14.09.21	09:06	BH302	S	1.0 - 10.0	1.7		0.00634	997	S	-0.24	0.0	0.0		0	0			0.1	0.5	20.7	20.3	0	0	Low flow sampling & gas monitoring
29.09.21	13:55	BH302	S	1.0 - 10.0	1.38		0.00515	1008	R	0.16	0.1	0.1		0	0			1.5	0.9	19.9	20.7	0	0.0009	DTB = 8.49m bgl. Found BH cover open and bung left out on tophat lid on arrival.
13.10.21	15:20	BH302	S	1.0 - 10.0	1.41		0.00526	1014	S	0.02	0.1	0.1		0.1	0.1			0.9	0.2	19.9	21.1	0.0001	0.0002	DTB = 8.42m bgl.
27.10.21	14:35	BH302	S	1.0 - 10.0	1.40		0.00522	1003	F	0.05	0.1	0.1		0.1	0.1			1.3	0.4	20.1	21.1	0.0001	0.0004	DTB = 8.46m bgl.

Monitoring round		Borehole details						Pressure and flow					Gas concentrations									GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
														Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
18.08.21	14:10	BH303	S	1.0 - 5.0	1.63		0.00608	1003	F	0.09	0.1	0.1		0.1	0.1			0.6	1.5	20.6	19.8	0.0001	0.0015	DTB = 5.13m bgl.
02.09.21	13:15	BH303	S	1.0 - 5.0	1.71		0.00638	1013	F	0.00	0.2	0.2		0	0			0.1	0.1	21.2	21.2	0	0.0002	DTB = 5.10m bgl.
14.09.21	10:09	BH303	S	1.0 - 5.0	1.87		0.00698	997	S	-0.26	0.2	0.2		0	0			0.1	0.7	20.8	20	0	0.0014	Low flow sampling & gas monitoring
29.09.21	14:15	BH303	S	1.0 - 5.0	1.54		0.00575	1008	R	0.28	0.3	0.3		0	0			0.1	0.3	21.5	21.3	0	0.0009	DTB = 5.10m bgl.
13.10.21	15:40	BH303	S	1.0 - 5.0	1.60		0.00597	1014	S	0.09	0.2	0.2		0.1	0			0.1	0.5	21.3	20.5	0	0.001	DTB = 5.10m bgl.
27.10.21	14:55	BH303	S	1.0 - 5.0	1.57		0.00586	1003	F	0.05	0.1	0.1		0.1	0.1			0.2	0.7	21.3	20.3	0.0001	0.0007	DTB = 5.09m bgl.

PID Readings

Exploratory Hole	Depth (m bgl)	PID Reading (ppm)	
		Steady	Max
WS05	0.6	15 - 36	48
	0.8	6 – 10.3	161.1

Appendix G Contamination Test Results and Statistical Analysis

Contamination Test Results

4041

Rebecca Price
Hydrock Consultants Ltd
Over Court Barns
Over Lane
Bristol
BS32 4DF

t: 01454 619533
f: 01454 614125
e: Group Bristol cc engineer

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 : 21-10808

Replaces Analytical Report Number: 21-10808, issue no. 1
Client references/information amended.

Project / Site name:	Heyford Park	**Samples received on:**	20/09/2021
Your job number:	4583	**Samples instructed on/ Analysis started on:**	20/09/2021
Your order number:	PO10022	**Analysis completed by:**	27/09/2021
Report Issue Number:	2	**Report issued on:**	29/10/2021
Samples Analysed:	5 water samples		

Signed: [redacted]

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 21-10808
Project / Site name: Heyford Park

Your Order No: PO10022

Lab Sample Number				2015911	2015912	2015913	2015914	2015915
Sample Reference				BH301	BH302	BH303	WS302	WS305
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.86	2.70	2.87	1.50	2.00
Date Sampled				14/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.6	7.6	7.6	7.4	7.2
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	480	470	480	340	690
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sulphate as SO4	µg/l	45	ISO 17025	32000	27500	100000	9020	90800
Chloride	mg/l	0.15	ISO 17025	9.5	8.7	6.6	3.5	9.8
Fluoride	µg/l	50	ISO 17025	190	210	140	100	140
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	57	51	46	< 15	< 15
Ammoniacal Nitrogen as NH3	µg/l	15	ISO 17025	69	62	56	< 15	< 15
Ammoniacal Nitrogen as NH4	µg/l	15	ISO 17025	73	66	60	< 15	< 15
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	1.53	2.68	7.07	3.52	11.8
Nitrate as N	mg/l	0.01	ISO 17025	0.07	0.09	0.47	2.09	0.08
Nitrate as NO3	mg/l	0.05	ISO 17025	0.31	0.41	2.07	9.26	0.36
Nitrite as N	µg/l	1	ISO 17025	2.8	3.8	20	< 1.0	1.3
Nitrite as NO2	µg/l	5	ISO 17025	9.3	13	66	< 5.0	< 5.0

Hardness - Total	mgCaCO3/l	1	ISO 17025	280	295	262	206	388
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

PAH Sums

Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Sum of Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.04	NONE	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16

Analytical Report Number: 21-10808
Project / Site name: Heyford Park

Your Order No: PO10022

Lab Sample Number				2015911	2015912	2015913	2015914	2015915
Sample Reference				BH301	BH302	BH303	WS302	WS305
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.86	2.70	2.87	1.50	2.00
Date Sampled				14/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

Heavy Metals / Metalloids

Boron (dissolved)	µg/l	10	ISO 17025	45	90	46	33	92
Calcium (dissolved)	mg/l	0.012	ISO 17025	97	100	93	80	150
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	1.7	2.2	1.7	2.0	3.5
Iron (dissolved)	mg/l	0.004	ISO 17025	0.006	0.010	0.007	< 0.004	0.012
Iron (dissolved)	µg/l	4	ISO 17025	5.8	9.9	6.6	< 4.0	12
Magnesium (dissolved)	mg/l	0.005	ISO 17025	9.1	9.4	6.9	1.5	4.9
Sodium (dissolved)	mg/l	0.01	ISO 17025	8.5	8.7	16	6.0	68

Aluminium (dissolved)	µg/l	1	ISO 17025	9.3	45	130	6.3	140
Antimony (dissolved)	µg/l	0.4	ISO 17025	0.4	< 0.4	0.5	0.4	1.5
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.10	0.45	1.03	0.19	1.13
Barium (dissolved)	µg/l	0.06	ISO 17025	15	18	22	14	34
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.02	< 0.02	0.06
Chromium (dissolved)	µg/l	0.2	ISO 17025	1.7	2.2	1.7	2.0	3.5
Cobalt (dissolved)	µg/l	0.2	ISO 17025	0.5	1.1	0.5	0.2	1.2
Copper (dissolved)	µg/l	0.5	ISO 17025	1.4	1.5	3.2	3.5	3.8
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	0.3
Manganese (dissolved)	µg/l	0.05	ISO 17025	44	62	30	7.7	150
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.2	1.9	2.6	0.9	4.0
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	1.4	< 0.6	10
Silver (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Tin (dissolved)	µg/l	0.2	ISO 17025	< 0.20	0.71	0.27	< 0.20	< 0.20
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	0.6	0.2	0.9
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.4	5.6	3.0	6.8	9.8

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sum of m, p & o-Xylene	µg/l	2	ISO 17025	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Analytical Report Number: 21-10808
Project / Site name: Heyford Park

Your Order No: PO10022

Lab Sample Number				2015911	2015912	2015913	2015914	2015915
Sample Reference				BH301	BH302	BH303	WS302	WS305
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.86	2.70	2.87	1.50	2.00
Date Sampled				14/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG Total C5 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Speciated EPA-16 PAHs in water (LOW LEVEL Dets)	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270 (low level)	L102B-PL	W	NONE
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE

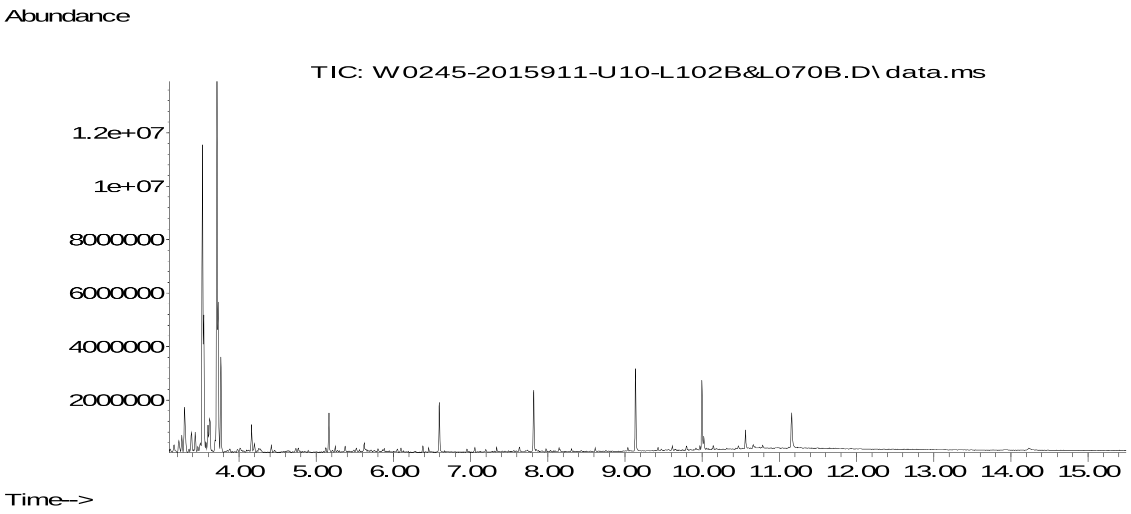
Analytical Report Number : 21-10808
Project / Site name: Heyford Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonia as NH3 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
TPH Chromatogram in Water	TPH Chromatogram in Water.	In-house method	L070-PL	W	NONE
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Free cyanide (low level) in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Bromate in Water	Determination of bromate in waters based on ion chromatography. Accredited matrices GW, PW, SW.	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
Specific PAH sums in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Chloride in water	Determination of Chloride (diissolved) colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	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.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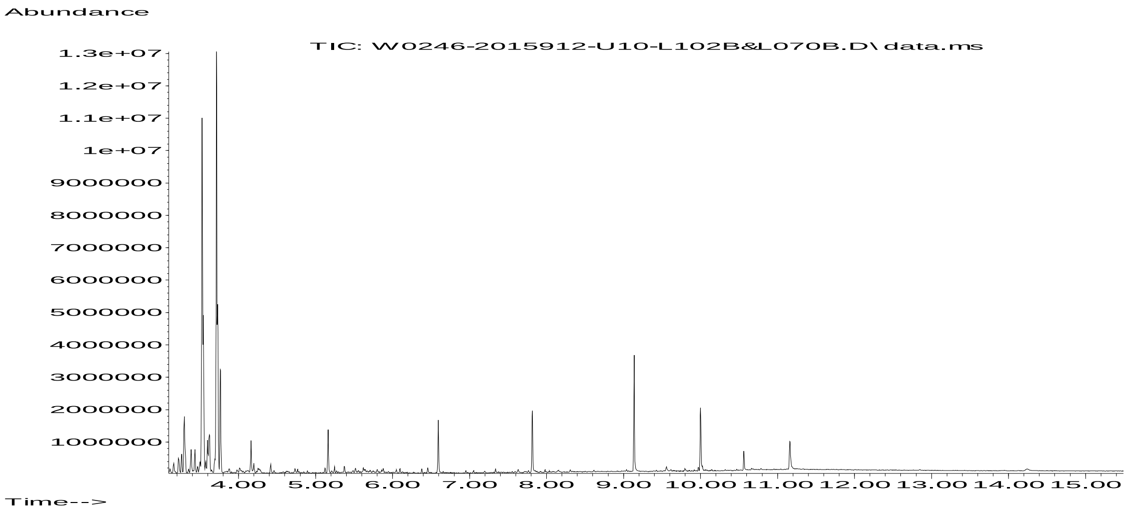
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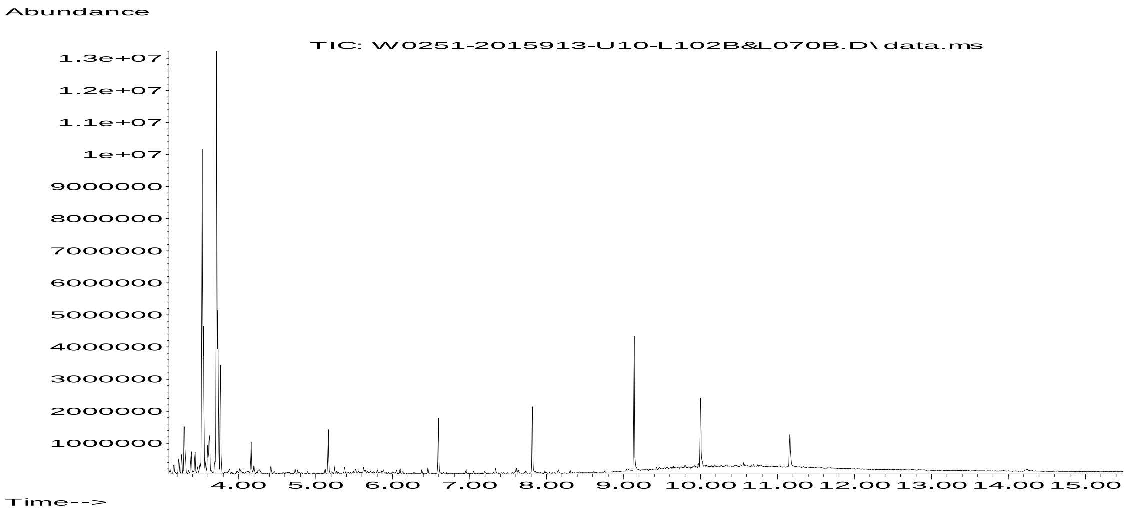
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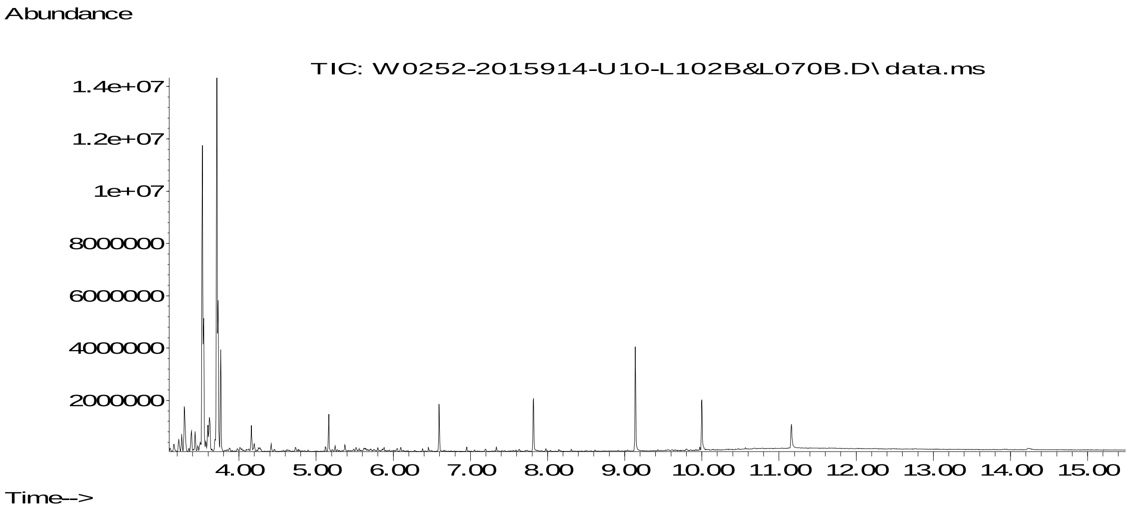
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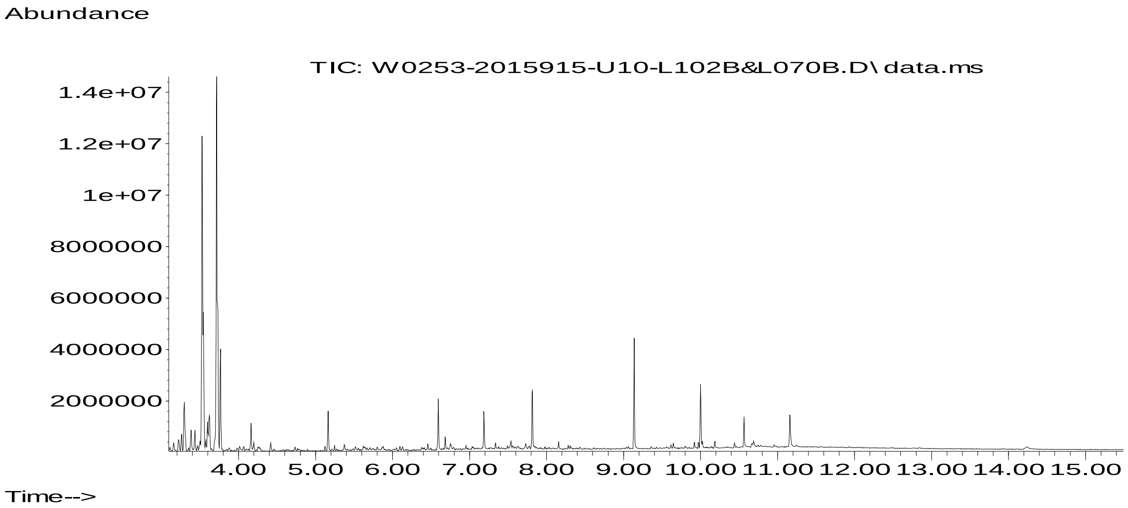
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Sample Deviation Report

Analytical Report Number : 21-10808
Project / Site name: Heyford Park

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH301	None Supplied	W	2015911	c	Ammonia as NH3 in water	L082-PL	c
BH301	None Supplied	W	2015911	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH301	None Supplied	W	2015911	c	Ammonium as NH4 in water	L082-PL	c
BH301	None Supplied	W	2015911	c	Electrical conductivity at 20oC of water	L031-PL	c
BH301	None Supplied	W	2015911	c	Nitrate as N in water	L078-PL	c
BH301	None Supplied	W	2015911	c	Nitrate in water	L078-PL	c
BH301	None Supplied	W	2015911	c	Nitrite as N in water	L082-PL	c
BH301	None Supplied	W	2015911	c	Nitrite in water	L082-PL	c
BH301	None Supplied	W	2015911	c	pH at 20oC in water (automated)	L099-PL	c
BH302	None Supplied	W	2015912	c	Ammonia as NH3 in water	L082-PL	c
BH302	None Supplied	W	2015912	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH302	None Supplied	W	2015912	c	Ammonium as NH4 in water	L082-PL	c
BH302	None Supplied	W	2015912	c	Electrical conductivity at 20oC of water	L031-PL	c
BH302	None Supplied	W	2015912	c	Nitrate as N in water	L078-PL	c
BH302	None Supplied	W	2015912	c	Nitrate in water	L078-PL	c
BH302	None Supplied	W	2015912	c	Nitrite as N in water	L082-PL	c
BH302	None Supplied	W	2015912	c	Nitrite in water	L082-PL	c
BH302	None Supplied	W	2015912	c	pH at 20oC in water (automated)	L099-PL	c
BH303	None Supplied	W	2015913	c	Ammonia as NH3 in water	L082-PL	c
BH303	None Supplied	W	2015913	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH303	None Supplied	W	2015913	c	Ammonium as NH4 in water	L082-PL	c
BH303	None Supplied	W	2015913	c	Electrical conductivity at 20oC of water	L031-PL	c
BH303	None Supplied	W	2015913	c	Nitrate as N in water	L078-PL	c
BH303	None Supplied	W	2015913	c	Nitrate in water	L078-PL	c
BH303	None Supplied	W	2015913	c	Nitrite as N in water	L082-PL	c
BH303	None Supplied	W	2015913	c	Nitrite in water	L082-PL	c
BH303	None Supplied	W	2015913	c	pH at 20oC in water (automated)	L099-PL	c
WS302	None Supplied	W	2015914	c	Ammonia as NH3 in water	L082-PL	c
WS302	None Supplied	W	2015914	c	Ammoniacal Nitrogen as N in water	L082-PL	c
WS302	None Supplied	W	2015914	c	Ammonium as NH4 in water	L082-PL	c
WS302	None Supplied	W	2015914	c	Electrical conductivity at 20oC of water	L031-PL	c
WS302	None Supplied	W	2015914	c	Nitrate as N in water	L078-PL	c
WS302	None Supplied	W	2015914	c	Nitrate in water	L078-PL	c
WS302	None Supplied	W	2015914	c	Nitrite as N in water	L082-PL	c
WS302	None Supplied	W	2015914	c	Nitrite in water	L082-PL	c
WS302	None Supplied	W	2015914	c	pH at 20oC in water (automated)	L099-PL	c
WS305	None Supplied	W	2015915	c	Ammonia as NH3 in water	L082-PL	c
WS305	None Supplied	W	2015915	c	Ammoniacal Nitrogen as N in water	L082-PL	c
WS305	None Supplied	W	2015915	c	Ammonium as NH4 in water	L082-PL	c
WS305	None Supplied	W	2015915	c	Electrical conductivity at 20oC of water	L031-PL	c
WS305	None Supplied	W	2015915	c	Nitrate as N in water	L078-PL	c
WS305	None Supplied	W	2015915	c	Nitrate in water	L078-PL	c
WS305	None Supplied	W	2015915	c	Nitrite as N in water	L082-PL	c
WS305	None Supplied	W	2015915	c	Nitrite in water	L082-PL	c
WS305	None Supplied	W	2015915	c	pH at 20oC in water (automated)	L099-PL	c

Rebecca Price
Hydrock Consultants Ltd
2-4 Hawthorne Park
Holdenby Road
Spratton
Northamptonshire
NN6 8LD

t: 01604842888
f: 01604842666
e: rebeccaprice@hydrock.com

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 : 21-91809

Project / Site name:	Heyford Park	**Samples received on:**	06/08/2021
Your job number:	C 04583	**Samples instructed on/ Analysis started on:**	06/08/2021
Your order number:	PO09046	**Analysis completed by:**	16/08/2021
Report Issue Number:	1	**Report issued on:**	16/08/2021
Samples Analysed:	2 bulk samples - 25 soil samples		

Signed: [redacted]

Joanna Wawrzeczko
#REF!
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966322	1966323	1966324	1966325	1966326
Sample Reference				WS304	WS305	WS305	WS305	WS305
Sample Number				ES102	ES103	ES104	ES106	ES107
Depth (m)				0.30	0.60	0.75	1.10	1.90
Date Sampled				02/08/2021	02/08/2021	02/08/2021	02/08/2021	02/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	4.2	10	6.9	13	7.5
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.4	1.3	1.2

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.8	8.5	-	8.5	-
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0043	0.11	-	0.21	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.0043	0.015	-	0.012	-

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.20	-	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.47	-	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	1.4	-	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	1.6	-	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	0.40	8.8	-	1.0	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	2.8	-	0.32	-
Fluoranthene	mg/kg	0.05	MCERTS	0.53	14	-	1.5	-
Pyrene	mg/kg	0.05	MCERTS	0.46	12	-	1.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.25	7.2	-	0.68	-
Chrysene	mg/kg	0.05	MCERTS	0.25	6.0	-	0.64	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.21	8.7	-	0.73	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.25	3.5	-	0.33	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.32	10	-	0.94	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	5.0	-	0.39	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	1.2	-	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	5.7	-	0.43	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	2.67	89.2	-	8.29	-

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966322	1966323	1966324	1966325	1966326
Sample Reference				WS304	WS305	WS305	WS305	WS305
Sample Number				ES102	ES103	ES104	ES106	ES107
Depth (m)				0.30	0.60	0.75	1.10	1.90
Date Sampled				02/08/2021	02/08/2021	02/08/2021	02/08/2021	02/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.3	13	-	19	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.30	0.77	-	0.98	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	1.5	-	2.5	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	-	< 1.2	-
Chromium (III)	mg/kg	1	NONE	7.2	20	-	27	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	7.3	20	-	28	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	4.9	6.4	-	6.4	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	5.4	13	-	14	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.4	14	-	19	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	17	37	-	57	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	14	37	-	51	-
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966322	1966323	1966324	1966325	1966326
Sample Reference				WS304	WS305	WS305	WS305	WS305
Sample Number				ES102	ES103	ES104	ES106	ES107
Depth (m)				0.30	0.60	0.75	1.10	1.90
Date Sampled				02/08/2021	02/08/2021	02/08/2021	02/08/2021	02/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	1.1	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	7.5	37	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	29	100	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	52	170	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	81	270	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	43	75	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	88	310	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	130	380	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	4.7	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	13	180	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	43	870	11	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	81	1000	24	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	13	160	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	140	2100	36	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	150	2200	36	< 10
TPH Total C5 - C44	mg/kg	10	NONE	-	280	2600	36	< 10
Miscellaneous Organics								
Coal Tar		N/A	NONE	-	-	-	-	-
Total Residue	mg/kg	10	NONE	-	-	-	-	-

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

Lab Sample Number				1966327	1966328	1966329	1966332	1966333
Sample Reference				WS302	WS302	TP306	TP309	TP309
Sample Number				ES102	ES103	ES102	ES102	ES105
Depth (m)				1.00	1.80	0.50	0.40	2.10
Date Sampled				02/08/2021	02/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	8.4	8.2	6.1	10
Total mass of sample received	kg	0.001	NONE	1.3	1.2	1.3	1.1	1.4

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.7	-	8.6	8.4	8.8
Free Cyanide	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0038	-	0.0082	0.027	0.0062
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.0024	-	0.0084	0.015	0.0034

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.97	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.28	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	3.0	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	3.1	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	1.8	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	1.6	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	2.2	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	1.2	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	2.9	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	1.2	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.26	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	1.5	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	-	< 0.80	19.9	< 0.80

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966327	1966328	1966329	1966332	1966333
Sample Reference				WS302	WS302	TP306	TP309	TP309
Sample Number				ES102	ES103	ES102	ES102	ES105
Depth (m)				1.00	1.80	0.50	0.40	2.10
Date Sampled				02/08/2021	02/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.9	-	7.9	14	2.9
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.30	-	0.42	0.76	0.27
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	-	0.3	1.0	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	-	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	6.4	-	11	32	5.6
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.4	-	11	32	5.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	4.3	-	3.6	7.2	2.4
Lead (aqua regia extractable)	mg/kg	1	MCERTS	3.9	-	13	62	3.1
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.8	-	8.6	15	5.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	7.9	-	25	40	8.7
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	10	-	34	50	9.8

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966327	1966328	1966329	1966332	1966333
Sample Reference				WS302	WS302	TP306	TP309	TP309
Sample Number				ES102	ES103	ES102	ES102	ES105
Depth (m)				1.00	1.80	0.50	0.40	2.10
Date Sampled				02/08/2021	02/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	< 10	< 10	-	-	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	-	-	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	-	-	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	-	-	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-	-	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	-	-	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	-	-	< 10

TPH Total C5 - C44	mg/kg	10	NONE	< 10	< 10	-	-	< 10

Miscellaneous Organics

Coal Tar		N/A	NONE	-	-	-	-	-
Total Residue	mg/kg	10	NONE	-	-	-	-	-

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

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966334	1966335	1966336	1966337	1966338
Sample Reference				TP302	TP302	TP305	TP307	TP307
Sample Number				ES101	ES102	ES102	ES101	ES102
Depth (m)				0.10	0.50	0.30	0.05	0.30
Date Sampled				04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	5.7	6.6	8.7	7.7	4.5
Total mass of sample received	kg	0.001	NONE	1.1	1.2	0.40	1.1	1.2

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2	8.5	8.5	8.3	8.7
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0081	0.0051	0.0080	0.0084	0.0068
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.031	0.014	0.011	0.032	0.0098

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.33	0.31	< 0.05	0.48	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	1.4	0.84	< 0.05	1.3	< 0.05
Pyrene	mg/kg	0.05	MCERTS	1.3	0.80	< 0.05	1.1	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.94	0.42	< 0.05	0.66	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.82	0.52	< 0.05	0.60	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	0.61	< 0.05	0.64	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.58	0.23	< 0.05	0.33	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3	0.61	< 0.05	0.77	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.66	0.38	< 0.05	0.36	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.82	0.48	< 0.05	0.44	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	9.28	5.20	< 0.80	6.68	< 0.80

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966334	1966335	1966336	1966337	1966338
Sample Reference				TP302	TP302	TP305	TP307	TP307
Sample Number				ES101	ES102	ES102	ES101	ES102
Depth (m)				0.10	0.50	0.30	0.05	0.30
Date Sampled				04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	15	18	16	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.80	0.75	0.90	0.84	0.46
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.4	0.7	1.0	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	21	21	22	23	12
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	21	22	24	12
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.4	5.4	7.8	8.6	4.9
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	16	14	21	8.8
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	14	20	17	9.4
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	43	39	47	49	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	49	40	35	50	28

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966334	1966335	1966336	1966337	1966338
Sample Reference				TP302	TP302	TP305	TP307	TP307
Sample Number				ES101	ES102	ES102	ES101	ES102
Depth (m)				0.10	0.50	0.30	0.05	0.30
Date Sampled				04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	< 8.0	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	-	-	< 10	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	< 8.4	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	< 10	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	< 10	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	18	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	< 8.4	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	21	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	21	-
TPH Total C5 - C44	mg/kg	10	NONE	-	-	-	21	-
Miscellaneous Organics								
Coal Tar		N/A	NONE	-	-	-	-	-
Total Residue	mg/kg	10	NONE	-	-	-	-	-

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

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966339	1966340	1966341	1966342	1966343
Sample Reference				TP304	TP310	TP310	TP313	TP313
Sample Number				ES102	ES101	ES102	ES101	ES102
Depth (m)				0.30	0.50	1.00	0.30	0.65
Date Sampled				05/07/2021	05/08/2021	05/08/2021	05/08/2021	05/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	46
Moisture Content	%	0.01	NONE	4.8	6.3	6.8	6.9	0.92
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.3	0.30
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.6	8.7	8.7	8.8	-
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0053	0.0075	0.0048	0.052	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.019	0.010	0.011	0.025	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	3.5	26
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	3.4	37
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	3.5	36
Phenanthrene	mg/kg	0.05	MCERTS	0.76	1.5	1.3	40	350
Anthracene	mg/kg	0.05	MCERTS	0.26	0.39	0.36	13	110
Fluoranthene	mg/kg	0.05	MCERTS	2.1	2.3	2.8	78	380
Pyrene	mg/kg	0.05	MCERTS	2.1	2.2	2.5	72	310
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	1.4	1.5	47	210
Chrysene	mg/kg	0.05	MCERTS	1.0	1.3	1.4	37	160
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.4	1.6	1.6	40	150
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.49	0.82	0.89	18	73
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.5	2.0	1.8	32	140
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.67	0.76	0.86	22	76
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.19	0.22	5.6	21
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.77	0.84	1.1	24	77
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	12.2	15.3	16.2	437	2150

Analytical Report Number: 21-91809

Project / Site name: Heyford Park

Your Order No: PO09046

Lab Sample Number				1966339	1966340	1966341	1966342	1966343
Sample Reference				TP304	TP310	TP310	TP313	TP313
Sample Number				ES102	ES101	ES102	ES101	ES102
Depth (m)				0.30	0.50	1.00	0.30	0.65
Date Sampled				05/07/2021	05/08/2021	05/08/2021	05/08/2021	05/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	12	13	13	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.75	0.63	0.70	0.64	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.4	0.2	0.5	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	20	16	18	17	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	16	18	17	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	6.7	5.3	6.0	9.2	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	11	14	19	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	12	13	12	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	42	33	38	41	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	47	34	43	47	-

Monoaromatics & Oxygenates

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

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966339	1966340	1966341	1966342	1966343
Sample Reference				TP304	TP310	TP310	TP313	TP313
Sample Number				ES102	ES101	ES102	ES101	ES102
Depth (m)				0.30	0.50	1.00	0.30	0.65
Date Sampled				05/07/2021	05/08/2021	05/08/2021	05/08/2021	05/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	< 10	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	22	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	30	-	-	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	30	-	-	-
TPH Total C5 - C44	mg/kg	10	NONE	-	30	-	-	-
Miscellaneous Organics								
Coal Tar		N/A	NONE	-	-	-	-	Not Identified
Total Residue	mg/kg	10	NONE	-	-	-	-	26000

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

Analytical Report Number: 21-91809
Project / Site name: Heyford Park
Your Order No: PO09046

Lab Sample Number				1966344	1966345	1966346	1966347	1966348
Sample Reference				TP308	TP311	TP311	TP311	TP311
Sample Number				ES101	ES301	ES02	ES03	ES05
Depth (m)				0.20	0.20	0.50	1.00	2.00
Date Sampled				05/08/2021	05/08/2021	05/08/2021	05/08/2021	05/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	5.2	5.7	5.7	12	10
Total mass of sample received	kg	0.001	NONE	1.3	1.2	1.2	1.2	1.5

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.7	-	8.5	8.4	-
Free Cyanide	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0052	-	0.0075	0.014	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.021	-	0.011	0.020	-

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	0.31	-	0.35	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	0.18	-	0.12	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	1.0	-	0.84	< 0.05	-
Pyrene	mg/kg	0.05	MCERTS	1.0	-	0.78	< 0.05	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.81	-	0.50	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	0.68	-	0.41	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.95	-	0.41	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.37	-	0.23	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.82	-	0.37	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.66	-	0.28	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.20	-	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.79	-	0.28	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	7.82	-	4.57	< 0.80	-

Lab Sample Number				1966344	1966345	1966346	1966347	1966348
Sample Reference				TP308	TP311	TP311	TP311	TP311
Sample Number				ES101	ES301	ES02	ES03	ES05
Depth (m)				0.20	0.20	0.50	1.00	2.00
Date Sampled				05/08/2021	05/08/2021	05/08/2021	05/08/2021	05/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	-	11	15	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	-	0.61	1.0	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	-	0.5	0.8	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	-	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	30	-	16	29	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	-	16	29	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	8.2	-	6.7	5.8	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	23	-	10	20	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	0.5	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	-	10	15	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	59	-	34	53	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	-	31	49	-
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0

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Lab Sample Number				1966344	1966345	1966346	1966347	1966348
Sample Reference				TP308	TP311	TP311	TP311	TP311
Sample Number				ES101	ES301	ES02	ES03	ES05
Depth (m)				0.20	0.20	0.50	1.00	2.00
Date Sampled				05/08/2021	05/08/2021	05/08/2021	05/08/2021	05/08/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	-	-	37
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	MCERTS	-	< 10	-	-	37
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	-	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	-	-	37
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	< 10	-	-	37
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	11	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	25	-	-	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	-	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	36	-	-	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	36	-	-	< 10
TPH Total C5 - C44	mg/kg	10	NONE	-	36	-	-	37
Miscellaneous Organics								
Coal Tar		N/A	NONE	-	-	-	-	-
Total Residue	mg/kg	10	NONE	-	-	-	-	-

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

Analytical Report Number: 21-91809
Project / Site name: Heyford Park

Your Order No: PO09046

Lab Sample Number				1966330	1966331
Sample Reference				HP302	HP303
Sample Number				None Supplied	None Supplied
Depth (m)				0.10	0.06
Date Sampled				04/08/2021	04/08/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Asbestos Identification	Type	N/A	ISO 17025	Chrysotile- Hard/Cement Type Material	Chrysotile - Hard/Cement Type Material

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

Analytical Report Number : 21-91809
Project / Site name: Heyford Park

* 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 *
1966322	WS304	ES102	0.3	Light brown sandy loam with gravel.
1966323	WS305	ES103	0.6	Brown loam and clay with gravel and vegetation.
1966324	WS305	ES104	0.75	Brown clay and loam with gravel and vegetation.
1966325	WS305	ES106	1.1	Brown clay and loam with gravel.
1966326	WS305	ES107	1.9	Brown sandy clay with gravel.
1966327	WS302	ES102	1	Light brown sandy clay with gravel.
1966328	WS302	ES103	1.8	Light brown sandy clay with gravel.
1966329	TP306	ES102	0.5	Brown sandy clay with gravel.
1966332	TP309	ES102	0.4	Brown sandy clay with gravel and vegetation.
1966333	TP309	ES105	2.1	Brown sandy clay with gravel and vegetation.
1966334	TP302	ES101	0.1	Brown clay and loam with gravel and vegetation.
1966335	TP302	ES102	0.5	Brown loam and clay with gravel and vegetation.
1966336	TP305	ES102	0.3	Brown loam and clay with gravel and vegetation.
1966337	TP307	ES101	0.05	Brown loam and clay with gravel and vegetation.
1966338	TP307	ES102	0.3	Brown loam and clay with gravel and vegetation.
1966339	TP304	ES102	0.3	Brown loam and clay with gravel and vegetation.
1966340	TP310	ES101	0.5	Brown loam and clay with gravel and vegetation.
1966341	TP310	ES102	1	Brown loam and clay with gravel and vegetation.
1966342	TP313	ES101	0.3	Brown loam and clay with gravel and vegetation.
1966343	TP313	ES102	0.65	Brown loam and clay with stones.
1966344	TP308	ES101	0.2	Brown loam and clay with gravel and vegetation.
1966345	TP311	ES301	0.2	Brown loam with gravel and vegetation.
1966346	TP311	ES02	0.5	Brown loam with gravel and vegetation.
1966347	TP311	ES03	1	Brown loam and clay.
1966348	TP311	ES05	2	Light brown clay and loam.

Analytical Report Number : 21-91809
Project / Site name: Heyford Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE

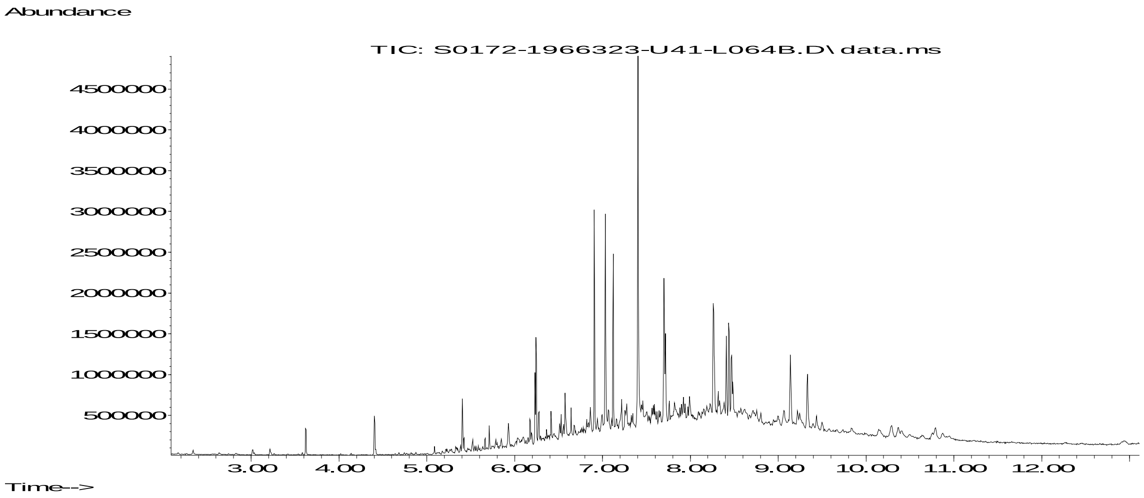
Analytical Report Number : 21-91809
Project / Site name: Heyford Park

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Coal Tar in Soil	DCM Extraction with qualitative interpretation via GC/MS	In-house method	L064-PL	D	NONE

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.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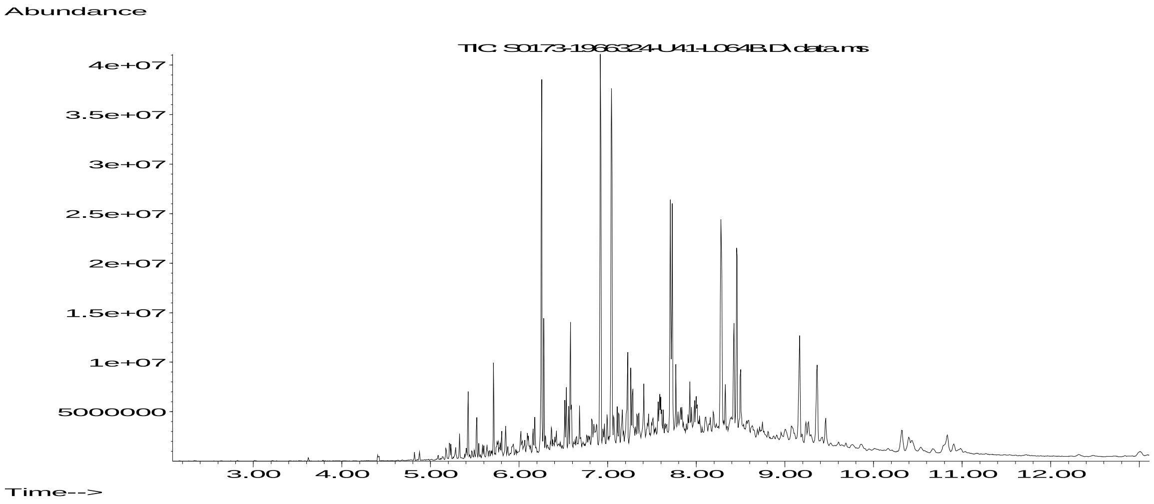
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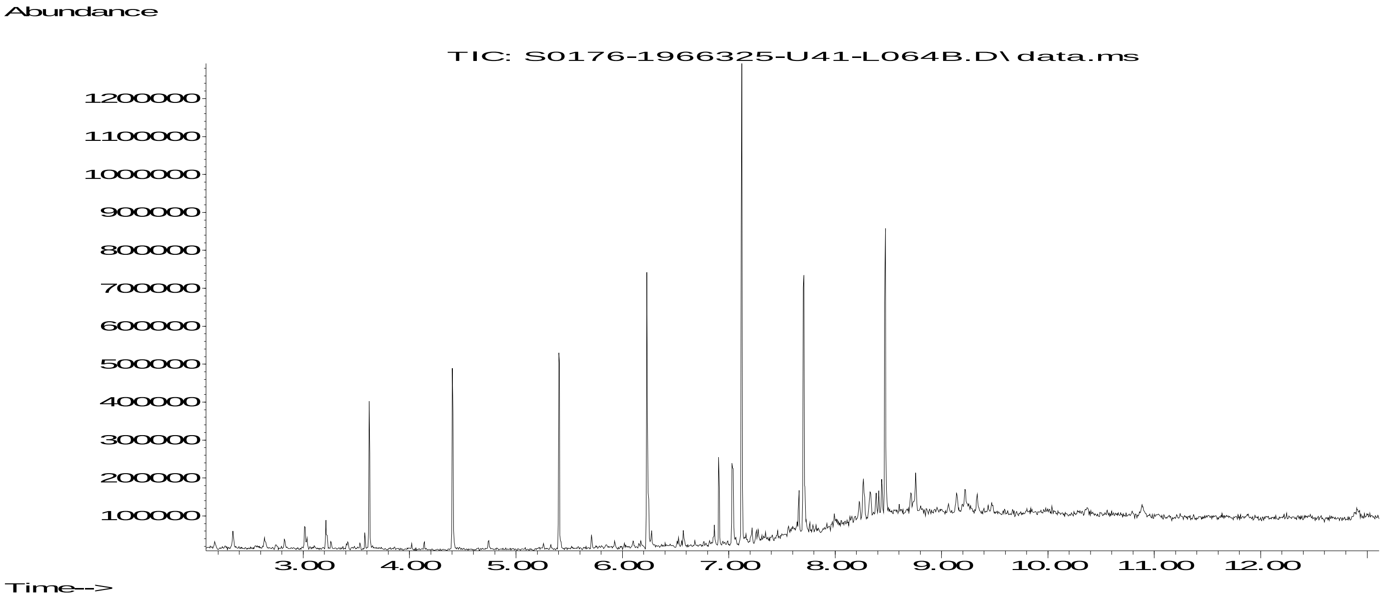
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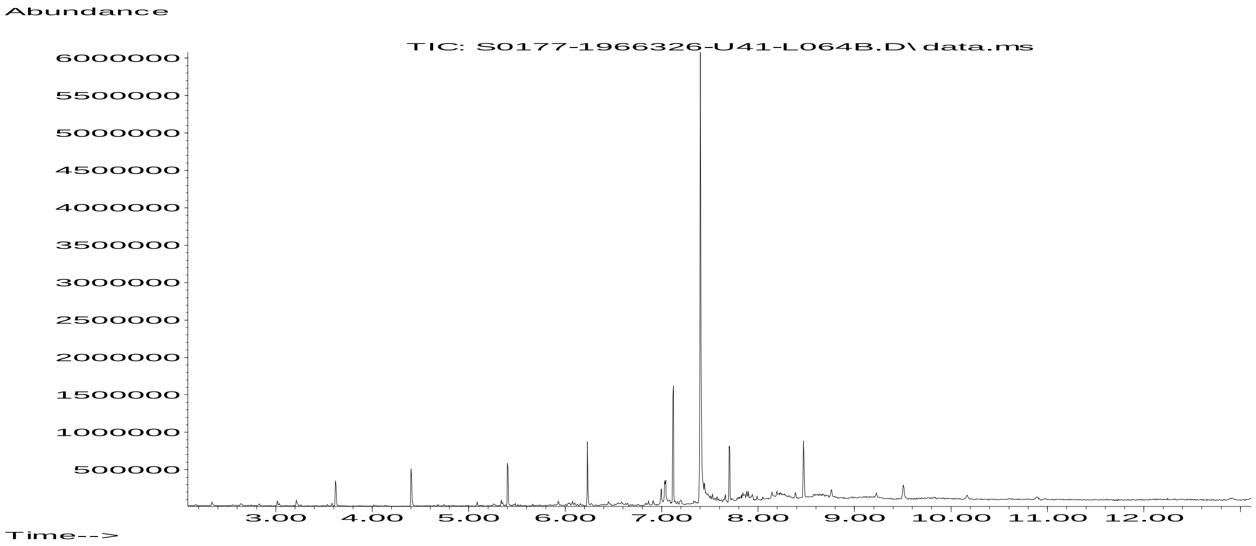
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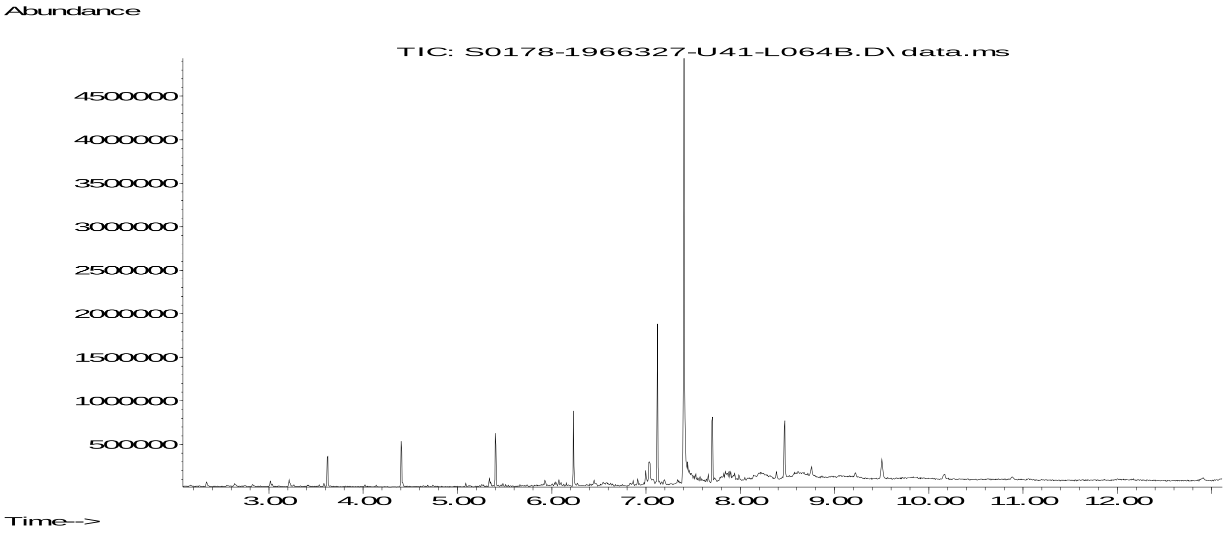
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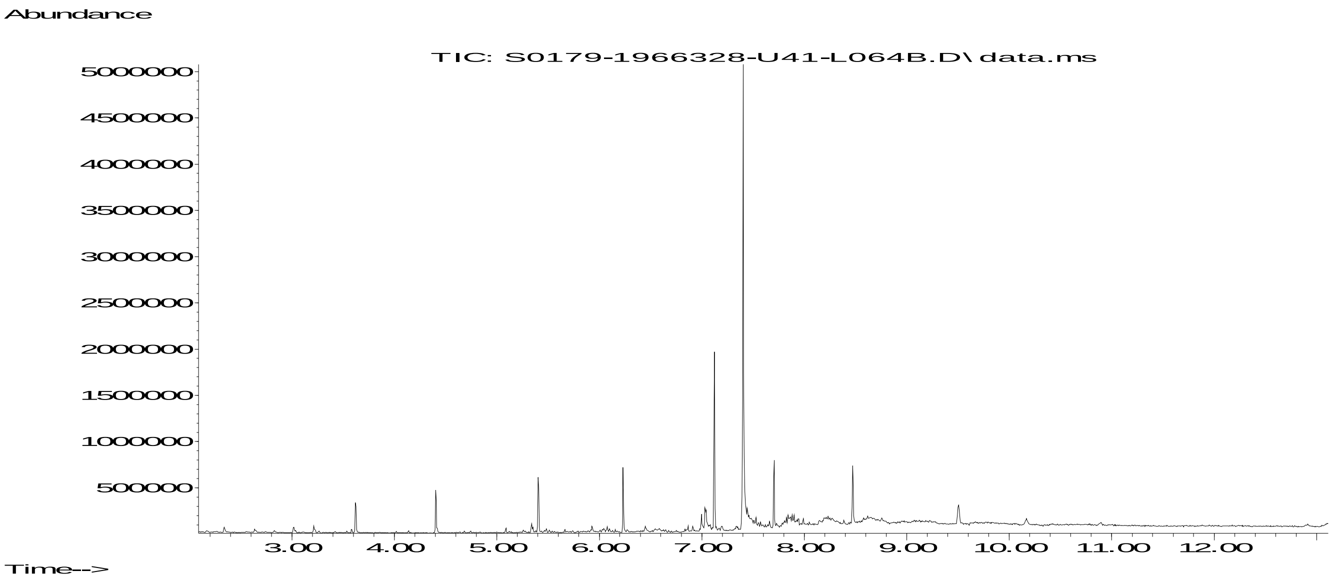

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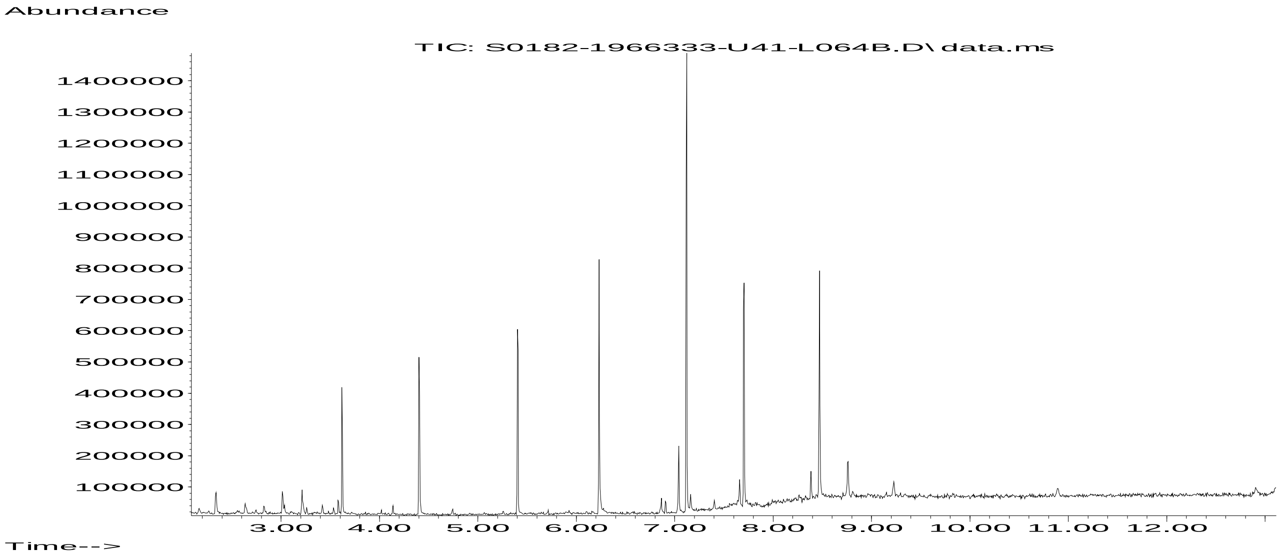
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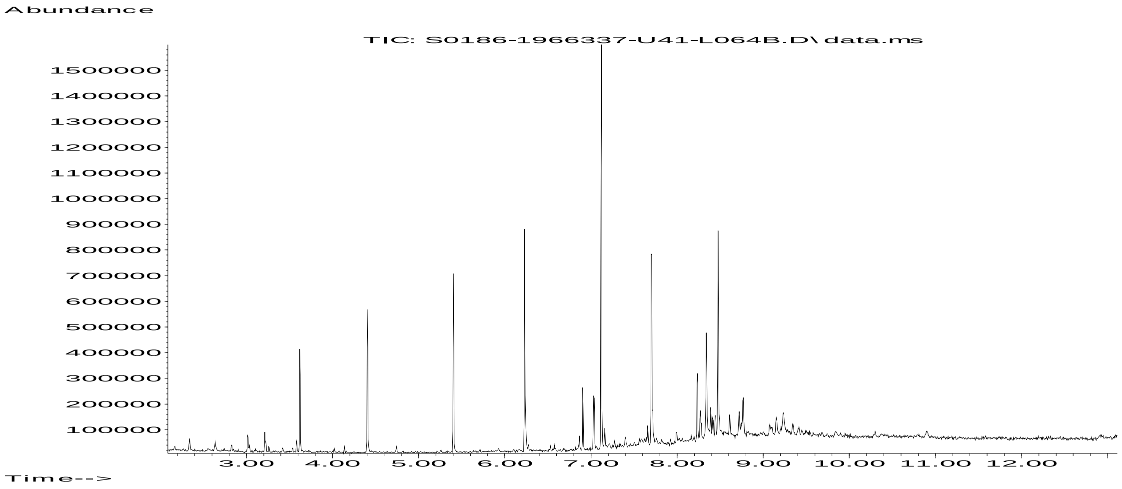
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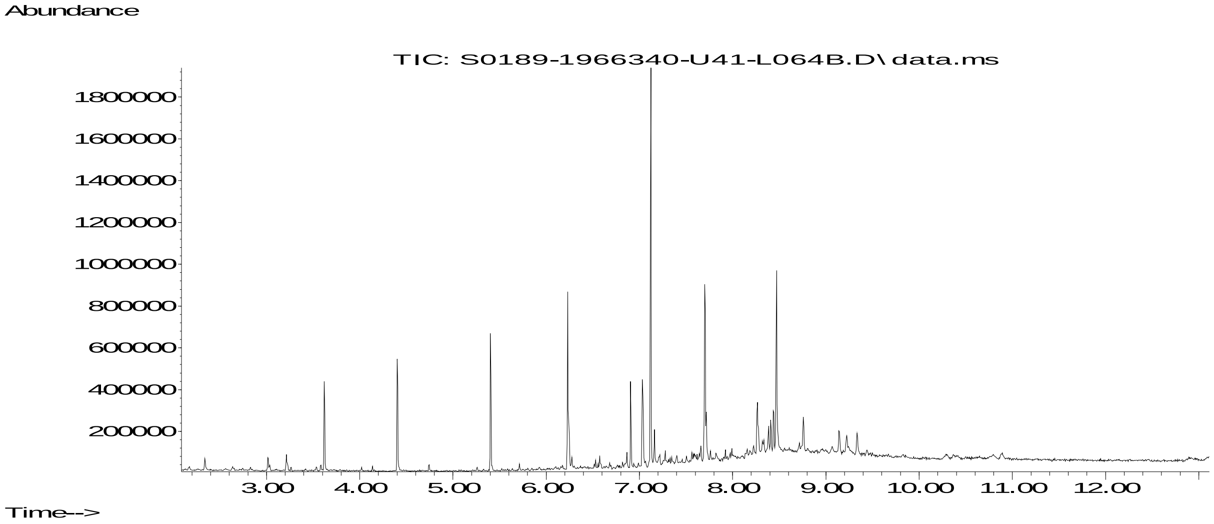
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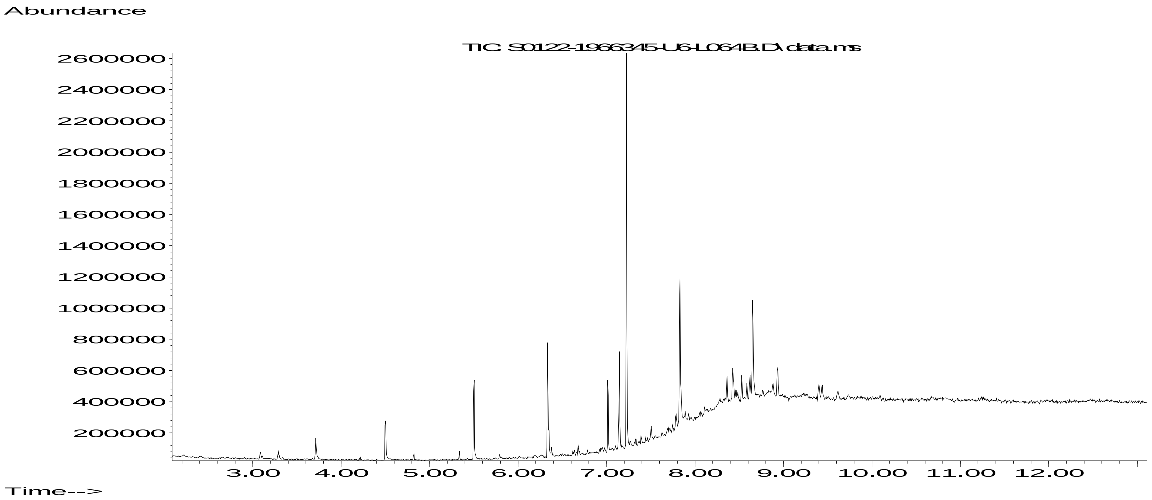
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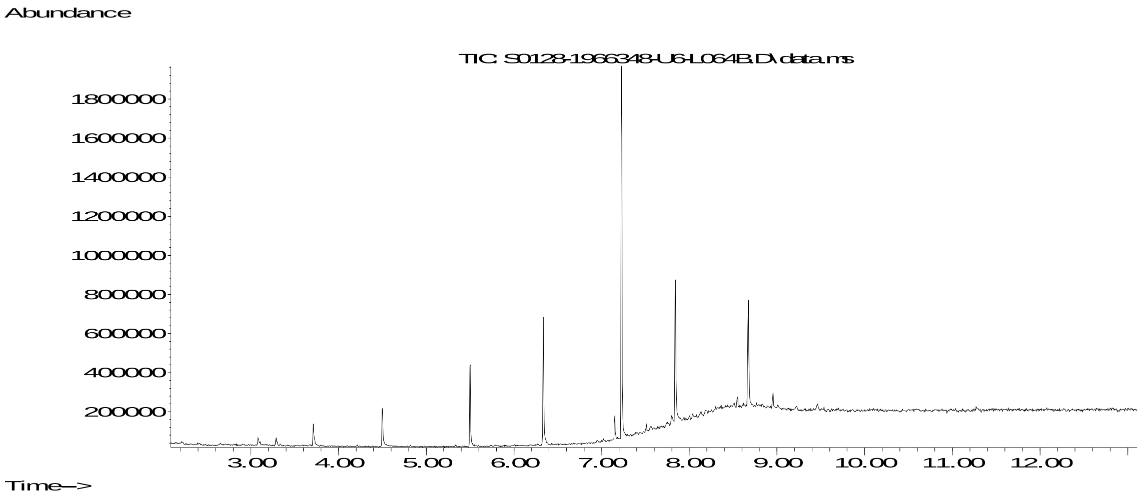
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Sample Deviation Report

Analytical Report Number : 21-91809
Project / Site name: Heyford Park

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP304	ES102	S	1966339	c	Free cyanide in soil	L080-PL	c
TP304	ES102	S	1966339	c	Hexavalent chromium in soil (Lower Level)	L080-PL	c
TP304	ES102	S	1966339	c	Cr (III) in soil	L080-PL	c
TP304	ES102	S	1966339	c	Fraction of Organic Carbon in soil	L009-PL	c
TP304	ES102	S	1966339	c	Monohydric phenols in soil	L080-PL	c
TP304	ES102	S	1966339	c	Organic matter (Automated) in soil	L009-PL	c
TP304	ES102	S	1966339	c	Speciated EPA-16 PAHs in soil	L064-PL	c
TP304	ES102	S	1966339	c	pH in soil (automated)	L099-PL	c
TP313	ES102	S	1966343	b	Coal Tar in Soil	L064-PL	b
TP313	ES102	S	1966343	b	Speciated EPA-16 PAHs in soil	L064-PL	b

Key: **a** - No sampling date **b** - Incorrect container
c - Holding time **d** - Headspace **e** - Temperature

Statistical Analysis

Assessment of Chemicals of Potential Concern to Human Health

						Soil Type	MG	MG	MG	MG	MG	MG	MG	MG
All values in mg/kg unless otherwise stated						Location & Depth	WS305	TP309	TP302	TP304	TP310	TP310	TP308	TP313
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.60**	**0.40**	**0.50**	**0.30**	**0.50**	**1.00**	**0.20**	**0.30**
Arsenic	1	8	12	20	0	40	13	14	15	15	12	13	20	13
Beryllium	0.06	8	0.63	1.1	0	73	0.77	0.76	0.75	0.75	0.63	0.7	1.1	0.64
Boron	0.2	8	0.2	1.5	0	11000	1.5	1	0.4	0.6	0.4	0.2	0.5	0.5
Cadmium	0.2	8	0.2	0.2	0	87	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Chromium (III)	1	8	16	32	0	890	20	32	21	20	16	18	30	17
Chromium (VI)	1.2	8	1.2	1.2	0	6.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	8	5.3	9.2	0	7300	6.4	7.2	5.4	6.7	5.3	6	8.2	9.2
Lead	1	8	11	62	0	310	13	62	16	26	11	14	23	19
Mercury, inorganic	0.3	8	0.3	0.3	0	56	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Nickel	1	8	12	18	0	180	14	15	14	14	12	13	18	12
Selenium	1	8	1	1	0	600	1	1	1	1	1	1	1	1
Vanadium	1	8	33	59	0	1200	37	40	39	42	33	38	59	41
Zinc	1	8	34	57	0	40000	37	50	40	47	34	43	57	47
Cyanide (free)	1	8	1	1	0	800	1	1	1	1	1	1	1	1
Phenol (total)	1	8	1	1	0	1300	1	1	1	1	1	1	1	1
Acenaphthene	0.05	8	0.05	3.4	0	4700	1.4	0.05	0.05	0.05	0.05	0.05	0.05	3.4
Acenaphthylene	0.05	8	0.05	3.5	0	4600	0.47	0.05	0.05	0.05	0.05	0.05	0.05	3.5
Anthracene	0.05	8	0.05	13	0	35000	2.8	0.28	0.05	0.26	0.39	0.36	0.18	13
Benz(a)anthracene	0.05	8	0.42	47	1	7.8	7.2	1.8	0.42	1.1	1.4	1.5	0.81	47
Benzo(a)pyrene	0.05	8	0.61	32	5	1.6	10	2.9	0.61	1.5	2	1.8	0.82	32
Benzo(b)fluoranthene	0.05	8	0.61	40	1	11	8.7	2.2	0.61	1.4	1.6	1.6	0.95	40
Benzo(ghi)perylene	0.05	8	0.48	24	0	72	5.7	1.5	0.48	0.77	0.84	1.1	0.79	24
Benzo(k)fluoranthene	0.05	8	0.23	18	1	16	3.5	1.2	0.23	0.49	0.82	0.89	0.37	18
Chrysene	0.05	8	0.52	37	1	16	6	1.6	0.52	1	1.3	1.4	0.68	37
Dibenz(a,h)anthracene	0.05	8	0.05	5.6	1	1.4	1.2	0.26	0.05	0.05	0.19	0.22	0.2	5.6
Fluoranthene	0.05	8	0.84	78	0	1600	14	3	0.84	2.1	2.3	2.8	1	78
Fluorene	0.05	8	0.05	3.5	0	3800	1.6	0.05	0.05	0.05	0.05	0.05	0.05	3.5
Indeno(1,2,3,cd)pyrene	0.05	8	0.38	22	1	6.6	5	1.2	0.38	0.67	0.76	0.86	0.66	22
Naphthalene	0.05	8	0.05	0.2	0	5.6	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.05	8	0.31	40	0	1500	8.8	0.97	0.31	0.76	1.5	1.3	0.31	40
Pyrene	0.05	8	0.8	72	0	3800	12	3.1	0.8	2.1	2.2	2.5	1	72
Asbestos identified	Y/N						N	N	N	N	N	N	N	N
FOC (dimensionless)	0.01625	**(mean)**					0.015	0.015	0.014	0.019	0.01	0.011	0.021	0.025
SOM (calculated)	2.80%	**(mean)**					2.59%	2.59%	2.41%	3.28%	1.72%	1.90%	3.62%	4.31%
pH (su)	8.6	**(mean)**					8.5	8.4	8.5	8.6	8.7	8.7	8.7	8.8

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: Made Ground
Client: Dorchester Living
Site: Heyford Park Primary School
Job no.: C-04583-C
Lab. report no(s).: 21-91809-1

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC) or +ve asbestos ID.
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

						Soil Type	MG	MG	MG	MG	MG	MG	MG	MG							
	All values in mg/kg unless otherwise stated					Location & Depth	WS305	TP309	TP302	TP304	TP310	TP310	TP308	TP313							
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.60**	**0.40**	**0.50**	**0.30**	**0.50**	**1.00**	**0.20**	**0.30**							
Arsenic	1	8	12	20	0	250	13	14	15	15	12	13	20	13							
Boron	0.2	8	0.2	1.5	0	3	1.5	1	0.4	0.6	0.4	0.2	0.5	0.5							
Chromium (III)	1	8	16	32	0	400	20	32	21	20	16	18	30	17							
Chromium (VI)	1.2	8	1.2	1.2	0	25	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2							
Copper	1	8	5.3	9.2	0	135	6.4	7.2	5.4	6.7	5.3	6	8.2	9.2							
Nickel	1	8	12	18	0	75	14	15	14	14	12	13	18	12							
Zinc	1	8	34	57	0	300	37	50	40	47	34	43	57	47							
	Mean																				
pH (su)	8.6						8.5	8.4	8.5	8.6	8.7	8.7	8.7	8.8							

Risk parameter: **Plant life pH 7**
Data set: Made Ground
Client: Dorchester Living
Site: Heyford Park Primary School
Job no.: C-04583-C
Lab. report no(s).: 21-91809-1

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

						Soil Type	Nat	Nat	Nat	Nat	Nat	Nat	Nat	Nat	Nat						
	All values in mg/kg unless otherwise stated					Location & Depth	TP305	TP311	TP311	WS304	WS305	WS302	TP306	TP309	TP307						
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.30**	**0.50**	**1.00**	**0.30**	**1.10**	**1.00**	**0.50**	**2.10**	**0.30**						
Arsenic	1	9	2.9	19	0	40	18	11	15	6.3	19	2.9	7.9	2.9	11						
Beryllium	0.06	9	0.27	1	0	73	0.9	0.61	1	0.3	0.98	0.3	0.42	0.27	0.46						
Boron	0.2	9	0.2	2.5	0	11000	0.7	0.5	0.8	0.3	2.5	0.2	0.3	0.2	0.4						
Cadmium	0.2	9	0.2	0.2	0	87	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2						
Chromium (III)	1	9	5.6	29	0	890	22	16	29	7.2	27	6.4	11	5.6	12						
Chromium (VI)	1.2	9	1.2	1.2	0	6.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2						
Copper	1	9	2.4	7.8	0	7300	7.8	6.7	5.8	4.9	6.4	4.3	3.6	2.4	4.9						
Lead	1	9	3.1	20	0	310	14	10	20	5.4	14	3.9	13	3.1	8.8						
Mercury, inorganic	0.3	9	0.3	0.5	0	56	0.3	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3						
Nickel	1	9	5.1	20	0	180	20	10	15	6.4	19	6.8	8.6	5.1	9.4						
Selenium	1	9	1	1	0	600	1	1	1	1	1	1	1	1	1						
Vanadium	1	9	7.9	57	0	1200	47	34	53	17	57	7.9	25	8.7	26						
Zinc	1	9	9.8	51	0	40000	35	31	49	14	51	10	34	9.8	28						
Cyanide (free)	1	9	1	1	0	800	1	1	1	1	1	1	1	1	1						
Phenol (total)	1	9	1	1	0	1300	1	1	1	1	1	1	1	1	1						
Acenaphthene	0.05	9	0.05	0.05	0	4700	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05						
Acenaphthylene	0.05	9	0.05	0.05	0	4600	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05						
Anthracene	0.05	9	0.05	0.32	0	35000	0.05	0.12	0.05	0.05	0.32	0.05	0.05	0.05	0.05						
Benz(a)anthracene	0.05	9	0.05	0.68	0	7.8	0.05	0.5	0.05	0.25	0.68	0.05	0.05	0.05	0.05						
Benzo(a)pyrene	0.05	9	0.05	0.94	0	1.6	0.05	0.37	0.05	0.32	0.94	0.05	0.05	0.05	0.05						
Benzo(b)fluoranthene	0.05	9	0.05	0.73	0	11	0.05	0.41	0.05	0.21	0.73	0.05	0.05	0.05	0.05						
Benzo(ghi)perylene	0.05	9	0.05	0.43	0	72	0.05	0.28	0.05	0.05	0.43	0.05	0.05	0.05	0.05						
Benzo(k)fluoranthene	0.05	9	0.05	0.33	0	16	0.05	0.23	0.05	0.25	0.33	0.05	0.05	0.05	0.05						
Chrysene	0.05	9	0.05	0.64	0	16	0.05	0.41	0.05	0.25	0.64	0.05	0.05	0.05	0.05						
Dibenz(a,h)anthracene	0.05	9	0.05	0.05	0	1.4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05						
Fluoranthene	0.05	9	0.05	1.5	0	1600	0.05	0.84	0.05	0.53	1.5	0.05	0.05	0.05	0.05						
Fluorene	0.05	9	0.05	0.05	0	3800	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05						
Indeno(1,2,3,cd)pyrene	0.05	9	0.05	0.39	0	6.6	0.05	0.28	0.05	0.05	0.39	0.05	0.05	0.05	0.05						
Naphthalene	0.05	9	0.05	0.05	0	5.6	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05						
Phenanthrene	0.05	9	0.05	1	0	1500	0.05	0.35	0.05	0.4	1	0.05	0.05	0.05	0.05						
Pyrene	0.05	9	0.05	1.3	0	3800	0.05	0.78	0.05	0.46	1.3	0.05	0.05	0.05	0.05						
Asbestos identified	Y/N						N	N	N	N	N	N	N	N	N						
FOC (dimensionless)	0.009144	**(mean)**					0.011	0.011	0.02	0.0043	0.012	0.0024	0.0084	0.0034	0.0098						
SOM (calculated)	1.58%	**(mean)**					1.90%	1.90%	3.45%	0.74%	2.07%	0.41%	1.45%	0.59%	1.69%						
pH (su)	8.6	**(mean)**					8.5	8.5	8.4	8.8	8.5	8.7	8.6	8.8	8.7						

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: Natural
Client: Dorchester Living
Site: Heyford Park Primary School
Job no.: C-04583-C
Lab. report no(s).: 21-91809-1

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC) or +ve asbestos ID.
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

						Soil Type	Nat	Nat	Nat	Nat	Nat	Nat	Nat	Nat	Nat
	All values in mg/kg unless otherwise stated					Location & Depth	TP305	TP311	TP311	WS304	WS305	WS302	TP306	TP309	TP307
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.30**	**0.50**	**1.00**	**0.30**	**1.10**	**1.00**	**0.50**	**2.10**	**0.30**
Arsenic	1	9	2.9	19	0	250	18	11	15	6.3	19	2.9	7.9	2.9	11
Boron	0.2	9	0.2	2.5	0	3	0.7	0.5	0.8	0.3	2.5	0.2	0.3	0.2	0.4
Chromium (III)	1	9	5.6	29	0	400	22	16	29	7.2	27	6.4	11	5.6	12
Chromium (VI)	1.2	9	1.2	1.2	0	25	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	9	2.4	7.8	0	135	7.8	6.7	5.8	4.9	6.4	4.3	3.6	2.4	4.9
Nickel	1	9	5.1	20	0	75	20	10	15	6.4	19	6.8	8.6	5.1	9.4
Zinc	1	9	9.8	51	0	300	35	31	49	14	51	10	34	9.8	28
	Mean														
pH (su)	8.6						8.5	8.5	8.4	8.8	8.5	8.7	8.6	8.8	8.7

Risk parameter: Plant life pH 7
Data set: Natural
Client: Dorchester Living
Site: Heyford Park Primary School
Job no.: C-04583-C
Lab. report no(s).: 21-91809-1

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

						Soil Type	TS	TS
	All values in mg/kg unless otherwise stated					Location & Depth	TP302	TP307
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.10**	**0.05**
Arsenic	1	2	16	16	0	40	16	16
Beryllium	0.06	2	0.8	0.84	0	73	0.8	0.84
Boron	0.2	2	0.6	1	0	11000	0.6	1
Cadmium	0.2	2	0.2	0.2	0	87	0.2	0.2
Chromium (III)	1	2	21	23	0	890	21	23
Chromium (VI)	1.2	2	1.2	1.2	0	6.1	1.2	1.2
Copper	1	2	7.4	8.6	0	7300	7.4	8.6
Lead	1	2	21	26	0	310	26	21
Mercury, inorganic	0.3	2	0.3	0.3	0	56	0.3	0.3
Nickel	1	2	16	17	0	180	16	17
Selenium	1	2	1	1	0	600	1	1
Vanadium	1	2	43	49	0	1200	43	49
Zinc	1	2	49	50	0	40000	49	50
Cyanide (free)	1	2	1	1	0	800	1	1
Phenol (total)	1	2	1	1	0	1300	1	1
Acenaphthene	0.05	2	0.05	0.05	0	4700	0.05	0.05
Acenaphthylene	0.05	2	0.05	0.05	0	4600	0.05	0.05
Anthracene	0.05	2	0.05	0.05	0	35000	0.05	0.05
Benz(a)anthracene	0.05	2	0.66	0.94	0	7.8	0.94	0.66
Benzo(a)pyrene	0.05	2	0.77	1.3	0	1.6	1.3	0.77
Benzo(b)fluoranthene	0.05	2	0.64	1.2	0	11	1.2	0.64
Benzo(ghi)perylene	0.05	2	0.44	0.82	0	72	0.82	0.44
Benzo(k)fluoranthene	0.05	2	0.33	0.58	0	16	0.58	0.33
Chrysene	0.05	2	0.6	0.82	0	16	0.82	0.6
Dibenz(a,h)anthracene	0.05	2	0.05	0.05	0	1.4	0.05	0.05
Fluoranthene	0.05	2	1.3	1.4	0	1600	1.4	1.3
Fluorene	0.05	2	0.05	0.05	0	3800	0.05	0.05
Indeno(1,2,3,cd)pyrene	0.05	2	0.36	0.66	0	6.6	0.66	0.36
Naphthalene	0.05	2	0.05	0.05	0	5.6	0.05	0.05
Phenanthrene	0.05	2	0.33	0.48	0	1500	0.33	0.48
Pyrene	0.05	2	1.1	1.3	0	3800	1.3	1.1
Asbestos identified	Y/N						N	N
FOC (dimensionless)	0.0315	**(mean)**					0.031	0.032
SOM (calculated)	5.43%	**(mean)**					5.34%	5.52%
pH (su)	8.3	**(mean)**					8.2	8.3

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: Topsoil
Client: Dorchester Living
Site: Heyford Park Primary School
Job no.: C-04583-C
Lab. report no(s).: 21-91809-1

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC) or +ve asbestos ID.
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

						Soil Type	**TS**	**TS**
	All values in mg/kg unless otherwise stated					**Location & Depth**	**TP302**	**TP307**
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.10**	**0.05**
Arsenic	1	2	16	16	0	250	16	16
Boron	0.2	2	0.6	1	0	3	0.6	1
Chromium (III)	1	2	21	23	0	400	21	23
Chromium (VI)	1.2	2	1.2	1.2	0	25	1.2	1.2
Copper	1	2	7.4	8.6	0	135	7.4	8.6
Nickel	1	2	16	17	0	75	16	17
Zinc	1	2	49	50	0	300	49	50
	Mean							
pH (su)	8.3						8.2	8.3

Risk parameter: **Plant life pH 7**
Data set: Topsoil
Client: Dorchester Living
Site: Heyford Park Primary School
Job no.: C-04583-C
Lab. report no(s).: 21-91809-1

Legend: Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Values in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

All values in mg/kg unless otherwise stated						Soil Type	MG	MG	MG	MG	TS
						Location & Depth	WS305	WS305	TP310	TP311	TP307
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**0.60**	**0.75**	**0.50**	**0.20**	**0.05**
Aliphatics EC5-EC6	0.001	5	0.001	0.001	0	78	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC6-EC8	0.001	5	0.001	0.001	0	230	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC8-EC10	0.001	5	0.001	0.001	0	65	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC10-EC12	1	5	1	1.1	0	120	1	1.1	1	1	1
Aliphatics >EC12-EC16	2	5	2	37	0	59	7.5	37	2	2	2
Aliphatics >EC16-EC35	10	5	10	270	0	93000	81	270	10	10	10
Aliphatics >EC35-EC44	8.4	5	8.4	75	0	93000	43	75	8.4	8.4	8.4
Aromatics EC5-EC7	0.001	5	0.001	0.001	0	690	0.001	0.001	0.001	0.001	0.001
Aromatics >EC7-EC8	0.001	5	0.001	0.001	0	1800	0.001	0.001	0.001	0.001	0.001
Aromatics >EC8-EC10	0.001	5	0.001	0.001	0	120	0.001	0.001	0.001	0.001	0.001
Aromatics >EC10-EC12	1	5	1	4.7	0	590	1	4.7	1	1	1
Aromatics >EC12-EC16	2	5	2	180	0	2300	13	180	2	2	2
Aromatics >EC16-EC21	10	5	10	870	0	1900	43	870	10	11	10
Aromatics >EC21-EC35	10	5	18	1000	0	1900	81	1000	22	25	18
Aromatics >EC35-EC44	8.4	5	8.4	160	0	1900	13	160	8.4	8.4	8.4

	ADDITIVITY CHECK	**HAZARD QUOTIENTS FOR EACH FRACTION**				
	Aliphatics EC5-EC6	0.000	0.000	0.000	0.000	0.000
	Aliphatics >EC6-EC8	0.000	0.000	0.000	0.000	0.000
Considered additive	Aliphatics >EC8-EC10	0.000	0.000	0.000	0.000	0.000
	Aliphatics >EC10-EC12	0.008	0.009	0.008	0.008	0.008
	Aliphatics >EC12-EC16	0.127	0.627	0.034	0.034	0.034
	Aliphatics >EC16-EC35	0.001	0.003	0.000	0.000	0.000
	Aliphatics >EC35-EC44	0.000	0.001	0.000	0.000	0.000
	Aromatics EC5-EC7	0.000	0.000	0.000	0.000	0.000
	Aromatics >EC7-EC8	0.000	0.000	0.000	0.000	0.000
Considered additive	Aromatics >EC8-EC10	0.000	0.000	0.000	0.000	0.000
	Aromatics >EC10-EC12	0.002	0.008	0.002	0.002	0.002
	Aromatics >EC12-EC16	0.006	0.078	0.001	0.001	0.001
Considered additive	Aromatics >EC16-EC21	0.023	0.458	0.005	0.006	0.005
	Aromatics >EC21-EC35	0.043	0.526	0.012	0.013	0.009
	Aromatics >EC35-EC44	0.007	0.084	0.004	0.004	0.004
	Hazard Index for ali>C8-C16	**0.135**	**0.636**	**0.042**	**0.042**	**0.042**
	Hazard Index for aro>C8-C16	**0.007**	**0.086**	**0.003**	**0.003**	**0.003**
	Hazard Index for aro>C16-C35	**0.065**	**0.984**	**0.017**	**0.019**	**0.015**

Hazard Index table - HI or HQ greater than 1 highlighted with yellow shading.

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: Made Ground / Topsoil
Client: Dorchester Living
Site: Heyford Park Primary School
Job no.: C-045583-C
Lab. report no(s).: 21-91809-1

Legend: Main table values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.

Main table alues in red are equal to, or greater than, the generic assessment criterion (GAC).

MG denotes Made Ground

NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health

						Soil Type	**Nat**	**Nat**	**Nat**	**Nat**	**Nat**	**Nat**
			All values in mg/kg unless otherwise stated			**Location & Depth**	**TP311**	**WS305**	**WS305**	**WS302**	**WS302**	**TP309**
Chemical of Potential Concern	**Lab. RL**	**No. Samples**	**Min. Value**	**Max. Value**	**No. Samples > or = GAC**	**GAC**	**2.00**	**1.10**	**1.90**	**1.00**	**1.80**	**2.10**
Aliphatics EC5-EC6	0.001	6	0.001	0.001	0	78	0.001	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC6-EC8	0.001	6	0.001	0.001	0	230	0.001	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC8-EC10	0.001	6	0.001	0.001	0	65	0.001	0.001	0.001	0.001	0.001	0.001
Aliphatics >EC10-EC12	1	6	1	1	0	120	1	1	1	1	1	1
Aliphatics >EC12-EC16	2	6	2	2	0	59	2	2	2	2	2	2
Aliphatics >EC16-EC35	10	6	10	37	0	93000	37	10	10	10	10	10
Aliphatics >EC35-EC44	8.4	6	8.4	8.4	0	93000	8.4	8.4	8.4	8.4	8.4	8.4
Aromatics EC5-EC7	0.001	6	0.001	0.001	0	690	0.001	0.001	0.001	0.001	0.001	0.001
Aromatics >EC7-EC8	0.001	6	0.001	0.001	0	1800	0.001	0.001	0.001	0.001	0.001	0.001
Aromatics >EC8-EC10	0.001	6	0.001	0.001	0	120	0.001	0.001	0.001	0.001	0.001	0.001
Aromatics >EC10-EC12	1	6	1	1	0	590	1	1	1	1	1	1
Aromatics >EC12-EC16	2	6	2	2	0	2300	2	2	2	2	2	2
Aromatics >EC16-EC21	10	6	10	11	0	1900	10	11	10	10	10	10
Aromatics >EC21-EC35	10	6	10	24	0	1900	10	24	10	10	10	10
Aromatics >EC35-EC44	8.4	6	8.4	8.4	0	1900	8.4	8.4	8.4	8.4	8.4	8.4

	ADDITIVITY CHECK	**HAZARD QUOTIENTS FOR EACH FRACTION**					
	Aliphatics EC5-EC6	0.000	0.000	0.000	0.000	0.000	0.000
	Aliphatics >EC6-EC8	0.000	0.000	0.000	0.000	0.000	0.000
Considered additive	Aliphatics >EC8-EC10	0.000	0.000	0.000	0.000	0.000	0.000
	Aliphatics >EC10-EC12	0.008	0.008	0.008	0.008	0.008	0.008
	Aliphatics >EC12-EC16	0.034	0.034	0.034	0.034	0.034	0.034
	Aliphatics >EC16-EC35	0.000	0.000	0.000	0.000	0.000	0.000
	Aliphatics >EC35-EC44	0.000	0.000	0.000	0.000	0.000	0.000
	Aromatics EC5-EC7	0.000	0.000	0.000	0.000	0.000	0.000
	Aromatics >EC7-EC8	0.000	0.000	0.000	0.000	0.000	0.000
Considered additive	Aromatics >EC8-EC10	0.000	0.000	0.000	0.000	0.000	0.000
	Aromatics >EC10-EC12	0.002	0.002	0.002	0.002	0.002	0.002
	Aromatics >EC12-EC16	0.001	0.001	0.001	0.001	0.001	0.001
Considered additive	Aromatics >EC16-EC21	0.005	0.006	0.005	0.005	0.005	0.005
	Aromatics >EC21-EC35	0.005	0.013	0.005	0.005	0.005	0.005
	Aromatics >EC35-EC44	0.004	0.004	0.004	0.004	0.004	0.004
	Hazard Index for ali>C8-C16	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**
	Hazard Index for aro>C8-C16	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**
	Hazard Index for aro>C16-C35	**0.011**	**0.018**	**0.011**	**0.011**	**0.011**	**0.011**

Risk parameter: **Human health - residential without plant uptake (2.5%SOM)**
Data set: Natural
Client: Dorchester Living
Site: Heyford Park Primary School
Job no.: C-045583-C
Lab. report no(s).: 21-91809-1

Hazard Index table - HI or HQ greater than 1 highlighted with yellow shading.

Legend: Main table values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.
Main table alues in red are equal to, or greater than, the generic assessment criterion (GAC).
MG denotes Made Ground
NAT denotes natural ground

Remedial Targets Methodology Data Table

Hydrock Scenario: **Scenario D - DWS & EQS (inland)**

RTM Level: **RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples**

Water body receptor(s): **Groundwater and surface water**
Secondary receptor(s): **Human health (abstraction)**
Data set: **Groundwater**
Client: **Dorchester Living**
Site: **Heyford Park Primary School**
Job no: **C-04583-C**
Test Certificates(s): **21-10808**
Dataset **ALL ZONES**

🟩 PNEC calculated (inland EQS)

123* Exceeds solubility value
<1 Grey text and "<" sign if value <= LoD
999 Red text if value > DWS
🟧 Red fill if value > Inland Waters EQS

Surface Water Representative Hardness as mg/l $CaCO_3$ 10

								Strata / Zone	White Lst	White Lst	White Lst	White Lst	White Lst
								Date sampled:	14/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021
CAS / AGS Number	**Chemical of Potential Concern (µg/l)**	**WFD Designation**	**Hazardous Substance Status**	**Solubility Limit (µg/l)**	**No. of samples**	**Limit of Detection**	**DWS**	**Inland Waters EQS**	**BH301**	**BH302**	**BH303**	**WS302**	**WS305**
7440-22-4	Silver (Ag) (dissolved)				5	0.05	n/a	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
7429-90-5	Aluminium (Al) (dissolved)				5	1	200	n/a	9.3	45	130	6.3	140
7440-38-2	Arsenic (As) (dissolved)	SP	H		5	0.15	10	50	1.1	0.45	1.03	0.19	1.13
7440-42-8	Boron (B) (dissolved)		NP		5	10	1000	2000	45	90	46	33	92
7440-39-3	Barium (Ba) (dissolved)				5	0.06	1300	n/a	15	18	22	14	34
7440-43-9	Cadmium (Cd) (dissolved)	PH	NP		5	0.02	5	0.08	<0.02	<0.02	<0.02	<0.02	0.06
7440-48-4	Cobalt (Co) (dissolved)		NP		5	0.2	n/a	3	0.5	1.1	0.5	<0.2	1.2
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	H		5	5	n/a	3.4	<5	<5	<5	<5	<5
16065-83-1	Chromium (III) (Cr) (dissolved)	SP			5	1	n/a	4.7	1.7	2.2	1.7	2	3.5
7440-47-3	Chromium (Cr) (total) (dissolved)				5	0.2	50	n/a	1.7	2.2	1.7	2	3.5
7440-50-8	Copper (Cu) (dissolved)	SP	NP		5	0.5	2000	1	1.4	1.5	3.2	3.5	3.8
7439-89-6	Iron (Fe) (dissolved)	SP			5	4	200	1000	5.8	9.9	6.6	<4	12
7439-97-6	Mercury (Hg) (dissolved)	PH	H		5	0.05	1	0.07	<0.05	<0.05	<0.05	<0.05	<0.05
P1286	Manganese (Mn) (dissolved)	SP			5	0.05	50	123	44	62	30	7.7	150
7440-23-5	Sodium (Na) (dissolved)				5	10	200000	n/a	8500	8700	16000	6000	68000
7440-02-0	Nickel (Ni) (dissolved)	P	NP		5	0.5	20	4	1.2	1.9	2.6	0.9	4
7439-92-1	Lead (Pb) (dissolved)	P	H		5	0.2	10	1.2	<0.2	<0.2	<0.2	<0.2	0.3
7440-36-0	Antimony (Sb) (dissolved)		NP		5	0.4	5	n/a	<0.4	<0.4	0.5	<0.4	1.5
7782-49-2	Selenium (Se) (dissolved)		NP		5	0.6	10	n/a	<0.6	<0.6	1.4	<0.6	10
7440-31-5	Tin (Sn) (dissolved)				5	0.2	n/a	25	<0.2	0.71	0.27	<0.2	<0.2
7440-62-2	Vanadium (V) (dissolved)				5	0.2	n/a	20	<0.2	<0.2	0.6	<0.2	0.9
7440-66-6	Zinc (Zn) (dissolved)	SP	NP		5	0.5	n/a	12.3	4.4	5.6	3	6.8	9.8
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP		5	1	n/a	1	<1	<1	<1	<1	<1
57-12-5	Cyanide (total)				5	1	50	n/a	<1	<1	<1	<1	<1
P1140	Ammonium (NH_4^+)		NP		5	15	500	n/a	73	66	60	<15	<15
P1238	Ammnoniacal Nitrogen (as N)		NP		5	15	n/a	300	57	51	46	<15	<15
P1720	Ammonia (unionised) (NH_3 as N) {free ammonia}	SP	NP		5	15	n/a	n/a	69	62	56	<15	<15
15541-45-4	Bromate (BrO_3)				5	2	10	n/a	<2	<2	<2	<2	<2
16887-00-6	Chloride (Cl^-)				5	150	250000	250000	9500	8700	6600	3500	9800
16984-48-8	Fluoride (F^-)				5	50	1500	1000	190	210	140	100	140
P1348	Nitrate (NO_3^-)				5	50	50000	n/a	310	410	2070	9260	360
P1349	Nitrite (NO_2^-)				5	5	500	n/a	9.3	13	66	<5	<5
14808-79-8	Sulfate (SO_4^{2-})				5	45	250000	400000	32000	27500	100000	9020	90800
P1134	pH (min.) (su)				5	0	6.5	6	7.6	7.6	7.6	7.4	7.2
P1134	pH (max.) (su)				5	0	9.5	9	7.6	7.6	7.6	7.4	7.2
P1287	Electrical conductivity (µS/cm)				5	10	2500	n/a	480	470	480	340	690
120-12-7	Anthracene	PH	H	56	5	0.01	n/a	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
50-32-8	Benzo(a)pyrene	PH	H	3.8	5	0.01	0.01	0.00017	<0.01	<0.01	<0.01	<0.01	<0.01
206-44-0	Fluoranthene	P	H	230	5	0.01	n/a	0.0063	<0.01	<0.01	<0.01	<0.01	<0.01
91-20-3	Naphthalene	P	NP	19000	5	0.01	n/a	2	<0.01	<0.01	<0.01	<0.01	<0.01
GRP01	PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene	P	H		5	0.04	0.1	n/a	<0.04	<0.04	<0.04	<0.04	<0.04
P1877	Phenol	SP	NP	84100000	5	1	n/a	7.7	<1	<1	<1	<1	<1
P1407	Ali EC5-EC6			35900	5	1	15000	10	<1	<1	<1	<1	<1
P1408	Ali >EC6-EC8			5370	5	1	15000	10	<1	<1	<1	<1	<1
P1409	Ali >EC8-EC10			427	5	1	300	10	<1	<1	<1	<1	<1
P1410	Ali >EC10-EC12			33.9	5	10	300	10	<10	<10	<10	<10	<10
P1411	Ali >EC12-EC16			0.759	5	10	300	10	<10	<10	<10	<10	<10
P1938	Ali >EC16-EC35			0.00254	5	10	n/a	10	<10	<10	<10	<10	<10
P1415	Ali >EC35-EC44			0.00254	5	10	n/a	10	<10	<10	<10	<10	<10
P1441	Aro EC5-EC7			1780000	5	1	1	10	<1	<1	<1	<1	<1
P1355	Aro >EC7-EC8			590000	5	1	700	10	<1	<1	<1	<1	<1
P1356	Aro >EC8-EC10			64600	5	1	300	10	<1	<1	<1	<1	<1
P1357	Aro >EC10-EC12			24500	5	10	90	10	<10	<10	<10	<10	<10
P1358	Aro > EC12-EC16			5750	5	10	90	10	<10	<10	<10	<10	<10
P1359	Aro >EC16-EC21			653	5	10	90	10	<10	<10	<10	<10	<10
P1360	Aro >EC21-EC35			6.61	5	10	90	10	<10	<10	<10	<10	<10
P1362	Aro >EC35-EC44			6.61	5	10	n/a	10	<10	<10	<10	<10	<10
71-43-2	Benzene	P	H	1780000	5	1	1	10	<1	<1	<1	<1	<1
108-88-3	Toluene	SP	H	590000	5	1	700	74	<1	<1	<1	<1	<1
100-41-4	Ethylbenzene		H	180000	5	1	300	20	<1	<1	<1	<1	<1
95-47-6	o-Xylene		H	173000	5	1	500	30	<1	<1	<1	<1	<1

Remedial Targets Methodology Data Table

Water body receptor(s): **Groundwater and surface water**
Secondary receptor(s): **Human health (abstraction)**
Data set: **Groundwater**
Client: **Dorchester Living**
Site: **Heyford Park Primary School**
Job no: **C-04583-C**
Test Certificates(s): **21-10808**
Dataset **ALL ZONES**

🟩 PNEC calculated (inland EQS)

123* Exceeds solubility value
<1 Grey text and "<" sign if value <= LoD
999 Red text if value > DWS
🟥 Red fill if value > Inland Waters EQS

Surface Water Representative Hardness as mg/l $CaCO_3$ 10

								Strata / Zone	White Lst	White Lst	White Lst	White Lst	White Lst				
								Date sampled:	14/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021				
CAS / AGS Number	**Chemical of Potential Concern (µg/l)**	**WFD Designation**	**Hazardous Substance Status**	**Solubility Limit (µg/l)**	**No. of samples**	**Limit of Detection**	**DWS**	**Inland Waters EQS**	**BH301**	**BH302**	**BH303**	**WS302**	**WS305**				
P1374	m,p-Xylene		H	200000	5	1	500	30	<1	<1	<1	<1	<1				
1634-04-04	Methyl tertiary butyl ether (MTBE)		NP	48000000	5	1	15	n/a	<1	<1	<1	<1	<1				

Summary of Remedial Targets Methodology Screening

Hydrock

Hydrock Scenario: Scenario D - DWS & EQS (inland)
RTM Level: RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples
Water body receptor(s): Groundwater and surface water
Secondary receptor(s): Human health (abstraction)
Data set: Groundwater
Client: Dorchester Living
Site: Heyford Park Primary School
Job no: C-04583-C
Test Certificates(s): 21-10808
Dataset ALL ZONES

	PNEC calculated (inland EQS)

2013/39/EU Annex I

P = priority substance
PH = priority hazardous substances.

WFD Designation (2015 Directions)

OP = Other substance identical to previous legislation
SP = Specific Pollutant

JAGDAG Hazardous Substances Determination (UK)

H	Hazardous substance
NP	Non-hazardous pollutant
(blank)	Not included in assessment

CAS / AGS Number	Chemicals of Potential Concern (concentrations in µg/l)	WFD Designation	Hazardous Substance Status	Summary of Sample Data						Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red)		No. Samples Exceeding Water Quality Target		No. Samples above LoD Exceeding Water Quality		Notes
				No. of Samples	No. of Samples > LoD	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value		DWS	Inland Waters EQS	DWS	Inland Waters EQS	DWS	Inland Waters EQS	EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
P1133	Hardness as mg/l CaCO$_3$			-	-	-	10	-	-	-	-	-					Representative hardness of receiving surface water environment used in some inland EQS
7440-22-4	Silver (Ag) (dissolved)			5	0	0.05	<0.05	<0.05	<0.05	<0.05	n/a	0.05		0		0	
7429-90-5	Aluminium (Al) (dissolved)			5	5	1	6.3	140	138	140	200	n/a	0		0		
7440-38-2	Arsenic (As) (dissolved)	SP	**H**	5	5	0.15	0.19	1.13	1.124	1.13	10	50	0	0	0	0	
7440-42-8	Boron (B) (dissolved)		NP	5	5	10	33	92	91.6	92	1000	2000	0	0	0	0	
7440-39-3	Barium (Ba) (dissolved)			5	5	0.06	14	34	31.6	34	1300	n/a	0		0		
7440-43-9	Cadmium (Cd) (dissolved)	**PH**	NP	5	1	0.02	<0.02	0.06	0.052	0.06	5	0.08	0	0	0	0	EQS (inland) dependent on hardness of receiving surface water environment
7440-48-4	Cobalt (Co) (dissolved)		NP	5	4	0.2	<0.2	1.2	1.18	1.2	n/a	3		0		0	
18540-29-9	Chromium (VI) (Cr) (dissolved)	SP	**H**	5	0	5	<5	<5	<5	<5	n/a	3.4		5		0	
16065-83-1	Chromium (III) (Cr) (dissolved)	SP		5	5	1	1.7	3.5	3.24	3.5	n/a	4.7		0		0	
7440-47-3	Chromium (Cr) (total) (dissolved)			5	5	0.2	1.7	3.5	3.24	3.5	50	n/a	0		0		
7440-50-8	Copper (Cu) (dissolved)	SP	NP	5	5	0.5	1.4	3.8	3.74	3.8	2000	1	0	5	0	5	Bioavailable EQS (inland)
7439-89-6	Iron (Fe) (dissolved)	SP		5	4	4	<4	12	11.58	12	200	1000	0	0	0	0	
7439-97-6	Mercury (Hg) (dissolved)	**PH**	**H**	5	0	0.05	<0.05	<0.05	<0.05	<0.05	1	0.07	0	0	0	0	
P1286	Manganese (Mn) (dissolved)	SP		5	5	0.05	7.7	150	132.4	150	50	123	2	1	2	1	Bioavailable EQS (inland)
7440-23-5	Sodium (Na) (dissolved)			5	5	10	6000	68000	57600	68000	200000	n/a	0		0		
7440-02-0	Nickel (Ni) (dissolved)	***P***	NP	5	5	0.5	0.9	4	3.72	4	20	4	0	0	0	0	Bioavailable EQS (inland)
7439-92-1	Lead (Pb) (dissolved)	***P***	**H**	5	1	0.2	<0.2	0.3	0.28	0.3	10	1.2	0	0	0	0	Bioavailable EQS (inland)
7440-36-0	Antimony (Sb) (dissolved)		NP	5	2	0.4	<0.4	1.5	1.3	1.5	5	n/a	0		0		
7782-49-2	Selenium (Se) (dissolved)		NP	5	2	0.6	<0.6	10	8.28	10	10	n/a	0		0		
7440-31-5	Tin (Sn) (dissolved)			5	2	0.2	<0.2	0.71	0.622	0.71	n/a	25		0		0	
7440-62-2	Vanadium (V) (dissolved)			5	2	0.2	<0.2	0.9	0.84	0.9	n/a	20		0		0	EQS (inland) dependent on hardness of receiving surface water environment
7440-66-6	Zinc (Zn) (dissolved)	SP	NP	5	5	0.5	3	9.8	9.2	9.8	n/a	12.3		0		0	Bioavailable EQS (inland) + ambient background concentration (ABC)
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP	5	0	1	<1	<1	<1	<1	n/a	1		0		0	
57-12-5	Cyanide (total)			5	0	1	<1	<1	<1	<1	50	n/a	0		0		
P1140	Ammonium (NH$_4^+$)		NP	5	3	15	<15	73	71.6	73	500	n/a	0		0		
P1238	Ammnoniacal Nitrogen (as N)		NP	5	3	15	<15	57	55.8	57	n/a	300		0		0	
P1720	Ammonia (unionised) (NH$_3$ as N) {free ammonia}	SP	NP	5	3	15	<15	69	67.6	69	n/a	n/a					
15541-45-4	Bromate (BrO$_3$)			5	0	2	<2	<2	<2	<2	10	n/a	0		0		
16887-00-6	Chloride (Cl$^-$)			5	5	150	3500	9800	9740	9800	250000	250000	0	0	0	0	
16984-48-8	Fluoride (F$^-$)			5	5	50	100	210	206	210	1500	1000	0	0	0	0	EQS (inland) dependent on hardness of receiving surface water environment
P1348	Nitrate (NO$_3^-$)			5	5	50	310	9260	7822	9260	50000	n/a	0		0		
P1349	Nitrite (NO$_2^-$)			5	3	5	<5	66	55.4	66	500	n/a	0		0		
14808-79-8	Sulfate (SO$_4^{2-}$)			5	5	45	9020	100000	98160	100000	250000	400000	0	0	0	0	
P1134	pH (min.) (su)			5	5	0	7.2	7.6	7.6	7.6	6.5	6	0	0	0	0	
P1134	pH (max.) (su)			5	5	0	7.2	7.6	7.6	7.6	9.5	9	0	0	0	0	
P1287	Electrical conductivity (µS/cm)			5	5	10	340	690	648	690	2500	n/a	0		0		
120-12-7	Anthracene	***PH***	**H**	5	0	0.01	<0.01	<0.01	<0.01	<0.01	n/a	0.1		0		0	
50-32-8	Benzo(a)pyrene	***PH***	H	5	0	0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.00017	0	5	0	0	Benzo(a)pyrene EQS used as marker substance for the group of benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene & indeno (1,2,3-cd)pyrene
206-44-0	Fluoranthene	***P***	**H**	5	0	0.01	<0.01	<0.01	<0.01	<0.01	n/a	0.0063		5		0	
91-20-3	Naphthalene	P	NP	5	0	0.01	<0.01	<0.01	<0.01	<0.01	n/a	2		0		0	
GRP01	PAHs = sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene	***P***	**H**	5	0	0.04	<0.04	<0.04	<0.04	<0.04	0.1	n/a	0		0		
P1877	Phenol	SP	**NP**	5	0	1	<1	<1	<1	<1	n/a	7.7		0		0	
P1407	Ali EC5-EC6			5	0	1	<1	<1	<1	<1	15000	10	0	0	0	0	n-hexane fall within this fraction
P1408	Ali >EC6-EC8			5	0	1	<1	<1	<1	<1	15000	10	0	0	0	0	n-heptane falls within this fraction
P1409	Ali >EC8-EC10			5	0	1	<1	<1	<1	<1	300	10	0	0	0	0	n-octane and n-nonane fall within this fraction
P1410	Ali >EC10-EC12			5	0	10	<10	<10	<10	<10	300	10	0	0	0	0	
P1411	Ali >EC12-EC16			5	0	10	<10	<10	<10	<10	300	10	0	0	0	0	
P1938	Ali >EC16-EC35			5	0	10	<10	<10	<10	<10	n/a	10		0		0	
P1415	Ali >EC35-EC44			5	0	10	<10	<10	<10	<10	n/a	10		0		0	
P1441	Aro EC5-EC7			5	0	1	<1	<1	<1	<1	1	10	0	0	0	0	Benzene wholly representative of this fraction
P1355	Aro >EC7-EC8			5	0	1	<1	<1	<1	<1	700	10	0	0	0	0	Toluene wholly representative of this fraction
P1356	Aro >EC8-EC10			5	0	1	<1	<1	<1	<1	300	10	0	0	0	0	Ethylbenzene / xylene / trimethylbenzene representative of this range
P1357	Aro >EC10-EC12			5	0	10	<10	<10	<10	<10	90	10	0	0	0	0	Naphthalene often forms a reasonable percentage of this fraction
P1358	Aro > EC12-EC16			5	0	10	<10	<10	<10	<10	90	10	0	0	0	0	2-methylnaphthalene, acenpthylene, acenapthene falls within this fraction
P1359	Aro >EC16-EC21			5	0	10	<10	<10	<10	<10	90	10	0	0	0	0	fluorene, anthracene, phenanthrene, pyrene falls within this range
P1360	Aro >EC21-EC35			5	0	10	<10	<10	<10	<10	90	10	0	0	0	0	Benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(cd)pyrene fall within this fraction

Summary of Remedial Targets Methodology Screening

RTM Level: RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples
Water body receptor(s): Groundwater and surface water
Secondary receptor(s): Human health (abstraction)
Data set: Groundwater
Client: Dorchester Living
Site: Heyford Park Primary School

Job no: C-04583-C
Test Certificates(s): 21-10808
Dataset ALL ZONES

🟩	PNEC calculated (inland EQS)

P = priority substance
PH = priority hazardous substances.

WFD Designation (2015 Directions)

OP = Other substance identical to previous legislation

SP = Specific Pollutant

JAGDAG Hazardous Substances Determination (UK)

H	Hazardous substance
NP	Non-hazardous pollutant
(blank)	Not included in assessment

CAS / AGS Number	Chemicals of Potential Concern (concentrations in µg/l)	WFD Designation	Hazardous Substance Status	Summary of Sample Data						Value Being Compared to Target = Maximum Value	Water Quality Target (Exceeded if Red		No. Samples Exceeding Water Quality Target		No. Samples above LoD Exceeding Water Quality		Notes
				No. of Samples	No. of Samples > LoD	Limit of Detection	Minimum Value	Maximum Value	95-%ile Value		DWS	Inland Waters EQS	DWS	Inland Waters EQS	DWS	Inland Waters EQS	EQS compared to dissolved metals as an initial screen, with no adjustment for bioavailability or ABC.
P1362	Aro >EC35-EC44			5	0	10	<10	<10	<10	<10	n/a	10		0		0	
71-43-2	Benzene	P	**H**	5	0	1	<1	<1	<1	<1	1	10	0	0	0	0	
108-88-3	Toluene	SP	**H**	5	0	1	<1	<1	<1	<1	700	74	0	0	0	0	
100-41-4	Ethylbenzene		**H**	5	0	1	<1	<1	<1	<1	300	20	0	0	0	0	Proposed EQS for Ethylbenzene in Water, R&D Technical Report P2-115/TR4. EA 2001
95-47-6	o-Xylene		**H**	5	0	1	<1	<1	<1	<1	500	30	0	0	0	0	DWS/EQS for total xylene
P1374	m,p-Xylene		**H**	5	0	1	<1	<1	<1	<1	500	30	0	0	0	0	DWS/EQS for total xylene
1634-04-04	Methyl tertiary butyl ether (MTBE)		**NP**	5	0	1	<1	<1	<1	<1	15	n/a	0		0		Non health based value - WHO odour threshold

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Appendix H Waste Assessment

HazWasteOnline™ Assessment

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.

LYYMD-DA7TY-5N9B5

Job name

21-91809_HWOL_Results

Description/Comments

Lab cert: 21-91809

Project

04583

Site

Heyford Park

Classified by

Name:
Matthew Keehn
Date:
07 Sep 2021 11:43 GMT
Telephone:

Company:
Hydrock Consultants Ltd

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	08 Sep 2020

Next 3 year Refresher due by Sep 2023

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS304-ES102-02082021-0.30		Non Hazardous		3
2	WS305-ES103-02082021-0.60		Non Hazardous		5
3	WS305-ES104-02082021-0.75		Hazardous	HP 3(i), HP 7, HP 11	8
4	WS305-ES106-02082021-1.10		Non Hazardous		10
5	WS302-ES102-02082021-1.00		Non Hazardous		13
6	TP306-ES102-04082021-0.50		Non Hazardous		16
7	TP309-ES102-04082021-0.40		Non Hazardous		18
8	TP309-ES105-04082021-2.10		Non Hazardous		20
9	TP302-ES101-04082021-0.10		Non Hazardous		23
10	TP302-ES102-04082021-0.50		Non Hazardous		25
11	TP305-ES102-04082021-0.30		Non Hazardous		27
12	TP307-ES101-04082021-0.05		Non Hazardous		29
13	TP307-ES102-04082021-0.30		Non Hazardous		32
14	TP304-ES102-05072021-0.30		Non Hazardous		34
15	TP310-ES101-05082021-0.50		Non Hazardous		36
16	TP310-ES102-05082021-1.00		Non Hazardous		39
17	TP313-ES101-05082021-0.30		Non Hazardous		41
18	TP308-ES101-05082021-0.20		Non Hazardous		43
19	TP311-ES02-05082021-0.50		Non Hazardous		45
20	TP311-ES03-05082021-1.00		Non Hazardous		47

Related documents

#	Name	Description
1	21-91809_HWOL_Results.hwol	.hwol file used to create the Job
2	Hydrock Standard plus Cresol (ammended Lead)	waste stream template used to create this Job

Report

Created by: Matthew Keehn

Created date: 07 Sep 2021 11:43 GMT

Classification of sample: WS304-ES102-02082021-0.30

✓ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
WS304-ES102-02082021-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
4.2% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.2% Wet Weight Moisture Correction applied (MC)

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.3	mg/kg	1.32	7.969	mg/kg	0.000797 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.25	mg/kg		0.24	mg/kg	0.000024 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.32	mg/kg		0.307	mg/kg	0.0000307 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.21	mg/kg		0.201	mg/kg	0.0000201 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.25	mg/kg		0.24	mg/kg	0.000024 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.3	mg/kg	2.775	0.798	mg/kg	0.0000798 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.3	mg/kg	13.43	3.86	mg/kg	0.000386 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		7.2	mg/kg	1.462	10.081	mg/kg	0.00101 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		0.25	mg/kg		0.24	mg/kg	0.000024 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		4.9	mg/kg	1.126	5.285	mg/kg	0.000529 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚗	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				0.53	mg/kg		0.508	mg/kg	0.0000508 %	✓	
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-893-2	193-39-5									
22	⚗	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	5.4	mg/kg		5.173	mg/kg	0.000517 %	✓	
		082-001-00-6											
23	⚗	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
25	⚗	nickel { nickel dihydroxide }				6.4	mg/kg	1.579	9.684	mg/kg	0.000968 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.8	pH		8.8	pH	8.8 pH		
				PH									
27	●	phenanthrene				0.4	mg/kg		0.383	mg/kg	0.0000383 %	✓	
			201-581-5	85-01-8									
28	●	pyrene				0.46	mg/kg		0.441	mg/kg	0.0000441 %	✓	
			204-927-3	129-00-0									
29	⚗	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
		034-002-00-8											
30	⚗	zinc { zinc oxide }				14	mg/kg	1.245	16.694	mg/kg	0.00167 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
				P1186									
32	⚗	vanadium { divanadium pentaoxide; vanadium pentoxide }				17	mg/kg	1.785	29.074	mg/kg	0.00291 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.00988 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: WS305-ES103-02082021-0.60

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:		
WS305-ES103-02082021-0.60	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)	
Moisture content:			
10% (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)	

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		1.4	mg/kg		1.26	mg/kg	0.000126 %	✓	
2	●	acenaphthylene		205-917-1	208-96-8		0.47	mg/kg		0.423	mg/kg	0.0000423 %	✓	
3	●	anthracene		204-371-1	120-12-7		2.8	mg/kg		2.52	mg/kg	0.000252 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	15.448	mg/kg	0.00154 %	✓	
5		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
6		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		7.2	mg/kg		6.48	mg/kg	0.000648 %	✓	
7		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		10	mg/kg		9	mg/kg	0.0009 %	✓	
8		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		8.7	mg/kg		7.83	mg/kg	0.000783 %	✓	
9	●	benzo[ghi]perylene		205-883-8	191-24-2		5.7	mg/kg		5.13	mg/kg	0.000513 %	✓	
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		3.5	mg/kg		3.15	mg/kg	0.000315 %	✓	
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.77	mg/kg	2.775	1.923	mg/kg	0.000192 %	✓	
12		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.5	mg/kg	13.43	18.131	mg/kg	0.00181 %	✓	
13		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
14		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20	mg/kg	1.462	26.308	mg/kg	0.00263 %	✓	
15		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
16		chrysene	601-048-00-0	205-923-4	218-01-9		6	mg/kg		5.4	mg/kg	0.00054 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6.4	mg/kg	1.126	6.485	mg/kg	0.000649 %	✓	
18		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
19		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		1.2	mg/kg		1.08	mg/kg	0.000108 %	✓	
20	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	●	fluoranthene		205-912-4	206-44-0		14	mg/kg		12.6	mg/kg	0.00126 %	✓	
22	●	fluorene		201-695-5	86-73-7		1.6	mg/kg		1.44	mg/kg	0.000144 %	✓	
23	●	indeno[123-cd]pyrene		205-893-2	193-39-5		5	mg/kg		4.5	mg/kg	0.00045 %	✓	
24		lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13	mg/kg		11.7	mg/kg	0.00117 %	✓	
25		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
26		naphthalene	601-052-00-2	202-049-5	91-20-3		0.2	mg/kg		0.18	mg/kg	0.000018 %	✓	
27		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		14	mg/kg	1.579	19.902	mg/kg	0.00199 %	✓	
28	●	pH			PH		8.5	pH		8.5	pH	8.5 pH		
29	●	phenanthrene		201-581-5	85-01-8		8.8	mg/kg		7.92	mg/kg	0.000792 %	✓	
30	●	pyrene		204-927-3	129-00-0		12	mg/kg		10.8	mg/kg	0.00108 %	✓	
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	TPH (C6 to C40) petroleum group			TPH		280	mg/kg		252	mg/kg	0.0252 %	✓	
34		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]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
35		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		37	mg/kg	1.245	41.449	mg/kg	0.00414 %	✓	
36	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
37		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		37	mg/kg	1.785	59.447	mg/kg	0.00594 %	✓	
38		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.054 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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

Supplementary Hazardous Property Information

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"

Force this Hazardous property to non hazardous because Flammability of soils due to TPH is likely to be in the region of 10,000mg/kg, therefore, anything below 1,000mg/kg is unlikely to be a flammable and, therefore, non-hazardous.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0252%)

Classification of sample: WS305-ES104-02082021-0.75

⚠ **Hazardous Waste**
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:		LoW Code:	
WS305-ES104-02082021-0.75		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
6.9% (wet weight correction)		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.: 0.242%)

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.: 0.242%)

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 determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.242%)

Determinands

Moisture content: 6.9% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
2	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
3		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
4	●	TPH (C6 to C40) petroleum group				2600	mg/kg		2420.6	mg/kg	0.242 %	✓	
				TPH									
5		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2]	95-47-6 [1] 106-42-3 [2]									

#		Determinand			CLP Note	**User entered data**	Conv. Factor	Compound conc.	**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
			203-576-3 [3] 215-535-7 [4]	108-38-3 [3] 1330-20-7 [4]							
6		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
		603-181-00-X	216-653-1	1634-04-4							
								Total:	0.242 %		

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)
<LOD	Below limit of detection
ND	Not detected

Classification of sample: WS305-ES106-02082021-1.10

✓ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
WS305-ES106-02082021-1.10		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
13% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		0.32 mg/kg		0.278 mg/kg	0.0000278 %	✓	
4	⚛	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19 mg/kg	1.32	21.825 mg/kg	0.00218 %	✓	
5		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
6		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.68 mg/kg		0.592 mg/kg	0.0000592 %	✓	
7		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.94 mg/kg		0.818 mg/kg	0.0000818 %	✓	
8		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.73 mg/kg		0.635 mg/kg	0.0000635 %	✓	
9	●	benzo[ghi]perylene		205-883-8	191-24-2		0.43 mg/kg		0.374 mg/kg	0.0000374 %	✓	
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.33 mg/kg		0.287 mg/kg	0.0000287 %	✓	
11	⚛	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.98 mg/kg	2.775	2.366 mg/kg	0.000237 %	✓	
12	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.5 mg/kg	13.43	29.21 mg/kg	0.00292 %	✓	
13	⚛	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
14	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27 mg/kg	1.462	34.332 mg/kg	0.00343 %	✓	
15	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2 mg/kg	1.923	<2.308 mg/kg	<0.000231 %		<LOD
16		chrysene	601-048-00-0	205-923-4	218-01-9		0.64 mg/kg		0.557 mg/kg	0.0000557 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17		copper { dicopper oxide; copper (I) oxide }				6.4	mg/kg	1.126	6.269	mg/kg	0.000627 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
18		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
20	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
21	●	fluoranthene				1.5	mg/kg		1.305	mg/kg	0.000131 %	✓	
			205-912-4	206-44-0									
22	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
23	●	indeno[123-cd]pyrene				0.39	mg/kg		0.339	mg/kg	0.0000339 %	✓	
			205-893-2	193-39-5									
24		lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	14	mg/kg		12.18	mg/kg	0.00122 %	✓	
		082-001-00-6											
25		mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
26		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
27		nickel { nickel dihydroxide }				19	mg/kg	1.579	26.109	mg/kg	0.00261 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
28	●	pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
29	●	phenanthrene				1	mg/kg		0.87	mg/kg	0.000087 %	✓	
			201-581-5	85-01-8									
30	●	pyrene				1.3	mg/kg		1.131	mg/kg	0.000113 %	✓	
			204-927-3	129-00-0									
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
		034-002-00-8											
32		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
33	●	TPH (C6 to C40) petroleum group				36	mg/kg		31.32	mg/kg	0.00313 %	✓	
				TPH									
34		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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]									
35		zinc { zinc oxide }				51	mg/kg	1.245	55.228	mg/kg	0.00552 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
36	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
				P1186									
37		vanadium { divanadium pentaoxide; vanadium pentoxide }				57	mg/kg	1.785	88.527	mg/kg	0.00885 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
38		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
										Total:	0.0322 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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

Supplementary Hazardous Property Information

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"

Force this Hazardous property to non hazardous because Flammability of soils due to TPH is likely to be in the region of 10,000mg/kg, therefore, anything below 1,000mg/kg is unlikely to be a flammable and, therefore, non-hazardous.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00313%)

Classification of sample: WS302-ES102-02082021-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
WS302-ES102-02082021-1.00	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		
11% (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2.9	mg/kg	1.32	3.408	mg/kg	0.000341 %	✓	
5		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
6		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.3	mg/kg	2.775	0.741	mg/kg	0.0000741 %	✓	
12		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.2	mg/kg	13.43	2.391	mg/kg	0.000239 %	✓	
13		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
14		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		6.4	mg/kg	1.462	8.325	mg/kg	0.000833 %	✓	
15		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
16		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	copper { dicopper oxide; copper (I) oxide }				4.3	mg/kg	1.126	4.309	mg/kg	0.000431 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
18	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
19		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
20	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
21	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
22	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
23	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
24	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	3.9	mg/kg		3.471	mg/kg	0.000347 %	✓	
		082-001-00-6											
25	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
26		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
27	⚛	nickel { nickel dihydroxide }				6.8	mg/kg	1.579	9.559	mg/kg	0.000956 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
28	●	pH				8.7	pH		8.7	pH	8.7 pH		
				PH									
29	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
30	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
31	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
		034-002-00-8											
32		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
33	●	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									
34		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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]									
35	⚛	zinc { zinc oxide }				10	mg/kg	1.245	11.078	mg/kg	0.00111 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
36	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
				P1186									
37	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				7.9	mg/kg	1.785	12.552	mg/kg	0.00126 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
38		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
										Total:	0.00738 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP306-ES102-04082021-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
TP306-ES102-04082021-0.50	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		
8.2% (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.2% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.9	mg/kg	1.32	9.575	mg/kg	0.000958 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.42	mg/kg	2.775	1.07	mg/kg	0.000107 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.3	mg/kg	13.43	3.699	mg/kg	0.00037 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11	mg/kg	1.462	14.759	mg/kg	0.00148 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		3.6	mg/kg	1.126	3.721	mg/kg	0.000372 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
20	●	fluorene		201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13 mg/kg		11.934 mg/kg	0.00119 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		8.6 mg/kg	1.579	12.47 mg/kg	0.00125 %	✓	
26	●	pH			PH		8.6 pH		8.6 pH	8.6 pH		
27	●	phenanthrene		201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
28	●	pyrene		204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		34 mg/kg	1.245	38.85 mg/kg	0.00389 %	✓	
31	●	monohydric phenols			P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		25 mg/kg	1.785	40.97 mg/kg	0.0041 %	✓	
									Total:	0.0145 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP309-ES102-04082021-0.40

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP309-ES102-04082021-0.40		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
6.1% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.1% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		0.28	mg/kg		0.263	mg/kg	0.0000263 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	17.357	mg/kg	0.00174 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.8	mg/kg		1.69	mg/kg	0.000169 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2.9	mg/kg		2.723	mg/kg	0.000272 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.2	mg/kg		2.066	mg/kg	0.000207 %	✓	
8		benzo[ghi]perylene		205-883-8	191-24-2		1.5	mg/kg		1.409	mg/kg	0.000141 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.2	mg/kg		1.127	mg/kg	0.000113 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.76	mg/kg	2.775	1.981	mg/kg	0.000198 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1	mg/kg	13.43	12.611	mg/kg	0.00126 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32	mg/kg	1.462	43.917	mg/kg	0.00439 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene	601-048-00-0	205-923-4	218-01-9		1.6	mg/kg		1.502	mg/kg	0.00015 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.2	mg/kg	1.126	7.612	mg/kg	0.000761 %	✓	

#		Determinand CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.26	mg/kg		0.244	mg/kg	0.0000244 %	✓	
19	●	fluoranthene	205-912-4	206-44-0		3	mg/kg		2.817	mg/kg	0.000282 %	✓	
20	●	fluorene	201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene	205-893-2	193-39-5		1.2	mg/kg		1.127	mg/kg	0.000113 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	62	mg/kg		58.218	mg/kg	0.00582 %	✓	
23	⚛	mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide } 028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		15	mg/kg	1.579	22.247	mg/kg	0.00222 %	✓	
26	●	pH		PH		8.4	pH		8.4	pH	8.4 pH		
27	●	phenanthrene	201-581-5	85-01-8		0.97	mg/kg		0.911	mg/kg	0.0000911 %	✓	
28	●	pyrene	204-927-3	129-00-0		3.1	mg/kg		2.911	mg/kg	0.000291 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide } 030-013-00-7	215-222-5	1314-13-2		50	mg/kg	1.245	58.439	mg/kg	0.00584 %	✓	
31	●	monohydric phenols		P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8	215-239-8	1314-62-1		40	mg/kg	1.785	67.052	mg/kg	0.00671 %	✓	
										Total:	0.0316 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP309-ES105-04082021-2.10

✓ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP309-ES105-04082021-2.10		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
10% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-469-6	83-32-9									
2	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-917-1	208-96-8									
3	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				2.9	mg/kg	1.32	3.446	mg/kg	0.000345 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		601-020-00-8	200-753-7	71-43-2									
6		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-033-00-9	200-280-6	56-55-3									
7		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-032-00-3	200-028-5	50-32-8									
8		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-034-00-4	205-911-9	205-99-2									
9	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-883-8	191-24-2									
10		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-036-00-5	205-916-6	207-08-9									
11		beryllium { beryllium oxide }				0.27	mg/kg	2.775	0.674	mg/kg	0.0000674 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
12		boron { ● boron tribromide/trichloride/trifluoride (combined) }				<0.2	mg/kg	13.43	<2.686	mg/kg	<0.000269 %		**<LOD**
				10294-33-4, 10294-34-5, 7637-07-2									
13		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
		048-010-00-4	215-147-8	1306-23-6									
14		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				5.6	mg/kg	1.462	7.366	mg/kg	0.000737 %	✓	
			215-160-9	1308-38-9									
15		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
		024-001-00-0	215-607-8	1333-82-0									
16		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-048-00-0	205-923-4	218-01-9									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		2.4	mg/kg	1.126	2.432	mg/kg	0.000243 %	✓	
18		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
19		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	●	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
22	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
24		lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	3.1	mg/kg		2.79	mg/kg	0.000279 %	✓	
25		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
26		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
27		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		5.1	mg/kg	1.579	7.25	mg/kg	0.000725 %	✓	
28	●	pH			PH		8.8	pH		8.8	pH	8.8 pH		
29	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
30	●	pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
34		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]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
35		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		9.8	mg/kg	1.245	10.978	mg/kg	0.0011 %	✓	
36	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
37		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		8.7	mg/kg	1.785	13.978	mg/kg	0.0014 %	✓	
38		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.00696 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP302-ES101-04082021-0.10

✓ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP302-ES101-04082021-0.10		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
5.7% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 5.7% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number								
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4	⚛	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	19.921	mg/kg	0.00199 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.94	mg/kg		0.886	mg/kg	0.0000886 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.3	mg/kg		1.226	mg/kg	0.000123 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.2	mg/kg		1.132	mg/kg	0.000113 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		0.82	mg/kg		0.773	mg/kg	0.0000773 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.58	mg/kg		0.547	mg/kg	0.0000547 %	✓	
10	⚛	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.8	mg/kg	2.775	2.094	mg/kg	0.000209 %	✓	
11	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	7.599	mg/kg	0.00076 %	✓	
12	⚛	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		21	mg/kg	1.462	28.943	mg/kg	0.00289 %	✓	
14	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		0.82	mg/kg		0.773	mg/kg	0.0000773 %	✓	
16	⚛	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.4	mg/kg	1.126	7.857	mg/kg	0.000786 %	✓	

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19	●	fluoranthene		205-912-4	206-44-0		1.4	mg/kg		1.32	mg/kg	0.000132 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.66	mg/kg		0.622	mg/kg	0.0000622 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	26	mg/kg		24.518	mg/kg	0.00245 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16	mg/kg	1.579	23.831	mg/kg	0.00238 %	✓	
26	●	pH			PH		8.2	pH		8.2	pH	8.2 pH		
27	●	phenanthrene		201-581-5	85-01-8		0.33	mg/kg		0.311	mg/kg	0.0000311 %	✓	
28	●	pyrene		204-927-3	129-00-0		1.3	mg/kg		1.226	mg/kg	0.000123 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		49	mg/kg	1.245	57.514	mg/kg	0.00575 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		43	mg/kg	1.785	72.387	mg/kg	0.00724 %	✓	
											Total:	0.0261 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP302-ES102-04082021-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP302-ES102-04082021-0.50		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
6.6% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.6% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number								
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15	mg/kg	1.32	18.498	mg/kg	0.00185 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.42	mg/kg		0.392	mg/kg	0.0000392 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.61	mg/kg		0.57	mg/kg	0.000057 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.61	mg/kg		0.57	mg/kg	0.000057 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		0.48	mg/kg		0.448	mg/kg	0.0000448 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.23	mg/kg		0.215	mg/kg	0.0000215 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.75	mg/kg	2.775	1.944	mg/kg	0.000194 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.4	mg/kg	13.43	5.017	mg/kg	0.000502 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		21	mg/kg	1.462	28.667	mg/kg	0.00287 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene	601-048-00-0	205-923-4	218-01-9		0.52	mg/kg		0.486	mg/kg	0.0000486 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		5.4	mg/kg	1.126	5.679	mg/kg	0.000568 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				0.84	mg/kg		0.785	mg/kg	0.0000785 %	✓	
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				0.38	mg/kg		0.355	mg/kg	0.0000355 %	✓	
			205-893-2	193-39-5									
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	16	mg/kg		14.944	mg/kg	0.00149 %	✓	
		082-001-00-6											
23	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
25	⚛	nickel { nickel dihydroxide }				14	mg/kg	1.579	20.654	mg/kg	0.00207 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
27	●	phenanthrene				0.31	mg/kg		0.29	mg/kg	0.000029 %	✓	
			201-581-5	85-01-8									
28	●	pyrene				0.8	mg/kg		0.747	mg/kg	0.0000747 %	✓	
			204-927-3	129-00-0									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
		034-002-00-8											
30	⚛	zinc { zinc oxide }				40	mg/kg	1.245	46.503	mg/kg	0.00465 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
				P1186									
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				39	mg/kg	1.785	65.027	mg/kg	0.0065 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0219 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP305-ES102-04082021-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP305-ES102-04082021-0.30
Moisture content:
8.7%
(wet 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: 8.7% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18	mg/kg	1.32	21.698	mg/kg	0.00217 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.9	mg/kg	2.775	2.281	mg/kg	0.000228 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.7	mg/kg	13.43	8.583	mg/kg	0.000858 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22	mg/kg	1.462	29.357	mg/kg	0.00294 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.8	mg/kg	1.126	8.018	mg/kg	0.000802 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	14	mg/kg		12.782	mg/kg	0.00128 %	✓	
		082-001-00-6											
23	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25	⚛	nickel { nickel dihydroxide }				20	mg/kg	1.579	28.842	mg/kg	0.00288 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
27	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
28	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
		034-002-00-8											
30	⚛	zinc { zinc oxide }				35	mg/kg	1.245	39.775	mg/kg	0.00398 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
				P1186									
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				47	mg/kg	1.785	76.604	mg/kg	0.00766 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0236 %		

Key

🟨	User supplied data
▒	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP307-ES101-04082021-0.05

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP307-ES101-04082021-0.05
Moisture content:
7.7%
(wet 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: 7.7% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	19.499	mg/kg	0.00195 %	✓	
5		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
6		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.66	mg/kg		0.609	mg/kg	0.0000609 %	✓	
7		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.77	mg/kg		0.711	mg/kg	0.0000711 %	✓	
8		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.64	mg/kg		0.591	mg/kg	0.0000591 %	✓	
9	●	benzo[ghi]perylene		205-883-8	191-24-2		0.44	mg/kg		0.406	mg/kg	0.0000406 %	✓	
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.33	mg/kg		0.305	mg/kg	0.0000305 %	✓	
11		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.84	mg/kg	2.775	2.152	mg/kg	0.000215 %	✓	
12		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1	mg/kg	13.43	12.396	mg/kg	0.00124 %	✓	
13		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
14		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23	mg/kg	1.462	31.027	mg/kg	0.0031 %	✓	
15		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
16		chrysene	601-048-00-0	205-923-4	218-01-9		0.6	mg/kg		0.554	mg/kg	0.0000554 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8.6	mg/kg	1.126	8.937	mg/kg	0.000894 %	✓	
18	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
19		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	●	fluoranthene		205-912-4	206-44-0		1.3	mg/kg		1.2	mg/kg	0.00012 %	✓	
22	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.36	mg/kg		0.332	mg/kg	0.0000332 %	✓	
24	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	21	mg/kg		19.383	mg/kg	0.00194 %	✓	
25	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
26		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
27	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		17	mg/kg	1.579	24.784	mg/kg	0.00248 %	✓	
28	●	pH			PH		8.3	pH		8.3	pH	8.3 pH		
29	●	phenanthrene		201-581-5	85-01-8		0.48	mg/kg		0.443	mg/kg	0.0000443 %	✓	
30	●	pyrene		204-927-3	129-00-0		1.1	mg/kg		1.015	mg/kg	0.000102 %	✓	
31	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	TPH (C6 to C40) petroleum group			TPH		21	mg/kg		19.383	mg/kg	0.00194 %	✓	
34		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]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
35	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		50	mg/kg	1.245	57.444	mg/kg	0.00574 %	✓	
36	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
37	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		49	mg/kg	1.785	80.739	mg/kg	0.00807 %	✓	
38		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.0289 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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

Supplementary Hazardous Property Information

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"

Force this Hazardous property to non hazardous because Flammability of soils due to TPH is likely to be in the region of 10,000mg/kg, therefore, anything below 1,000mg/kg is unlikely to be a flammable and, therefore, non-hazardous.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00194%)

Classification of sample: TP307-ES102-04082021-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP307-ES102-04082021-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
4.5% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.5% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		acenaphthene	201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene	205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene	204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	13.87	mg/kg	0.00139 %	✓	
5		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[ghi]perylene	205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide } 004-003-00-8	215-133-1	1304-56-9		0.46	mg/kg	2.775	1.219	mg/kg	0.000122 %	✓	
11		boron { boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		0.4	mg/kg	13.43	5.13	mg/kg	0.000513 %	✓	
12		cadmium { cadmium sulfide } 048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		12	mg/kg	1.462	16.749	mg/kg	0.00167 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
15		chrysene 601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
16		copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		4.9	mg/kg	1.126	5.269	mg/kg	0.000527 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚗	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
19	●	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
22	⚗	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	8.8	mg/kg		8.404	mg/kg	0.00084 %	✓	
23	⚗	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
25	⚗	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		9.4	mg/kg	1.579	14.179	mg/kg	0.00142 %	✓	
26	●	pH			PH		8.7	pH		8.7	pH	8.7 pH		
27	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
28	●	pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
29	⚗	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
30	⚗	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		28	mg/kg	1.245	33.284	mg/kg	0.00333 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
32	⚗	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		26	mg/kg	1.785	44.326	mg/kg	0.00443 %	✓	
											Total:	0.015 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP304-ES102-05072021-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
TP304-ES102-05072021-0.30	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:		
4.8% (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.8% Wet Weight Moisture Correction applied (MC)

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		0.26	mg/kg		0.248	mg/kg	0.0000248 %	✓	
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15	mg/kg	1.32	18.854	mg/kg	0.00189 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.1	mg/kg		1.047	mg/kg	0.000105 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.5	mg/kg		1.428	mg/kg	0.000143 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.4	mg/kg		1.333	mg/kg	0.000133 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		0.77	mg/kg		0.733	mg/kg	0.0000733 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.49	mg/kg		0.466	mg/kg	0.0000466 %	✓	
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.75	mg/kg	2.775	1.982	mg/kg	0.000198 %	✓	
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	7.671	mg/kg	0.000767 %	✓	
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20	mg/kg	1.462	27.828	mg/kg	0.00278 %	✓	
14		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		1	mg/kg		0.952	mg/kg	0.0000952 %	✓	
16		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6.7	mg/kg	1.126	7.181	mg/kg	0.000718 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚗	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				2.1	mg/kg		1.999	mg/kg	0.0002 %	✓	
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				0.67	mg/kg		0.638	mg/kg	0.0000638 %	✓	
			205-893-2	193-39-5									
22	⚗	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	26	mg/kg		24.752	mg/kg	0.00248 %	✓	
		082-001-00-6											
23	⚗	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
25	⚗	nickel { nickel dihydroxide }				14	mg/kg	1.579	21.052	mg/kg	0.00211 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.6	pH		8.6	pH	8.6 pH		
				PH									
27	●	phenanthrene				0.76	mg/kg		0.724	mg/kg	0.0000724 %	✓	
			201-581-5	85-01-8									
28	●	pyrene				2.1	mg/kg		1.999	mg/kg	0.0002 %	✓	
			204-927-3	129-00-0									
29	⚗	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
		034-002-00-8											
30	⚗	zinc { zinc oxide }				47	mg/kg	1.245	55.693	mg/kg	0.00557 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
				P1186									
32	⚗	vanadium { divanadium pentaoxide; vanadium pentoxide }				42	mg/kg	1.785	71.379	mg/kg	0.00714 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0255 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP310-ES101-05082021-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP310-ES101-05082021-0.50		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
6.3% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.3% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		0.39	mg/kg		0.365	mg/kg	0.0000365 %	✓	
4	⚛	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	14.846	mg/kg	0.00148 %	✓	
5		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
6		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.4	mg/kg		1.312	mg/kg	0.000131 %	✓	
7		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2	mg/kg		1.874	mg/kg	0.000187 %	✓	
8		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.6	mg/kg		1.499	mg/kg	0.00015 %	✓	
9	●	benzo[ghi]perylene		205-883-8	191-24-2		0.84	mg/kg		0.787	mg/kg	0.0000787 %	✓	
10		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.82	mg/kg		0.768	mg/kg	0.0000768 %	✓	
11	⚛	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.63	mg/kg	2.775	1.638	mg/kg	0.000164 %	✓	
12	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.4	mg/kg	13.43	5.034	mg/kg	0.000503 %	✓	
13	⚛	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
14	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16	mg/kg	1.462	21.912	mg/kg	0.00219 %	✓	
15	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
16		chrysene	601-048-00-0	205-923-4	218-01-9		1.3	mg/kg		1.218	mg/kg	0.000122 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		5.3	mg/kg	1.126	5.591	mg/kg	0.000559 %	✓	
18		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
19		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.19	mg/kg		0.178	mg/kg	0.0000178 %	✓	
20	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	●	fluoranthene		205-912-4	206-44-0		2.3	mg/kg		2.155	mg/kg	0.000216 %	✓	
22	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.76	mg/kg		0.712	mg/kg	0.0000712 %	✓	
24		lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	11	mg/kg		10.307	mg/kg	0.00103 %	✓	
25		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
26		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
27		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		12	mg/kg	1.579	17.76	mg/kg	0.00178 %	✓	
28	●	pH			PH		8.7	pH		8.7	pH	8.7 pH		
29	●	phenanthrene		201-581-5	85-01-8		1.5	mg/kg		1.406	mg/kg	0.000141 %	✓	
30	●	pyrene		204-927-3	129-00-0		2.2	mg/kg		2.061	mg/kg	0.000206 %	✓	
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	TPH (C6 to C40) petroleum group			TPH		30	mg/kg		28.11	mg/kg	0.00281 %	✓	
34		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]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
35		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		34	mg/kg	1.245	39.654	mg/kg	0.00397 %	✓	
36	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
37		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		33	mg/kg	1.785	55.2	mg/kg	0.00552 %	✓	
38		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.0222 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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

Supplementary Hazardous Property Information

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"

Force this Hazardous property to non hazardous because Flammability of soils due to TPH is likely to be in the region of 10,000mg/kg, therefore, anything below 1,000mg/kg is unlikely to be a flammable and, therefore, non-hazardous.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00281%)

Classification of sample: TP310-ES102-05082021-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP310-ES102-05082021-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
6.8% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.8% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
2	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
3	●	anthracene				0.36	mg/kg		0.336	mg/kg	0.0000336 %	✓	
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				13	mg/kg	1.32	15.997	mg/kg	0.0016 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				1.5	mg/kg		1.398	mg/kg	0.00014 %	✓	
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				1.8	mg/kg		1.678	mg/kg	0.000168 %	✓	
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				1.6	mg/kg		1.491	mg/kg	0.000149 %	✓	
		601-034-00-4	205-911-9	205-99-2									
8	●	benzo[ghi]perylene				1.1	mg/kg		1.025	mg/kg	0.000103 %	✓	
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				0.89	mg/kg		0.829	mg/kg	0.0000829 %	✓	
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				0.7	mg/kg	2.775	1.811	mg/kg	0.000181 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }				0.2	mg/kg	13.43	2.503	mg/kg	0.00025 %	✓	
				10294-33-4, 10294-34-5, 7637-07-2									
12		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				18	mg/kg	1.462	24.519	mg/kg	0.00245 %	✓	
			215-160-9	1308-38-9									
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				1.4	mg/kg		1.305	mg/kg	0.00013 %	✓	
		601-048-00-0	205-923-4	218-01-9									
16		copper { dicopper oxide; copper (I) oxide }				6	mg/kg	1.126	6.296	mg/kg	0.00063 %	✓	
		029-002-00-X	215-270-7	1317-39-1									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
		006-007-00-5											
18		dibenz[a,h]anthracene				0.22	mg/kg		0.205	mg/kg	0.0000205 %	✓	
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				2.8	mg/kg		2.61	mg/kg	0.000261 %	✓	
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				0.86	mg/kg		0.802	mg/kg	0.0000802 %	✓	
			205-893-2	193-39-5									
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	14	mg/kg		13.048	mg/kg	0.0013 %	✓	
		082-001-00-6											
23	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
25	⚛	nickel { nickel dihydroxide }				13	mg/kg	1.579	19.137	mg/kg	0.00191 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.7	pH		8.7	pH	8.7 pH		
				PH									
27	●	phenanthrene				1.3	mg/kg		1.212	mg/kg	0.000121 %	✓	
			201-581-5	85-01-8									
28	●	pyrene				2.5	mg/kg		2.33	mg/kg	0.000233 %	✓	
			204-927-3	129-00-0									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
		034-002-00-8											
30	⚛	zinc { zinc oxide }				43	mg/kg	1.245	49.883	mg/kg	0.00499 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
				P1186									
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				38	mg/kg	1.785	63.224	mg/kg	0.00632 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0219 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP313-ES101-05082021-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP313-ES101-05082021-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
6.9% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.9% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		3.4	mg/kg		3.165	mg/kg	0.000317 %	✓	
2	●	acenaphthylene		205-917-1	208-96-8		3.5	mg/kg		3.258	mg/kg	0.000326 %	✓	
3	●	anthracene		204-371-1	120-12-7		13	mg/kg		12.103	mg/kg	0.00121 %	✓	
4	⚛	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	15.98	mg/kg	0.0016 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		47	mg/kg		43.757	mg/kg	0.00438 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		32	mg/kg		29.792	mg/kg	0.00298 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		40	mg/kg		37.24	mg/kg	0.00372 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		24	mg/kg		22.344	mg/kg	0.00223 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		18	mg/kg		16.758	mg/kg	0.00168 %	✓	
10	⚛	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.64	mg/kg	2.775	1.654	mg/kg	0.000165 %	✓	
11	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.5	mg/kg	13.43	6.252	mg/kg	0.000625 %	✓	
12	⚛	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17	mg/kg	1.462	23.132	mg/kg	0.00231 %	✓	
14	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		37	mg/kg		34.447	mg/kg	0.00344 %	✓	
16	⚛	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.2	mg/kg	1.126	9.643	mg/kg	0.000964 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		5.6	mg/kg		5.214	mg/kg	0.000521 %	✓	
19	●	fluoranthene		205-912-4	206-44-0		78	mg/kg		72.618	mg/kg	0.00726 %	✓	
20	●	fluorene		201-695-5	86-73-7		3.5	mg/kg		3.258	mg/kg	0.000326 %	✓	
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		22	mg/kg		20.482	mg/kg	0.00205 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	19	mg/kg		17.689	mg/kg	0.00177 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		12	mg/kg	1.579	17.646	mg/kg	0.00176 %	✓	
26	●	pH			PH		8.8	pH		8.8	pH	8.8 pH		
27	●	phenanthrene		201-581-5	85-01-8		40	mg/kg		37.24	mg/kg	0.00372 %	✓	
28	●	pyrene		204-927-3	129-00-0		72	mg/kg		67.032	mg/kg	0.0067 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		47	mg/kg	1.245	54.465	mg/kg	0.00545 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		41	mg/kg	1.785	68.142	mg/kg	0.00681 %	✓	
											Total:	0.0631 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP308-ES101-05082021-0.20

✓ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP308-ES101-05082021-0.20		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
5.2% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.2% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene		204-371-1	120-12-7		0.18	mg/kg		0.171	mg/kg	0.0000171 %	✓	
4	⚛	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20	mg/kg	1.32	25.033	mg/kg	0.0025 %	✓	
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.81	mg/kg		0.768	mg/kg	0.0000768 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.82	mg/kg		0.777	mg/kg	0.0000777 %	✓	
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.95	mg/kg		0.901	mg/kg	0.0000901 %	✓	
8	●	benzo[ghi]perylene		205-883-8	191-24-2		0.79	mg/kg		0.749	mg/kg	0.0000749 %	✓	
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.37	mg/kg		0.351	mg/kg	0.0000351 %	✓	
10	⚛	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	2.894	mg/kg	0.000289 %	✓	
11	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.5	mg/kg	13.43	6.366	mg/kg	0.000637 %	✓	
12	⚛	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30	mg/kg	1.462	41.567	mg/kg	0.00416 %	✓	
14	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene	601-048-00-0	205-923-4	218-01-9		0.68	mg/kg		0.645	mg/kg	0.0000645 %	✓	
16	⚛	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8.2	mg/kg	1.126	8.752	mg/kg	0.000875 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
		006-007-00-5											
18		dibenz[a,h]anthracene				0.2	mg/kg		0.19	mg/kg	0.000019 %	✓	
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				1	mg/kg		0.948	mg/kg	0.0000948 %	✓	
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				0.66	mg/kg		0.626	mg/kg	0.0000626 %	✓	
			205-893-2	193-39-5									
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	23	mg/kg		21.804	mg/kg	0.00218 %	✓	
		082-001-00-6											
23	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
25	⚛	nickel { nickel dihydroxide }				18	mg/kg	1.579	26.953	mg/kg	0.0027 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.7	pH		8.7	pH	8.7 pH		
				PH									
27	●	phenanthrene				0.31	mg/kg		0.294	mg/kg	0.0000294 %	✓	
			201-581-5	85-01-8									
28	●	pyrene				1	mg/kg		0.948	mg/kg	0.0000948 %	✓	
			204-927-3	129-00-0									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
		034-002-00-8											
30	⚛	zinc { zinc oxide }				57	mg/kg	1.245	67.259	mg/kg	0.00673 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
				P1186									
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				59	mg/kg	1.785	99.849	mg/kg	0.00998 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0315 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP311-ES02-05082021-0.50

✓ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP311-ES02-05082021-0.50		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
5.7% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.7% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene											
			201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
2	●	acenaphthylene											
			205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
3	●	anthracene											
			204-371-1	120-12-7		0.12	mg/kg		0.113	mg/kg	0.0000113 %	✓	
4	⚛	arsenic { arsenic trioxide }											
		033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	13.696	mg/kg	0.00137 %	✓	
5		benzo[a]anthracene											
		601-033-00-9	200-280-6	56-55-3		0.5	mg/kg		0.472	mg/kg	0.0000471 %	✓	
6		benzo[a]pyrene; benzo[def]chrysene											
		601-032-00-3	200-028-5	50-32-8		0.37	mg/kg		0.349	mg/kg	0.0000349 %	✓	
7		benzo[b]fluoranthene											
		601-034-00-4	205-911-9	205-99-2		0.41	mg/kg		0.387	mg/kg	0.0000387 %	✓	
8	●	benzo[ghi]perylene											
			205-883-8	191-24-2		0.28	mg/kg		0.264	mg/kg	0.0000264 %	✓	
9		benzo[k]fluoranthene											
		601-036-00-5	205-916-6	207-08-9		0.23	mg/kg		0.217	mg/kg	0.0000217 %	✓	
10	⚛	beryllium { beryllium oxide }											
		004-003-00-8	215-133-1	1304-56-9		0.61	mg/kg	2.775	1.596	mg/kg	0.00016 %	✓	
11	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }											
				10294-33-4, 10294-34-5, 7637-07-2		0.5	mg/kg	13.43	6.332	mg/kg	0.000633 %	✓	
12	⚛	cadmium { cadmium sulfide }											
		048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
13	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }											
			215-160-9	1308-38-9		16	mg/kg	1.462	22.052	mg/kg	0.00221 %	✓	
14	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }											
		024-001-00-0	215-607-8	1333-82-0		<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		<LOD
15		chrysene											
		601-048-00-0	205-923-4	218-01-9		0.41	mg/kg		0.387	mg/kg	0.0000387 %	✓	
16	⚛	copper { dicopper oxide; copper (I) oxide }											
		029-002-00-X	215-270-7	1317-39-1		6.7	mg/kg	1.126	7.113	mg/kg	0.000711 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
19	●	fluoranthene		205-912-4	206-44-0		0.84	mg/kg		0.792	mg/kg	0.0000792 %	✓	
20	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
21	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.28	mg/kg		0.264	mg/kg	0.0000264 %	✓	
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	10	mg/kg		9.43	mg/kg	0.000943 %	✓	
23	⚛	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
24		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
25	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		10	mg/kg	1.579	14.895	mg/kg	0.00149 %	✓	
26	●	pH			PH		8.5	pH		8.5	pH	8.5 pH		
27	●	phenanthrene		201-581-5	85-01-8		0.35	mg/kg		0.33	mg/kg	0.000033 %	✓	
28	●	pyrene		204-927-3	129-00-0		0.78	mg/kg		0.736	mg/kg	0.0000736 %	✓	
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
30	⚛	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		31	mg/kg	1.245	36.387	mg/kg	0.00364 %	✓	
31	●	monohydric phenols			P1186		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		34	mg/kg	1.785	57.237	mg/kg	0.00572 %	✓	
											Total:	0.0181 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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: TP311-ES03-05082021-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP311-ES03-05082021-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:			
12% (wet weight correction)		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-469-6	83-32-9									
2	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-917-1	208-96-8									
3	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				15	mg/kg	1.32	17.428	mg/kg	0.00174 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-034-00-4	205-911-9	205-99-2									
8	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-036-00-5	205-916-6	207-08-9									
10		beryllium { beryllium oxide }				1	mg/kg	2.775	2.442	mg/kg	0.000244 %	✓	
		004-003-00-8	215-133-1	1304-56-9									
11		boron { ● boron tribromide/trichloride/trifluoride (combined) }				0.8	mg/kg	13.43	9.455	mg/kg	0.000945 %	✓	
				10294-33-4, 10294-34-5, 7637-07-2									
12		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
		048-010-00-4	215-147-8	1306-23-6									
13		chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				29	mg/kg	1.462	37.299	mg/kg	0.00373 %	✓	
			215-160-9	1308-38-9									
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.2	mg/kg	1.923	<2.308	mg/kg	<0.000231 %		**<LOD**
		024-001-00-0	215-607-8	1333-82-0									
15		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-048-00-0	205-923-4	218-01-9									
16		copper { dicopper oxide; copper (I) oxide }				5.8	mg/kg	1.126	5.747	mg/kg	0.000575 %	✓	
		029-002-00-X	215-270-7	1317-39-1									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
17	⚛	cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
		006-007-00-5											
18		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-041-00-2	200-181-8	53-70-3									
19	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-912-4	206-44-0									
20	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
21	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-893-2	193-39-5									
22	⚛	lead { ● lead compounds with the exception of those specified elsewhere in this Annex }			1	20	mg/kg		17.6	mg/kg	0.00176 %	✓	
		082-001-00-6											
23	⚛	mercury { mercury dichloride }				0.5	mg/kg	1.353	0.596	mg/kg	0.0000596 %	✓	
		080-010-00-X	231-299-8	7487-94-7									
24		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
25	⚛	nickel { nickel dihydroxide }				15	mg/kg	1.579	20.849	mg/kg	0.00208 %	✓	
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
26	●	pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
27	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-581-5	85-01-8									
28	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			204-927-3	129-00-0									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
		034-002-00-8											
30	⚛	zinc { zinc oxide }				49	mg/kg	1.245	53.672	mg/kg	0.00537 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
31	●	monohydric phenols				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
				P1186									
32	⚛	vanadium { divanadium pentaoxide; vanadium pentoxide }				53	mg/kg	1.785	83.261	mg/kg	0.00833 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0256 %		

Key

🟨	User supplied data
▨	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	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 CLP determinands

• **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

• **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

• **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

• **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

• **boron tribromide/trichloride/trifluoride (combined)** (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06 Aug 2015
Hazard Statements: EUH014 , Acute Tox. 2 H330 , Acute Tox. 2 H300 , Skin Corr. 1A H314 , Skin Corr. 1B H314

• **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

• **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

• **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

• **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

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers many simple lead compounds to be Carcinogenic category 2
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

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

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

monohydric phenols (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Acute Tox. 3 H301 , Acute Tox. 3 H311 , Acute Tox. 3 H331 , Skin Corr. 1B H314 , Skin Corr. 1B H314 >= 3 %, Skin Irrit. 2 H315 1 £ conc. < 3 %, Eye Irrit. 2 H319 1 £ conc. < 3 %, Muta. 2 H341 , STOT RE 2 H373 , Aquatic Chronic 2 H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case species based on hazard statements

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on hazard statements

zinc {zinc oxide}

Worst case species based on hazard statements

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species based on hazard statements.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2021.246.4869.9247 (05 Sep 2021)
HazWasteOnline Database: 2021.246.4869.9247 (05 Sep 2021)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
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 2019 - UK: 2019 No. 720 of 27th March 2019
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
POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019

Appendix I Preliminary Geotechnical Risk Register

Geotechnical Hazard Identification – Desk Study Stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table I.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with ground investigation design.

Table I.1: Possible geotechnical hazards

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Uncontrolled Made Ground (variable strength and compressibility).	Made Ground is anticipated on site due to the historic construction.	✓	-
Soft / loose compressible ground (low strength and high settlement potential).	No superficial deposits recorded on site.	-	✓
Shrink swell of the clay fraction of soils under the influence of vegetation.	Possible clay in the underlying geology at the site could be affected by shrink swell.	✓	-
Variable lateral and vertical changes in ground conditions.	Possible changes due to previous development of the taxi/runway and aircraft hangars.	✓	-
High sulfates present in the soils.	Possible within Made Ground.	✓	-
Adverse chemical ground conditions, (e.g. expansive slag).	Not likely to be present.	-	✓
Obstructions.	There is the potential due to prior development.	✓	-
Existing below ground structures to remain (on or off-site tunnels, foundations, basements, and adjacent sub-structures).	There is the potential due to prior development.	✓	-
Shallow groundwater.	There is the potential for shallow groundwater due to the primary aquifer designation of the White Limestone Formation.	✓	-
Changing groundwater conditions.	There is the potential for changing groundwater conditions across the seasons.	✓	-
Risk from erosion.	Site is generally level.	-	✓
Risk from flooding.	The site is located in Flood Zone 1.	-	✓
Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls.	Loose Made Ground is a risk.	✓	-
Slope stability issues – general slopes.	There are no major slopes present on site.	-	✓
Slope stability issues – retaining walls.	Retaining walls proposed in east of site relating to the aircraft hangar.	✓	-
Earthworks – settlement (due to placement of fill on soft / loose ground).	Earthworks are not anticipated to be required.	-	✓

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Earthworks – poor bearing capacity of new fill.	Earthworks are not anticipated to be required.	-	✓
Earthworks – unsuitability of site won material to be reused as fill.	Earthworks are not anticipated to be required.	-	✓
Solution features in Chalk.	No chalk present on site.	-	✓
Cavities in the Superficial Deposits due to solution features.	Not a risk.	-	✓
Dissolution (associated with "wet rock head").	White Limestone Formation could be at risk from dissolution.	✓	-
Brine extraction.	Not present on site.	-	✓
Mining.	Not a risk due to quarries being small in nature and likely to have been backfilled.	-	✓
Cambered ground with gulls possibly present.	N/A		
Relict Slip Surfaces.	N/A	-	✓
Solifluction.	N/A		
Problematic soils (silts and rewetting etc.).	The geology on site is competent and not thought to be prone to this.	-	✓

Geotechnical Hazard Identification – Following Ground Investigation

The preliminary Geotechnical Risk Register following Ground Investigation is set out in Table I.3.

The probability and impact of a hazard have been judged on a qualitative scale as set out in Table I.2. The degree of risk (R) is determined by combining tan assessment of the probability (P) of the hazard occurring with an assessment of the impact (I) of the hazard and associated mitigation it will require if it occurs (R = P x I).

Table I.2: Qualitative assessment of hazards and risks

P = Probability			I = Impact			R = Risk Rating (P x I)	
1	Very unlikely (VU)		1	Very Low		1 – 4	None / negligible
2	Unlikely (U)		2	Low		5 – 9	Minor
3	Plausible(P)		3	Medium		10 – 14	Moderate
4	Likely (Lk)		4	High		15 – 19	Substantial
5	Very Likely (VLk)		5	Very High		20 - 25	Severe

Table I.3: Preliminary geotechnical risk register

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Uncontrolled Made Ground (variable strength and compressibility).	Made Ground was encountered across the site to depths of up to 1.9m bgl generally as reworked natural material	Residential Dwellings.	Bearing capacity failure, settlement (total and differential).	3	4	12	Design foundations to found below Made Ground or on Made Ground which has been improved.
		Roads and Pavements.	Settlement (total and differential) of roads and pavements.	2	2	4	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate.
		Services.	Settlement (differential), causing damage to services.	2	2	4	Anticipated settlements are significant with regard to services. There is a requirement to improve the Made Ground prior to installation of services. It is also advisable to steepen falls in drainage to prevent back fall and use rocker boxes and flexible couplings.
		Gardens.	Settlement (differential), in gardens.	1	2	2	It is unlikely that settlements will be significant with regard to gardens.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	1	3	3	Where soft spots encountered, over-excavation and replacement with suitable fill. Outline design of working platform to include geo-grid. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
Shrinkage / swelling of the clay fraction of soils under the influence of vegetation.	The clays of the Weathered White Limestone Formation are low volume change potential.	Foundations.	Shrinkage or heave of soils and associated damage to foundations.	2	3	6	Design foundations in accordance with NHBC standards. Deepen foundations due to trees as appropriate.
Cont…							

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Variable lateral and vertical changes in ground conditions.	The is Made Ground across much of the site. The depth to rockhead and bearing capacity of the weathered bedrock is variable.	Residential Dwellings.	Foundation bearing capacity failure, settlement (total and differential).	3	4	12	Design foundations to found below Made Ground and on firm clay or medium dense sand.
		Roads and Pavements.	Settlement (total and differential), of roads and pavements.	2	3	6	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate. If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace unsuitable soils.
		Services.	Settlement (differential), causing damage to services.	2	3	6	Settlements are not anticipated to be significant with regard to services. No additional design requirements envisaged.
		Gardens.	Settlement (differential), in gardens.	1	3	3	It is unlikely that settlements will be significant with respect to gardens.
Sulfates present in the soils.	The ground investigation has proven low sulfate concentrations.	Attack of buried concrete.	Damage to concrete and reduction in strength.	1	4	4	Classify concrete in accordance with BRE SD1 and design concrete accordingly. Site soils are classified as DC-1 and AC-1
Obstructions.	Obstructions have been proven by the investigation and there is a potential for additional obstructions to be present due to historical construction activity, or unknown fill in Made Ground.	Construction staff, vehicles and plant operators.	Risk of collapse of excavation as obstructions are pulled out.	4	3	12	Undertake Enablement Works and remove all obstructions.
		Roads and Pavements.	Hard spots in externals and roads / pavements.	4	2	8	
Cont…							

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Shallow groundwater.	Monitoring during the ground investigations has proven a shallow groundwater table at a depth of around 1.5m bgl albeit with relatively slow inflows at this depth. Investigation work was undertaken in the summer and gorundwater may be significantly higher during the winter.	Construction staff, vehicles and plant operators.	Difficulty with excavation. Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.	2	2	4	Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011. Temporary Works Designer to consider in their analysis the impact of, and requirements for, de-watering of excavations. Any water that collects at the base of excavations to be removed as soon as practicable.
Changing groundwater conditions.	It is anticipated that groundwater levels will be highly variable depending upon the season.	Construction staff, vehicles and plant operators.	Difficulty with excavation. Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.	3	2	6	Contractor to appoint competent Temporary Works Designer to design temporary works as required, in accordance with BS 5975:2008+A1:2011. Temporary Works Designer to consider in their analysis the impact of a variable water table.
Slope stability issues – retaining walls.	Small retaining walls are proposed around some of the existing hangers.	Existing hangers to be above retaining walls.	Serviceability issues.	3	4	12	Design of the retaining to be undertaken in accordance with EC7. Adequate drainage to be designed behind the structure, or for water seepage through the face of the wall. Lateral earth pressure parameters to be characterised during investigation and design. Engineered fill requirements to be defined at outline design stage.
Cont…							

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Dissolution associated with “wet rock head”.	Site ins underlain by soluble rock of the White Limestone with potentially variable ground conditions due to areas of dissolution.	On site structures.	Potential differential settlement affecting stability of structure.	3	5	15	Reinforce foundations to span any ‘soft spots’ where material has removed or weakened by dissolution.
Unforeseen ground conditions - risk associated with limited data.	Ground investigation has been undertaken. However, additional information will be obtained during construction. Ground conditions are only defined at exploratory hole locations.	All aspects of the development		3	4	12	Designers to be contacted if conditions encountered are different to those identified during investigation. Regular inspections of excavations and earthworks for evidence of stability. Adequate investigation required to characterise the site and understand the potential risks.

Whilst the probability and impact of the hazard occurring can be reduced to a minimum by geotechnical design, the impact cannot be reduced below very low. The risk register will need to be up-dated, as necessary, to reflect design, additional information, data and experience as it is gained through the construction process.

Impacts of the design with regard to health and Safety considerations will need to be included by the designer at design stage.

Appendix J Plausible Source-Pathway-Receptor Contaminant Linkages

Summary of Potential Contaminant Linkages

Table J.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in LCRM (2021) and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland et al 2001) but modified to add a ‘no linkage’ category and to remove low/moderate risk (See Table J.1).

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table J.1: Consequence versus probability assessment.

		Consequence			
Probability		Severe	Medium	Mild	Minor
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

Table J.2: Exposure model – final source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Made Ground, associated with historical construction activities and imported fill, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials, PAH and petroleum hydrocarbons.	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	There is Made Ground below much of the site with exceedances of PAH.	Mitigation required in the form of either the excavation and replacement of PAH hotspot around TP313 and WS305 or the placement of an engineered cover system.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Low likelihood	Medium	Low	Only two isolated exceedances of Manganese noted in groundwater samples collected from the site.	
	Surface run-off. Base flow from contaminated groundwater.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low	No exceedances of EQS noted in groundwater samples collected from the site.	
Petroleum hydrocarbons associated with former use as an airfield.	Ingestion, inhalation or direct contact.	Site users.	Low Likelihood	Medium	Low	Hydrocarbon odours were noted in a number of exploratory holes although none of these occurrences were found to be in exceedance of relevant thresholds.	Mitigation will not be required for the protection of human health.
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Low likelihood	Medium	Low	No concentrations of petroleum hydrocarbons above limit of detection noted in groundwater samples collected from the site.	

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Ground gases (carbon dioxide and methane) from organic materials in the Made Ground below the site and from off-site landfill sites.	Migration, build up and asphyxiation.	Site users.	Unlikely	Medium to Severe	Very low to Low	Ground gas monitoring has indicated CS1 ground gas conditions with no requirement for mitigation measures.
		Neighbours.		Medium	Very low	
	Migration, build up and explosion.	Site users.		Medium to Severe	Very low to Low	
Hydrocarbon vapours from potential hydrocarbon spillages.	Migration, build up and exceedance of workplace exposure limits.	Site users	Low likelihood	Medium	Low	Hydrocarbons not noted in exceedance of relevant thresholds for soils and therefore it is considered unlikely there will be significant amounts of vapour produced.
Asbestos fibres from insulation or asbestos-containing materials in the existing aircraft hangers.	Fugitive dust.	On Site	Likely	Severe	High	Asbestos is known to be present in the hangers on site as proven by an asbestos survey. As one of the hangers is to be reused as part of the development one of the following will be required; -Further assessment by an asbestos in buildings specialist to assess the long-term risk. -Encapsulation of all the asbestos in the building. -Removal of all asbestos and replacement with suitable non asbestos containing material.
		Neighbours.	Unlikely	Severe	Low	
Radon	Inhalation.	Site users.	Likely	Medium	Moderate	Site is in an area where 1-3% of homes are above the radon action level and therefore basic radon protection measures are considered best practice.