**SUBJECT**
Harewood Whin Landfill, Preliminary GI: Interim Summary

**TO**
Neil Fletcher

**DATE**
15 August 2025

**OUR REF**
30284479-ARC-XX-XX-RP-ZZ-0010-01-Interim Summary Memo

**DEPARTMENT**
Site Evaluation & Restoration

**PROJECT NUMBER**
30284479

# Background

Arcadis Consulting (UK) Limited ("Arcadis") has been commissioned by City of York Council (CYC) to produce a factual and interpretative report following the preliminary ground investigation (GI) undertaken at Harewood Whin Landfill ("the Site") to inform the development of a solar farm under Planning Decision 23/01732/FULM.

At the time of writing, geotechnical laboratory results have not yet been issued by PSL and therefore have not been reviewed by Arcadis. Without this data, a more robust assessment of foundation options for the development cannot be undertaken, and the full report cannot be issued. This memo provides an interim summary of key points and findings from the works completed to date.

This report is based on information available at the time of writing. Additional information will become available and may have a bearing on the contents of this report and for which Arcadis cannot be held responsible.

# Scope of Works

The primary objective of the preliminary GI was to observe the composition and thickness of the landfill cap and cover materials, and for geotechnical and geo-environmental sample recovery for laboratory testing. It is necessary to understand the depths and characteristics of the cover materials, depth to cap (or waste in the historical landfill), and to determine the ground conditions to inform assessment of foundation options for the proposed solar farm.

The investigation works consisted of the following main elements:

- PAS128 Type B survey prior to intrusive works to inform safe excavation of trial pits and establish levels and coordinates of exploratory hole locations;
- 12No. mechanically excavated trial pits (four across Phase 1 (historic landfill) and eight across Phases 2 - 8 (permitted landfill)) to 0.5 - 1.0 m into the clay cap, or to a maximum depth of 2.0 m below ground level (BGL);
- 13No. soil samples for geo-environmental analysis;
- 16No. soil samples for geotechnical analysis;
- 12No. (one per trial pit) *in situ* tests using a Light-Weight Deflectometer (LWD) to measure bearing capacity; and
- *In situ* Photo-Ionisation Detector (PID) measurements from the headspace of an amber glass vial at 1.0 m intervals or change of strata and for each environmental sample taken.

# Site Work Summary

A Site walkover inspection was undertaken 19th June 2025 by the Arcadis site investigation consultant, in the presence of representatives from CYC and Yorwaste, the landfill operator. The purpose of the walkover was to

identify any potential ecological constraints, establish access routes and to determine whether the locations of proposed exploratory holes (detailed within the Arcadis CQA Plan ref. 30284479-ARC-XX-XX-RP-GE-0001-02-CQA Plan, dated June 2025) required adjustment due to physical obstructions, ecological and other site limitations. The final as-built exploratory hole location plan is presented in Appendix A.

The Site walkover identified above-ground ancillary pipework associated with the landfill operations, requiring consideration when establishing access routes to each exploratory hole location. Access was agreed between the Arcadis consultant and Yorwaste representative prior to commencement of works.

The PAS128 Type B survey was conducted 14th July 2025 followed by intrusive works on 15th and 16th July 2025 with subsequent laboratory testing thereafter. A total of 12No. mechanically excavated trial pits (TP) were undertaken using a tracked 14 tonne excavator (JCB X140) to a maximum depth of 2.0 m BGL and logged in accordance with BS 5930:2015+A1:2020. A smooth-edged grading bucket attachment was used during the excavation in order to minimise the risk of breaching the landfill cap.

*In situ* PID tests did not identify any Volatile Organic Compounds (VOCs) above 1.0 ppm.

During the fieldwork period, the weather conditions at the Site were characterised by predominantly heavy rain with intermittent sunny spells.

## Ground Conditions

Preliminary exploratory hole logs are presented in Appendix B. Table 1 provides a summary of the strata observed across each capping restoration phase in comparison to anticipated materials based on information provided by Yorwaste as detailed in the Arcadis CQA Plan (Arcadis, 2025).

*Table 1: Summary of strata within each landfill cell*

| Capping Restoration Cell (Phase) | Exploratory Locations | Anticipated Cover Material | Observed Cover Materials (thickness) | Depth to Clay Cap (m BGL) |
|---|---|---|---|---|
| 1 | ARC_TP101<br>ARC_TP102<br>ARC_TP103<br>ARC_TP104 | 1.0 m 'restoration soils' | 0.1 – 0.2 m topsoil<br>0.2 – 0.7 m subsoil<br>0.60 m "compost" material (ARC_TP102) | 0.2 – 0.8 |
| 2 | ARC_TP105 | 0.2 m topsoil and 0.3 m subsoil | 0.3 m topsoil | 0.3 |
| 3 | ARC_TP106 | 0.2 m topsoil and 0.8 m subsoil | 0.12 m topsoil<br>0.33m subsoil<br>0.4 m restorative soil<br>0.65 m "compost" material | Not observed |
| 4A | ARC_TP108 | 0.2 m topsoil and 0.8 m subsoil | 0.1 m topsoil<br>0.4 m subsoil | 0.5 |
| 4B/5B | ARC_TP107 | 0.2 m topsoil and 0.8 m subsoil | 0.1 m topsoil | Not observed |

| Capping Restoration Cell (Phase) | Exploratory Locations | Anticipated Cover Material | Observed Cover Materials (thickness) | Depth to Clay Cap (m BGL) |
|---|---|---|---|---|
| | | | 0.4 m subsoil<br>1.5 m “compost” material | |
| 5A | ARC_TP109 | 0.2 m topsoil and 0.8 m subsoil | 0.1 m topsoil<br>0.3 m subsoil | 0.4 |
| 7 | ARC_TP110 | 0.2 m topsoil and 0.3 m subsoil | 0.05 m topsoil<br>0.55 m subsoil | 0.6 |
| 7A | ARC_TP111 | 0.2 m topsoil and 0.8 – 1.0 m subsoil | 0.05 m topsoil<br>0.30 m subsoil | 0.35 |
| 8 East | ARC_TP112 | 1.0 m ‘restoration soils’ | 0.05 m topsoil<br>0.9 m restorative soil | Not observed |

**Visual and Olfactory Observations**

Trial pits ARC_TP102 (Phase 1), ARC_TP106 (Phase 3) and ARC_TP107 (Phase 4B/5B) contained dark, soil-like material with an organic odour, resembling compost. Based on appearance and context of the Site, this is likely to be stabilised biodegradable waste that was historically processed on Site.

Trial pit ARC_TP112 (Phase 8 East) was terminated at 0.95 m BGL due to the unexpected presence of a liner material identified at the base of the trial pit. Due to the slow nature of the excavation process, it was confirmed that there was no damage to the liner material and the trial pit was subsequently backfilled.

**Topsoil**

Topsoil, generally described as a dark brown clayey sand with rootlets, was identified within each landfill cell across the Site, with thicknesses ranging from 0.05 m to 0.3 m. However, topsoil was absent at location ARC_TP101 within Phase 1, where the surface layer consisted of very gravelly sand classified as a subsoil.

**Subsoil**

Subsoil, typically described as gravelly sand or gravelly clay, was present within each landfill cell across the Site, with thicknesses varying between 0.2 m and 0.7 m. Subsoil was not encountered at locations ARC_TP102, ARC_TP103, ARC_TP105, and ARC_TP112.

**Potential Restoration Soils**

Soils presumed to be restoration material were identified within Phases 2 and 8 East. At location ARC_TP106 (Phase 3), a band of firm gravelly clay was observed between depths of 0.45 m and 0.85 m BGL, underlain by a 0.65 m thick layer of fibrous organic material (“compost”) in the absence of a clay cap. At location ARC_TP112 (Phase 8 East), Made Ground, described as clayey, very sandy gravel, was identified beneath the topsoil. The clay cap was absent at this location, and a membrane/liner was uncovered at a depth of 0.95 m BGL, as discussed in subsequent sections. Given that the material was placed above a membrane / liner, it was deemed probable restoration material.

### Compost Material

Trial pit locations ARC_TP102 (Phase 1), ARC_TP106 (Phase 3) and ARC_TP107 (Phase 4B/5B) contained dark, soil-like material with an organic odour, resembling compost, at thicknesses between 0.6 and 1.5 m. Upon discussions with Yorwaste during the excavation, based on appearance and context of the Site, this is likely to be stabilised biodegradable waste that was historically processed on Site. Field observations within Phase 3 and Phase 4B/5B suggest that the compost material is likely associated with the mounds that occupy the landfill cells. For example, trial pit location ARC_TP105 was located approximately 160 m southeast (away from the mound) of ARC_TP106 where compost was not observed. The approximate extent of potential mounds containing compost have been annotated on the exploratory hole plan in Appendix A. A topographic survey may help to identify potential mounds, and additional trial pits would be required to delineate the extent of the material.

### Clay Cap

In areas where the clay cap was identified, it was typically described as a stiff, brown silty clay, found between 0.2 m and 0.8 m BGL.

## Laboratory Testing

### Geotechnical Testing

Representative bulk disturbed (B) and small disturbed (D) geotechnical samples were taken from suitable strata encountered during the excavation of each exploratory hole location. Samples were transported by courier to Professional Soils Laboratory Limited (PSL) for geotechnical analysis, in accordance with the Arcadis CQA Plan (Arcadis, 2025).

Geotechnical laboratory testing is being carried out on selected soil samples by PSL, at their UKAS accredited laboratory near Doncaster, South Yorkshire.

Table 2 below, details the total number of each type of test undertaken. At the time of writing, the geotechnical results have not yet been issued and therefore have not been reviewed by Arcadis.

*Table 2: Geotechnical laboratory testing summary*

| Test | Test Method | No. of Tests |
|---|---|---|
| Natural Moisture Content | BS 1377:2022 Part 2:3 | 16 |
| Atterberg Limits | BS 1377:2022 Part 2:4 & 5 | 14 |
| Particle Size Distribution (by wet sieving) | BS 1377:2022 Part 2:9 | 9 |
| Large Shear Box Test (Drained Shear Strength in Large Shear Box) | BS 1377:2022 Part 7:4 | 3 |

### Geo-environmental Testing

At least one Environmental Soil (ES) sample was obtained from each exploratory hole location and transported by courier to ALS Laboratories Limited (ALS) for geo-environmental analysis, in accordance with the Arcadis CQA Plan (Arcadis, 2025).

Geo-environmental testing for chemical analysis was carried out by ALS at their laboratory in Deeside, in accordance with their UKAS/MCERTS accreditation.

Table 3 below, details the total number of each type of test undertaken on selected ES samples.

*Table 3: Geo-environmental laboratory testing summary*

| Test | Test Method | No. of Tests |
|---|---|---|
| Asbestos | Asbestos ID* | 13 |
| Barium | ICP-OES | 7 |
| Beryllium | ICP-OES | 7 |
| Total Cyanide | SFA | 7 |
| Hexavalent Chromium | Spectrophotometric | 7 |
| PAH Speciated 16 | GC-MS | 7 |
| BRE Special Digest SD1 Suite | Various methods | 7 |
| pH | Meter | 7 |
| Phenols Monohydric | HPLC | 7 |
| Total Sulphate | ICP-OES | 7 |
| Total Organic Carbon | IR | 7 |
| Toxic 9 Metals | ICP-OES | 7 |
| TPH CWG | GC-MS | 4 |
| Waste Acceptance Criteria (WAC) Complete Suite | Various methods | 3 |
| **Detailed gravimetric asbestos quantification was not undertaken as no positive asbestos ID identified* | | |

The geo-environmental chemical analysis results did not identify any exceedances when compared to the criteria outlined in the Generic Assessment Criteria (GAC) used for conservative screening (LQM S4UL - Public Open Space (POS) Park - 1% soil organic matter). No asbestos was identified in any of the trial pit locations.

However, one sample collected from the compost material at location ARC_TP107, at a depth of 1.0 m BGL (sample reference: ARC-TP107-ES2), recorded Total Petroleum Hydrocarbons (TPH) at 766 mg/kg and Polycyclic Aromatic Hydrocarbons (PAH) at 2.97 mg/kg. Additionally, the sample exhibited a loss on ignition of 48.4% and a total organic carbon content of 22.8%, likely attributable to the high organic content of the compost material.

In addition, a sample collected from location ARC_TP101, at a depth of 0.20 m BGL (sample reference: ARC-TP101-ES1) also exhibited elevated levels of TPH and PAH at 296 mg/kg and 17.5 mg/kg respectively. A sample collected from location ARC_TP112, at a depth of 0.50 m BGL (sample reference: ARC-TP112-ES1) also exhibited impacted levels of TPH and PAH at 216 mg/kg and 7.19 mg/kg respectively.

# Key Considerations

## Geotechnical Considerations

Results from the geotechnical testing will provide information on the soil characteristics across the Site, which in addition to the LWD data and the actual soil descriptions, will be used to indicate the foundation solutions for the solar arrays. It is considered unlikely that the Environment Agency will allow any piling (or other construction activity) that disturbs the engineered landfill cap (piles typically driven to depths of approximately 1.8 m BGL). Given that the depth to the clay cap was observed to be between 0.2 and 0.8 m BGL, surface mounted solutions may be required to avoid breaching the cap.

Results from the LWD *in situ* testing indicated an average Evd across the Site of 22.57, with a maximum value of 52.33 (ARC-TP106) and minimum of 4.37 (ARC_TP107). The Evd values obtained at each exploratory hole location are included on the exploratory hole location plan presented in Appendix A. The Evd values will be interpreted alongside the geotechnical laboratory testing data when available.

Compost material observed across the Site is likely unsuitable for foundation purposes due to its inherent instability and ongoing decomposition, which can lead to uneven settlement and low load-bearing capacity. This is supported by the low Evd value (4.37) obtained from the LWD testing at trial pit location ARC_TP107. Additionally, the chemical laboratory testing of compost samples indicated a high natural moisture content, which may further exacerbate instability and decomposition. Ground improvement techniques or removal may be required in these areas to accommodate foundations.

A full assessment of the foundation solutions cannot yet be made until Arcadis has reviewed the geotechnical laboratory data.

## Geo-environmental Considerations

The geo-environmental considerations are as follows:

- Given the nature of the site development i.e. a solar farm, likely to be constructed on a surface mounted foundation solution, the geo-environmental risks are considered to be low as viable source-pathway-receptor linkages will not exist at the site, post construction.
- It is advised that construction and maintenance workers are informed of the associated risks and that mitigating controls and measures, such as personal protective equipment, are implemented. In particular, the presence of elevated TPH within the compost materials should be communicated within relevant Health and Safety documentation.
- Given the history of the site as a former landfill the Environment Agency must be informed of the development and may require detailed CQA procedures to be followed during the construction phase. It is not expected that surplus excavated materials will be generated from the site, if a surface mounted solution is deployed, however if surplus materials are excavated they must be managed in accordance with the Waste Framework Directive.

# Appendix A

## Exploratory Hole Location Plan with Associated Evd Values


## Legend

- Capping Restoration Phase Outline
- Exploratory Hole Location
- Evd Value
- Indicative Extent of Compost Mounds

NOTES / DISCLAIMER

Basemap: Bing Aerial (obtained through QuickMapServices QGIS plugin), map data © 2025 Microsoft. All rights reserved.

All entities shown on this drawing are to be regarded as approximate and are indicative only. No measurements taken from this drawing should be used for the design of instrusive investigation works on site.

The landfill boundary shown is approximated and is based on a PDF site plan provided by the Client.

Compost locations are approximate based on field observations and are not definitive boundaries.

**Site: Harewood Whin Landfill**

**Title: Exploratory Hole Location Plan with Evd Values**

**Interim Summary - Appendix A**

**Project: 30284479**

**Client:**

CITY OF YORK COUNCIL

**Drawn by: MB**
**Checked by: GF**
**Approved by: CR**
**Date: 14/08/2025**

**Scale at A3 Page Size: 1:3000**
**Drawing Number:**
**30284479-ARC-XX-XX-DR-ZZ-0011-01-Exploratory Plan with Evd**

ARCADIS

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London
EC3M 4BY

# Appendix B

## Preliminary Exploratory Hole Logs

# ARCADIS Trial Pit Log

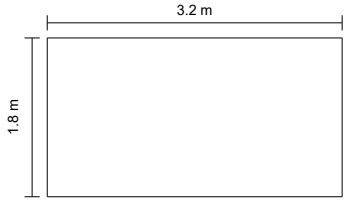
**PRELIMINARY**

**ARC_TP101**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **20.43** | **16/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **453745.15** | **451837.55** | **16/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| (ES1) 0.20 | PID(1) 0.20m <1ppm | MADE GROUND: Grey very gravelly SAND with occasional cobbles. Gravel is fine to coarse angular to rounded of limestone, sandstone, various natural lithologies, plastic, brick and wood. Cobbles are rounded of sandstone. | | | (0.30) | | |
| | | | | | 0.30 | 20.13 | |
| (B3) 0.50<br>(D4) 0.50<br>(ES2) 0.50 | PID(2) 0.50m <1ppm | MADE GROUND: Stiff dark brown mottled blue silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. Occasionally orangish. Occasionally very silty. | | | (1.00) | | |
| | PID(3) 1.30m <1ppm | | | | 1.30 | 19.13 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 15.13

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.30m** | **M Bell** | |

# ARCADIS Trial Pit Log

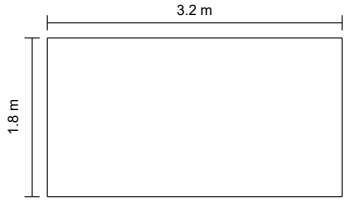
**PRELIMINARY**

**ARC_TP102**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **23.73** | **16/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **453771.05** | **451766.77** | **16/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | | MADE GROUND: Black clayey SAND with frequent rootlets. | | | 0.05 | 23.68 | |
| | | MADE GROUND: Soft dark brown to black loose fibrous organic material with strong organic odour. Contains decomposed plant material and frequent angular to subangular wood fragments. | | | (0.60) | | |
| (ES1) 0.30 | PID(1) 0.30m <1ppm | | | | | | |
| | | MADE GROUND: Stiff dark brown mottled blue silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. Occasionally orangish. Occasionally very silty. | | | 0.65 | 23.08 | |
| (ES2) 1.00-1.20 | PID(2) 1.00m <1ppm | | | | (1.15) | | |
| (B3) 1.50 (D4) 1.50 | PID(3) 1.50m <1ppm | | | | | | |
| | | | | | 1.80 | 21.93 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 10.38

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.80m** | **M Bell** | |

# ARCADIS Trial Pit Log

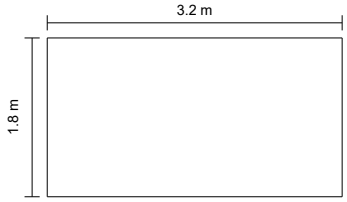
**PRELIMINARY**

**ARC_TP103**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **23.55** | **16/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **453781.92** | **451684.55** | **16/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | | MADE GROUND: Black clayey SAND with frequent rootlets. | | | (0.20) | | |
| (ES1) 0.20 | PID(1) 0.20m <1ppm | MADE GROUND: Stiff yellowish dark brown mottled blue silty slightly sandy slightly gravelly CLAY with occasional cobbles. Gravel is fine to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. Cobbles are subrounded to rounded of limestone and sandstone. Rare angular cobbles of brick noted. | | | 0.20 | 23.35 | |
| (B3) 0.50<br>(D4) 0.50<br>(ES2) 0.50 | PID(2) 0.50m <1ppm | | | | (1.00) | | |
| | PID(3) 1.20m <1ppm | | | | 1.20 | 22.35 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 15.37

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.20m** | **M Bell** | |

# ARCADIS Trial Pit Log

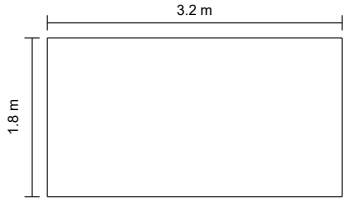
**PRELIMINARY**

**ARC_TP104**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **23.69** | **16/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **453874.62** | **451607.32** | **16/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | PID(1) 0.10m <1ppm | MADE GROUND: Black clayey SAND with frequent rootlets. | | | (0.10) 0.10 | 23.59 | |
| (B2) 0.50<br>(D3) 0.50<br>(ES1) 0.50 | PID(2) 0.50m <1ppm | MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. | | | (0.70) | | |
| (B5) 1.00<br>(D6) 1.00<br>(ES4) 1.00 | PID(3) 1.00m <1ppm | MADE GROUND: Stiff yellowish brown mottled blue silty slightly sandy slightly gravelly CLAY with occasional cobbles. Gravel is fine to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. Cobbles are rounded of limestone. | | | 0.80<br>(0.80) | 22.89 | |
| | PID(4) 1.50m <1ppm | | | | 1.60 | 22.09 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 11.57

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.60m** | **M Bell** | |

# ARCADIS Trial Pit Log

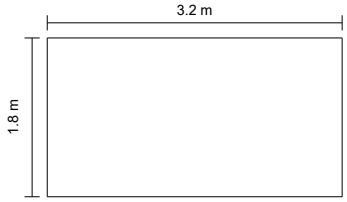
**PRELIMINARY**

**ARC_TP105**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **27.53** | **15/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **454243.65** | **451628.62** | **15/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | | MADE GROUND: Brown gravelly SAND with frequent rootlets. Gravel is fine to coarse angular to subrounded and includes various natural lithologies, limestone and sandstone | | | (0.30) | | |
| | PID(1) 0.20m <1ppm | | | | | | |
| | PID(2) 0.30m <1ppm | | | | 0.30 | 27.23 | |
| | | MADE GROUND: Firm yellowish brown silty sandy slightly gravelly CLAY with occasional cobbles. G is fine to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. Cobbles are rounded of limestone and sandstone. Occasionally very sandy | | | (1.00) | | |
| (B2) 1.00<br>(D3) 1.00<br>(ES1) 1.00 | PID(3) 1.00m <1ppm | | | | | | |
| | | | | | 1.30 | 26.23 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 35.6

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.30m** | **M Bell** | |

# ARCADIS Trial Pit Log

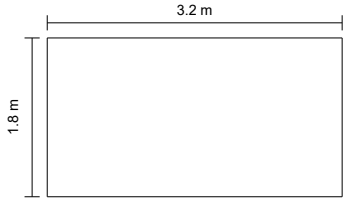
**PRELIMINARY**

**ARC_TP106**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **33.07** | **15/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **454116.06** | **451716.38** | **15/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | PID(1) 0.10m <1ppm | MADE GROUND: Brown very gravelly SAND with occasional rootlets. Gravel is fine to coarse angular to subrounded and includes wood, various natural lithologies, limestone and sandstone. | | | (0.12) 0.12 | 32.95 | |
| | PID(2) 0.20m <1ppm | MADE GROUND: Soft to firm brown very sandy slightly gravelly CLAY w/occasional cobbles. G is fine to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. Cobbles are rounded of limestone and sandstone | | | (0.33) 0.45 | 32.62 | |
| (B2) 0.50<br>(D3) 0.50<br>(ES1) 0.50 | PID(3) 0.50m <1ppm | MADE GROUND: Firm dark bluish brown slightly gravelly CLAY with occasional cobbles. Gravel is fine to coarse subrounded to rounded and includes brick, wood, various natural lithologies, limestone and sandstone. Cobbles are rounded of limestone and sandstone and angular of brick (rare) and wood. Mild organic odour noted | | | (0.40) 0.85 | 32.22 | |
| | PID(4) 0.90m <1ppm | MADE GROUND: Soft dark brown to black loose fibrous organic material with strong organic odour. Contains decomposed plant material and frequent angular to subangular wood fragments. | | | (0.65) 1.50 | 31.57 | |
| | PID(5) 1.50m <1ppm | | | | | | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 52.33

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.50m** | **M Bell** | |

# ARCADIS Trial Pit Log

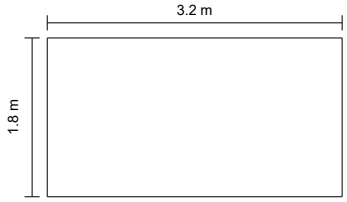
**PRELIMINARY**

**ARC_TP107**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **31.84** | **15/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **454074.60** | **451831.04** | **16/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | | MADE GROUND: Dark brown clayey SAND with frequent rootlets. | | | (0.10) | | |
| | PID(1) 0.10m <1ppm | | | | 0.10 | 31.74 | |
| | PID(2) 0.20m <1ppm | MADE GROUND: Brown slightly gravelly SAND with frequent rootlets. Gravel is fine to coarse subrounded to rounded and includes limestone, various natural lithologies and sandstone. Frequent angular to subangular wood fragments noted. | | | | | |
| (ES1) 0.30 | | | | | (0.40) | | |
| | PID(3) 0.50m <1ppm | MADE GROUND: Soft dark brown to black loose fibrous organic material with strong organic odour. Contains decomposed plant material and frequent angular to subangular wood fragments. Rare cobble-sized ceramic and plastic sheet recovered | | | 0.50 | 31.34 | |
| (B3) 1.00<br>(D4) 1.00<br>(ES2) 1.00 | PID(4) 1.00m <1ppm | | | | (1.50) | | |
| | PID(5) 2.00m <1ppm | | | | 2.00 | 29.84 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 4.37

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **2.00m** | **M Bell** | |

# ARCADIS Trial Pit Log

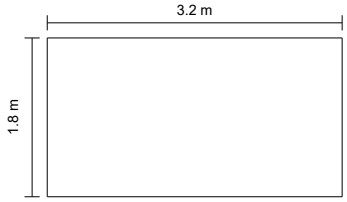
**PRELIMINARY**

**ARC_TP108**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **19.86** | **15/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **454206.36** | **451979.96** | **15/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | PID(1) 0.10m <1ppm | MADE GROUND: Brown slightly clayey SAND with frequent rootlets. | | | (0.10) 0.10 | 19.76 | |
| (B2) 0.30<br>(D3) 0.30<br>(ES1) 0.30 | PID(2) 0.30m <1ppm | MADE GROUND: Dark brown clayey gravelly SAND. Gravel is fine to coarse subrounded and includes various natural lithologies and limestone. | | | (0.40) | | |
| | PID(3) 0.50m <1ppm | MADE GROUND: Firm to stiff yellowish brown mottled blue silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. Rare cobble-sized plastic sheet noted. | | | 0.50 | 19.36 | |
| (B5) 1.00<br>(D6) 1.00<br>(ES4) 1.00 | | | | | (1.00) | | |
| | PID(4) 1.50m <1ppm | | | | 1.50 | 18.36 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 15.76

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.50m** | **M Bell** | |

# ARCADIS Trial Pit Log

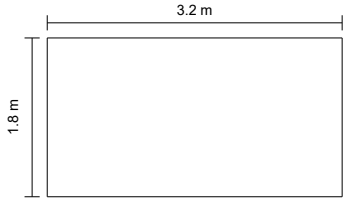
**PRELIMINARY**

**ARC_TP109**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **22.48** | **15/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **454107.96** | **452218.13** | **15/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | PID(1) 0.10m <1ppm | MADE GROUND: Brown slightly gravelly SAND with frequent rootlets. Gravel is fine to coarse angular to subrounded and includes various natural lithologies, limestone and sandstone. | | | (0.10) 0.10 | 22.38 | |
| | PID(2) 0.20m <1ppm | MADE GROUND: Stiff bluish brown silty very sandy slightly gravelly CLAY with occasional cobbles. Gravel is fine to coarse subrounded to rounded of various natural lithologies and limestone. Cobbles are rounded of limestone. | | | (0.30) | | |
| (B2) 0.30<br>(D3) 0.30<br>(ES1) 0.30 | | | | | 0.40 | 22.08 | |
| | PID(3) 0.50m <1ppm | MADE GROUND: Firm to stiff yellowish brown mottled blue silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded to rounded and includes various natural lithologies, limestone, sandstone and rare angular brick. | | | (1.20) | | |
| (B1) 1.00<br>(D6) 1.00<br>(ES4) 1.00 | | | | | | | |
| | PID(4) 1.50m <1ppm | | | | 1.60 | 20.88 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 23.71

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.60m** | **M Bell** | |

# ARCADIS Trial Pit Log

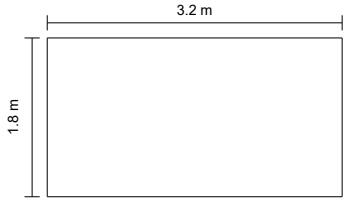
**PRELIMINARY**

**ARC_TP110**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **27.80** | **16/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **453939.23** | **452127.13** | **16/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | PID(1) 0.05m <1ppm | MADE GROUND: Dark brown clayey SAND with frequent rootlets. | | | 0.05 | 27.75 | |
| | PID(2) 0.20m <1ppm | MADE GROUND: Brown clayey very gravelly SAND with occasional cobbles. Gravel is fine to coarse subangular to rounded and includes various natural lithologies, limestone and sandstone. Cobbles are subrounded to rounded of limestone and sandstone. | | | (0.55) | | |
| (B2) 0.50<br>(D3) 0.50<br>(ES1) 0.50 | | | | | 0.60 | 27.20 | |
| | PID(3) 1.00m <1ppm | MADE GROUND: Stiff to very stiff dark brown silty slightly sandy slightly gravelly CLAY with occasional cobbles. Gravel is fin to coarse subrounded to rounded and includes various natural lithologies, limestone and sandstone. Cobbles are rounded of limestone. Occasionally mottled blue. Occasionally very silty. | | | (1.20) | | |
| (B5) 1.50<br>(D6) 1.50<br>(ES4) 1.50 | PID(4) 1.50m <1ppm | | | | 1.80 | 26.00 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 30.95

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.80m** | **M Bell** | |

# ARCADIS Trial Pit Log

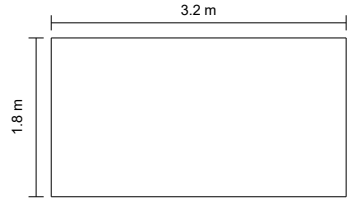
**PRELIMINARY**

**ARC_TP111**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **33.97** | **16/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **454040.54** | **452005.16** | **16/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | PID(1) 0.05m <1ppm | MADE GROUND: Dark brown clayey SAND with frequent rootlets. | | | 0.05 | 33.92 | |
| | | MADE GROUND: Firm light brown sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to rounded and includes various natural lithologies, limestone and sandstone. | | | (0.30) | | |
| (ES1) 0.25 | PID(2) 0.25m <1ppm | | | | | | |
| | | MADE GROUND: Soft to firm bluish dark brown very silty sandy slightly gravelly CLAY with occasional cobbles. Gravel is fine to coarse subrounded to rounded of various natural lithologies, sandstone and limestone. Cobbles are rounded of limestone. Occasional very sandy pockets noted. | | | 0.35 | 33.62 | |
| | PID(3) 0.50m <1ppm | | | | | | |
| | PID(4) 1.00m <1ppm | | | | (1.25) | | |
| (B3) 1.50<br>(D4) 1.50<br>(ES2) 1.50 | PID(5) 1.50m <1ppm | | | | 1.60 | 32.37 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

LWD Evd: 17.32

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **1.60m** | **M Bell** | |

# ARCADIS Trial Pit Log

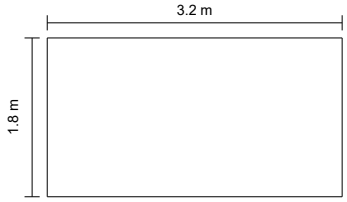
**PRELIMINARY**

**ARC_TP112**

| Project | Project No. | Ground Level (mAOD) | Start Date | Scale |
|---|---|---|---|---|
| **Harewood Whin Landfill** | **30284479** | **26.98** | **15/07/2025** | **1:20** |
| Client | Easting (OS mE) | Northing (OS mN) | End Date | |
| **City of York Council** | **453955.85** | **451887.93** | **15/07/2025** | **Sheet 1 of 1** |

| SAMPLES | TESTS | STRATA | | | | | |
|---|---|---|---|---|---|---|---|
| Depth - Type | Type - Depth (m) - Result | Description | Legend | Strike | Depth (Thick) | Level | Install/ Backfill |
| | PID(1) 0.05m <1ppm | MADE GROUND: Brown slightly gravelly SAND with frequent rootlets. Gravel is fine to coarse angular to subrounded and includes various natural lithologies, limestone and sandstone. | | | 0.05 | 26.93 | |
| | PID(2) 0.20m <1ppm | MADE GROUND: Brown slightly clayey very sandy GRAVEL with occasional cobbles. Gravel is fine to coarse angular to rounded and includes sandstone, limestone, brick, various natural lithologies, plastic, ceramic, textile, glass and wood. Cobbles are angular to subrounded of ceramic, wood, brick and sandstone. | | | | | |
| (B2) 0.50<br>(D3) 0.50<br>(ES1) 0.50 | | | | | (0.90) | | |
| | PID(3) 0.95m <1ppm | | | | 0.95 | 26.03 | |

PLAN DETAILS




Shoring / Support: None

Stability: Stable

Long Axis Orientation:

WATER OBSERVATIONS

| Date/Time | Strike | Rest | Mins | Remarks |
|---|---|---|---|---|
| | | | | |

NO MONITORING INSTRUMENTS INSTALLED

| Name | Type | m AGL |
|---|---|---|
| | | |

REMARKS

Terminated at 0.95m BGL due to presence of liner material. LWD Evd: 38.46

**Unless otherwise stated:**
**Depth (m bgl), Diameter (mm), From/To (m bgl), Level (m AOD/ASD), Thickness (m), Time (hhmm), Height Above Ground Level (m AGL)**

| Equipment Used | Termination Depth | Logged By | Checked By |
|---|---|---|---|
| **14T JCB X140** | **0.95m** | **M Bell** | |