



Geological & Geotechnical Consultants

**Dewsbury & District Hospital  
Remediation Verification Report  
(February 2026)**

**Prepared for Darwin Group Ltd**

## Document Information

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	<b>Name</b>	<b>Position</b>	<b>Signature</b>	<b>Date</b>
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## **1 Introduction**

### **1.1 Reason for the Report**

Key GeoSolutions Ltd (KGS) has been commissioned by Darwin Group Ltd (Darwin) to provide a Verification Report to demonstrate that the remediation at the new single storey modular surgical hub at Dewsbury and District Hospital was undertaken in accordance with the proposed Remediation Strategy. The report is to be used as evidence in discharging a planning condition.

### **1.2 Development**

The development consists of a newly constructed single storey modular surgical hub connected to the existing Boothroyd Centre via a corridor and surrounded by hard and soft landscaping. Refer to Darwin Group drawings included as Appendix 1

### **1.3 Planning Context**

Planning permission has been granted by the Kirklees Council, the Local Planning Authority (LPA) and is subject to a number of planning conditions. The relevant planning condition (Condition 18) to which this report relates is reproduced below:

*“Following completion of any measures identified in the approved Remediation Strategy or any approved revised Remediation Strategy a Verification Report by a suitably competent person shall be submitted to the Local Planning Authority (LPA). No part of the site shall be brought into use until such time as the remediation measures have been completed for the site in accordance with the approved Remediation Strategy or the approved revised Remediation Strategy and a Verification Report in respect of those remediation measures has been approved in writing by the Local Planning Authority”.*

### **1.4 Previous Ground Investigations**

Two phases of ground investigation were undertaken at the site by Key GeoSolutions Ltd. The first phase took place between 11<sup>th</sup> and 12<sup>th</sup> March 2023, and the second phase was carried out between 2<sup>nd</sup> and 4<sup>th</sup> October 2023 (report ref: 9202-001-R-01-2, dated October 2023).

### **1.5 Project Organisation**

Table 1.5-1 summarises the parties who assisted with the implementation of the Remediation & Discovery Strategy for the site, together with the duties undertaken in relevance to this Validation Report.

**Table 1.5-1: Summary of Parties Involved**

Organisation	Role	Responsibility
Darwin Group Ltd	Principal Contractor	To construct the proposed development.  To provide appropriate resources to enable implementation of all aspects of the works.
Darwin Group Ltd	Principal Designer	To ensure records are kept and post construction Health and Safety file is completed and handed over to the ultimate client.
Evabuild Ltd	Landscape Contractors	Responsible for installing the soft landscaping to the landscaping specification.
Key GeoSolutions Ltd (from December 2025 onward only)	Geo-environmental Advisor	To verify that the remediation strategy has been completed.  To geo-environmental provide advice to the client.
Allied Plant Ltd Edwards Excavations Ltd CSH Bulk Transport Ltd	Registered waste carrier	Disposal of waste arising from the site.
i2 Analytical Ltd	Analytical Laboratory	To undertake laboratory analysis if required.

## 1.6 Assumptions and Limitations

The information and comments concerning the site and any opinions expressed are based in part on information made available by Darwin. KGS were not present on-site whilst works were being undertaken and has proceeded in good faith on the assumption that any information provided for this verification report is accurate and accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied. Undertaking the development and any remedial measures required was the responsibility of the contractor.

It should also be noted that the effects of ground and waterborne contamination on the environment are constantly under review, and authoritative guidance values are potentially subject to change. The conclusions presented herein are based on the guidance available at the time this report was prepared, and no liability can be accepted for the retrospective effects of any changes or amendments to the legislation or guidance.

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## 2 Proposed Remediation Scope

### 2.1 Objectives and Layout of the Report

A Remediation Strategy Report has been prepared by KGS, dated September 2025 (Report Ref. 9202-007-R-03). This report includes the following sections for the Remediation & Discovery Strategy (Section 3) and Record Keeping and Verification (Section 4). These sections will be used as the Remediation Strategy for the purpose of this report.

This report has been compiled in accordance with Section 4.5 (“Validation Report” section) of the Remediation Strategy to demonstrate the actions that have been taken to mitigate contamination risks and will be submitted in support of the discharge of the planning condition referred to in Section 1.3.

### 2.2 Ground Contamination and Pollutant Linkages

The Remediation Scheme outlined the following contamination concerns:

- Concentrations of Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene, Dibenz(ah)-anthracene and Chrysene exceeding screening values for Residential without Homegrown Produce were identified within the Made Ground.
- The presence of contamination within the Made Ground may cause stress cracking and/or permeation in potable water pipes, leading to contaminated drinking water.
- Redundant gas/groundwater monitoring wells may form preferential pathways for contaminants.
- Ground gas monitoring wells within the Made Ground detected elevations in carbon dioxide and the site was characterised as Characteristic Situation 2 (CS2). The site was also found to be located within an intermediate probability radon area (5-10% of homes are estimated to be at or above the action level) and required basic radon protection measures.

### 2.3 Proposed Remediation Works

It was concluded in the remediation scheme that the site would be suitable for the proposed development with the following mitigation / remedial measures:

- A suitable cover system to be installed in all soft landscaping areas to remove any potential exposure pathways.
- Appropriate measures to mitigate stress cracking and/or permeation of contaminants into potable water pipes
- Redundant gas/groundwater monitoring wells to be suitably decommissioned.
- Suitable gas protection measures to protect against carbon dioxide and radon.

## **2.4 Exclusions**

All remedial measures that posed a potential risk to construction workers have been undertaken under the direct supervision of the Principal Contractor. These remedial measures are assumed to have been implemented and continually risk assessed throughout the duration of the works and therefore a review of their implementation has been excluded from this report.

Verification of ground gas protection measures are beyond the scope of this report; this should have been undertaken by a suitably qualified engineer.

### **3 Verification of the Remedial Measures**

#### **3.1 Completed Soil Remediation Works**

##### **3.1.1 Cover System**

###### **Outline**

In all proposed soft landscaping areas, a cover system will be employed to remove the exposure pathway which poses a risk to human health. The cover system will comprise the replacement of the upper 600mm of Made Ground with imported clean material. Excavated Made Ground will be disposed of off-site to a licenced facility.

###### **Works Undertaken**

KGS were not on site during these works and sufficient evidence was not submitted to verify a suitable clean cover system had been installed. A site visit was therefore conducted by KGS, following completion of the landscaping works, to confirm the thickness of clean cover installed.

Prior to the site visit, KGS were informed by Darwin that an area of proposed soft landscaping, located in the southwestern corner of the site, was outside the scope of the development and had not been disturbed during the works (see Drawing Ref. 180598-DGL-01-XX-DR-A-1402, Appendix 1).

Two site visits were conducted by KGS on the 17<sup>th</sup> December 2025 and 20<sup>th</sup> January 2026 to confirm the thickness of clean cover installed. A total of nine trial pits were excavated: five within the soft landscaping area along the southeastern corner of the building (DH 1 to 5), and four within the soft landscaping area along the western margin of the building (DH 6 to 9).

Trial pitting along the southeastern corner of the building confirmed that a cover system had been installed at between 215 to 440mm thickness. The cover system is composed of 200 to 250mm of topsoil underlain by 0 to 220mm of reworked Made Ground, underlying a geotextile separation layer. Two trial pits (DH1 and 2) intercepted concrete associated with Aco drains that appear to underly the soft landscaping area.

Trial pitting along the western margin of the building confirmed a variable cover system thickness had been installed across the area. In the central and southern sections (DH6 to 8), topsoil had been installed to a thickness of approximately 170 to 230mm and was underlain by a hard-to-dig layer composed of concrete. In the northern section (DH9), topsoil had been installed to a thickness of at least 660mm thick.

A location plan and photographs of the trial pits are included Appendix 2.

###### **Verification**

The trial pits along the southeastern corner of the building confirmed that a cover system had been installed generally to between 414 to 440mm thickness (locally 215-224mm where concrete associated with the Aco drains was encountered) and underlain by a geotextile separation layer. Although this

thickness is at variance with the Remediation Strategy, given that the soft landscaping area is limited in extent and is unlikely to be used as a communal open space for recreational purposes, a revised minimum cover thickness of 300mm is considered suitable to remove any exposure pathways.

The trial pits along the western margin of the building confirmed that the cover system was composed of either at least 600mm of clean cover (DH9) or approximately 170 to 230mm of clean cover underlain by a hard-to-dig layer of concrete (DH6-8). Although a hard-to-dig layer is at variance with the Remediation Strategy, it is considered to act as a physical barrier preventing any exposure to the underlying Made Ground and is a suitable alternative.

### **3.1.2 Cover Material**

#### **Outline**

Imported soils and aggregates used in the cover system should be chemically suitable for use and compared to the industry recognised chemical criteria standards outlined in the remediation strategy.

#### **Works Undertaken**

The site visit undertaken by KGS on 17<sup>th</sup> December 2025 and 20<sup>th</sup> January 2026 confirmed that imported topsoil had been placed in areas of soft landscaping, in general accordance with Darwins Landscaping Plan (Appendix 1).

Darwin was unable to provide any clean cover material testing results undertaken by the Registered Waste Provider or Landscaping Contractor. As such, contamination samples were collected by KGS during the site visit which were then tested for general contamination by i2 Analytical Ltd (see Appendix 3).

#### **Verification**

A total of ten contamination samples were analysed for general contamination; five from along the southeastern corner of the building; and five from along the western margin of the building.

The samples taken from the soft landscaping area along the southeastern corner of the building included three samples of topsoil and two samples of reworked Made Ground. The limited extent of this area, together with its proximity to the car park, indicates that it will not be used for recreational purposes. Accordingly, the end use category for this area has been revised to a Commercial/Industrial land use, representing a variance from the Remediation Strategy.

The results have been analysed against the S4UL for Commercial/Industrial and are summarised below:

- The five samples contained no exceedance of contaminants above the S4UL.
- Contamination testing was undertaken at a frequency of one sample per 100m<sup>3</sup> or less.

The samples taken from the soft landscaping area along the western margin of the building comprised five samples of topsoil. The area is an area of potential recreational use and remains an area of Residential without Homegrown Produce land use.

The results have been analysed against the S4UL for Residential without Homegrown Produce and are summarised below:

- The five samples contained no exceedance of contaminants above the S4UL.
- Contamination testing was undertaken at a frequency of one sample per 100m<sup>3</sup> or less.

All laboratory testing results are included in full in Appendix 3.

No test results have been supplied to confirm the imported soils are compliant with the requirements for BS3883:2015 multipurpose grade.

### **3.2 Water Pipes to be Barrier Pipes, or Suitable Investigation & Testing**

#### **Outline**

KGS recommended that Darwin should undertake a consultation with the local water supplier to confirm the appropriate measures required to mitigate stress cracking and/or permeation of contaminants into the potable water supply are installed, due to the presence of contamination within the Made Ground.

#### **Works Undertaken**

Following correspondence with Darwin, KGS are unaware of any consultation between Darwin and the local water supplier. However, Darwin have confirmed that MDPE barrier pipe has been installed below ground level and has been utilised throughout the development.

#### **Verification**

MDPE barrier pipe is considered to provide sufficient protection against the ingress of PAHs and hydrocarbons recorded in the Made Ground into the potable water supply via stress cracking and/or permeation, assuming it has been installed to an appropriate standard.

### **3.3 Decommissioning of Redundant Monitoring Wells**

#### **Outline**

There are six known monitoring wells within the site area. The response zones for gas monitoring were installed within both the superficial clay and weathered Pennie Lower Coal Measures.

Once all the required gas monitoring has been completed, these boreholes will require decommissioning at the start of the groundworks to ensure that they do not form preferential pathways for ground gas or contaminant migration into the underlying strata, which is classified as Secondary A Aquifers.

#### **Works Undertaken**

KGS are not aware of any Decommissioning Method Statement prepared for the site. Based on correspondence with Darwin, KGS are not aware of any backfilling or capping of the monitoring wells at the start of earthworks.

The foundations for the building consist of pad and beam foundations with the monitoring wells located below the footprint of the building, and surface water around the building is managed.

#### **Verification**

KGS is unable to confirm whether the monitoring wells were decommissioned. However, all six wells are located beneath the building footprint, and the construction of the pad-and-beam foundation system, along with the surface water management, is considered to significantly reduce the potential for contaminant migration into the underlying strata via these wells.

The monitoring wells could also represent a potential pathway for ground gas into the building; however, suitable gas protection measures have been installed within the building, due to the site being classified as CS2 (Section 3.4).

### **3.4 Ground Gas Protection Measures**

#### **Outline**

The site has been classified as CS2 as part of the ground investigation, and suitable ground gas protection measures will need to be adopted during the groundworks and installed within the proposed development.

#### **Works Undertaken**

Darwin have confirmed to KGS that the required gas protection measures have been installed throughout the development.

## **Verification**

Verification of these works is outside the role of KGS as the appointed Geo-environmental Advisor.

Darwin have provided a Verification Certificate produced by GeoShield Ltd confirming the Gas Membrane and ancillaries were installed to specification and verified to meet the requirements outlined in BS 8485:2015+A1:2019 and CIRIA 735 (see Appendix 4).

### **3.5 Unexpected Contamination**

As recommended as part of the Inspection and Discovery Strategy, vigilance should be maintained by all operatives and groundworks for unforeseen or suspicious ground conditions.

Following correspondence with Darwin, dated the 4<sup>th</sup> February 2026, it was confirmed that no unexpected soil/ground conditions were encountered during the earthworks and no additional remedial actions were required.

### **3.6 Detail of Soil Disposal**

Collection Notes and Waste Transfer Notes from Allied Plant Ltd, Edwards Excavations Ltd and CSH Bulk Transport Ltd between 3<sup>rd</sup> May 2025 and 24<sup>th</sup> January 2025 are included in Appendix 5. None of the Collection Notes/Waste Transfer Notes state the removal of soils/material containing contaminated materials.

### **3.7 Details of Imported Materials**

Darwin have not supplied any Delivery Notes to confirm the import of soils/material used as part of the clean cover system. Testing of the imported topsoil was undertaken by KGS as part of Section 3.1.2 of this report.

### **3.8 Photographic Evidence**

Photographs of the site works are included in Appendix 2.

### **3.9 Requirements for any Further Environmental Works**

No further environmental works are required.

## 4 Summary & Conclusions

Key GeoSolutions Ltd has been commissioned by Darwin Group Ltd. to provide a Verification Report to demonstrate the effectiveness of the remediation works undertaken at the new surgical hub building developed at Dewsbury and District Hospital. The report is to be used as evidence in discharging a planning condition, requiring Darwin Group to “*demonstrate the effectiveness of the remediation carried out*”.

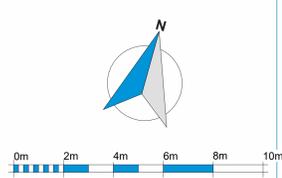
A Remediation Strategy was prepared by Key GeoSolutions Ltd, dated September 2025 (KGS Report Ref. 9202-007-R-03). This report includes the following sections for the Remedial & Discovery Strategy (Section 3) and Verification Reporting (Section 4). These sections, along with the remedial recommendations relating to the soil contamination, were used as the remediation scheme for the purpose of this report.

The findings of this report are summarised below;

- Cover System and Material
  - Although at slight variance to the Remediation Strategy, a cover system has been installed within both soft landscaping areas to a suitable thickness and with material deemed chemically suitable for the intended end uses.
- Water Pipes to be Barrier Pipes, or Suitable Investigation & Testing
  - MDPE barrier pipe has been installed throughout the development and is considered to provide sufficient protection against the permeation of contaminants into the potable water supply.
- Decommissioning Redundant Monitoring Wells
  - Although KGS cannot confirm whether the monitoring wells were decommissioned, their location beneath the building footprint, along with the surface water management, is considered sufficient to minimise contaminant migration into the underlying strata.
  - Gas protection measures have mitigated the risk posed by upwards gas migration from the monitoring wells to the building.
- Ground Gas Protection Measures
  - A Verification Certificate has been issued by GeoShield confirming the ground gas protection measures have been installed to the specification and meet the requirements outlined in BS 8485:2015+A1:2019 and CIRIA 735.
- Unexpected Contamination
  - Darwin Group confirmed no contamination was identified during the proceeding groundwork activities.
- Details of Soil Disposal
  - Collection Notes and Waste Transfer Notes for exported soil have been provided and are included in Appendix 5.

In view of the evidence supplied, subject to the suitability of the Geosheild report, this report concludes that the remedial works for the new surgical hub building at Dewsbury and District Hospital have been carried out in accordance with the revised Remediation Strategy and are suitable for the site’s proposed end use.

## **Appendix 1: Proposed Site Plans**



VISUAL SCALE 1:100 @ A0

Rev	Description	By	Chk	Date
P1	Updated for S2 Issue	HB	MYH	20/12/22
P2	IPC comments added: external platform lift, and load bring to MTR2	LS	MYH	08/02/23
P3	Parking Note Added	EB	MYH	03/03/23
P4	RIBA Stage 3 Submission	EB/LS	LS	31/03/23
CR1	As Constructed Record	PH / AR	AR / DT	16/04/25
CR2	As constructed record updates for clarification	AR	DT	17/07/25

**DarwinGroup**  
 Design | Engineering | Construction Has Evolved  
 London House, Sharncliffe Business Park, Featherstone, West Yorkshire, WF13 4JG  
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PROJECT TITLE: Dewsbury and District Hospital  
 ADDRESS: Halifax Rd, Dewsbury, WF13 4JG

DRAWING TITLE: Proposed Site Plan

DRAWING REFERENCE: 180598\_DGL\_01\_00\_DR\_A\_1160

PROJECT ORGANISER: DGL  
 VOLUME: 01  
 DATE: 14/12/22  
 INITIAL ISSUE DATE: 14/12/22  
 INITIAL ISSUE BY: HB  
 INITIAL CHECKED BY: LS  
 SCALE: 1:503 m<sup>2</sup>

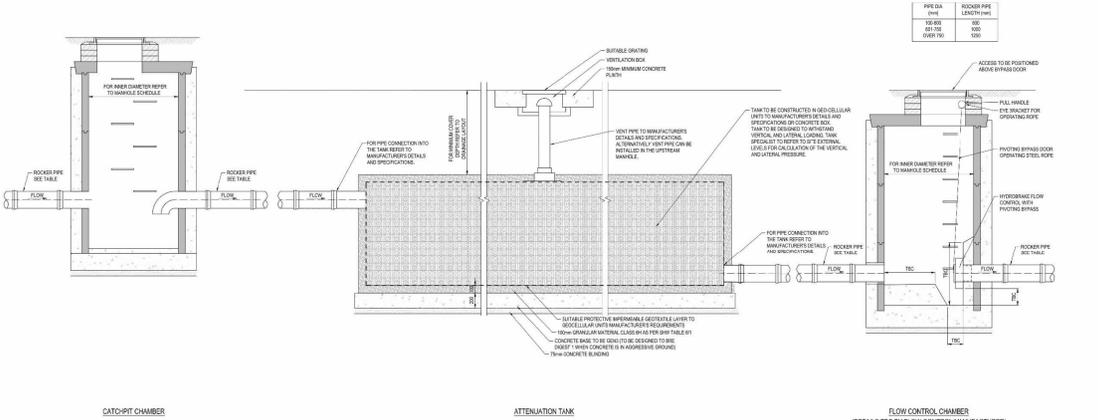
SUITABILITY: CR  
 AS CONSTRUCTED RECORD  
 SCALE: As Indicated  
 SHEET: A0  
 REV: CR2

23/07/2025 09:44:15

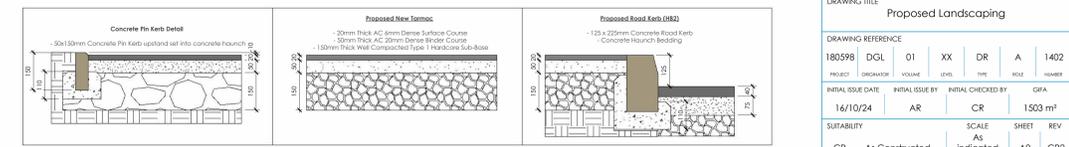


**Proposed Landscaping Plan 01**  
1 : 200

(not to scale)  
Extract from drawing: 10060-D4S-XX-XX-DR-C-4002



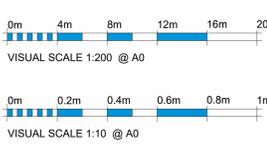
**Landscape Detail**  
1 : 10



**Key:**

- Proposed building
- Existing building
- Proposed New Path Tarmac - 181.2 m<sup>2</sup>
- Existing tarmac
- Reinstated tarmac - 655.3m<sup>2</sup>
- Loose pea gravel infill - 9.0m<sup>2</sup>
- Proposed new tarmac for new walkway - 110.8m<sup>2</sup>
- Proposed new tarmac for new ramp (southwest corner) - 61.4m<sup>2</sup>
- 600mm x 600mm buff concrete slabs to match the existing ramp slabs - 36.8m<sup>2</sup>
- Concrete foundation pad - 24.0m<sup>2</sup>
- Proposed Soft Landscaping - 333.3\* top-soil and seeded
- Existing Soft Landscaping
- Proposed pink kerb - 121.31/m
- Proposed road kerb - 39.11/m
- Retaining wall
- Crash Rail - Approx. 10.21/m
- Proposed trees - x1
- Existing Trees
- Shrubs
- Planting-Ornamental Mixes
- Existing Levels
- Proposed Levels

**NOTE:**  
DGL drawing to be read in conjunction with Landscape Architect drawing.  
Prior to execution, the sub-contractor is to assume design responsibility for all elements of their work and safety themselves with the details shown on the drawing. Design, compliance with relevant regulations and execution on site is the responsibility of the appointed sub-contractor



Rev	Description	By	Chk	Date
P3	North aco drain edit. Entrance handrail amended, 6 corner barrier added and some crash rails removed. Rear ramp edited to as-built, low-level loop barriers added to west elevation	AR	DT	14/03/25
CR1	As Constructed Record	AR	DT	11/04/25
CR2	Key and materials updated for accuracy	AR	DT	07/07/25

**DarwinGroup**  
Construction has evolved

PROJECT TITLE: Dewsbury and District Hospital  
ADDRESS: Halifax Rd, Dewsbury, Wt1 4RS

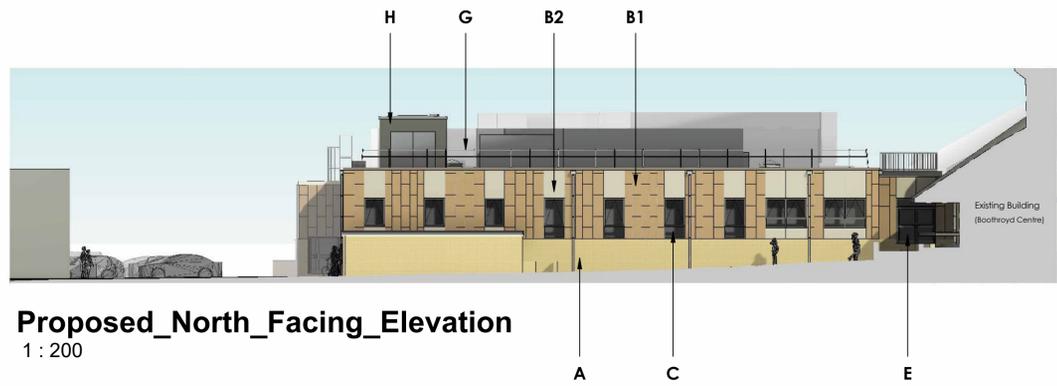
DRAWING TITLE: Proposed Landscaping

DRAWING REFERENCE: 180598 DGL 01 XX DR A 1402

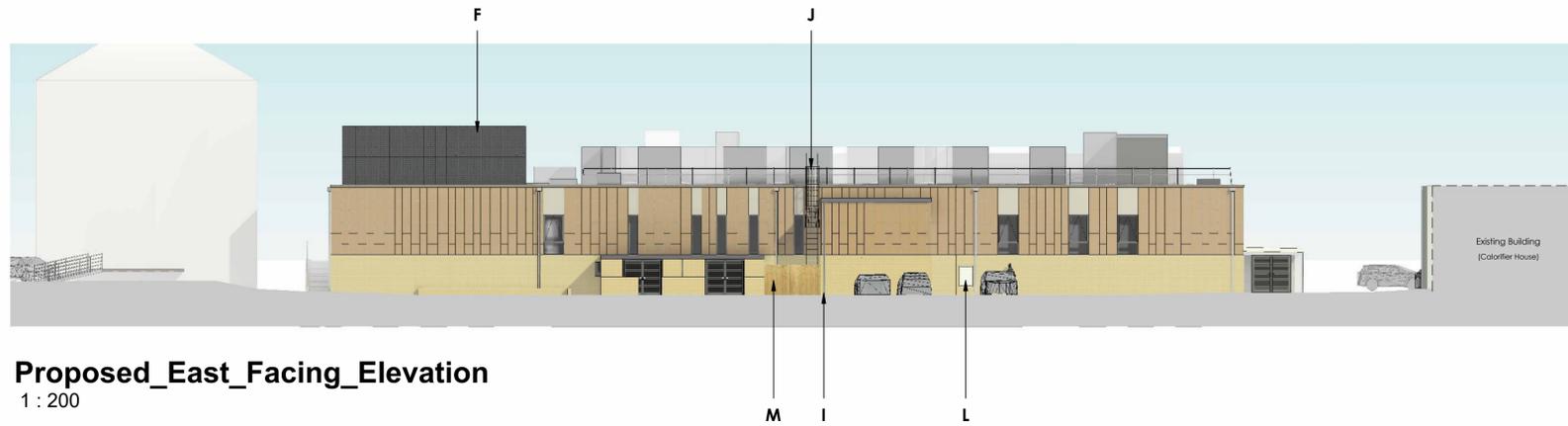
PROJECT ORIGINATOR: DGL  
PROJECT VOLUME: 01  
PROJECT DATE: 14/10/24  
SCALE: 1:503 m<sup>2</sup>

INITIAL ISSUE DATE: 14/10/24  
INITIAL ISSUE BY: AR  
INITIAL CHECKED BY: CR  
SCALE: A0  
SHEET: REV 2

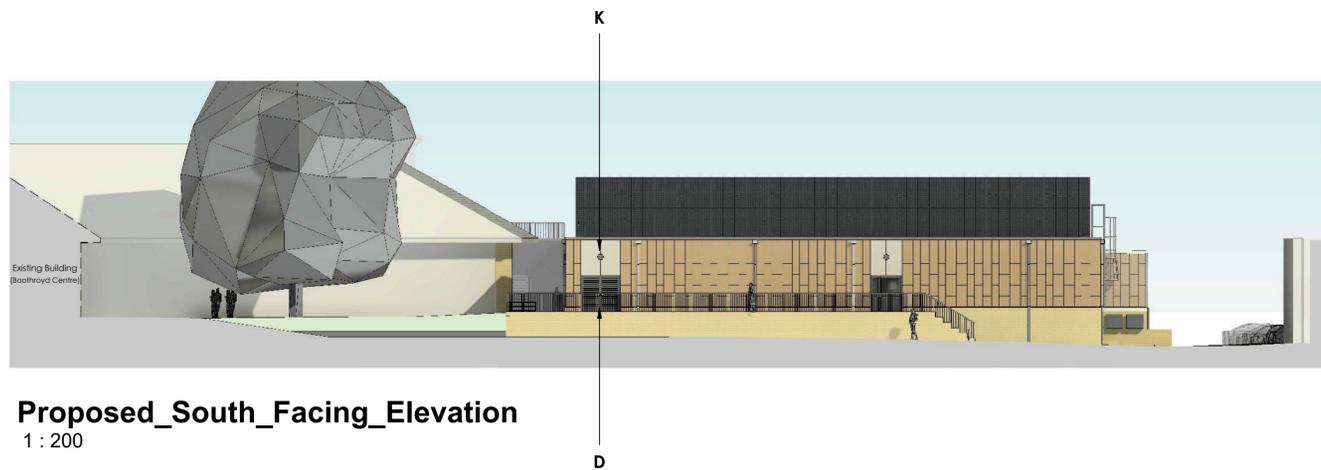
SUITABILITY: As Constructed  
DATE CODE: 25072025-07-44-53



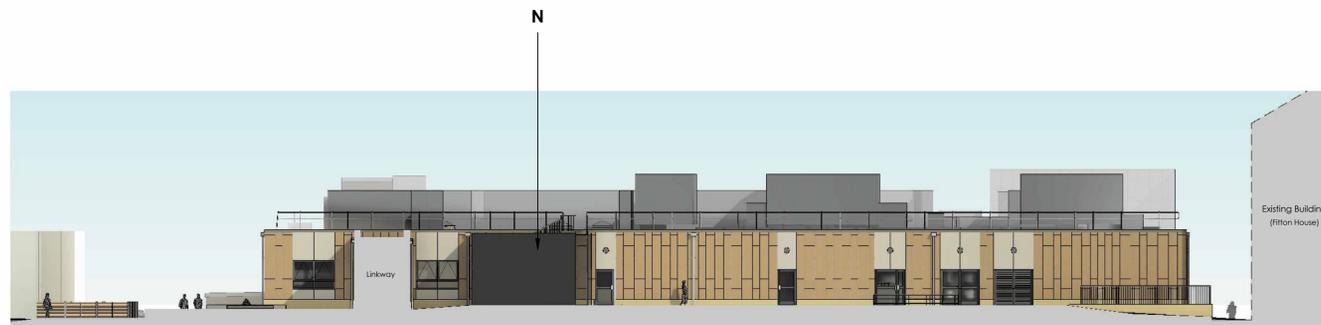
**Proposed\_North\_Facing\_Elevation**  
1 : 200



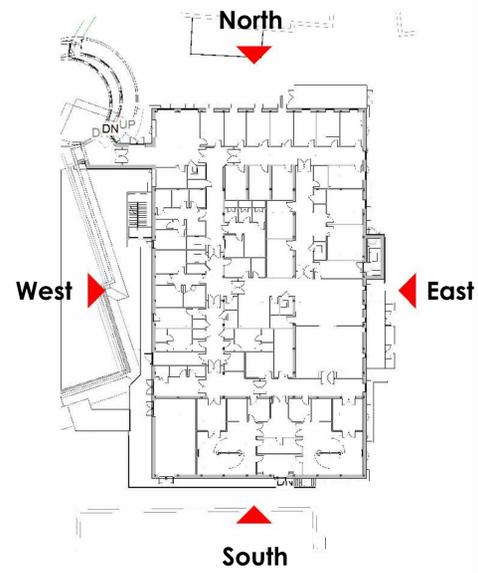
**Proposed\_East\_Facing\_Elevation**  
1 : 200



**Proposed\_South\_Facing\_Elevation**  
1 : 200



**Proposed\_West\_Facing\_Elevation**  
1 : 200



**Elevation Plan**  
1 : 500

Cladding	
<b>A</b>	Brickwork Plinth - Buff Brick Village Golden Thatch  Product photo
<b>B1</b>	Architectural Cladding - Equitone TE 30 (Sandstorm)   Colour match from product photo      Product photo
<b>B2</b>	Architectural Cladding - Equitone TE 00 (Calico)   Colour match from product photo      Product photo
External Windows/Doors	
<b>C</b>	Aluminium Windows - Anthracite Grey RAL 7016
<b>D</b>	PPC Aluminium Frame External Louvred Door - Anthracite Grey RAL 7016
<b>E</b>	PPC Aluminium Frame External Glazed Door - Anthracite Grey RAL 7016
External Components	
<b>F</b>	Ballasted Louvre Screen RAL 7016
<b>G</b>	Ballasted Handrail
<b>H</b>	GRP Enclosure - Grey
<b>I</b>	82mm uPVC Round Downpipes, Black
<b>J</b>	CAT Ladder
<b>K</b>	External Bulkhead Light
<b>L</b>	White Access Panel
<b>M</b>	Vertical Closeboard Fencing
<b>N</b>	Sheet metal cladding - RAL 7016

Rev	Description	By	Chk	Date
P1	Updated for S2 Issue	HB	MYH NHST	20/12/22
P2	IPC comments added: external platform lift, and lead lining to MTR2	LS	MYH NHST	08/02/23
P3	External Stair Added	EB	LS	13/02/23
P4	RIBA Stage 3 Submission	EB/ CA	LS	31/03/23
P5	Updated materials	ET	CR	14/08/23
CR1	As Constructed Record	FH / AR	AR / DT	16/04/25
CR2	As constructed record updates for clarification	AR	DT	17/07/25

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PROJECT TITLE: Dewsbury and District Hospital  
ADDRESS: Halifax Rd, Dewsbury, WF13 4HS

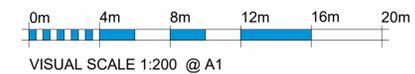
DRAWING TITLE: Elevations

DRAWING REFERENCE: 180598 DGL 01 XX DR A 2100

PROJECT ORIGINATOR: DGL  
VOLUME: 01  
LEVEL: XX  
TYPE: DR  
ROLE: A  
NUMBER: 2100

INITIAL ISSUE DATE: 14/12/22  
INITIAL ISSUE BY: HB  
INITIAL CHECKED BY: LS  
GIFA: 1503 m²

SUITABILITY: CR As Constructed Record  
SCALE: As indicated  
SHEET: A1  
REV: CR2



**Appendix 2: Cover System Photos and Annotated Plan**



Photo 1 - View of soft landscaping area along southeastern corner of the building



Photo 2a and 2b - View of DH1 (left) and DH4 to the top of the Made Ground (right)



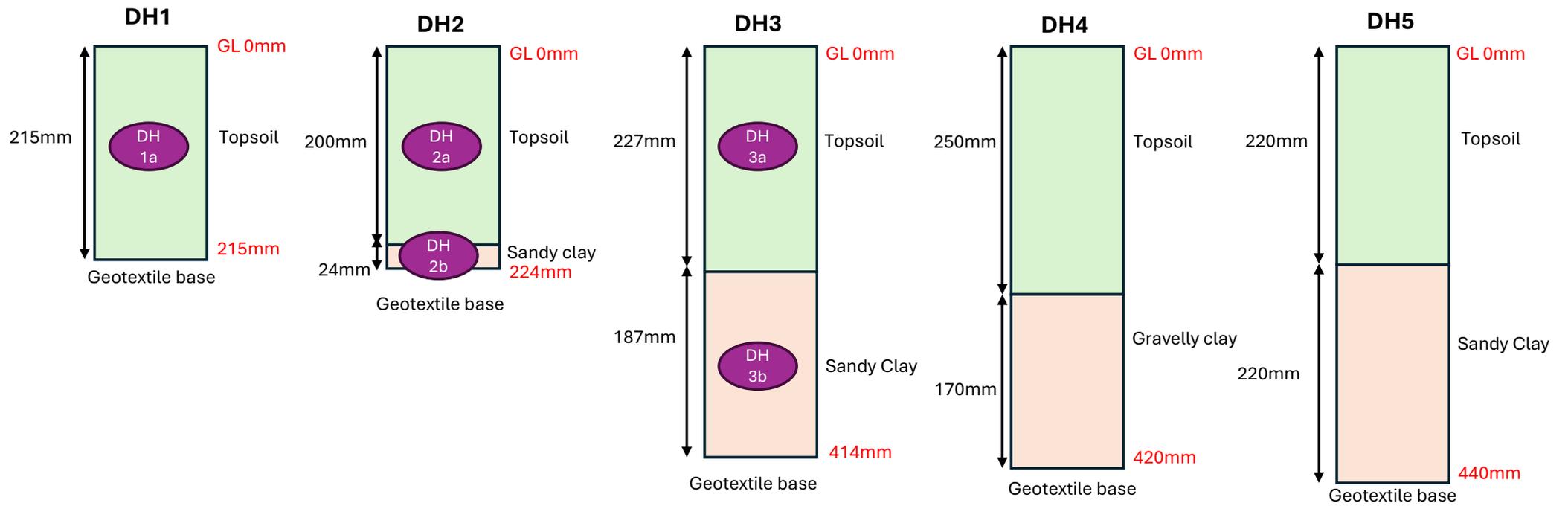
Photo 3a and 3b - View of soft landscaping area along western margin of building (left) and hard-to-dig layer below clean topsoil (right)

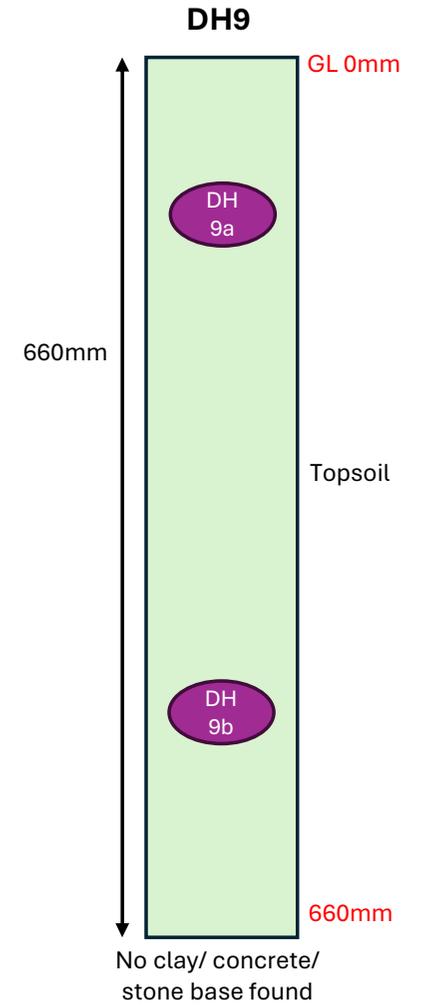
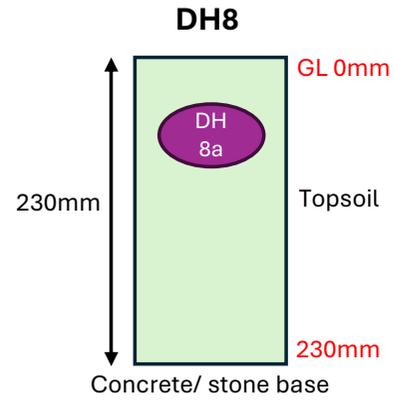
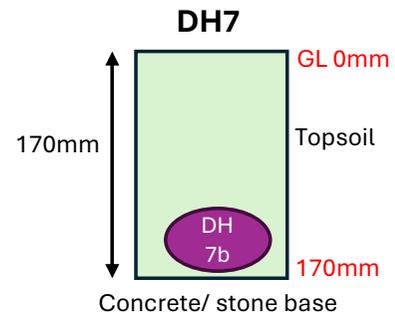
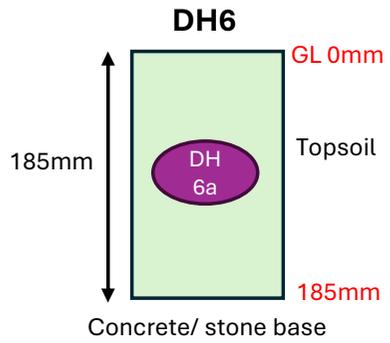


Photo 4 - View of DH7









## **Appendix 3: Geo-environmental Laboratory Test Results**



Key GeoSolutions Ltd  
Nova House  
Audley Avenue Enterprise Park  
Newport  
TF10 7DW

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Business Park,  
Watford,  
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## **Analytical Report Number : 25-069129**

<b>Project / Site name:</b>	Dewsbury Hospital	<b>Samples received on:</b>	22/12/2025
<b>Your job number:</b>	9202-011	<b>Samples instructed on/ Analysis started on:</b>	22/12/2025
<b>Your order number:</b>		<b>Analysis completed by:</b>	13/01/2026
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	13/01/2026
<b>Samples Analysed:</b>	5 soil samples		

**Signed:** \_\_\_\_\_

Rafał Szczepańczyk  
Technical Reviewer  
**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
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.  
Some records may be kept for longer according to other legal/best practice requirements.

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.



4041



Analytical Report Number: 25-069129  
Project / Site name: Dewsbury Hospital

Lab Sample Number		791475	791476	791477	791478	791479
Sample Reference		DH1A	DH2A	DH2B	DH3A	DH3B
Sample Number		None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix		N/A	N/A	N/A	N/A	N/A
Depth (m)		None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled		17/12/2025	17/12/2025	17/12/2025	17/12/2025	17/12/2025
Time Taken		None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status			

Stone Content	%	0.1	NONE	< 0.1	< 0.1	21.8	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	23	26	20	24	21
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.9	0.9	1.1

**Asbestos**

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	WIK	WIK	WIK	WIK	WIK
Analysis completed	N/A	N/A	N/A	08/01/2026	08/01/2026	08/01/2026	08/01/2026	08/01/2026

**General Inorganics**

pH (L099)	pH Units	N/A	MCERTS	8.1	7.9	9.9	7.9	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sulphide	mg/kg	1	MCERTS	< 1.0	13	20	18	8.6
Organic Matter (automated)	%	0.1	MCERTS	6.7	6.3	5.2	6.5	5.6

**Total Phenols**

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

Naphthalene	mg/kg	0.05	MCERTS	0.22	< 0.05	0.19	0.28	0.53
Acenaphthylene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.05	0.05	0.1
Acenaphthene	mg/kg	0.05	MCERTS	0.25	0.08	0.15	0.15	0.98
Fluorene	mg/kg	0.05	MCERTS	0.2	0.08	0.12	0.13	0.66
Phenanthrene	mg/kg	0.05	MCERTS	2.1	1.1	1.4	0.99	5.3
Anthracene	mg/kg	0.05	MCERTS	0.63	0.26	0.4	0.23	1.1
Fluoranthene	mg/kg	0.05	MCERTS	4.9	1.7	3	1.6	7.2
Pyrene	mg/kg	0.05	MCERTS	4.7	1.4	2.8	1.5	6.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.5	0.7	1.7	0.82	3.4
Chrysene	mg/kg	0.05	MCERTS	2.4	0.71	1.7	0.79	3.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.9	0.75	1.9	1.1	3.9
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.2	0.45	0.94	0.36	1.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.6	0.68	1.7	0.82	3.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.2	0.42	0.93	0.42	1.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.27	0.1	0.22	0.14	0.41
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.4	0.47	1.1	0.53	1.9

**Total PAH**

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	27.5	8.86	18.1	9.81	41.9
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Analytical Report Number: 25-069129  
Project / Site name: Dewsbury Hospital

Lab Sample Number		791475	791476	791477	791478	791479
Sample Reference		DH1A	DH2A	DH2B	DH3A	DH3B
Sample Number		None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix		N/A	N/A	N/A	N/A	N/A
Depth (m)		None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled		17/12/2025	17/12/2025	17/12/2025	17/12/2025	17/12/2025
Time Taken		None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status			

#### Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	7.1	26	12	30
Barium (aqua regia extractable)	mg/kg	1	MCERTS	200	79	230	120	270
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.83	0.64	1.1	0.72	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	2.4	2.2	1.4	2	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.5	0.7	0.5	0.7
Chromium (hexavalent)	mg/kg	1.8	MCERTS	U/S <sup>*U/S g</sup>				
Chromium (hexavalent) by IC	mg/kg	1.8	NONE	< 1.80	< 1.80	< 1.80	< 1.80	< 1.80
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	50	17	70	32	87
Copper (aqua regia extractable)	mg/kg	1	MCERTS	44	28	60	44	180
Lead (aqua regia extractable)	mg/kg	1	MCERTS	87	46	110	100	130
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3	0.7	< 0.3	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	13	20	14	27
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	23	17	29	20	34
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	160	90	150	100	160

#### Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 <sub>HS_1D_AL</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 <sub>HS_1D_AL</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 <sub>HS_1D_AL</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 <sub>EH_CU_1D_AL</sub>	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 <sub>EH_CU_1D_AL</sub>	mg/kg	2	MCERTS	< 2.0	< 2.0	2.7	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 <sub>EH_CU_1D_AL</sub>	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 <sub>EH_CU_1D_AL</sub>	mg/kg	8	MCERTS	35	16	31	15	18
TPHCWG - Aliphatic >EC5 - EC35 <sub>EH_CU+HS_1D_AL</sub>	mg/kg	10	NONE	35	16	34	15	18

TPHCWG - Aromatic >EC5 - EC7 <sub>HS_1D_AR</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 <sub>HS_1D_AR</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 <sub>HS_1D_AR</sub>	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 <sub>EH_CU_1D_AR</sub>	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 <sub>EH_CU_1D_AR</sub>	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	2.1	< 2.0
TPHCWG - Aromatic >EC16 - EC21 <sub>EH_CU_1D_AR</sub>	mg/kg	10	MCERTS	11	< 10	< 10	< 10	15
TPHCWG - Aromatic >EC21 - EC35 <sub>EH_CU_1D_AR</sub>	mg/kg	10	MCERTS	36	< 10	25	15	34
TPHCWG - Aromatic >EC5 - EC35 <sub>EH_CU+HS_1D_AR</sub>	mg/kg	10	NONE	47	< 10	25	17	50

#### VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

**Analytical Report Number : 25-069129**

**Project / Site name: Dewsbury Hospital**

\* 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 *
791475	DH1A	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation
791476	DH2A	None Supplied	None Supplied	Brown loam with vegetation and gravel
791477	DH2B	None Supplied	None Supplied	Brown clay and loam with stones and vegetation
791478	DH3A	None Supplied	None Supplied	Brown loam with vegetation and gravel
791479	DH3B	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation

**Analytical Report Number : 25-069129**

**Project / Site name: Dewsbury Hospital**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)**

**Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	D	MCERTS
Moisture Content (Wet Weight)	Moisture content (% wet weight), determined gravimetrically (up to 30°C)	In-house-procedure based on BS EN 12880:2000	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
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	L038B	D	MCERTS
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	L038B	D	MCERTS
Hexavalent chromium in soil by Ion Chromatography	Determination of hexavalent chromium in alkaline soil extract by use of ion chromatography with spectrophotometric detection	In-house method	L130B	W	NONE
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
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	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	MCERTS

**Analytical Report Number : 25-069129**  
**Project / Site name: Dewsbury Hospital**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)**  
**Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

**For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).**

**For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).**

**For method numbers ending in 'PL' or 'B' 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.**

Quality control parameter failure associated with individual result applies to calculated sum of individuals.  
 The result for sum should be interpreted with caution

\*U/S g- Unsuitable for analysis due to high colour intensity.



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## **Analytical Report Number : 26-003545**

<b>Project / Site name:</b>	Dewsbury	<b>Samples received on:</b>	23/01/2026
<b>Your job number:</b>	9202	<b>Samples instructed on/ Analysis started on:</b>	26/01/2026
<b>Your order number:</b>		<b>Analysis completed by:</b>	05/02/2026
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	06/02/2026
<b>Samples Analysed:</b>	5 soil samples		

**Signed:** \_\_\_\_\_

Anna Goc  
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
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.  
Some records may be kept for longer according to other legal/best practice requirements.

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: 26-003545  
Project / Site name: Dewsbury

Lab Sample Number	810371	810372	810373	810374	810375
Sample Reference	DH6a	DH7b	DH8a	DH9a	DH9b
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	23.1	10.4	< 0.1	< 0.1	26.7
Moisture Content	%	0.01	NONE	18	21	24	19	18
Total mass of sample received	kg	0.1	NONE	0.2	0.2	0.2	0.4	0.4

#### Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	OGR	OGR	OGR	OGR	OGR
Analysis completed	N/A	N/A	N/A	04/02/2026	04/02/2026	04/02/2026	04/02/2026	04/02/2026

#### General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.9	7.8	8.2	8.3	8.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.3	< 1.0
Organic Matter (automated)	%	0.1	MCERTS	4.1	5.4	4.7	4.6	4.3

#### Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 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	0.12	< 0.05	0.08
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.09	< 0.05	0.06
Phenanthrene	mg/kg	0.05	MCERTS	0.15	0.2	0.95	0.2	0.56
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.22	0.07	0.12
Fluoranthene	mg/kg	0.05	MCERTS	0.72	0.49	1.7	0.7	0.72
Pyrene	mg/kg	0.05	MCERTS	0.64	0.47	1.6	0.65	0.66
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.49	0.33	0.82	0.5	0.4
Chrysene	mg/kg	0.05	MCERTS	0.46	0.39	0.83	0.48	0.33
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.61	0.46	1.1	0.6	0.48
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.29	0.21	0.44	0.31	0.24
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.51	0.35	0.89	0.53	0.41
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.3	0.19	0.44	0.3	0.26
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.1	0.08	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.27	0.21	0.45	0.33	0.25

#### Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	4.5	3.29	9.72	4.75	4.57
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Analytical Report Number: 26-003545  
Project / Site name: Dewsbury

Lab Sample Number				810371	810372	810373	810374	810375
Sample Reference				DH6a	DH7b	DH8a	DH9a	DH9b
Sample Number				None Supplied				
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				None Supplied				
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

#### Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.8	6.6	6.5	4.6	5.7
Barium (aqua regia extractable)	mg/kg	1	MCERTS	56	42	55	54	48
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.5	0.46	0.56	0.43	0.47
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	1.7	0.7	0.8	2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.3	0.2	0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	U/S <sup>*U/S g</sup>				
Chromium (hexavalent) by IC	mg/kg	1.8	NONE	< 1.80	< 1.80	< 1.80	< 1.80	< 1.80
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	10	9.8	16	10	10
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	15	24	20	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	20	25	25	24
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	10	9	11	9.2	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	14	13	16	13	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	63	54	72	70	64

#### Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 <sub>HS_1D_AL</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 <sub>HS_1D_AL</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 <sub>HS_1D_AL</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 <sub>EH_CU_1D_AL</sub>	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 <sub>EH_CU_1D_AL</sub>	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 <sub>EH_CU_1D_AL</sub>	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 <sub>EH_CU_1D_AL</sub>	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 <sub>EH_CU+HS_1D_AL</sub>	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPHCWG - Aromatic >EC5 - EC7 <sub>HS_1D_AR</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 <sub>HS_1D_AR</sub>	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 <sub>HS_1D_AR</sub>	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 <sub>EH_CU_1D_AR</sub>	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 <sub>EH_CU_1D_AR</sub>	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 <sub>EH_CU_1D_AR</sub>	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 <sub>EH_CU_1D_AR</sub>	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 <sub>EH_CU+HS_1D_AR</sub>	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

#### VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

**Analytical Report Number : 26-003545**

**Project / Site name: Dewsbury**

\* 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 *
810371	DH6a	None Supplied	None Supplied	Brown loam and sand with gravel and stones
810372	DH7b	None Supplied	None Supplied	Brown loam and sand with vegetation and stones
810373	DH8a	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation
810374	DH9a	None Supplied	None Supplied	Brown clay and sand with gravel and vegetation
810375	DH9b	None Supplied	None Supplied	Brown clay and sand with vegetation and stones

**Analytical Report Number : 26-003545**

**Project / Site name: Dewsbury**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)**

**Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	D	MCERTS
Moisture Content (Wet Weight)	Moisture content (% wet weight), determined gravimetrically (up to 30°C)	In-house-procedure based on BS EN 12880:2000	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
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	L038B	D	MCERTS
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	L038B	D	MCERTS
Hexavalent chromium in soil by Ion Chromatography	Determination of hexavalent chromium in alkaline soil extract by use of ion chromatography with spectrophotometric detection	In-house method	L130B	W	NONE
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
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	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	MCERTS

Analytical Report Number : 26-003545

Project / Site name: Dewsbury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' 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.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

\*U/S g- Unsuitable for analysis due to high colour intensity.

Analytical Report Number : 26-003545

Project / Site name: Dewsbury

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
DH6a	N/A	S	810371	ab	Asbestos identification in Soil	A001B	ab
DH6a	N/A	S	810371	ab	BTEX and/or Volatile organic compounds in soil	L073B	a
DH6a	N/A	S	810371	ab	Boron, water soluble, in soil	L038B	a
DH6a	N/A	S	810371	ab	Hexavalent chromium in soil	L080-PL	a
DH6a	N/A	S	810371	ab	Hexavalent chromium in soil by Ion Chromatography	L130B	a
DH6a	N/A	S	810371	ab	Metals in soil by ICP-OES	L038B	a
DH6a	N/A	S	810371	ab	Moisture Content (Wet Weight)	L019B	a
DH6a	N/A	S	810371	ab	Monohydric phenols in soil	L080-PL	a
DH6a	N/A	S	810371	ab	Organic matter (Automated) in soil	L009B	a
DH6a	N/A	S	810371	ab	Sample Preparation	L019B	a
DH6a	N/A	S	810371	ab	Soil Descriptions	L019B	a
DH6a	N/A	S	810371	ab	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
DH6a	N/A	S	810371	ab	Stones content of soil	L019B	a
DH6a	N/A	S	810371	ab	Sulphide in soil	L010-PL	a
DH6a	N/A	S	810371	ab	Total cyanide in soil	L080-PL	a
DH6a	N/A	S	810371	ab	Total petroleum hydrocarbons with carbon banding by GC-FID in soil	L076B	a
DH6a	N/A	S	810371	ab	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	L076B/L088-PL	a
DH6a	N/A	S	810371	ab	Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	L088-PL	a
DH6a	N/A	S	810371	ab	pH in soil (automated)	L099-PL	a
DH7b	N/A	S	810372	ab	Asbestos identification in Soil	A001B	ab
DH7b	N/A	S	810372	ab	BTEX and/or Volatile organic compounds in soil	L073B	a
DH7b	N/A	S	810372	ab	Boron, water soluble, in soil	L038B	a
DH7b	N/A	S	810372	ab	Hexavalent chromium in soil	L080-PL	a
DH7b	N/A	S	810372	ab	Hexavalent chromium in soil by Ion Chromatography	L130B	a
DH7b	N/A	S	810372	ab	Metals in soil by ICP-OES	L038B	a
DH7b	N/A	S	810372	ab	Moisture Content (Wet Weight)	L019B	a
DH7b	N/A	S	810372	ab	Monohydric phenols in soil	L080-PL	a
DH7b	N/A	S	810372	ab	Organic matter (Automated) in soil	L009B	a
DH7b	N/A	S	810372	ab	Sample Preparation	L019B	a
DH7b	N/A	S	810372	ab	Soil Descriptions	L019B	a
DH7b	N/A	S	810372	ab	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
DH7b	N/A	S	810372	ab	Stones content of soil	L019B	a
DH7b	N/A	S	810372	ab	Sulphide in soil	L010-PL	a
DH7b	N/A	S	810372	ab	Total cyanide in soil	L080-PL	a
DH7b	N/A	S	810372	ab	Total petroleum hydrocarbons with carbon banding by GC-FID in soil	L076B	a
DH7b	N/A	S	810372	ab	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	L076B/L088-PL	a
DH7b	N/A	S	810372	ab	Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	L088-PL	a
DH7b	N/A	S	810372	ab	pH in soil (automated)	L099-PL	a
DH8a	N/A	S	810373	ab	Asbestos identification in Soil	A001B	ab
DH8a	N/A	S	810373	ab	BTEX and/or Volatile organic compounds in soil	L073B	a
DH8a	N/A	S	810373	ab	Boron, water soluble, in soil	L038B	a
DH8a	N/A	S	810373	ab	Hexavalent chromium in soil	L080-PL	a
DH8a	N/A	S	810373	ab	Hexavalent chromium in soil by Ion Chromatography	L130B	a
DH8a	N/A	S	810373	ab	Metals in soil by ICP-OES	L038B	a
DH8a	N/A	S	810373	ab	Moisture Content (Wet Weight)	L019B	a
DH8a	N/A	S	810373	ab	Monohydric phenols in soil	L080-PL	a
DH8a	N/A	S	810373	ab	Organic matter (Automated) in soil	L009B	a
DH8a	N/A	S	810373	ab	Sample Preparation	L019B	a
DH8a	N/A	S	810373	ab	Soil Descriptions	L019B	a
DH8a	N/A	S	810373	ab	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
DH8a	N/A	S	810373	ab	Stones content of soil	L019B	a
DH8a	N/A	S	810373	ab	Sulphide in soil	L010-PL	a
DH8a	N/A	S	810373	ab	Total cyanide in soil	L080-PL	a
DH8a	N/A	S	810373	ab	Total petroleum hydrocarbons with carbon banding by GC-FID in soil	L076B	a

Analytical Report Number : 26-003545

Project / Site name: Dewsbury

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
DH8a	N/A	S	810373	ab	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	L076B/L088-PL	a
DH8a	N/A	S	810373	ab	Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	L088-PL	a
DH8a	N/A	S	810373	ab	pH in soil (automated)	L099-PL	a
DH9a	N/A	S	810374	ab	Asbestos identification in Soil	A001B	ab
DH9a	N/A	S	810374	ab	BTEX and/or Volatile organic compounds in soil	L073B	a
DH9a	N/A	S	810374	ab	Boron, water soluble, in soil	L038B	a
DH9a	N/A	S	810374	ab	Hexavalent chromium in soil	L080-PL	a
DH9a	N/A	S	810374	ab	Hexavalent chromium in soil by Ion Chromatography	L130B	a
DH9a	N/A	S	810374	ab	Metals in soil by ICP-OES	L038B	a
DH9a	N/A	S	810374	ab	Moisture Content (Wet Weight)	L019B	a
DH9a	N/A	S	810374	ab	Monohydric phenols in soil	L080-PL	a
DH9a	N/A	S	810374	ab	Organic matter (Automated) in soil	L009B	a
DH9a	N/A	S	810374	ab	Sample Preparation	L019B	a
DH9a	N/A	S	810374	ab	Soil Descriptions	L019B	a
DH9a	N/A	S	810374	ab	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
DH9a	N/A	S	810374	ab	Stones content of soil	L019B	a
DH9a	N/A	S	810374	ab	Sulphide in soil	L010-PL	a
DH9a	N/A	S	810374	ab	Total cyanide in soil	L080-PL	a
DH9a	N/A	S	810374	ab	Total petroleum hydrocarbons with carbon banding by GC-FID in soil	L076B	a
DH9a	N/A	S	810374	ab	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	L076B/L088-PL	a
DH9a	N/A	S	810374	ab	Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	L088-PL	a
DH9a	N/A	S	810374	ab	pH in soil (automated)	L099-PL	a
DH9b	N/A	S	810375	ab	Asbestos identification in Soil	A001B	ab
DH9b	N/A	S	810375	ab	BTEX and/or Volatile organic compounds in soil	L073B	a
DH9b	N/A	S	810375	ab	Boron, water soluble, in soil	L038B	a
DH9b	N/A	S	810375	ab	Hexavalent chromium in soil	L080-PL	a
DH9b	N/A	S	810375	ab	Hexavalent chromium in soil by Ion Chromatography	L130B	a
DH9b	N/A	S	810375	ab	Metals in soil by ICP-OES	L038B	a
DH9b	N/A	S	810375	ab	Moisture Content (Wet Weight)	L019B	a
DH9b	N/A	S	810375	ab	Monohydric phenols in soil	L080-PL	a
DH9b	N/A	S	810375	ab	Organic matter (Automated) in soil	L009B	a
DH9b	N/A	S	810375	ab	Sample Preparation	L019B	a
DH9b	N/A	S	810375	ab	Soil Descriptions	L019B	a
DH9b	N/A	S	810375	ab	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	a
DH9b	N/A	S	810375	ab	Stones content of soil	L019B	a
DH9b	N/A	S	810375	ab	Sulphide in soil	L010-PL	a
DH9b	N/A	S	810375	ab	Total cyanide in soil	L080-PL	a
DH9b	N/A	S	810375	ab	Total petroleum hydrocarbons with carbon banding by GC-FID in soil	L076B	a
DH9b	N/A	S	810375	ab	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	L076B/L088-PL	a
DH9b	N/A	S	810375	ab	Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	L088-PL	a
DH9b	N/A	S	810375	ab	pH in soil (automated)	L099-PL	a

**Appendix 4: Gas Protection Measures Validation Certificate  
(GeoShield Ltd)**



# GEOSHIELD

## Verification Certificate

Date: 15 January 2024

**Darwin Group Limited**

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**Dewsbury & District Hospital**

**Halifax Road**

**Dewsbury**

**WF14 4HS**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification.

Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services



## **Appendix 5: Waste Collection Notes**