



# Rectory Farm Landfill (EPR/BT98791Y)

## Surrender Report

*For Mick George Ltd*

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## 1. Introduction

### 1.1 Context and Purpose

This report concerns the inert waste landfill known as Rectory Farm Quarry which holds Environmental Permit reference BT98791Y held by Mick George Haulage Limited.

It has been prepared in accordance with the guidance referenced below:

<https://www.gov.uk/guidance/landfill-operators-environmental-permits/close-your-landfill-site>

... and, because it is an inert site, to support the option to **'apply for definite closure and permit surrender together'**.

It may be noted that, as required, closure has been approved by the local Environment Agency Office (Appendix B).

The wider context is that, as stated in Section 10 of this report, it is intended that, following permit surrender, the site will form part of a logistical warehousing development incorporating the adjacent land to the north and west. The intention is that the landfilled waste will be recovered and re-used to form landscaped bunds under an approved Waste Recovery Plan and Bespoke Deposit for Recover Permit.

The current position is that the EA has advised of approval in principle that the proposed works constitute a Waste Recovery Activity. As such, when the development is completed, the Rectory Farm Quarry Landfill will cease to exist, with the waste having served a useful purpose. Definite closure of the site and surrender of the permit are critical steps in achieving this objective.

### 1.2 Report Content

#### 1.2.1 General

The content of this report is based on requirements set out in Point 19 (Surrender Report: summary) of the following guidance

[https://www.gov.uk/government/publications/landfill-epr-502-and-other-permanent-deposits-of-waste-how-to-surrender-your-environmental-permit/landfill-and-deposit-for-recovery-aftercare-and-permit-surrender#Completion\\_criteria:\\_landfill](https://www.gov.uk/government/publications/landfill-epr-502-and-other-permanent-deposits-of-waste-how-to-surrender-your-environmental-permit/landfill-and-deposit-for-recovery-aftercare-and-permit-surrender#Completion_criteria:_landfill)

... noting what is or is not relevant to an inert waste site and advice received from the EA as an outcome of pre-application consultation held on 03 April 2023.

#### 1.2.2 Schedule 5 Issue and Response

On 06 October 2023 the Environment Agency, having reviewed Version P01.01 of this surrender report, issued a Schedule 5 Notice of Request for Further Information. A meeting to discuss EA requirements was held on 11 October 2023 and a schedule of additional investigations was agreed.

- » Appendix O to this report is a tracking document that lists EA schedule 5 requirements and applicant responses.
- » Appendix P presents the findings of the additional investigations.

It may be noted that the findings as presented in Version P01 of this report remain in this Version P02 apart from a cross-reference to the additional appendices.

#### 1.2.3 Compliance with Guidance

We have addressed the following issues, with the Section 19 list acting as a guide to where the issues are addressed in this surrender report.

1. A review of the history of the operation, including:
  - a. a conceptual model for the facility including cross sections (Section 3.5.1);
  - b. key dates in the development of the permit (Section 5.1.2);
  - c. location and sensitivity of environmental receptors (Section 3.4);
  - d. aquifer status (Section 3.6.1);
  - e. proximity and sensitivity of surface water courses (Sections 3.3.1, 3.3.2);
  - f. proximity of housing and human receptors (Section 3.7);
  - g. Natura 2000 sites and Sites of Special Scientific Interest (Section 3.4);
  - h. pollution control measures installed at the site (Section 5.3);
  - i. confirmation of completion in accordance with permit conditions (Section 5.3.6);
2. Characterisation of waste deposited at the site, including the:
  - a. description of the waste (Section 5.2.6);
  - b. waste acceptance procedures (Section 5.2.4);
  - c. audits or inspections of waste acceptance procedures (including frequency and outcomes) (Section 5.2.6);
3. Details of any non-compliant waste deposited, including:
  - a. characterisation of the waste (Section 5.2.6);
  - b. location and extent of the non-compliant waste (Section 5.2.6);
  - c. evidence that non-compliant waste has been removed (include evidence of on-site checks and the disposal route) - Section 5.2.6;
  - d. risk assessments that show the potential impact of any non-compliant waste you did not remove - not applicable.
4. The completion criteria for each pollutant generated within the site (Section 6 and Appendix K);
5. Details of the construction of any pollution control measure you used at the site, including the geological barrier, attenuation layer or geology beneath the site. You must include:
  - » the design (Section 5.3.2);
  - » the construction quality assurance (Section 5.3.2);
  - » the effective lifespan – include dates they were turned off or no longer required (Section 5.3.3);
  - » any accident or incident that has affected their effectiveness or integrity (Section 5.4);
6. A review of any changes to the performance of the pollution control measures during the life of the site (Section 5.4).
7. Details of the components and generation rate of any leachate and how leachate components have changed over the life of the site (Section 6 and Appendix K).
8. Details of the components and generation rate of any landfill gas and how the landfill gas components have changed over the life of the site (Section 7 and Appendix L).
9. Topographical surveys of the final landform. You must include an assessment of the stability and settlement of the waste at sites with unstable slopes (Section 8).
10. Details of monitoring infrastructure, including:
  - » borehole logs, response zones and construction details (Section 4);
  - » evidence that the monitoring points are fit for purpose (Section 4).
11. A review of the monitoring results that show an acceptable impact at any receptor including, where necessary:
  - » leachate quality (Section 6 and Appendix K);

- » groundwater quality (Section 6 and Appendix K);
- » surface water quality (Section 6 and Appendix K);
- » landfill gas (within the waste and surrounding the site) (Section 7 and Appendix L).

For all site types you may need to include the results of any investigations of the deposited waste. You must include the investigation:

- » extent (Section 4.3);
- » date (Section 4.3);
- » findings (Section 4.3).

#### 1.2.4 *Outcome of Pre-Application Consultation (03 April 2023)*

Appendix A contains a tabulated list of comments received from the EA during pre-application discussions and shows where each issue is addressed in the Surrender Report.

#### 1.2.5 *Pre-Application Consultation (23 August 2022)*

Point 5 of the response to the 03 April 2023 pre-application consultation is a requirement to comply with the findings of the 23 August 2022 consultation as set out in the email dated 15 August 2022 from the EA to Hydrock. A summary of requirements and outcomes is as follows:

- » Requirement to decommission site investigation boreholes that penetrated the geological barrier:
  - » complied with; see Section 5.3.4 below;
- » Borehole CBH 106:
  - » this borehole was decommissioned as part of the above works but similar alternatives are available;
- » Recommendation for an additional pre-application consultation when operator considers sufficient data has been assembled to support a surrender application:
  - » complied with;
- » Permit operator remains responsible for maintaining, monitoring and controlling activities in the aftercare phase until the permit is surrendered:
  - » permit requirements continue to be complied with.

### 1.3 **Supporting Data**

A statement on data availability is presented in Section 4. In summary, it comprises:

- » Long term monitoring data taken in compliance with the permit:
  - » Groundwater;
  - » Surface water;
  - » Gas.
  - » Settlement (post restoration topographic survey data);
- » 15 in-waste boreholes installed by the operator in 2018 with associated gas monitoring;
- » Hydrock site investigation and monitoring data 2020-2023:
  - » Borehole installations (both in-waste and outwith permit boundary, some specifically recommended by the EA);
  - » Leachate and groundwater monitoring;
  - » Surface water monitoring;
  - » Gas monitoring.



## 2. Application for Definite Closure

### 2.1 Context

As noted in 1.1, this report is intended to support an application for 'definite closure and permit surrender together'.

- » EA letter reference 73156/KM1/Closure dated 13 January 2023 confirms acceptance of Hydrock Closure Report Reference 23880-HYD-XX-XX-RP-GE-0001 Version PO4 dated 21 December 2022 and is attached at Appendix B;
- » The Closure Report is attached at Appendix C (included herein because it contains information directly relevant to permit surrender that need not be repeated).

In addition, it may be noted that:

- » The site ceased accepting waste in 2015 and has been fully restored back to agricultural use;
- » Current monitoring covers the aftercare regime described in Section 4 of the Closure Report, which will continue until the permit is surrendered.

### 2.2 Area Requiring Definite Closure and Surrender

The permit boundary that defines the area that is required to proceed to definitive closure and surrender is taken to be that shown on the drawing at Schedule 2, Page 18, of Permit Variation Reference PP3233XK, i.e., the current permit. The drawing is titled 'Site Plan'. A copy is attached at Appendix D.

For information as below, it may be noted that there are anomalies in records as to precisely what the landfill boundary is. For record purposes, this issue is reviewed below:

#### (i) EA on-line interactive map data

The blue boundary shown on Drawing Reference 23880-HYD-XX-XX-DR-GE-1021 at Appendix E and copied in Figure 2.1 below is based on the EA's on-line interactive map data (Authorised Landfills). It is noted to differ slightly from that shown in the permit., in that it includes an area of land in the southwest and a small strip in the northeast that is not coincident with the Schedule 2 Site Plan.

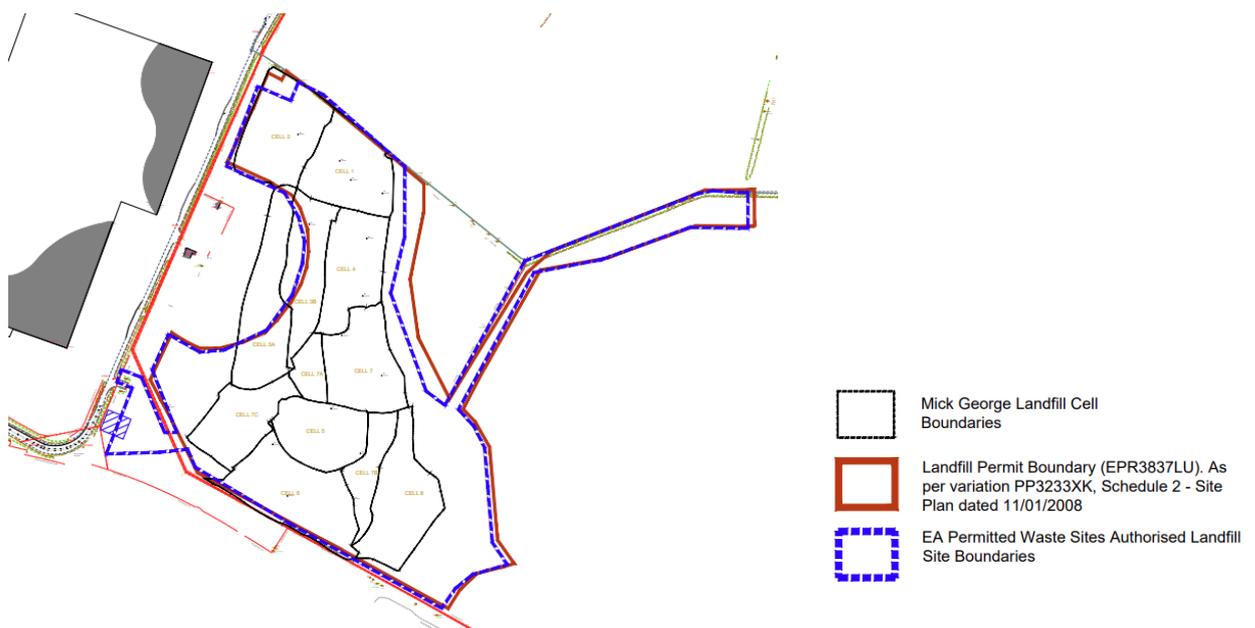


Figure 2.1: Permit boundary plans

(ii) Tipped waste boundary

Because the landfill operation was intended to result in restoration of the former quarry, the Schedule 2 Site Plan boundary would have been expected to accord with the voids requiring infill but this is not the case. It is evident that there are areas in the east and southwest that are within the permit boundary but were not tipped on and a small area in the west where the landfill cells extend beyond the permit boundary.

When this matter was raised in January 2023 with the local EA office the Operator was advised that *'at the time this permit was issued (2004) and subsequently varied the 'science' behind putting the line on the permit boundary plan wasn't as sophisticated as it is today and therefore older plans are not a precise measurement but more of an indicator of where the boundary is'*.

(iii) Summary

It is accepted by the Operator that these discrepancies are attributable to imprecision in old records and confirms the intention to apply for surrender of the permit in accordance with the site plan at Schedule 2, Page 18, of Permit Reference PP3233XK, i.e., the current permit.

### 3. Conceptual Site Model

#### 3.1 Context

This section presents a Conceptual Site Model (CSM) based on an assessment of all currently available data. It accords with the CSM presented in the following report:

*Hydrock, August 2022. Rectory Farm (Thrapston) Landfill (EPR/BT98791Y). Hydrogeological Risk Assessment Review (HRAR). Report reference 23880-HYD-XX-XX-RP-GE-0003.*

The findings of the above HRAR report were accepted by the local area Groundwater Technical Specialist which was confirmed in writing. Points to note are:

- » The ensuing text captures specific issues specified in the checklist presented in Section 1.2 above;
- » It also accords with the content of the Closure Report at Appendix C;
- » A critical finding of the HRAR is recognition and acceptance that, in terms of the potential risk to groundwater from landfill leachate, it is the Cornbrash Limestone that is the critical receptor, not (as previously accepted), the Blisworth Limestone.

#### 3.2 Site Location and Referencing

The Rectory Farm Landfill site is located to the north of the A14 on the eastern edges of Thrapston, Northamptonshire, the National Grid Reference of the approximate centre being 501968E, 278464N. A nearby postcode for the site is NN14 4QT. A site location plan is included as Drawing 23880-HYD-XX-XX-DR-GE-1001 at Appendix E

The site is a former sand and gravel quarry that has been restored to agricultural use by backfilling with inert waste. Backfilled settlement ponds associated with the quarrying are present in an eastern overhanging strip that is part of the permit area (Drawing 23880-HYD-XX-XX-DR-GE-1021 at Appendix E).

#### 3.3 Hydrology and Drainage

##### 3.3.1 Proximity of Surface Water Features

There are few permanent surface water features potentially within influential distance of the landfill site.

A small pond is present off-site at Castle Manor Farm, 450m south-east of the backfilled settlement ponds and 430m east of the landfill area. Drainage ditches are present parallel to the eastern half of the overhang adjacent to the backfilled settlement ponds and 110m to the east of the site but the long-term permit compliance monitoring shows that these are normally dry since quarrying operations ceased.

For aftercare monitoring purposes (i.e., for a precautionary check on surface water quality), Point X on Drawing 23880-HYD-XX-ZZ-DR-GE-1008 (Post Closure monitoring Plan) at Appendix E has been agreed with the EA as being the closest surface water location likely to be flowing during most monitoring visits.

Drainage is north-east towards Thorpe Brook, which ultimately joins the River Nene 3km further north at an elevation approximately 20m lower than the lowest point on site.

##### 3.3.2 Sensitivity

Reference to the Environment Agency web site shows the site is located within the catchment of the River Nene (Middle Nene) Basin District, with the specific river water body being the Thorpe Waterville Brook.

The current (2019 cycle 2) overall status under the Water Framework Directive is 'poor' with chemical classification noted as a 'fail'. The river water quality is currently 'Poor' status due to phosphate levels, macrophytes and phytobenthos combined, invertebrates and dissolved oxygen. The objective is for the water body to be classified as 'Moderate' by 2027.

### 3.4 Conservation Sites

Reference to the on-line resource 'Multi Agency Geographic Information for the Countryside' (MAGIC) website indicates the nearest conservation sites as being as listed in Table 3.1.

Table 3.1: Conservation Sites

Site Name	Site Type	Approximate distance (m)	Direction
<b>Aldwinckle Marsh &amp; The Upper Nene Valley Gravel Pits</b>	SSSI / Ramsar/ SPA	1300	NW
<b>Thrapston Station Quarry</b>	SSSI	1400	SW
<b>Titchmarsh Meadow</b>	SSSI	1670	NE
<b>Titchmarsh LNR</b>	LNR	1610	NW
<b>Deciduous woodland</b>	Priority Habitat	430	S
<b>Deciduous woodland</b>	Priority Habitat	630	S
<b>Deciduous woodland</b>	Priority Habitat	660	W
<b>Deciduous woodland</b>	Priority Habitat	755	S
<b>Deciduous woodland</b>	Priority Habitat	1060	NE
<b>Deciduous woodland</b>	Priority Habitat	1120	N
<b>Deciduous woodland</b>	Priority Habitat	1120	E
<b>Deciduous woodland</b>	Priority Habitat	1250	NE
<b>Deciduous woodland</b>	Priority Habitat	1300	SW
<b>Traditional Orchard</b>	Priority Habitat	1750	E

Given the distances involved and the low-risk nature of the facility, the risk of a significantly adverse impact on the above conservation sites from the landfill is considered to be very low.

### 3.5 Geology

#### 3.5.1 Mapping

The general geology of the site area is shown on the British Geological Survey (BGS) 1:50,000 geological map of Kettering (Sheet 171). Geological maps and sections (based on the findings of the Hydrock investigation) are attached as Appendix C to the Closure Report, included herein at Appendix C.

Extracts from the map of the wider development site are shown in Figures 3.1 and 3.2. The information is summarised in Table 3.2.

Landfill waste is present over majority of the permitted site, with other (non-waste) Made Ground on the periphery, especially in the eastern overhang, associated with the backfill of the settlement ponds and in the west, placed to create areas of hardstanding.



Figure 3.1: Superficial deposits



Figure 3.2: Bedrock geology

(red line boundary is the future development site boundary) (Reproduced with permission from Groundsure)

Table 3.2: Geology

Ref. for Figures 3.1 and 3.2	Location	Stratigraphic Name	Regional Description
<b>Superficial Deposits</b>			
1	On site	Glacial Till - Oadby Member	Grey weathering brown clay with subordinate lenses of sand and gravel with chalk and flint fragments.
2		Glaciofluvial Deposits	Sand and gravels: mostly removed by quarrying and backfilled with waste
<b>Solid Geology</b>			
5	On site	Oxford Clay Formation	Silicate mudstone, grey with sporadic beds of limestone.
4		Kellaways Sand Member	Silicate sandstone and siltstone, pale grey with interbeds of sandy and silty mudstone (typically 3 to 5m within the East Midlands).
9		Kellaways Clay Member	Grey mudstone (typically 2 to 3m within the East Midlands).
8		Cornbrash Formation	Medium to fine grained, blueish grey, weathering olive or yellowish-brown, limestone (up to 10.50m thick but generally 2-4m).
6		Blisworth Clay Formation	Silicate mudstone, grey with frequent fossils, rootlets and ironstone nodules (typically 2-4m thick).
1		Blisworth Limestone Formation	Pale grey or off-white yellowish limestone (typically 2-4m thick).

### 3.5.2 Stratigraphy (Geological Sequence)

The geological sequence of the solid geology as defined by the BGS Lexicon of Named Rock Units is presented in Table 3.3.

Table 3.3: Stratigraphy

Age (Jurassic)		Strata	
<b>Oxfordian - Callovian</b>	Youngest	Oxford Clay Formation	
<b>Callovian</b>		Kellaways Sand Member	Kellaways Formation
		Kellaways Clay Member	
<b>Callovian - Bathonian</b>		Cornbrash Formation	
<b>Bathonian</b>		Blisworth Clay Formation	
	Blisworth Limestone Formation		
<b>Bathonian - Bajocian</b>	Oldest	Rutland Formation	

Mapping indicates that Oxford Clay Formation is locally overlain by the superficial deposits. The 2021 Hydrock investigation found the Glacial Till overlying the Glaciofluvial Deposits, with majority of the latter having mostly been removed during historic sand and gravel extraction activities.

### 3.5.3 Lithology

#### 3.5.3.1 Sources of Information

Lithological descriptions are based on the findings of the Hydrock 2021 investigations.

#### 3.5.3.2 Made Ground

In general, there are three main types of Made Ground:

- » General Made Ground associated with the backfilled settlement ponds and the development of areas of hardstanding;
- » Placed/reworked topsoil; and
- » Landfill Waste.

General Made Ground comprises soft to firm, greyish brown, or orangish brown, sandy, gravelly, clay. Gravel comprises subangular to rounded, fine to coarse, ironstone, flint, and limestone.

Topsoil comprises a soft to firm, dark to light brown, slightly sandy, slightly gravelly, clay, with frequent rootlets. Gravels comprise angular to subrounded, fine to coarse, brick, chalk, flint, limestone, sandstone and ash.

Landfill Waste – comprises soft to firm grey, yellowish brown, brown and orangish brown, slightly sandy, gravelly, clay. Gravels generally comprised angular to subrounded, fine to coarse, flint, sandstone, ironstone, chalk, limestone and gravel sized fragments of brick.

Waste characteristics are described in detail in Section 5 below.

#### 3.5.3.3 Head Deposits

Head deposits were encountered in the eastern overhang of the site and comprised firm to stiff reddish brown, light brown or greenish grey, slightly gravelly, sandy, clay. Gravels comprise subangular to rounded, fine to coarse, flint, limestone, chalk, and fossilised material.

#### 3.5.3.4 *Glacial Till*

Glacial Till was typically encountered underlying topsoil and beneath the landfill where the landfill cuts through the Glacial Till as part of the sand and gravel extraction works. The Glacial Till generally consisted of stiff to very stiff, grey and greyish brown, slightly sandy, slightly gravelly, clay. Gravels comprise subangular to rounded, fine to coarse, flint, sandstone, limestone, and chalk.

#### 3.5.3.5 *Glaciofluvial Deposits*

Remnant Glaciofluvial Deposits were encountered at the landfill area of the site, typically underlying the Glacial Till. Glaciofluvial Deposits have mostly been removed as part of gravel extraction works, to be replaced by landfill.

Glaciofluvial Deposits generally comprises dense to very dense, orange brown, greyish brown, and reddish-brown, gravelly, sand and localised firm, orange brown, and bluish grey, sandy, clay. Gravels comprise subangular to rounded, fine to coarse, limestone, flint, sandstone and ironstone.

#### 3.5.3.6 *Oxford Clay Formation*

Although shown locally on geological maps (see above), the Oxford Clay Formation was not recognised during the Hydrock 2021 investigation (suggesting that the geological mapping on the south west corner of the site is incorrect).

#### 3.5.3.7 *Kellaways Sand Member*

The Kellaways Sand Member was encountered underlying the Glaciofluvial Deposits/Glacial Till or beneath the landfill where superficial deposits have been removed as part of gravel extraction works.

The Kellaways Sand Member comprised yellowish brown and orangish brown, clayey, slightly gravelly, sand. Gravels comprised subangular to rounded, fine to coarse, sandstone, limestone, ironstone and siltstone.

#### 3.5.3.8 *Kellaways Clay Member*

The Kellaways Clay Member underlies the Kellaways Sand Member and generally comprises firm to stiff bluish grey, light grey or dark grey, sandy, slightly gravelly, clay. Gravels comprised subangular to subrounded, fine to coarse, sandstone, with rare shell fragments.

#### 3.5.3.9 *Cornbrash Limestone Formation*

The Cornbrash Limestone Formation was encountered underlying the Kellaways Clay Member and generally consisted of extremely weak to strong, grey to light brown, occasionally shelly, limestone.

#### 3.5.3.10 *Blisworth Clay Formation*

The Blisworth Clay Formation was encountered underlying the Made Ground or Head Deposits in the eastern half of the eastern overhang, and underlying the Cornbrash Limestone Formation across the rest of the site outwith the permitted landfill area.

The Blisworth Clay Formation generally comprises firm to very stiff, light grey, bluish grey, and dark grey, occasionally fissured, slightly gravelly, clay. Gravels comprised subangular to subrounded, fine to coarse, limestone and chert.

#### 3.5.3.11 *Blisworth Limestone Formation*

The Blisworth Limestone Formation was encountered underlying Made Ground or Head Deposits in the eastern part of the overhang, and underlying the Blisworth Clay Formation across the rest of the site.

The Blisworth Limestone comprises weak to strong, grey, limestone.

### 3.5.3.12 Rutland Formation

The Rutland Formation was not encountered on the site.

The Rutland Formation encountered from 82m to the east of the site comprised stiff bluish grey clay with frequent shell fragments and weak dark grey siltstone.

## 3.5.4 Structure

The relationship between bedrock and superficial deposits is illustrated on the geological sections at Appendix C to the Closure Report, included herein at Appendix C.

The concept is of a conformable sequence of sub-horizontal Jurassic strata underlying the site and the land to the east.

A minor fault line is shown to the north of the site, trending east to west with downthrow to the north (Figure 3.2 above).

## 3.6 Hydrogeology

### 3.6.1 Aquifer Designations

Based on the geological sequence presented in Section 3.5.4 and the Environment Agency's interactive aquifer designation map, the aquifer system presented in Table 3.4 applies.

Table 3.4: Aquifer Designations

Stratum	Aquifer Designation	Comments
<b>Made Ground</b>	Unclassified / unproductive	Artificial Ground not included in the classification system, but is present across the site mainly as landfill waste, backfilled settlement ponds and topsoil. Likely to be moderate to high porosity because of unconsolidated nature, but permeability is likely to be constrained to low, or low to moderate because of poor sorting and clay content.
<b>Superficial Deposits</b>		
<b>Glaciofluvial Sand &amp; Gravel</b>	Secondary A Aquifer	Intergranular permeability. Dominated by moderate to high permeability layers of sand and occasional gravel, interbedded with low permeability clay. Groundwater flow is likely to be variable and discontinuous as water migrates around low permeability areas. Note: substantially absent due to quarrying.
<b>Glacial Till</b>	Secondary undifferentiated Aquifer	Dominated by low permeability clay, which is interbedded with moderate to high permeability layers of sand with occasional gravel. Likely to be anisotropic in nature.
<b>Solid Geology</b>		
<b>Oxford Clay</b>	Unproductive	Dominated by low permeability clay
<b>Kellaways Sand Member</b>	Secondary A Aquifer	Moderate to high porosity, but permeability likely to be constrained to low or low to moderate because of poor sorting and fines content. Not used for groundwater supply within influential distance of the site
<b>Kellaways Clay Member</b>	Unproductive	Dominated by low permeability clay and unable to provide useable water supplies.

Stratum	Aquifer Designation	Comments
<b>Cornbrash Limestone Formation</b>	Secondary A Aquifer	High permeability due to fractured limestone, but limited thickness and weathering of unit. Not used for groundwater supply within influential distance of the site
<b>Blisworth Clay Formation</b>	Unproductive	Dominated by low permeability clay, which is usually unable to provide useable water supplies. Likely to be anisotropic.
<b>Blisworth Limestone Formation</b>	Principal Aquifer	High permeability due to fractured limestone but interbedded with layers of clay. Not used for groundwater supply within influential distance of the site

### 3.6.2 Groundwater Utilisation

There are no active or historical licensed groundwater abstractions within 1km of the site and the site is not within a groundwater Source Protection Zone (SPZ).

### 3.6.3 Aquifer System

Regionally, the Kellaways Sand yields small supplies of groundwater. However, hydraulic conductivity values are very low, partly due to high fines content of the sands. On a regional scale, hydraulic heads in the Kellaways Sand are generally above the underlying Blisworth Limestone, indicating a downwards hydraulic gradient from the sand to the Limestone (Mather et al., 1998 as referenced by Jones et al., 2000).

However, on a local scale the low permeability Kellaways Clay Member and the Blisworth Clay would be expected to act as aquicludes separating the Kellaways Sand Member from underlying units.

Regionally (but not locally), the Cornbrash provides small, intermittent groundwater supplies which tend to dry out during drought episodes, especially if hydraulically separate from the Blisworth Limestone. In the East Midlands, the thin Cornbrash Formation is an unimportant aquifer due to its separation from the underlying Blisworth Limestone by the Blisworth Clay. The inferred geological sequence presented in Section 3.5.4 indicates that these conditions (that is, limited unit thickness and separation from the underlying Blisworth Limestone by the Blisworth Clay) apply locally.

Whilst a high permeability is expected via fracture flow within the Cornbrash Limestone, Mackay and Cooper (1996) quoted a field permeability of  $7.5 \times 10^{-5}$  m/d at Elstow, Bedford (approximately 32km south of the site).

### 3.6.4 Groundwater Levels

Groundwater levels are reviewed in the Hydrogeological Risk Assessment Review report 23880-HYD-XX-XX-RP-GE-0003 dated 23 August 2022.

The general observations were that:

- » leachate levels in the landfill were raised above surrounding groundwater levels with general flow direction towards the north-east and east following the topographic profile. Despite the indication of a flux towards the eastern edge of the landfill there is no recorded observation of leachate emergence. Either the flux is so small that any discharge is lost through evapotranspiration at the surface or the permeability so low that there is virtually no flux at all, despite the hydraulic gradient
- » In general groundwater flow within the Cornbrash Limestone Formation is towards the northeast following topographic profile;

- » The Blisworth Limestone Formation is separated from the Cornbrash Limestone Formation by the Blisworth Clay Formation. Groundwater flow beneath the site within the Blisworth Formation is generally towards the north east following topographic profile

### 3.6.5 Hydraulic Continuity Issues

#### 3.6.5.1 Between Landfill Waste and Natural Strata

At the base of the landfill there is the potential for hydraulic continuity between the waste and the Kellaways Sand or the waste and the Cornbrash, depending on whether or not the Kellaways Clay is present or absent.

Critically however, this hydraulic continuity will be eliminated by the presence of the geological barrier (i.e., an engineered, low permeability clay layer placed at the base and sides of the excavation before tipping)

#### 3.6.5.2 Within the Natural Geological Sequence

The three main natural hydraulic units (that is, the Kellaways Sand Member, the Cornbrash Limestone Formation and Blisworth Limestone Formation) are not expected to be in hydraulic continuity with each other given the presence of confining clay layers between each of the units.

Groundwater elevations with the Blisworth Limestone are consistently lower than groundwater elevations in the Cornbrash Formation at similar locations, indicating two separate groundwater bodies, with no or limited hydraulic connectivity between the two.

#### 3.6.5.3 Baseflow

The Kellaways Sand Member, Cornbrash Limestone Formation, and Blisworth Limestone Formation potentially provide baseflow to site drainage leading to Thorpe Brook and the River Nene. However, the generally dry nature of ditches downstream of the site suggest that the baseflow contribution is locally very small due to the very low throughput of water.

### 3.6.6 Conceptual Hydrogeological Risk Model

#### 3.6.6.1 General

A qualitative assessment of the risk posed by the landfill has been undertaken in Table 3.5 to determine the critical receptor (s) for the site.

Table 3.5: Qualitative Risk Assessment

Receptor	Risk from Landfill	Justification
Glacial Till	Low	<ul style="list-style-type: none"> <li>» Relatively little groundwater present in the unit.</li> <li>» Low permeability expected.</li> <li>» Flux of water is likely to be very small.</li> </ul>
Glaciofluvial deposits	Low	<ul style="list-style-type: none"> <li>» Extent of this strata is expected to be limited due to historical quarrying activities.</li> </ul>
Kellaways Sand Member	Low	<ul style="list-style-type: none"> <li>» Most vulnerable where present below the base of the landfill.</li> <li>» Appears to be unsaturated east of the site</li> </ul>
Kellaways Clay Member	Low	<ul style="list-style-type: none"> <li>» Low permeability expected.</li> <li>» Flux of water is likely to be very small.</li> <li>» Classified as unproductive strata.</li> </ul>

Receptor	Risk from Landfill	Justification
<b>Cornbrash Limestone Formation</b>	Low to Moderate	» Critical Receptor (see text below)
<b>Blisworth Clay Formation</b>	Low	» Low permeability expected. » Flux of water is likely to be very small.
<b>Blisworth Limestone Formation</b>	Low	» Overlain by a thick layer of low permeability Blisworth Clay, so unlikely to receive leakage from the Cornbrash Limestone Formation.
<b>Thorpe Brook (Including tributaries, e.g. Polopit Brook) and River Nene</b>	Low	» Theoretically in receipt of baseflow from the Cornbrash Limestone Formation and the Blisworth Limestone Formation but no evidence of issues within influential distance of site (all ditches and watercourses are now dry since site operations ceased) » The first permanent water 'downstream' of the landfill site is subject to other water quality influences (such as agricultural activity) which compromises the effectiveness of long-term monitoring.

### 3.6.6.2 Critical Receptor

Based on the qualitative risk assessment presented above, the critical receptor for leachate is the Cornbrash Limestone Formation, which will become the focus of attention in any post-closure monitoring, with one precautionary 'sentinel' borehole in the Blisworth Limestone because of its status as a Principal Aquifer.

Other units are not critical receptors for the following reasons:

- » Glacial Till: low permeability;
- » Glaciofluvial deposits: remnant presence only;
- » Kellaways Sand: thin and unsaturated;
- » Kellaways Clay: low permeability;
- » Blisworth Clay: low permeability.

Effectively, the surface water environment downstream of the landfill is not a critical receptor as the base flow contribution from the site and units connected with it is considered to be too small.

As per Figure 3.3 below, the first permanent water 'downstream' of the landfill site is subject to other water quality influences (such as agricultural activity). Whilst this potential extraneous effect compromises the effectiveness of any long-term monitoring, for precautionary reasons, it is proposed to include this location in the post closure monitoring regime.

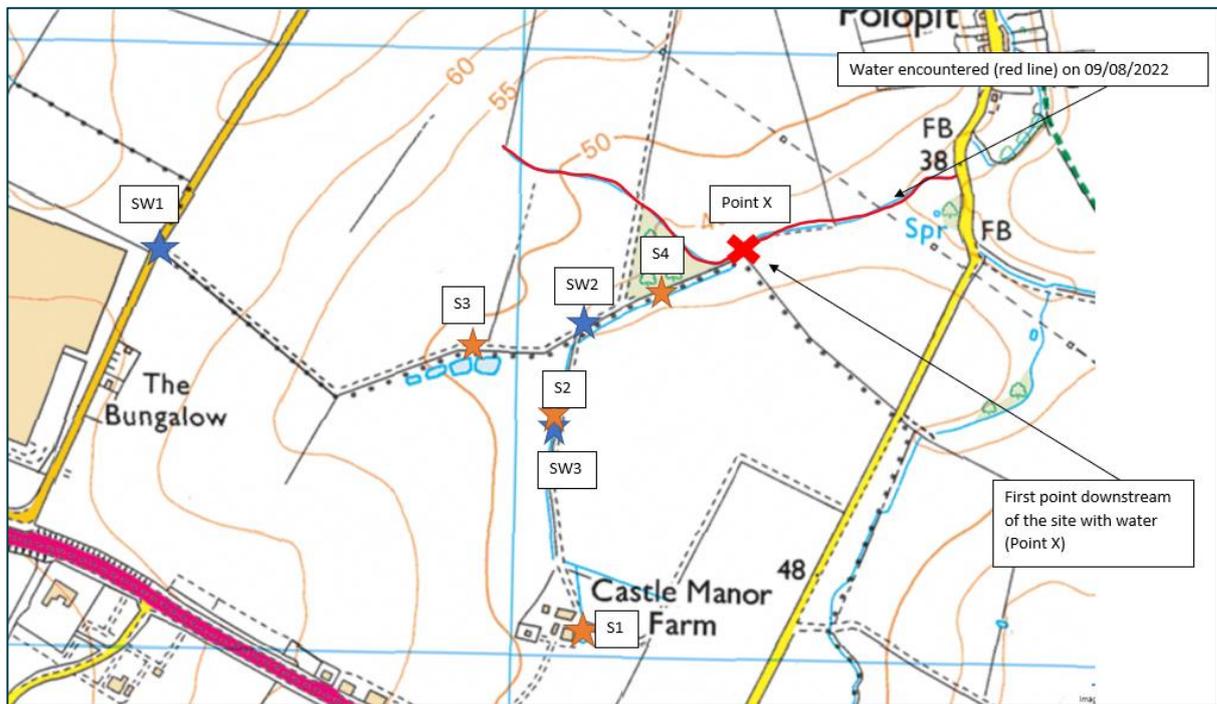


Figure 3.3: Surface water occurrence and monitoring locations

Notes on Figure 3.9:

- » SW1, SW2 and SW3 are monitoring points specified in the permit, now dry;
- » S1, S2, S3, and S4 are Hydrock site investigation surface water monitoring points unrelated to the permit;
- » The lagoons shown near S3 are historic and no longer present;
- » Point X is the agreed aftercare surface water monitoring point.

### 3.7 Proximity of Housing and Human Receptors

This statement is a surrender report requirement relevant mainly to gas risk. Details are given in Table 3.6 below, with locations within 500m of the site shown on drawing 23880-HYD-XX-ZZ-DR-GE-1019 at Appendix E.

Table 3.6: Proximity of housing and human receptors

Title	Details	Closest Distance to permit boundary (m, approximate)	Direction	Status
<b>The Bungalow</b>	Dwelling house	100	WNW	Occupied
<b>Haldens Parkway</b>	Commercial warehousing	150	WNW	Operational
<b>Astwell Augers</b>	Commercial premises (industrial units)	220	SSW	Operational
<b>Rectory Farm</b>	Dwelling house and farm buildings	355	SE	Occupied
<b>Thrapston Village</b>	Dwelling houses	800	NW	Occupied
<b>Titchmarsh Village</b>	Dwelling houses	1500	NE	Occupied

## 4. Monitoring Infrastructure and Data Availability

### 4.1 Available Database

The available database comprises:

- » Long-term monitoring data acquired in compliance with Schedules 4 and 5 of the Permit;
- » Site investigations, borehole installations, and testing undertaken by Hydrock 2020-2022;
- » Gas, groundwater, and surface water monitoring undertaken by Hydrock, 2020 to date.

### 4.2 Long Term Permit Compliance Data

#### 4.2.1 Long Term Monitoring Data

##### 4.2.1.1 General

- » Requirements specified in Schedules 4 and 5 of the 2008 permit (Appendix D);
- » Available data goes back to 2009;
- » Locations shown on October 2003 drawing attached Appendix F.

##### 4.2.1.2 Groundwater Monitoring Locations/Setting

- » Borehole logs at Appendix F;
- » GW1:
  - » 'screened' (= open hole) in Oxford Clay;
  - » Designated as the 'upstream' borehole.
- » GW2:
  - » 'screened' in Blisworth Limestone and Stamford Member (downstream/cross gradient).
- » GW3:
  - » 'screened' in Blisworth Limestone and Stamford Member (downgradient).

##### 4.2.1.3 Groundwater Monitoring Scope (as permit)

- » Quarterly (as below, with compliance limits):
  - » Water level;
  - » pH (6-9);
  - » Cl (250 mg/l);
  - » NH<sub>4</sub>-N (1mg/l);
  - » Cd (0.1 µg/l);
  - » Ni (20 µg/l);
  - » SO<sub>4</sub> (400 mg/l).
- » Annually
  - » pH; Cl; NH<sub>4</sub>-N; Cd; Ni; EC; TON; TOC; Ca; Mg; Na; K; Total alkalinity; SO<sub>4</sub>; Fe; Mn; Cr; Cu; Pb; Zn (no compliance limits specified)

##### 4.2.1.4 Surface Water monitoring locations, setting

- » Locations as Figure 3.9 above;
- » Open water sampling.

#### 4.2.1.5 Surface Water Scope (as permit)

- » Monthly
  - » Visible oils/grease (none)
- » Quarterly
  - » pH (limit 6-9);
  - » suspended solids (40 mg/l);
  - » visible oils (none); and
  - » NH<sub>4</sub>-N (1mg/l).
- » Annually
  - » pH; Cl; NH<sub>4</sub>-N; Cd; Ni; EC; TON; TOC; Ca; Mg; Na; K; Total alkalinity; SO<sub>4</sub>; Fe; Mn; Cr; Cu; Pb; Zn.

Records indicate that the designated long-term surface water monitoring locations were normally dry and not sustained by baseflow.

#### 4.2.1.6 Long-Term Gas Data

- » Undertaken quarterly in accordance with permit conditions, on GW1, GW2, GW3 and an in-waste borehole referred to as GAS 1 (near GW2);
- » Data limited to gas concentrations (CH<sub>4</sub>, CO<sub>2</sub>, O<sub>2</sub>), atmospheric pressure, temperature, meteorological conditions, differential pressure (only required if CH<sub>4</sub>, CO<sub>2</sub> concentrations > limits but standard since September 2020).

#### 4.2.1.7 2018 in-waste boreholes

In 2018, following site restoration the Operator installed 15 gas monitoring boreholes (BH01 – 15) into the landfill targeting the full depth of the waste.

- » Boreholes located as drawing T\_IWBH attached (Appendix G);
- » Standardised borehole design as attached (Appendix G)
- » Drilling and installation undertaken in accordance with EA-approved CQA plan and verification report on completion (Appendix G);
- » Quarterly monitoring (with gaps) since March 2021 in accordance with permit (i.e., limited to gas concentrations (CH<sub>4</sub>, CO<sub>2</sub>, O<sub>2</sub>), atmospheric pressure, temperature, meteorological conditions, differential pressure (only if CH<sub>4</sub>, CO<sub>2</sub> concentrations > limits).
- » Monitored by Hydrock since 24/11/22 to include gas flow measurements.

### 4.3 Site investigations, borehole installations, and monitoring undertaken by Hydrock 2020-2022

#### 4.3.1 Borehole Installations, Leachate and Groundwater Monitoring

An exploratory hole location plan 23880-HYD-XX-ZZ-DR-GE-1012 attached at Appendix H refers. Borehole logs are attached at Appendix H.

Table 4.1 summarises the total network.

Table 4.1: Hydrock Borehole Network

Location	Installation Date	Strata targeted	Current Status
CBH-101	June 2021	Kellaways Sand Member	Decommissioned*
CBH-102		Kellaways Clay Member	Not part of current network***
CBH-103	July 2021	Glaciofluvial Deposits	Decommissioned*
CBH-104	June 2021	Landfill	Decommissioned*
CBH-105		Landfill	Decommissioned*
CBH-106	July 2021	Landfill	Decommissioned*
CBH-107	June 2021	Landfill	Decommissioned*
CBH-108	July 2021	Glacial Till	Decommissioned*
CBH-109		Made Ground	Actively monitored
CBH-110		Landfill	Decommissioned*
CBH-111		Landfill	Not part of current network ***
RBH-101	June 2021	Cornbrash Limestone Formation	Actively monitored
RBH-102		Cornbrash Limestone Formation	Decommissioned*
RBH-103		Cornbrash Limestone Formation	Actively monitored
RBH-104		Cornbrash Limestone Formation	Actively monitored
RBH-105		Cornbrash Limestone Formation	Decommissioned*
RBH-106	July 2021	Cornbrash Limestone Formation	Actively monitored
RBH-107		Cornbrash Limestone Formation	Actively monitored
RBH-108	June 2021	Cornbrash Limestone Formation.	Decommissioned*
RBH-109	July 2021	Blisworth Limestone Formation	Not part of current network****
RBH-110		Head Deposits	Not part of current network****
RBH-111		Blisworth Limestone Formation	Not part of current network****
RBH-112		Blisworth Limestone Formation	Not part of current network****
RBH-113		Cornbrash Limestone Formation	Actively monitored
RBH-114		Blisworth Limestone Formation	Not part of current network****
RBH-115		Blisworth Clay Formation	Not part of current network****
RBH-116		Blisworth Limestone Formation	Not part of current network****
RBH-117		Blisworth Clay Formation	Not part of current network****
RBH-118		Blisworth Limestone Formation	Not part of current network****
RBH-119	Cornbrash Limestone Formation	Actively monitored	
CP201	November 2021	Glacial Till	Not part of current network****
CP202		Kellaways Sand	Not part of current network****
CP203		Landfill	Not part of current network***
CP204***		Kellaways Sand	Actively monitored***
CP205		Landfill	Actively monitored
CP206		Landfill	Decommissioned*
CP207		Landfill	Not part of current network***
CP208		Landfill	Decommissioned*

Location	Installation Date	Strata targeted	Current Status
CP209		Glacial Till	Decommissioned*
CP210		Landfill	Decommissioned*
RBH-201		Cornbrash Limestone Formation	Actively monitored
RBH-202	December 2021	Cornbrash Limestone Formation	Actively monitored
RBH-203	November 2021	Blisworth Limestone Formation	Actively monitored
RBH-204	December 2021	Blisworth Limestone Formation	Actively monitored
RBH-205		Blisworth Limestone Formation	Not part of current network****
RBH-206		Blisworth Limestone Formation	Not part of current network****
RBH-207		Blisworth Limestone Formation	Not part of current network****
RBH-208		Blisworth Limestone Formation	Actively monitored
RBH-209		Blisworth Limestone Formation	Not part of current network****
RBH-210		Blisworth Limestone Formation	Not part of current network****
RBH-211		Blisworth Limestone Formation	Actively monitored
RBH-212		Blisworth Limestone Formation	Not part of current network****
RBH-213		Blisworth Limestone Formation	Actively monitored
RBH-214		Blisworth Limestone Formation	Not part of current network****
RBH-215		Cornbrash Limestone Formation	Actively monitored
RBH-216		Cornbrash Limestone Formation	Actively monitored
RBH-217		Blisworth Limestone Formation	Not part of current network****
RBH-218		Blisworth Limestone Formation	Not part of current network****
RBH-219		Cornbrash Limestone Formation	Actively monitored
RBH-301	November 2022	Cornbrash Limestone Formation (partial penetration only)	Abandoned; replaced (adjacent location) by 301A****
RBH-301A**	December 2022	Cornbrash Limestone Formation (full penetration)	Replacement for RBH 301. Actively monitored
RBH-302		Cornbrash Limestone Formation (partial penetration only)	Abandoned; replaced (adjacent location) by 302A****
RBH-302A**	November 2022	Cornbrash Limestone Formation (full penetration)	Replacement for RBH 302. Abandoned due to blockage; replaced (adjacent location) by 302B
RBH-302B	January 2023	Cornbrash Limestone Formation (full penetration)	Replacement for RBH 302A. Actively monitored
RBH-303		Cornbrash Limestone Formation (partial penetration only)	Abandoned; replaced (adjacent location) by 303A****
RBH-303A	November 2022	Cornbrash Limestone Formation (full penetration)	Replacement for RBH 303. Actively monitored

\* Decommissioned in accordance with pre-approved CQA plan followed by CQA validation report on completion (see Appendix J)

\*\* Located approximately 15m downgradient of waste mass

\*\*\* Continuous gas monitoring

Location	Installation Date	Strata targeted	Current Status
**** some post installation monitoring data is available			

In summary, the leachate and groundwater monitoring network used as the basis for permit surrender is as Table 4.2 below:

Table 4.2: Leachate and Groundwater Testing

BH No	Target strata	Orientation	Function
RBH 101	Cornbrash Limestone	Up gradient from landfill	Background water quality in critical receptor
RBH 106	Cornbrash Limestone		
RBH 107	Cornbrash Limestone		
CBH 109	Made Ground	Down gradient of landfill	Leachate quality
CP 205	Landfill waste	In-waste mass	To check for outward migration of leachate at progressive distances from edge of waste
RBH 201	Cornbrash Limestone	Cross gradient N	Background water quality in critical receptor
RBH 216	Cornbrash Limestone	Cross gradient S	
RBH 301A	Cornbrash Limestone	Down gradient E	To check for outward migration 15m from edge of waste.
RBH 302B	Cornbrash Limestone		
RBH 303A	Cornbrash Limestone	Up gradient from landfill	Background water quality in critical receptor
RBH 103	Cornbrash Limestone	Down gradient of landfill in critical receptor at progressive distances from edge of waste	To check for outward migration of leachate at progressive distances from edge of waste
RBH 104	Cornbrash Limestone		
RBH 202	Cornbrash Limestone		
RBH 219	Cornbrash Limestone		
RBH 113	Cornbrash Limestone		
RBH 119	Cornbrash Limestone	Cross gradient E - separate flow path	
RBH 215	Cornbrash Limestone	Cross gradient E - separate flow path	
RBH 203	Blisworth Limestone	Cross gradient N	Background water quality in Principal Aquifer
RBH 204	Blisworth Limestone	Down gradient NE	
RBH 209	Cornbrash Limestone	Down gradient of landfill in Principal Aquifer at progressive distances from edge of waste	Assess potential impact of landfill on Principal Aquifer
RBH 211	Cornbrash Limestone		
RBH 213	Cornbrash Limestone		
CP 204	Kellaways Sand	Downgradient of waste	Precautionary check

### 4.3.2 Scope of Leachate and Groundwater Testing

The following programme (Table 4.3) is being followed (applies to all boreholes designated listed in Table 4.2 above (Reference Drawing 23880-HYD-XX-ZZ-DR-GE-1007 at Appendix H).

Table 4.3: Monitoring and Testing Programme

Year	Month	Testing Requirement
2022	November	Full Suite
	December	Reduced Suite
2023	January	Full Suite
	February	Reduced Suite
	March	Full Suite

Monitoring suites are based on current permit requirements, with sulphate added to the reduced suite at the request of the EA:

- » Full Suite: pH; Cl; NH<sub>4</sub>-N; Cd; Ni; EC, TON, TOC, Ca, Mg, Na, K, Total alkalinity, SO<sub>4</sub>, Fe, Mn, Cr, Cu, Pb, Zn;
- » Reduced Suite: pH; Cl; NH<sub>4</sub>-N; Cd; Ni; SO<sub>4</sub>.

### 4.3.3 Surface-water Monitoring

The monitoring programme also includes surface water testing at Point X (reference Figure 3.3) for the testing programme as per Table 4.3, with the suite as below:

- » Full suite: pH, Suspended Solids, Visible oils, NH<sub>4</sub>-N; TOC, Se, Sb, Hg, Al, Mg, SO<sub>4</sub>, Cl, Fe, Cd, Cr, Cu, Ni, Pb, Zn, FI, BTEX, PCB, PAH, TDS, DOC.
- » Reduced suite: pH, Suspended Solids, Visible oils, NH<sub>4</sub>-N; SO<sub>4</sub>.

### 4.3.4 Assessment

The leachate, groundwater and surface water quality assessment in Appendix J will in addition incorporate any relevant historical data.

## 4.4 Ground Gas Monitoring

### 4.4.1 Continuous Gas Monitoring

Available data as follows:

- » CBH-111: (in waste): from July 2022 -March 2023;
- » CP203: (in waste): from July 2022 -March 2023;
- » CP204: (off site, east, Kellaways Sand): July – October 2022; and
- » CP207: (in waste): from October 2022 -March 2023.

Borehole logs are included herein at Appendix H.

### 4.4.2 Spot Gas Monitoring

Spot gas monitoring has been undertaken by Hydrock on boreholes within the landfill and in the wider area from July 2021 to March 2023.

Full details of the relevant available gas monitoring dataset are included in Appendix L.

## 5. Environmental Permit and Waste Issues

### 5.1 Key dates in development of the permit

#### 5.1.1 General

A December 2000 Planning Application (granted) was for the extraction of sand and gravel followed by restoration to agricultural use by the import of inert waste.

The first PPC Permit for waste deposition reference BT9879 was issued in July 2004. The only significant technical variation over the years has been to the quantity of waste deposited (increased in 2008). Regulatory changes are summarised in Section 5.1.2 below.

The site was licensed to accept Inert Waste, and, with minor exceptions (which are allowed under the permit), Compliance Assessment Reports (CAR's) made available to Hydrock indicate that this requirement was mostly complied with. Logs of boreholes drilled into the waste by Hydrock support this assessment (Section 5.2.6 below).

Records indicate that the site was lined with locally-derived boulder clay with the intention of forming a hydraulic barrier at the base and sides of the landfill and again, the Hydrock site investigation supports this assessment (also see Appendix I, Cell Engineering).

In terms of natural geology, the footprint of the landfill was considered to be variably underlain by remnant glacial deposits, Oxford Clay, Kellaways Clay and Kellaways Sand. The Hydrock 2022 interpretation, based on more extensive site investigation, indicates that the presence of Oxford Clay beneath the landfill is questionable but that other natural clay layers are present.

The site ceased accepting waste in July 2015 and by the end of 2016 it had been fully decommissioned and restored. It is now in agricultural use.

#### 5.1.2 Permitting History

The permitting history is summarised in Table 5.1 below. The latest (2008) permit is attached at Appendix D.

Table 5.1: Permitting History

Date	Activity
<b>April 2003</b>	Application for an authorisation (PPC Permit) submitted by Mick George.
<b>July 2004</b>	PPC permit issued to Mick George reference BT8789.
<b>October 2006</b>	Permit varied by the EA due to legislative change and re-issued as EP3837LU.
<b>August 2007</b>	Permit varied by EA in response to an application by Mick George to increase annual waste input.
<b>January 2008</b>	Variation Notice number PP3233XK issued by the EA for the increased input.
<b>April 2008</b>	PPC Permit became an Environmental Permit (EP) with no change to PPC Permit conditions. The EP reference is EPR/BT9879IY.

#### 5.1.3 Current Permit Reference Details

Based on the above table, it is the wording of PPC Permit Number EP3837LU Variation Notice Number PP3233XK dated April 2008 that continues to specify compliance requirements (Appendix D).

## 5.1.4 Summary of Improvement Conditions

Improvement conditions are listed in Table S1.3 of the permit. The current status of each is summarised in Table 5.2 below.

Table 5.2: Improvement Conditions

Improvement Condition (IC) Reference	Requirement	Status
IC1	Requirement for permitted installation Closure Plan	Not enforced by the regulator but requirements superseded by the content of the Hydrock June 2022 Closure Report.
IC2	Requirement for permitted installation post closure aftercare and restoration plan	Not enforced by the regulator but covered by local authority acceptance of the restoration works, the content of the Hydrock June 2022 Closure Report, and the content of this surrender report.
IC3	Permitted installation decommissioning plan	Site now fully decommissioned apart from monitoring boreholes
IC4	Proposals for the location of additional in-waste boreholes.	Subject to EA-approved CQA planning and installed in 2018 and undergoing monitoring to the satisfaction of the regulator.
IC5	Drawing showing pre-settlement levels of landfill	Understood to have been complied with (reference section 8.3 below).

## 5.2 Waste Characteristics

### 5.2.1 Permit Requirements

Applicable wastes are specified in Schedule 3 of the permit (Appendix D) and are reproduced in Box 1 below:

Box 1: Applicable waste

EWC Code	Description	Restrictions
17 01 01	Concrete	Selected C&D waste only <sup>(a)</sup>
17 01 02	Bricks	Selected C&D waste only <sup>(a)</sup>
17 01 03	Tiles and ceramics	Selected C&D waste only <sup>(a)</sup>
17 01 07	Mixtures of concrete, bricks, tiles and ceramics	Selected C&D waste only <sup>(a)</sup>
17 05 04	Soil and stones	Excluding topsoil, peat; excluding soil and stones from contaminated sites

(a) Selected construction and demolition waste (C & D waste): with low contents of other types of materials (like metals, plastic, organics, wood, rubber, etc). The origin of the waste must be known.

No C & D waste from constructions, polluted with inorganic or organic dangerous substances, e.g. because of production processes in the construction, soil pollution, storage and usage of pesticides or other dangerous substances, etc., unless it is made clear that the demolished construction was not significantly polluted.

No C & D waste from constructions, treated, covered or painted with materials, containing dangerous substances in significant amounts.

### 5.2.2 Inert Nature of the Waste

In pre-application discussions (Appendix A, point 10) the EA requested 'a comparison with the landfill inert waste acceptance criteria to confirm compliant waste acceptance'. By definition, inert waste is 'waste that does not undergo any significant physical, chemical or biological transformations', examples being sand, gravel, brick, concrete etc that accords with the permit conditions in Box 1 above. Compliance is demonstrated below.

### 5.2.3 Waste Returns

Quarterly waste returns are available from April 2006 to when the site ceased accepting waste in July 2015. Returns were submitted using the EAs Waste Returns pro-forma which lists:

- » Site referencing details;
- » Tonnage of waste received on site, split according to EWC code;
- » Tonnage of waste removed from site according to EWC code (mostly zero).

There is no evidence that these returns were ever disputed by the EA.

### 5.2.4 Waste Acceptance Procedures

Waste Acceptance Procedures are specified in Section 6.5 (Waste Acceptance and Control Systems and Procedures) of the April 2003 Working Plan submitted with the original IPPC application (see Appendix C to SCR for non-tipped areas) at Appendix N). It provides for:

- » Visual inspection of the waste prior to entry;
- » Passage over a weighbridge;
- » Check against a Waste Transfer Note;
- » Removal of non-compliant waste;
- » Further inspection after discharge;
- » Record keeping.

### 5.2.5 Annual Reports

Historic annual reports are mostly unavailable but there is no evidence in correspondence of non-compliance.

### 5.2.6 Compliance Assessment Reports (CARs)

The CAR record following EA inspections is incomplete but copies are available intermittently from 2004 to present (see table 5.3 below).

Table 5.3: CAR reports summary

Month/Year	Number of CAR available	Summary of CAR content with reference to waste acceptance
07/2004	Permit issued	
10/2004	1	No non-conformance reported
2005	3	No non-conformance reported
2006	5	4/5 reports compliant 1/5 reports minor amounts of plastic
2007	5	4/5 reports compliant 1/5 reports wood and grass which the operator was instructed to remove (and keep waste transfer notes)
2008	7	Some issues of non-conformance (Tarmac) but site reported as generally well run with improvement in waste acceptance
2009	4	

Month/Year	Number of CAR available	Summary of CAR content with reference to waste acceptance
2010	2	procedures. Operator was instructed to remove non-compliant waste (and keep waste transfer notes) No reports of non-compliance
2011	0	
2012	1	High levels of input reported. No reports of non-compliance
2013	0	
2014	0	
2015	0	
09/2015	Site had ceased accepting waste	

Available CARs show sporadic issues of non-compliance 2007 -2009 but having recognised the breach the Operator was instructed to remove the non-compliant material and provide evidence (to the EA) via Waste Transfer Notes that the instruction had been complied with. The anomalies were never sufficient to prompt the EA into taking enforcement action.

It is reasonable to conclude that tipping was carried out generally in compliance with the permit (as at 5.2.1/Box 1 above) i.e., inert waste with small amounts of non-compliant waste.

## 5.2.7 Waste characterisation evidence from site investigations

### 5.2.7.1 Operator (Mick George) In Waste Boreholes

In 2018, the operator installed 15 in-waste boreholes. A CQA report (Appendix G) was submitted to, and accepted by, the EA on completion. The CQA report included borehole logs containing lithological descriptions for the waste such as:

- » Brown grey black gravelly clay;
- » Brown stony gravelly clay fill;
- » Brick fill;
- » Concrete fill;
- » Concrete and stone fill;

There is no mention of material that might be considered to be non-compliant with the permit.

### 5.2.7.2 Hydrock in waste boreholes

Details in Table 5.4 below are for all boreholes that penetrated > 5m of waste and which, collectively, may be considered to be representative of the deposited waste.

Table 5.4: Waste description from Hydrock in-waste boreholes

BH no	Drilling method	Waste Thickness (m)	Waste Description (dominant material)
CBH101	Cable	9.8	All inert materials (clay, brick, concrete, etc)
CBH104	Cable	8.9	All inert materials described as sandy, slightly gravelly, clay, with mention of flint and sandstone
CBH106	Cable	9.6	All inert materials described as sandy, slightly gravelly, clay, with mention of brick, ask, and limestone. Isolated occurrence of furnace slag at 7.5m

BH no	Drilling method	Waste Thickness (m)	Waste Description (dominant material)
CBH107	Cable	9.4	All inert materials described as sandy, slightly gravelly, clay, with mention of sandstone and brick. Isolated record of timber at 3m.
CBH110	Cable	8.3	All inert materials described as slightly gravelly, clay, with mention of flint, brick. Ironstone and chalk.
CBH111	Cable	8.45	Slightly silty, slightly sandy, slightly gravelly clay. Gravel is fine to coarse angular to sub-rounded brick, limestone, ash, flint, sandstone, ironstone, concrete, plastic and timber. Carbonaceous material after 7.5m
CP203	Cable	11.9	Mainly slightly sandy gravelly clay. Gravel is chalk, brick and limestone
CP205	Cable	11.0	Mainly slightly sandy gravelly clay. Gravel is chalk, brick and limestone
CP206	Cable	10.0	Slightly gravelly sandy clay with chalk, brick, and flint
CP207	Cable	9.0	Gravelly sandy clay with chalk, brick, and limestone. Mention of rootlets and partially decomposed organic material at 2m depth
CP208	Cable	6.8	Gravelly sandy clay with sandstone, chalk and limestone. Mention of rootlets and partially decomposed organic material at 3m depth
CP210	Cable	8.0	Grey gravelly clay with chalk, flint and limestone and rare rootlets.
RBH102	Dynamic sampling and rotary coring	9.6	Slightly gravelly, slightly sandy clay with flint, chalk and bricks
RBH108		8.85	Slightly gravelly clay with flint, chalk, sandstone and brick.

### 5.2.7.3 Non-compliant waste summary

It is evident from CAR and Site Investigation records that the waste is mainly inert and complies with the permit, which allows for 'low contents of other types of materials (like metals, plastic, organics, wood, rubber, etc.' (as 5.2.1 above).

It follows that the pollution risk from non-compliant materials would be expected to be insignificant.

## 5.3 Pollution Control Measures

### 5.3.1 Surface Water

Surface water pollution control measures at the site were operational during quarrying and relate to surface water management via a discharge consent that was surrendered on completion. In respect of the landfilling, there is no specific requirement in the permit for leachate, or surface water management.

### 5.3.2 Geological Barrier (CQA)

#### 5.3.2.1 Reporting and Approvals Requirements

The original PPC permit specifies a requirement for the submission to the EA of a CQA plan for the engineering of the cells, including a geological barrier, followed by a CQA validation report on completion. The requirement was for a clay liner on the base, slopes and sides of each cell

minimum 0.5m thick using site-won boulder clay. The liner was to have a maximum permeability of  $1 \times 10^{-7}$  m/s.

### 5.3.2.2 Dates, elevation, thickness

This information is presented below and in Appendix I. Cell boundaries are shown on Drawing 23880-HYD-XX-XX-DR-GE-1021 is included in Appendix E.

Table 5.5: Construction dates and approvals

Cell No	Approximate Liner Completion date	CQA reports submitted to EA?	EA Acceptance letter received?
1	July 2004	Yes	Yes
2	April 2005	Yes	Yes
3a	March 2006	Yes	Yes
3b	September 2006	Yes	Yes
4	October 2007	Yes	Yes
5&6	November 2009	Yes	Yes
7 -7c	2010	Record incomplete	Record incomplete
8	2012	Record incomplete	Record incomplete

Appendix I is taken from a 2009 Hydrogeological Risk Assessment Review and is a contemporaneous account of the engineering of the cells constructed to that time.

This record indicates that each cell was lined (base and sides) with 0.5m of engineered clay as standard with laboratory testing of core samples proving a  $10^{-11}$  m/s permeability for the lining.

Whilst not required under the permit, records indicate a low-permeability cap was emplaced in cells 1 & 2. All other cells are understood to have been completed with restoration soils at surface.

The elevation of each cell liner varies according to the depth of quarrying in that cell area but it would appear that the liner thickness was 0.5m as standard.

### 5.3.2.3 Evidence of compliance

#### Cells 1-6

Reports were prepared on behalf of the operator by professional consultants We have evidence of CQA reporting on Cells 1-6 in each case with acknowledgement and approval from the EA. An example is given in Box 2 below:

Box 2: Sample EA letter accepting CQA Plan for Landfill Cell



### Cells 7, 7a, 7b, 7c and 8

There are no records of CQA reporting for Cells 7, 7a, 7b, 7c and 8 but nor is there any evidence of EA request to resolve this apparent anomaly.

Given that the local EA office has confirmed acceptance of Closure it is implied that construction and completion of Cells 7, 7a, 7b, 7c and 8 is considered to be satisfactory.

### 5.3.3 *Effective Lifespan*

There are no likely means by which the effectiveness of the barrier can reduce other than, possibly, by settlement, which has been shown by annual topographic survey to be negligible (ref section 8 below).

### 5.3.4 *Accidents and Incidents*

The Hydrock 2021 investigation included boreholes drilled and completed through the landfill to monitor groundwater quality in formations below the deposited waste. At the request of the EA all such boreholes were decommissioned in November 2022. A CQA Plan was prepared for the decommissioning works and approved in advance by the EA (Appendix J). On completion, a CQA Verification Report was prepared and this was also accepted by the EA (Appendix J).

Part of the verification was assurance that the geological barrier had been restored with material with a permeability lower than the design value of  $10^{-7}$  m/s. There is no evidence in monitoring data that the original drilling works had any adverse effect on the effectiveness of the barrier.

### 5.3.5 *Changes to the performance of the pollution control measures*

There have been no significant changes to the performance of the pollution control measures during the life of the site.

### 5.3.6 *Confirmation of Completion in accordance with permit conditions*

The site was subject to final inspection by the EA on 06 January 2023.

The CAR stated:

- » The operator is compliance with the conditions of the current permit (consolidated variation dated 11 January 2008),

## 5.4 Post-Surrender Decommissioning of Infrastructure

An outcome of pre-application discussions was a requirement for the Operator to undertake a commitment to 'minimise risks during decommissioning of any infrastructure, including monitoring boreholes external to the landfill'. The Operator is willing to make that commitment and will engage professional consultants to prepare a CQA Plan for the works when required.

In practice, the only remaining infrastructure is boreholes on and outwith the landfill is the site investigation / monitoring boreholes which will require bespoke decommissioning to ensure that they do not pose a long-term pollution risk.

A CQA Plan for the decommissioning works will be compiled and submitted to the local EA office for approval. The works will then be undertaken by qualified and experienced contractors supervised by appropriately qualified consultants. On completion, a CQA validation report will be produced for the benefit of the local EA Office.

## 6. Leachate, Surface water and Groundwater Assessment

### 6.1 Context

The purpose of this section is to demonstrate that the site does not pose a significant risk to groundwater or surface water receptors.

The relevant leachate, groundwater and surface water monitoring data for the site is assessed in Appendix J, with the summary and conclusions reproduced below.

### 6.2 Summary and Conclusions

Hydrock has reviewed the available leachate, groundwater and surface water quality data applicable to the site, and makes the following comments:

- » within the inert landfill, infiltrating rainwater through the restoration soils is the origin of the leachate;
- » due to the presence of a geological barrier, conceptually, an impact by leachate on the surrounding ground would not be expected, which accords with the absence of any evidence of leachate breakout or vegetation distress in the cropped agricultural fields east of the tipped waste area;
- » The data presented in previous sections of this appendix assesses the leachate, groundwater and surface water quality relevant to the landfill waste and surrounding ground,
- » a review of the leachate data has highlighted a number of determinands that are present in the leachate which need to be assessed in natural groundwater outwith the landfill;
- » there is no evidence of a significant impact in the down-gradient groundwater receptors (Cornbrash Formation) from:
  - » substances which have a groundwater criterion in the permit;
  - » any additional substances present in the leachate that are classified either as a hazardous substance or are present above the EQS.
- » there is no evidence of any significant impact in the closest surface water receptors that can be attributed to the landfill;
- » the agricultural use of the land may be a source the sporadic occurrence of ammoniacal nitrogen due to fertiliser application;
- » there is no requirement to develop leachate compliance criteria at the site as the landfill is classified as an inert. However, by virtue of there being no significant impact on groundwater that can be attributed to the landfill, Hydrock conclude that the leachate within the inert landfill does not and will not pose an unacceptable risk to groundwater or surface water.

### 6.3 Additional Investigations Arising from Schedule 5 Notice

As noted in Section 1.2.2, additional leachate and groundwater testing was carried out in accordance with the requirements of the Schedule 5 Notice issued by the EA. The investigations undertaken and the findings are presented in Appendix P.

The conclusions presented above remain unchanged.

## 7. Landfill Gas Completion Assessment

### 7.1 Context

The purpose of this section is to demonstrate compliance with surrender criteria for gas. Separate consideration is given to the following available data sets:

- » Long-term gas monitoring data acquired by the Operator in compliance with the permit;
- » Gas monitoring pertaining to the 15 in-waste boreholes installed by the Operator in 2018;
- » Spot gas monitoring undertaken in boreholes installed and monitored by Hydrock July 2021 - March 2023;
- » Continuous gas monitoring undertaken by Hydrock July 2022 - March 2023.

The relevant gas monitoring data for the site is assessed in Appendix L with the summary and conclusions reproduced below.

### 7.2 Summary and Conclusions

Hydrock has reviewed the available gas monitoring data applicable to the site, with a multiple lines of evidence risk assessment and makes the following comments:

- » there is comprehensive dataset of spot and continuous gas monitoring of in-waste boreholes, which has been monitored over a sufficient time-frame to meet the duration, frequency and environmental conditions criteria as specified in the guidance;
- » the continuous monitoring dataset in particular supplements the available spot monitoring data in order to provide high resolution characterisation of the gas status of the landfill;
- » the landfill is mostly saturated, such that a number of monitoring points / readings have been excluded from the assessment, however the remaining dataset is sufficient to provide a robust assessment;
- » the available data indicates that, within the waste, landfill gas completion criteria 2 (a  $Q_{ngs}$  of 0.7/hr) is exceeded on a very small number of occasions (1.2% of readings) and from borehole CBH-111 only, and all other locations and readings record below completion criteria 2;
- » the source of these exceedances has been attributed to the presence of small quantities of methane dissolved within the water within the landfill, outgassing into the air contained within CBH-111, with atmosphere pressure drops causing temporary over-pressurisation of the borehole and thereby temporarily elevated GSVs for methane;
- » the over-pressurisation effect does not represent an emission rate of gas but is due to the effects of borehole construction in a relatively low permeability environment;
- » the source of the dissolved methane within the landfill is attributed to microbial degradation of small amounts of organic materials contained within the saturated inert waste.
- » a risk assessment of the relevant spot and continuous gas monitoring data from perimeter and other appropriate receptor boreholes screened in natural deposits outside the landfill indicates that the landfill does not pose a gas risk to neighbouring properties, with an overall classification of CS1 for data acquired out-with the landfill.
- » there is no evidence of any gas migration in the closest unsaturated perimeter monitoring borehole to CBH-111 (CBH-103).

On the basis of the findings above, Hydrock considers that the landfill, in its current undisturbed state, is suitable for surrender with respect to gas risk as it does not pose a significant risk to the identified receptors.

### 7.3 Additional Investigations Arising from Schedule 5 Notice

As noted in Section 1.2.2, additional ground gas testing was carried out in accordance with the requirements of the Schedule 5 Notice issued by the EA. The investigations undertaken and the findings are presented in Appendix P.

The conclusions presented above remain unchanged.

## 8. Topographic Survey (evidence of settlement)

### 8.1 Observation at final inspection by the EA

The CAR dated 06 January 2023 (final inspection) stated:

- » Although the site was heavily waterlogged due to the amount of rain in previous weeks there were no significant dips and hollows on the site surface; and
- » There appeared to be no evidence of instability of slopes such as cracking at the crest of slopes or bulging at the base.

### 8.2 Evidence from topographic survey

A comparison between successive annual post-restoration topographic surveys since 2016 show no evidence of settlement so significant as to cause instability. The 2023 survey information is attached at Appendix M.

### 8.3 Agreement with Local Authority Planning

Appendix M includes Mick George Drawing reference T10/15/01 dated 20/01/2015 and titled Final Restoration Contours and Landscaping Scheme.

A Northampton County Council Planning Permission Checklist report following an inspection on 23 June 2015 notes (reference Condition 37): *Restoration being undertaken in accordance with the approved plan which has the same levels as plan/drawing no. T10/15/01.*

The equivalent later report dated 03 May 2018 notes: *Restored to the approved levels set out in the approved plan. No settlement noted to date.*

## 9. SCR for non-waste areas

Item 35 of the 03 April 2023 pre-app meeting notes requires the Operator to prepare a Site Condition Report (SCR) for the areas within the permit boundary not subject to waste tipping. The required SCR is presented at Appendix N.

## 10. Future Development

As noted in Section 1.1 it is intended that, following permit surrender, the Rectory Farm Landfill site will form part of a logistical warehousing development incorporating the adjacent land to the north and west. The intention is that the landfilled waste will be recovered and re-used to form landscaped bunds under an approved Waste Recovery Plan and Bespoke Deposit for Recovery Permit.

The current position is that the EA has, via pre-application discussions, advised that the proposed works constitute a Waste Recovery Activity. It is anticipated that, when the Environmental Permit for the landfill has been surrendered and planning permission for the warehousing development obtained, the Waste Recovery Plan will be formally submitted for approval. When that approval is granted, the earthworks contractor (Mick George Earthworks Limited) will apply to deploy its Mobile Plant Permit for waste excavation, segregation and treatment and will also apply for a Deposit for Recovery Permit to re-use the recovered wastes to construct the bunds.

All such activities are underpinned by an extensive series of design reports, risk assessments etc to establish re-use criteria. These reports will be made available to the EA as part of planning consultations, as well as the MMP Deployment and DfR application processes.

When the development is completed, the Rectory Farm Quarry Landfill will cease to exist, with the waste having served a useful purpose.

# Appendix A Pre-Application Discussions

**RECTORY FARM (THRAPSTON) LANDFILL PERMIT SURRENDER**

**FW: [Hydrock: 23880-GNST] Enhanced pre-application advice request for Mick George Haulage Ltd - EPR/BT9879IY/S007**

**Pre-application meeting 1030 hrs 03 April 2023**

**AGENDA (checklist of issues to address based on Helen Culshaw comments in 28 March email from Joe Hall)**

<b>Point Ref</b>	<b>Helen Culshaw comment</b>	<b>Response (for completion based on discussion at pre-app meeting)</b>	<b>Where in surrender report is issue addressed</b>
1	The pre-application request was for a review of the Technical design note provided in relation to a proposed surrender application for the site. This has been reviewed in conjunction with the closure report submitted to the Environment Agency area team and the surrender guidance. An application to surrender can be made at any time, the site does not have to be definitively closed. An application to surrender will only be accepted if the surrender criteria are met. Advice provided below is in relation to surrender only.	Noted	Not applicable
2	The review presented below covers the elements detailed in the guidance <a href="http://www.gov.uk">Landfill and deposit for recovery: aftercare and permit surrender - GOV.UK (www.gov.uk)</a> . This guidance should be read when producing a surrender application and section 19 details the information required to be presented in a surrender report.	Noted	1.2.1
	The following surrender criteria need to be met:		
3	<ul style="list-style-type: none"> <li>an appropriate period of aftercare has passed to allow waste to stabilise and evidence gathered to demonstrate that pollution control measures are no longer necessary</li> </ul>	Noted	Evidence presented in surrender report
4	<ul style="list-style-type: none"> <li>the deposits of waste are in a satisfactory state that if left undisturbed, will not cause pollution of the environment</li> </ul>	Noted	
5	This advice should also be viewed with the previous pre-application advice provided in August 2022.	Noted	1.2.4

	<b>Site Summary</b>		
	<b>Waste area and depth</b>		
6	<p>Please see previous comments provided. The surrender report will need to provide reference to the CQA undertaken for the liner, dates for each cell, and reference to it's elevation and thickness.</p> <p>The report will need to provide the confirmation that the 2021/2 site investigation works have been successfully decommissioned and no pollution caused.</p>	<p>Text included in report</p> <p>Text included in report</p>	<p>5.3.2</p> <p>5.3.4</p>
7	A finished topographical survey will need to be provided.	Latest topo survey (January 2023 included)	Appendix M
	<b>Waste Types.</b>		
8	<p>The surrender report should discuss the details of non-compliant waste acceptance as detailed in Section 19 of the guidance.</p> <p>While reference is made to one specific CAR form in the technical design note, the records we hold include other CAR forms detailing observations of some non-conforming wastes. Section 12 of the guidance explains that the operator must provide evidence that they either removed all the deposited non-compliant waste, or have assessed the contribution these wastes will have on emissions and confirmed their significance.</p> <p>This also appears relevant given the gas concentrations recorded (see below) which are higher than would be expected for a landfill directive inert site with a compliant waste acceptance history.</p>	CAR forms to be obtained from local team.	5.2.6
9	The surrender report will need to describe the site investigation and monitoring data that has been collected to support the inert nature of the waste.	Included	Section 4
10	A comparison with the landfill inert waste acceptance criteria will need to be made to confirm compliant waste acceptance	Add Text	5.2.2

	<b>Receptors</b>		
11	The surrender report will need to provide detail on the receptors related to the site. These should include, Rectory Farmhouse (~100 m southeast), Bungalow Rectory Farm (~110 west), and industrial units.	Text included in report	Sections 3.3.1, 3.7
	<b>Groundwater</b>		
12	The technical design note references the Cornbrash Formation (Secondary A aquifer) as the groundwater receptor. The surrender report will also need to cover the presence of the Kellaways Sand Member that is above this formation and is also a Secondary A aquifer.	Text included in report	Appendix K, section 6.7
13	The surrender report will need to assess the monitoring data collected, comparing up gradient (not cross-gradient) and downgradient quality with reference to compliance limits (ammoniacal nitrogen, nickel, chloride and cadmium) and water quality standards for other contaminants identified in the source term.	Text included in report	Appendix K, section 6.5, 6.5, 6.7
14	Groundwater data will be required from all available boreholes to demonstrate that the deposits if left undisturbed will not cause pollution of the environment, and potentially to show that there is no potential impact from any non-compliant wastes that were not removed	Text included in report	Appendix K section 7
15	The groundwater data will have to demonstrate any seasonal variation. Appendix C indicates that groundwater data from the boreholes to be relied on for surrender is only available from November 2022 to March 2023. Further data will need to be collected during the summer low flow groundwater levels to support the surrender application.	Text included in report	Appendix K section 3, section 6
16	The technical design note again refers to the presence of groundwater in the landfill as leachate, it is unclear if this is groundwater from the superficial deposits that has entered the waste or is a perched leachate from infiltration. The surrender report will need to clarify the source and the conceptual model. Water within a landfill directive lined landfill should be leachate rather than “groundwater”.	Text included in report	Appendix K section 3.3
	<b>Surface Water</b>		
17	Any surface water data that has been collected by the operator over the lifetime of the permit will need to be discussed and presented. The surface	Text included in report	Appendix K section 6.9

	water monitoring points in the permit, relate to the surface water management system. It is not clear from Appendix C whether there is any monitoring data from Polopit Brook.		
	<b>Waste Mass Stability</b>		
18	The area of the landfill was to be restored to an agreed planning level for agricultural use. The surrender report will need to provide a final topographic survey with reference to the agreed planning	Evidence from local authority inspection	8.3
19	The work done for the closure report comparing surveys should be included in the surrender report.		8.2
	<b>Gas monitoring infrastructure</b>		
20	The surrender report will need to provide the borehole logs for all boreholes where the data collected is used to support surrender.	Included	Appendix F,G,H
21	A plan showing their location will also be required.	Included	Plans in Appendix E,F,G,H
22	The surrender report will need to explain which boreholes have had the continuous gas monitoring data, and their appropriateness	Included	Appendix L – section 2.2
	<b>Landfill gas monitoring requirements</b>		
23	The surrender report will need to present the available data and the assessment of the concentrations observed. The technical design note states that the data covers the range of environmental conditions required under section 4.1 of the guidance. This will be assessed during the determination of the surrender application.	Text included in report	Appendix L – section 2.5
24	The technical note states that landfill gas completion criteria 2 is demonstrated with flow data. However, the information provided in appendix D appears to contradict this.	Revised text	Appendix L – section 4
25	The surrender report must discuss how the continuous monitoring has been used to supplement the regular monitoring to provide sufficient data including flow to meet the requirement for 24 datasets.	Text included in report	Appendix L – section 2.6
26	Appendix D states that concentrations of methane have been significantly above 1.5% in borehole CBH-111 at between 60-80%. With BH05 also recording concentrations up to 80%. Elevated methane concentrations are indicative of biodegradable wastes within the site, so discussion of non-compliances and assessment of the waste quality recorded during the site	Discussed in report	Appendix L – section 3.2.3, 4

	investigation works will be important. Methane concentrations have also exceeded 1.5% in borehole CP207, CBH-104, and “other locations” in the BH01-15 series in-waste boreholes.		
27	The full dataset, and GSV calculations will need to be provided in the surrender report.	Included	Appendix L, Annex A - D
28	Evidence will also need to be provided of the suitability of the monitoring infrastructure since Appendix D highlights that the majority of the BHXX Series in-waste boreholes are saturated. The saturation of the waste with leachate in these locations will need to be explained given the site is of a landfill directive inert category.	Text included	Appendix L, section 3.1.3, annex A,C,D
29	Table 3.2.2 states that the maximum GSV for methane in borehole CBH-111 is 2.35 l/hr. This exceeds the surrender completion criteria 2 where GSV must be less than 0.7 l/hr., and so contradicts the statement that the maximum $Q_{hgs}$ is compliant. <b>To show that the site is suitable for surrender you will need to produce a comprehensive landfill gas risk assessment adopting a multiple lines of evidence approach to demonstrate the acceptability of the gas risk posed by the site to receptors.</b>		Appendix L, sections 3.2.3 and 4
30	This will need to pull together all the data you have collected, demonstrate that the flow is not from high gas production rates, and provide reasons for the high flow rates. It will need to demonstrate why the GSV exceedances do not constitute an unacceptable risk to receptors from landfill gas in its current undisturbed state	Text included	
31	Undertaking a detailed surface emissions walkover survey or tests may add to your lines of evidence.	Not considered necessary at this stage	-
32	A low-risk surrender charge will not be appropriate for this site, and the full charge would be applied to any application.	Noted	-
33	The surrender report will need to discuss all the data collected from in-waste and any appropriate perimeter boreholes to justify that there is no evidence of any gas migration outside the waste.	Text included	Section 3.3
	<b>Harm to Flora and Fauna</b>		
34	The surrender report will need to include evidence that there is no impact from gas on the surrounding environment.	No reports of distressed vegetation were recorded	-

		during Environment Agency inspections.	
	<b>Minimise risks during decommissioning</b>		
35	The surrender report must also include a description of how you will minimise risks during decommissioning of any infrastructure, including monitoring boreholes external to the landfill.		5.4
36	It should be noted that a site condition report will need to be provided for the areas outside of the landfill cells where waste has not been permanently deposited. Read <a href="http://www.gov.uk">Environmental permitting: H5 Site condition report - GOV.UK (www.gov.uk)</a>	LF site boundary minus tipped part	Appendix N
	<b>Future development</b>		
37	The surrender report should include the information presented regarding the recovery of waste from the landfill.		Section 10
38	It will need to highlight that this would only be carried out under an Environmental Permit		Section 10
39	It should also be noted that advice given for a waste recovery activity following submission of a waste recovery plan is not in itself a permitting decision or an indication that a permit will be granted following submission of an application	Noted and accepted	Section 10

# Appendix B Closure Confirmation Letter

Neil Johnson  
Director  
Mick George Limited  
6 Lancaster Way  
Ermine Business Park  
Huntingdon  
PE29 6XU

**Our ref:** 73156/KM1/closure

**Date:** 13 January 2023

Dear Neil,

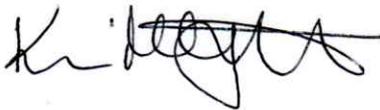
**EAWML73156 / EPRPP3233SK – Rectory Farm Quarry (Thrapston Landfill)**

Further to your letter dated 20 May 2022 requesting the above named site to be put into definite closure I can confirm that we accept that you can apply to vary the permit to enter the aftercare phase.

The closure report document reference 23880-HYD-XX-XX-RP-GE-0001 dated 21 December 2022 has been accepted and a final on-site inspection was undertaken on 06 January 2023.

Please note the site is not definitely closed until the closure variation has been determined you should ensure an application to vary the permit is submitted within 12 months of the date of this letter.

Yours sincerely



**Kim Mynard**  
Regulatory Officer  
Installations – Lincolnshire and Northamptonshire  
Tel: 07795 127160  
Kim.mynard@environment-agency.gov.uk

# Appendix C Closure Report



# Rectory Farm (Thrapston) Landfill (EPR/BT9879IY)

## Closure Report

*For Mick George (Haulage) Ltd*

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*Date:* 21 December 2022

*Doc ref:* 23880-HYD-XX-XX-RP-GE-0001

# DOCUMENT CONTROL SHEET

Issued by	Hydrock Consultants Limited 4 Lakeside Festival Park Stoke on Trent Staffordshire ST1 5RY United Kingdom	T +44 (0)1782 261919 F +44 (0)1782 262020 E stoke@hydrock.com www.hydrock.com
Client	Mick George (Haulage) Ltd	
Project name	Rectory Farm (Thrapston) Landfill (EPR/BT9879IY)	
Title	Closure Report	
Doc ref	23880-HYD-XX-XX-RP-GE-0001	
Project no.	23880	
Status	S2	
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Document Production Record		
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Approved by		Leon Warrington MSc C.Geol

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Issue Number	Status	Date	Revision Details
P01	For client review	21 06 2022	First Issue
P02	First issue to EA	23 06 2022	None
P03	Revised issue to EA	21 12 2022	Additional monitoring boreholes
P04	Revised issue to EA	21 12 2022	Revised monitoring borehole location plan

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

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## Appendices

Appendix A	Drawings
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Appendix D	Restoration Contours and Settlement Drawings
Appendix E	Monitoring Infrastructure

## 1. INTRODUCTION

### 1.1 Background

This Closure Report has been prepared with reference to the following guidance:

<https://www.gov.uk/guidance/landfill-operators-environmental-permits/close-your-landfill-site>

It concerns the Rectory Farm (Thrapston) Landfill Site that is granted permit reference PP3233XK (EPR/BT98791Y) held by Mick George Limited.

The site is a former sand and gravel quarry that was restored by backfilling with inert waste followed by restoration to agricultural use.

### 1.2 Note on Report Versions

Version P01 of this Closure Report was issued to the EA on 22 June 2022. In response, the EA requested preparation and issue by the Operator of an updated Hydrogeological Risk Assessment Review (HRAR) which was complied with through issue of Hydrock HRAR Report 23880-HYD-XX-XX-RP-0003.

The HRAR presented groundwater and surface water monitoring proposals to apply during aftercare. These proposals were incorporated into version P02 of the Closure Report together with updated gas monitoring proposals.

Further discussions with the EA led to a requirement for 3 additional monitoring boreholes for inclusion in the aftercare monitoring programme, which were installed in November 2022. This report version P04 takes into account the availability of these additional boreholes.

### 1.3 Area Requiring Closure

The permit boundary is taken to be that shown on the drawing at Schedule 2, Page 18, of Permit Reference PP3233XK, attached herein at Appendix A. This boundary defines the area that is required to proceed to definitive closure.

For clarity and context, the boundary has been transposed on to Drawing Reference 23880-HYD-XX-XX-DR-GE-1001, also at Appendix A. The site location is shown in Figure 1.1 below.



Figure 1.1: Site Location

The site is located 0.5km east of Thrapston at NGR TL 01470 78354.

#### 1.4 Site Development Summary

Records of Waste Returns indicate that the site first accepted wastes in 2004 and last accepted waste in July 2015. Since then, the site has been fully decommissioned and restored to agricultural fields that are actively cropped.

#### 1.5 Development Context

The Environment Agency should be aware it is the permit holder's intention that, following closure of the site and eventual surrender of the permit, the landfill site will form part of a logistical warehousing development that will involve recovery and re-use of the waste under a Waste Recovery Plan and a Deposit for Recovery Permit.

In anticipation of this development, the landfill site and the remainder of the development site has been subject to an extensive intrusive geotechnical and geo-environmental ground investigation by Hydrock, which has provided information that is available to support the closure and surrender process.

The scope of these investigations is summarised at Appendix B (drawing reference 23880-HYD-XX-ZZ-DR-GE-1011). This drawing excludes all boreholes on the landfill area that were decommissioned at the request of the EA. A CQA Validation Report covering this decommissioning was issued to and accepted by the EA.

## 2. SITE SETTING

### 2.1 Site Location

The site is located north of the A14 on the eastern edge of Thrapston, Northamptonshire at approximate National Grid Reference 501800E, 278350N. Drawing Reference 23880-HYD-XX-XX-DR-GE-1001 at Appendix A is a site location plan.

### 2.2 Topography and Current Land Use

The site is now restored to cropped agricultural fields. Mick George Drawing TPN-EOY/01/2021 at Appendix A (topographic survey dated January 2021) shows the site to slope gently in a north easterly direction.

### 2.3 Geology

The natural geology is glacial drift, including glacio-fluvial deposits (sand and gravel) overlying a stratified sequence of Jurassic strata. It was the sand and gravel that was exploited by the quarry to create the void that was backfilled with waste.

The natural geological sequence in the area that is beneath and potentially within influential distance of the landfill is:

- Glacial Till (Oadby Member), comprising grey or brown clay with subordinate lenses of sand and gravel; and
- Glaciofluvial Deposits comprising sands and gravels.

These superficial deposits overlie the solid geology, which comprises:

- Oxford Clay Formation, comprising silicate mudstone with sporadic beds of limestone; over
- Kellaways Sand Member comprising silicate sandstone and siltstone, pale grey with interbeds of sandy and silty mudstone; over
- Kellaways Clay Member outcropping in the south, centre and north-west of the site, comprising grey mudstone; over
- Cornbrash Limestone Formation, comprising fine grained, bluish grey, weathering olive or yellow brown limestone; over
- Blisworth Clay Formation, comprising silicate mudstone, grey with frequent fossils, rootlets and ironstone nodules; over
- Blisworth Limestone Formation, comprising pale grey or off-white yellowish limestone; over
- Rutland Formation, comprising grey mudstone and siltstone; over
- Stamford Member, comprising grey to yellowish and white sandstone or siltstone.

Geological maps and Sections are presented at Appendix C.

### 2.4 Hydrogeology

The Glaciofluvial Deposits, Kellaways Sand Member and the Cornbrash Formation are classified as 'Secondary A' aquifers. The Oadby Member is classified as a 'Secondary Undifferentiated' aquifer. The Blisworth Limestone Formation is classified as a 'Principal' aquifer. The Oxford Clay Formation,

Kellaways Clay Member and Blisworth Clay Formation are classified as unproductive strata. Each of the other geological units are noted as 'Unproductive Strata'.

The site is not within a Source Protection Zone and there are no active licensed groundwater abstractions within 1km of the site.

There is unconfined groundwater present in the landfill as leachate, which was recorded by Hydrock at depths between 0.12m (64.31m OD) and 4.03m (55.58m OD) with a groundwater flow direction towards the north-east.

Off the landfill site to the north east, groundwater is present in the more permeable Kellaways Sand formation, the Cornbrash Formation and the Blisworth Limestone Formation. These units are separated by lower permeability units comprising the Kellaways Clay and the Blisworth Clay. The concept is of a layered sequence of aquifers and aquicludes.

## 2.5 Hydrology

A series of ditches are present in the land east and north east of the landfill, which coalesce to join Polopit Brook. Under current conditions these ditches are normally dry and only flow after rainfall and are not supported by noticeable baseflow. All flow eventually joins the river Nene.

## 2.6 Conservation Sites

Reference to the on-line resource 'Multi Agency Geographic Information for the Countryside' (MAGIC) website indicates the nearest conservation sites as being as listed in Table 2.1.

Table 2.1: Conservation Sites

Site Name	Site Type	Approximate distance (m)	Direction
Aldwincle Marsh & The Upper Nene Valley Gravel Pits	SSSI / Ramsar/ SPA	1300	NW
Thrapston Station Quarry	SSSI	1400	SW
Titchmarsh Meadow	SSSI	1670	NE
Titchmarsh LNR	LNR	1610	NW
Deciduous woodland	Priority Habitat	430	S
Deciduous woodland	Priority Habitat	630	S
Deciduous woodland	Priority Habitat	660	W
Deciduous woodland	Priority Habitat	755	S
Deciduous woodland	Priority Habitat	1060	NE
Deciduous woodland	Priority Habitat	1120	N
Deciduous woodland	Priority Habitat	1120	E
Deciduous woodland	Priority Habitat	1250	NE
Deciduous woodland	Priority Habitat	1300	SW
Traditional Orchard	Priority Habitat	1750	E

Given the distances involved and the low-risk nature of the facility, the risk of a significantly adverse impact on the above conservation sites is considered to be very low.

## 2.7 Site Development History

The December 2000 Planning Application was for extraction of sand and gravel and restoration to agricultural use by the import of inert waste.

The first PPC Permit for waste deposition reference BT9879 was issued in July 2004. The only significant variation over the years has been to the quantity of waste deposited (increased in 2008).

The site was licensed to accept Inert Waste, and, with minor exceptions, CAR's made available to Hydrock indicate that this requirement was complied with. Logs of boreholes drilled by Hydrock into the waste support this assessment.

The site was lined with locally-derived boulder clay with the intention of forming a hydraulic barrier. The installation of this liner was subject to CQA reporting and approval to confirm that it met specification requirements (especially a permeability of  $10^{-7}$  m/s). In terms of natural geology, the footprint of the landfill appears to be variably underlain by remnant glacial deposits, Oxford Clay, Kellaways Clay and Kellaways Sand.

### 3. EVIDENCE THAT THE WASTE IS STABLE

#### 3.1 Background

The site ceased accepting waste in July 2015 and correspondence between Mick George Ltd and the Local Planning Authority indicates that:

- By the end of 2016 the site had been fully restored (the Mick George Drawing D1.R/08/2016/JM dated 01 August 2016 at Appendix D shows 'Restoration Contours as Built');
- Following an inspection by an officer from the Local Planning Authority on 03 May 2018, a Planning Permission Checklist noted:
  - » Landscaping scheme submitted and approved;
  - » Site restored to the levels set out in the approved plan;
  - » No settlement noted to date;
  - » Soil deposit in accordance with the relevant planning condition;
  - » Landform in accordance with the relevant planning condition;
  - » Aftercare scheme submitted and approved.

It is concluded that the site has been restored and landscaped to the satisfaction of the Local Planning Authority and in accordance with the planning permission.

#### 3.2 Evidence of Settlement

To check for settlement Hydrock has used topographic survey data from 2018 and 2021 as input data to the Civils 3D modelling package. The model uses the topographic data to form a surface and then compares the two to check for change.

Drawing 18443-HYD-XX-XX-DR-GE-6000 at Appendix D compares 2018 and 2021 end of year topographic surveys. The comparison shows that there has been minimal ground movement from 2017 to 2021. Approximately 65% of the survey area has deviated +/- 50mm or less between 2017 and 2021. Approximately 90% of the survey area has deviated +/- 100mm or less between 2017 and 2021. There are a number of locations across the survey area which present with larger deviations (up to +/-300mm) from 2017 to 2021. Interrogation of these specific areas suggest that the deviation is likely to be a gridding error as a result of a relatively sparse dataset where the spot heights are not aligned from survey to survey.

#### 3.3 Future Topographic Surveys

A topographic survey of the site will take place at the end of each calendar year.

## 4. POST-CLOSURE SITE INFRASTRUCTURE AND MONITORING

### 4.1 Context

All buildings and equipment associated with the operational site has been decommissioned and as reported in Section 3 above the site has been fully restored. The following proposals therefore relate to post-closure aftercare conditions with the site restored to agricultural use.

### 4.2 Site Inspections and Reporting

Site inspections are anticipated annually involving representatives of the Environment Agency and Mick George, who would be expected to be in receipt of a CAR if any deficiencies or significant environmental effects are evident.

In addition, the quarterly and annual monitoring (see below) will provide data, an assessment of which will indicate any potentially significant environmental effects.

### 4.3 CoTC Cover

CoTC Cover will be provided by Mr Neil Johnson, Technical and Waste Director, Mick George Ltd, who holds the appropriate WAMITAB qualifications.

### 4.4 Monitoring Proposals

#### 4.4.1 Explanatory Note

The proposals below take into account discussions with the EA since issue of Version P02 of this Closure Report. Section 1.2 above refers.

In summary the existing groundwater and surface water monitoring activities will be replaced by revised monitoring proposals, already discussed and agreed with the EA, as reflecting the findings of a revised Conceptual Site Model as set out in the updated HRAR Report.

Critical to this monitoring strategy is agreement with the EA that it is the Cornbrash Formation that is the critical receptor rather than the Blisworth Limestone.

#### 4.4.2 Proposals for Groundwater and Surface Water Monitoring

##### 4.4.2.1 Proposed Locations

Locations as Drawing 23880-HYD-XX-ZZ-DR-GE-1008 at Appendix E and Table 4.1 below:

Table 4.1: Groundwater and Surface Water Monitoring Proposals

Propose Location	Status	Monitoring Function
RBH 107	Hydrock borehole installed in Cornbrash upgradient from the waste	Upstream groundwater quality in the critical receptor
RBH303A	Hydrock borehole installed in Cornbrash upgradient/cross gradient from the waste	Upstream/cross-gradient groundwater quality in the critical receptor
RBH 301A RBH 302A	Hydrock boreholes installed in Cornbrash downgradient from the waste mass	Groundwater quality in the critical receptor immediately (circa 15m) downgradient from the known edge of the waste (as proven from trial pits in the area)

Propose Location	Status	Monitoring Function
RBH 103		Groundwater quality in the critical receptor further downgradient from the landfill
RBH 104		
CP 204	Hydrock borehole installed in Kellaways Sand and Kellaways Clay downgradient from the waste mass	Groundwater in a unit potentially hydraulically connected to the landfill
RBH 209	Hydrock borehole in Blisworth Limestone downgradient from the waste mass	Downgradient sentinel borehole in Principal Aquifer
Point X on Drawing 1008	Closest surface water location likely to be flowing during most monitoring visits (previous locations have been reported dry for many years)	Precautionary check on surface water quality

#### 4.4.2.2 Parameters and Compliance

Water to be sampled and tested in accordance with the permit, other than that applying to GW1 in the permit, which will now apply to all boreholes in the network

- Surface Water: Monthly
  - » Visible oils/grease (none)
- Surface Water: Quarterly
  - » pH (limit 6-9);
  - » suspended solids (40 mg/l);
  - » visible oils (none); and
  - » NH<sub>4</sub>-N (1mg/l).

The surface water data will be monitored by the Mick George technical team and if there are any significant exceedances of the compliance values they will be reported immediately to the EA. The monitoring visit will then be repeated and if re-confirmed Mick George will commission a risk assessment by a competent person as the basis for further decision making.

- Surface Water: Annually
  - » TOC; Se; Sb; Hg; Al; Mg; SO<sub>4</sub>; Cl; Fe; Cd; Cr; Cu; Ni; Pb; Zn; Fluorides; BTEX; PCBs; PAH; TDS; DOC.
- Groundwater: Quarterly
  - » Water level;
  - » pH (6-9);
  - » Cl (250 mg/l);
  - » NH<sub>4</sub>-N 1mg/l);
  - » Cd (0.1 µg/l);
  - » Ni (20 µg/l);
  - » SO<sub>4</sub> (400 mg/l).
- Groundwater: Annually
  - » pH; Cl; NH<sub>4</sub>-N; Cd; Ni; EC; TON; TOC; Ca; Mg; Na; K; Total alkalinity; SO<sub>4</sub>; Fe; Mn; Cr; Cu; Pb; Zn.

#### 4.4.2.3 *Action Plan for Compliance Exceedances*

The groundwater data will be monitored by the Mick George technical team (unless re-assigned to Hydrock) and if there are any exceedances of the compliance values they will be reported immediately to the EA. The monitoring visit will then be repeated and if re-confirmed Mick George will commission a risk assessment by a competent person as the basis for further decision making.

#### 4.4.2.4 *Explanatory Note*

The above proposal relates specifically to post-closure aftercare requirement. It is anticipated that additional water quality and gas monitoring will be required to support a surrender application, which is beyond the scope of this report.

#### 4.4.3 *Proposals for Landfill Gas Monitoring*

##### 4.4.3.1 *Proposed Locations*

- BHs listed in Table 4.1 above;
- Mick George in-waste boreholes BH1-BH15 (see drawing A109017-BLP-018 at Appendix E).

##### 4.4.3.2 *Measurements*

The following measurements/records will be taken:

- Weather conditions;
- Concentration of methane, carbon dioxide, and oxygen;
- Relative pressure;
- Gas flow;
- Atmospheric pressure;
- Groundwater level.

##### 4.4.3.3 *Compliance Values (for reporting purposes)*

- Methane: 1%
- Carbon Dioxide: 1.5%

##### 4.4.3.4 *Frequency*

Gas monitoring will take place quarterly.

#### 4.4.4 *Action Plan for Compliance Exceedances*

The gas monitoring data will be monitored by the Mick George technical team and if there are any exceedances of the compliance values they will be reported immediately to the EA. The monitoring visit will then be repeated and if re-confirmed Mick George will commission a risk assessment by a competent person as the basis for further decision making.

#### 4.5 *Reporting Frequency*

Reports containing the gas and water data will be submitted quarterly to the EA within 1 week of receipt of the lab test results.

Annual reports will continue to be issued by 31 January of each year in accordance with Condition 4.2.1 of the permit (insofar as the listed requirement reflect the site as being closed and in aftercare).

#### 4.6 Maintenance

The technician employed to undertake the monitoring will be required to report on the functionality of the monitoring infrastructure and to record any defects. Any such defects will be rectified as soon as practicable or, at a minimum, within one month of receipt of the report.

#### 4.7 Note on CQA

In respect of Construction Quality Assurance requirements, as related to the monitoring network:

- Historic monitoring boreholes GW1, GW2, GW3, and GAS 1 pre-dated a formal CQA requirement;
- Mick George in-waste boreholes were installed in accordance with:
  - » WYG Report reference A109017 QP01; Construction Quality Assurance Plan for the Drilling of In Waste Gas Monitoring; and
  - » WYG Report reference A109017 dated May 2019; Construction Quality Assurance Report for the In-Waste Monitoring Borehole Installation – August/September 2018
- Hydrock Boreholes RBH 301A-303A were subject to a CQA Plan and CQA verification reporting submitted to and approved by the EA;
- All other Hydrock Boreholes were installed in accordance with the Company's accredited Quality Management System with the works being managed and supervised by professionally qualified staff and an experienced drilling contractor from Hydrock's list of pre-qualified approved suppliers.

## 5. HYDROGEOLOGICAL RISK ASSESSMENT

Section 1.2 (above) refers; in response to review of Version P01 of this Closure Report the EA requested a more in-depth Hydrogeological Risk Assessment Review report be issued.

This request has been complied with through issue of the following report:

*Hydrock, 23 August 2022. Rectory Farm (Thrapston) Landfill (EPR/BT9879IY). Hydrogeological Risk Assessment Review. For Mick George (Haulage) Limited. Version S2-P03.*

Proposals for monitoring in the above report are superseded by those presented in this closure report.

## 6. OTHER ISSUES

### 6.1 Organisation and Management

The Mick George Organisation Chart applicable to closure and aftercare is shown in Figure 6.1 below.

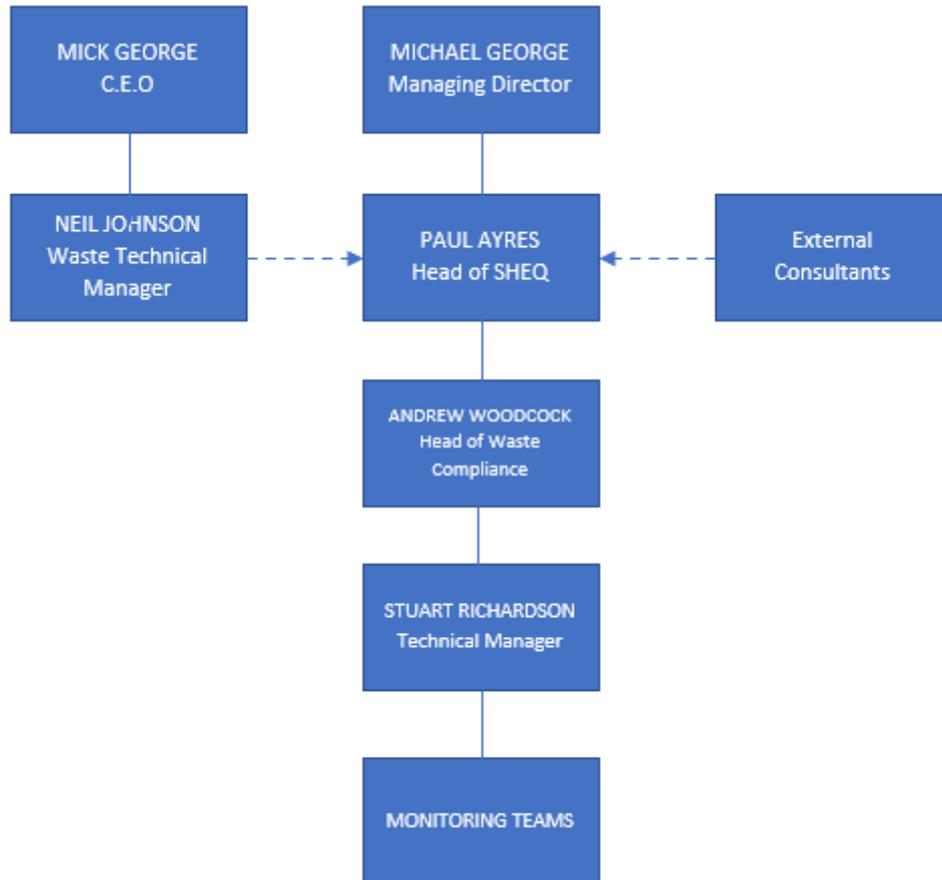


Figure 6.1: Rectory Farm Landfill Operator's Organisation Chart

### 6.2 Site Security

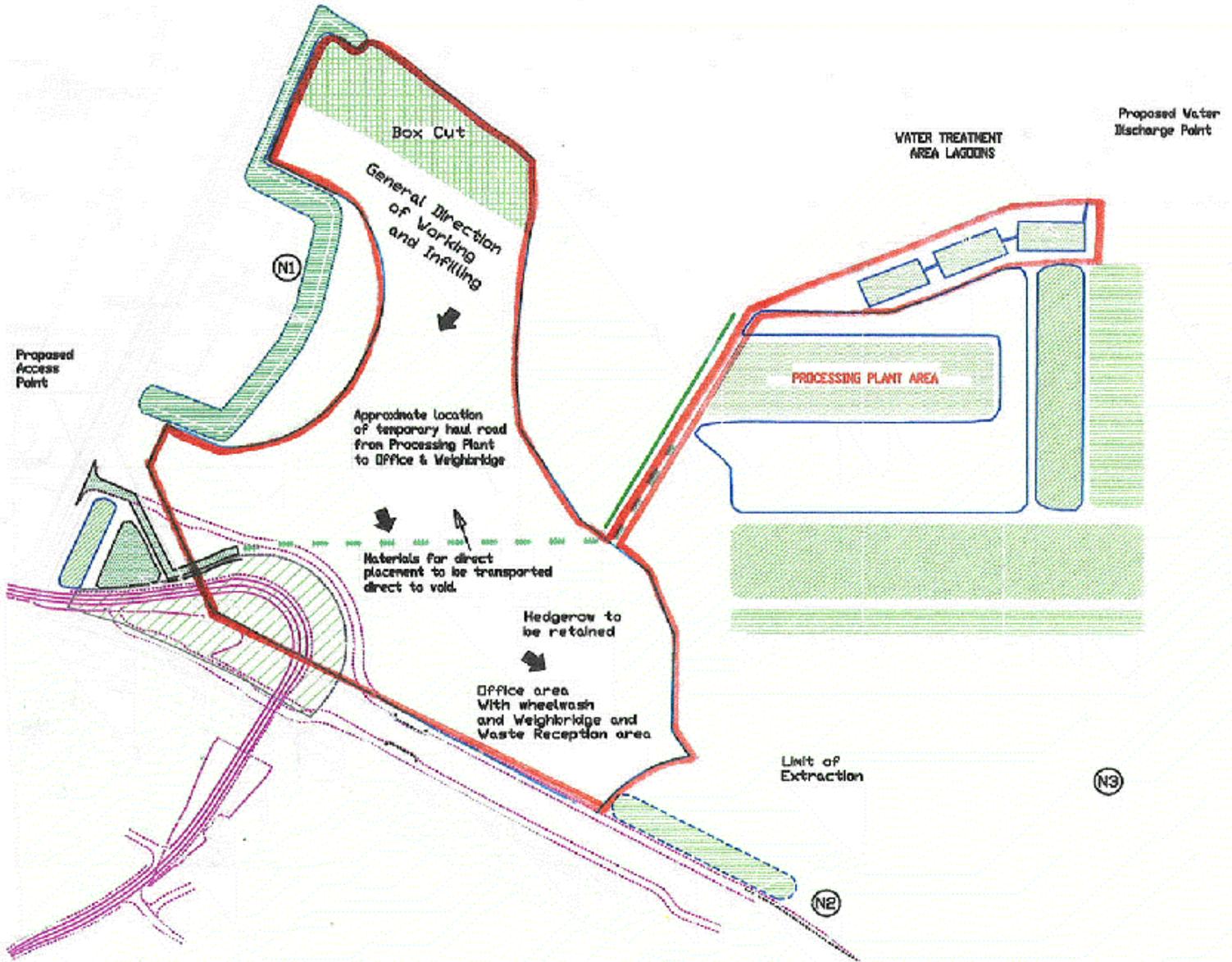
Site security appears to be satisfactory and there are no reports of unauthorised intruders causing damage to monitoring infrastructure. The site is secured by fences and gates which are inspected at every monitoring visit. Any reported damage is rectified as soon as practicable after it is reported, normally by the end of the working day. Records of inspections and repairs are main.

### 6.3 Financial Provision

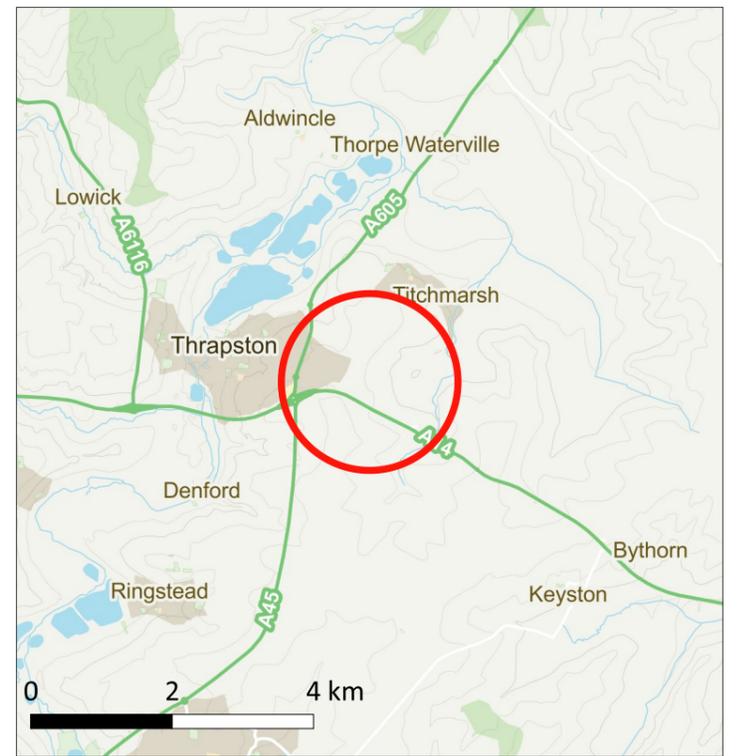
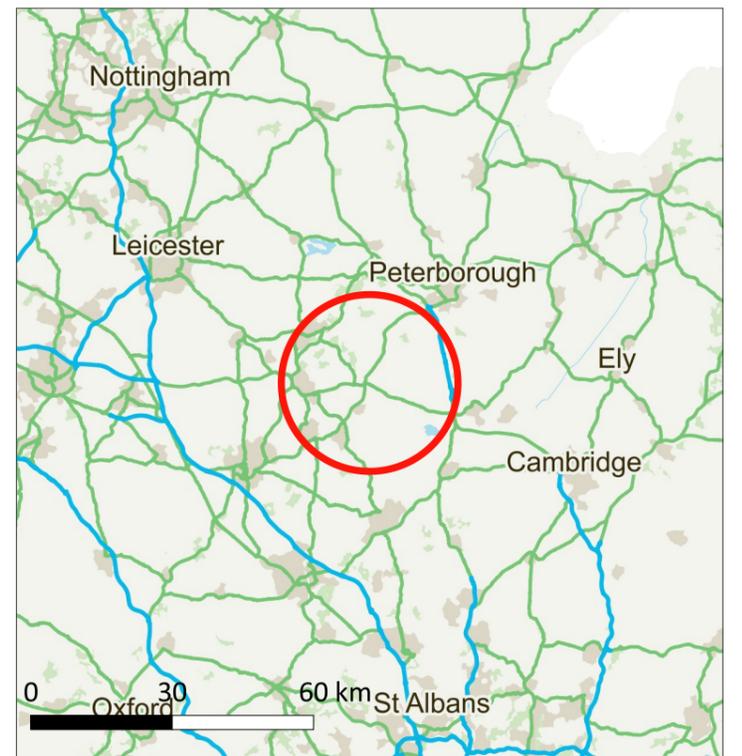
The Financial Provision requirement is met by Mick George Limited via payments into an escrow account and in accordance with a post-closure expenditure plan. The latest payment was made in January 2022. Given the restored nature of the site, the expenditure commitments going forward are relatively small.

## Appendix A Drawings

## Schedule 2 - Site plan



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**KEY PLAN**



Landfill Boundary

**NOTES**

1. Contains OS data © Crown copyright and database right (2022)

**REVISIONS**

REV.	DRAWN BY INITIALS	CHECKED BY INITIALS	DATE	REVISION NOTES/COMMENTS
P01	LH	EC	17/06/22	First issue



**TITLE**  
**SITE LOCATION PLAN**

HYDROCK PROJECT NO.  
23880

SCALE @ A3  
1:10,000

CLIENT  
Mick George Ltd

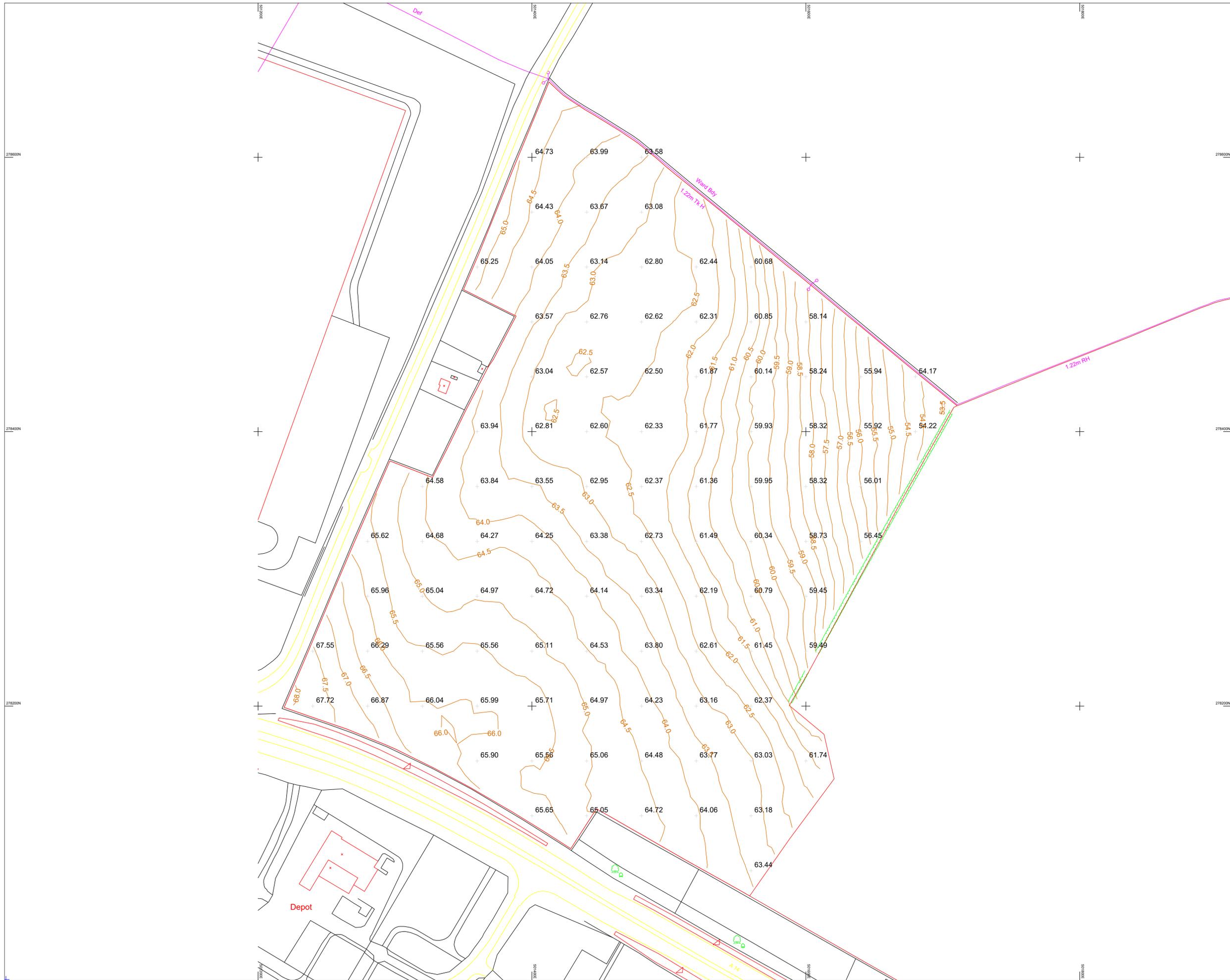
PURPOSE OF ISSUE  
SUITABLE FOR INFORMATION

STATUS  
S2

PROJECT  
Thrapston Landfill Permit Surrender

DRAWING NO.  
23880-HYD-XX-XX-DR-GE-1001

REVISION  
P01



Notes  
 Grid and levels relative to OS active GPS network  
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KEY:  
 Restored Contours ———  
 OS Map ———  
 Site Boundary ———  
 Spot Levels 62.61

Rev	Date	Description

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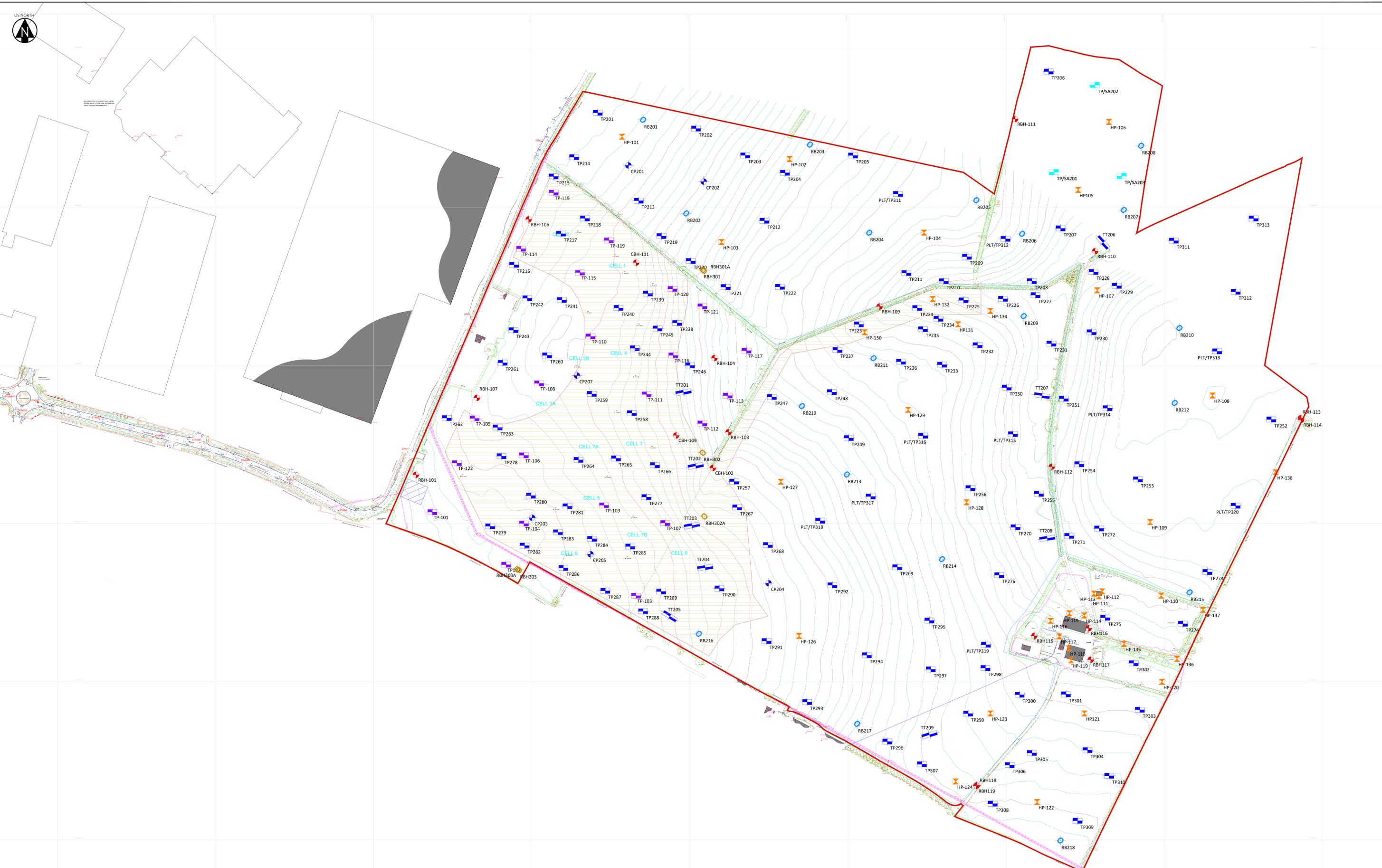
Client  
 Mick George Limited

Project  
 Thrapston Landfill

Title  
 End Of The Year Survey

Drawn : IMS	Approved : MEG	
Date : 19/01/2021	Scale : 1/1250	
Drawing Number	Paper size	Rev
TPN_EOY/01/2021	A1	

## Appendix B Hydrock Site Investigation Plan



**KEY**

TPXX	Initial Site Investigation (June/July 2021)
BHXX	Cable Percussion Borehole
RBHXX	Rotary Percussion / Core Borehole
HP##	Hand Dug Excavation Pit
	Made Ground encountered

	No Access
	Hydrock welfare compound
	Mick George Landfill Cell Boundaries

**Detailed Site Investigation November/December 2021**

CP##	Cable Percussion Borehole
RB##	Rotary Borehole
TP##	Trial Pit
TP##	Soakaway
TT##	Trial Trench

**2022 Boreholes**

RB##	BH Rotary
------	-----------

- NOTES**
1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
  2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
  3. This drawing has been based on the following drawings and information:
  3. This drawing has been based on the Station Drawing 'Huntingdon Road, Thrapston. Topographic Survey', Ref: 11521A-0, dated 10/03/21.
  4. Locations subject to change following walkover and subject to discussions and agreement.
  5. Locations shown at the farm building and yard areas. Subject to discussions and agreement.
  6. No known archaeological, ecological or arboricultural restrictions.
  7. Permit boundaries derived from Permit EP837LU

PROJ	ISSUE	DATE	BY	DATE	BY	DATE	BY
REV	REVISION/NOTES/COMMENTS	DATE	DRAWN BY	CHECKED BY	DATE	APPROVED BY	DATE

**Hydrock**

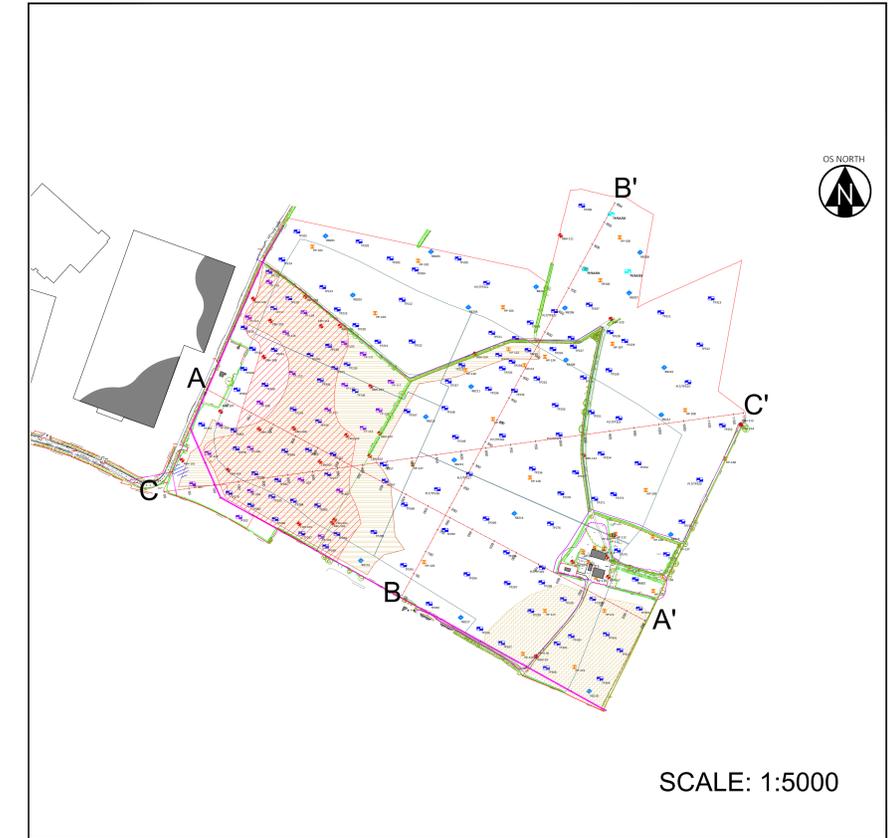
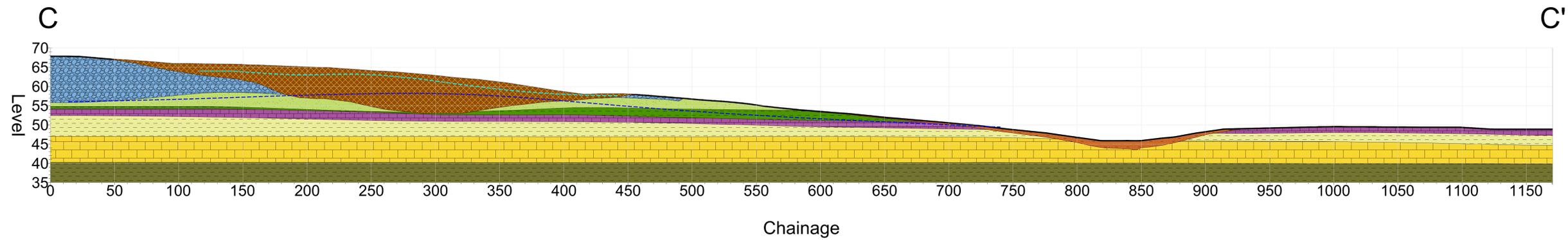
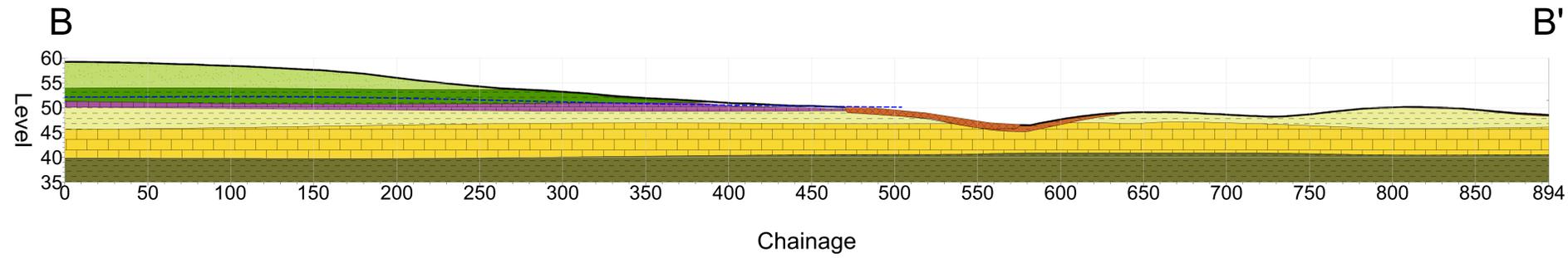
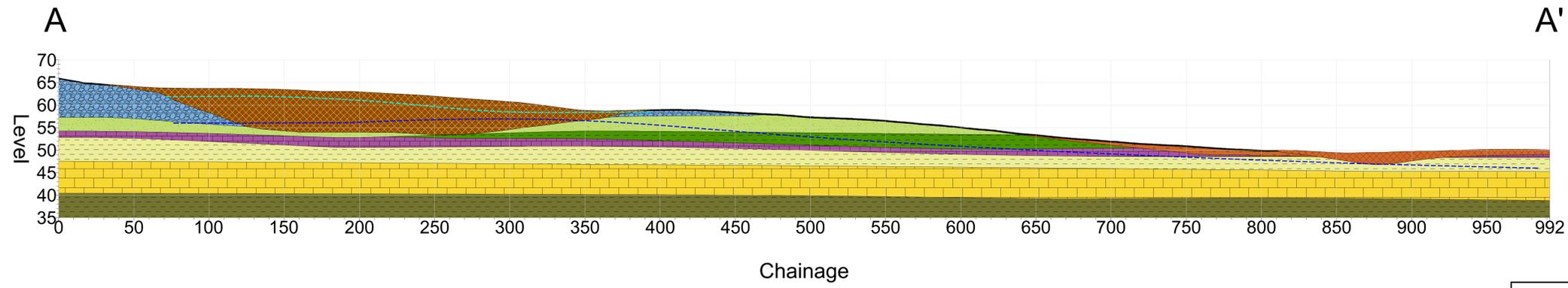
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CLIENT  
**MICK GEORGE LIMITED**

PROJECT  
**LAND ADJACENT HALDEN PARKWAY THRAPSTON**

TITLE <b>EXPLORATORY HOLE LOCATION PLAN</b>	
HYDROCK PROJECT NO. <b>23880</b>	SCALE @ A0 <b>1:1500</b>
PURPOSE OF ISSUE <b>SUITABLE FOR INFORMATION</b>	STATUS <b>S2</b>
DRAWING NO. (PROJECT CODE, ORIGINATOR, ZONE LEVEL, TYPE, ROLE NUMBER) <b>23880-HYD-XX-ZZ-DR-GE-1011</b>	REVISION <b>P01</b>

## Appendix C Geological Maps and Sections



KEY	
	Top Soil + Agriculturally Top Soil
	Glacial Till + Glaciofluvial Deposits
	Blisworth Clay Formation
	Landfill Made Ground
	Kellaways Sand Member
	Blisworth Limestone Formation
	Made Ground
	Kellaways Clay Member
	Rutland Formation
	Head
	Combrash Formation
	Site Boundary (approximate)
	Trial Pit
	Cable Percussion Borehole
	Rotary Percussion / Core Borehole
	Hand Dug Excavation Pit
	Ground water level from BH with the screened zone within the Landfill made ground
	Ground water level from BH with the screened zone within the Combrash formation

NOTES

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:  
Staflsurv Drawing 'Huntington Road, Thrapston, Topography Survey', Ref: 11521a-0, dated 10/03/21
- Surfaces have been created using Hydrack Site Investigation data (July 2021 and December 2021). Levels and depths are accurate at investigation locations. Between investigation locations, levels and depths have been extrapolated and are indicative only.

THIRD ISSUE (After Amended 06)		CLIENT	
PO1	RT 13/06/22 NT 13/06/22 AB 13/06/22	EQUITES NEWLANDS (THRAPSTON EAST) LTD	
PO2	NT 15/12/21 AB 15/12/21 AB 15/12/21	PROJECT	
PO3	RT 04/10/21 MONT 04/10/21 AB 04/10/21	LAND ADJACENT HALDENS PARKWAY THRAPSTON	
REV	REVISION NOTIFICATION	DATE	CHECKED BY
		DATE	APPROVED BY
		DATE	

INDICATIVE CROSS SECTIONS	
HYDRACK PROJECT NO.	SCALE @ A0
C-18443	1:1250 or as shown
PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE LEVEL-TYPE-ROLE-NUMBER)	REVISION
18443-HYD-XX-ZZ-DR-GE-1014	P03

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**KEY**

- Kellaways Sand Member
- Kellaways Clay Member
- Cornbrash Formation
- Blisworth Clay Formation
- Blisworth Limestone Formation
- Made Ground

KEY

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:  
StaSurv Drawing 'Huntington Road, Thrapston. Topography Survey'. Ref: 11521a-0, dated 10/03/21
- Surfaces have been created using Hydrock Site Investigation data (July 2021). Levels and depths are accurate at investigation locations. Between investigation locations, levels and depths have been extrapolated and are indicative only.

<table border="1"> <tr> <td>P1</td> <td>FIRST ISSUE</td> <td>06.10.21</td> <td>NS/NT</td> <td>06.10.21</td> <td>AB</td> <td>06.10.21</td> </tr> <tr> <td>REV.</td> <td>REVISION NOTES/COMMENTS</td> <td>DATE</td> <td>CHECKED BY</td> <td>DATE</td> <td>APPROVED BY</td> <td>DATE</td> </tr> <tr> <td> </td> </tr> </table>						P1	FIRST ISSUE	06.10.21	NS/NT	06.10.21	AB	06.10.21	REV.	REVISION NOTES/COMMENTS	DATE	CHECKED BY	DATE	APPROVED BY	DATE							
P1	FIRST ISSUE	06.10.21	NS/NT	06.10.21	AB	06.10.21																				
REV.	REVISION NOTES/COMMENTS	DATE	CHECKED BY	DATE	APPROVED BY	DATE																				

<p><b>Hydrock</b></p> <p>Hawthorn Park Holdenby Road Spratton Northampton NN6 8LD TEL: 01604 842 888 E-Mail: northampton@hydrock.com or visit www.hydrock.com</p>	
CLIENT	NEWLANDS DEVELOPMENTS
PROJECT	HUNTINGDON ROAD, THRAPSTON

TITLE	SOLID GEOLOGY - OUTCROP LEVEL	
HYDROCK PROJECT NO.	C-18443	SCALE @ A1 1:2000
PURPOSE OF ISSUE	SUITABLE FOR INFORMATION	STATUS S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	18443-HYD-XX-ZZ-DR-GE-1015	REVISION P2

# Appendix D Restoration Contours and Settlement Drawings



**Notes**

Grid and levels relative to OS active GPS network

Reproduced from Ordnance Survey digital map data

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**KEY:**

- Restored Contours
- OS Map
- Site Boundary

Rev	Date	Description

**MICK GEORGE**

6 LANCASTER WAY  
 ERMINE BUSINESS PARK  
 HUNTINGDON  
 CAMBRIDGESHIRE  
 PE29 6XU  
 Tel : 01480 498099 Fax : 01480 498077  
 www.mickgeorge.co.uk

Client  
 Mick George Limited

Project  
 Thrapston Landfill

Title  
 Restoration Contours As Built

Drawn : JM      Approved : MEG

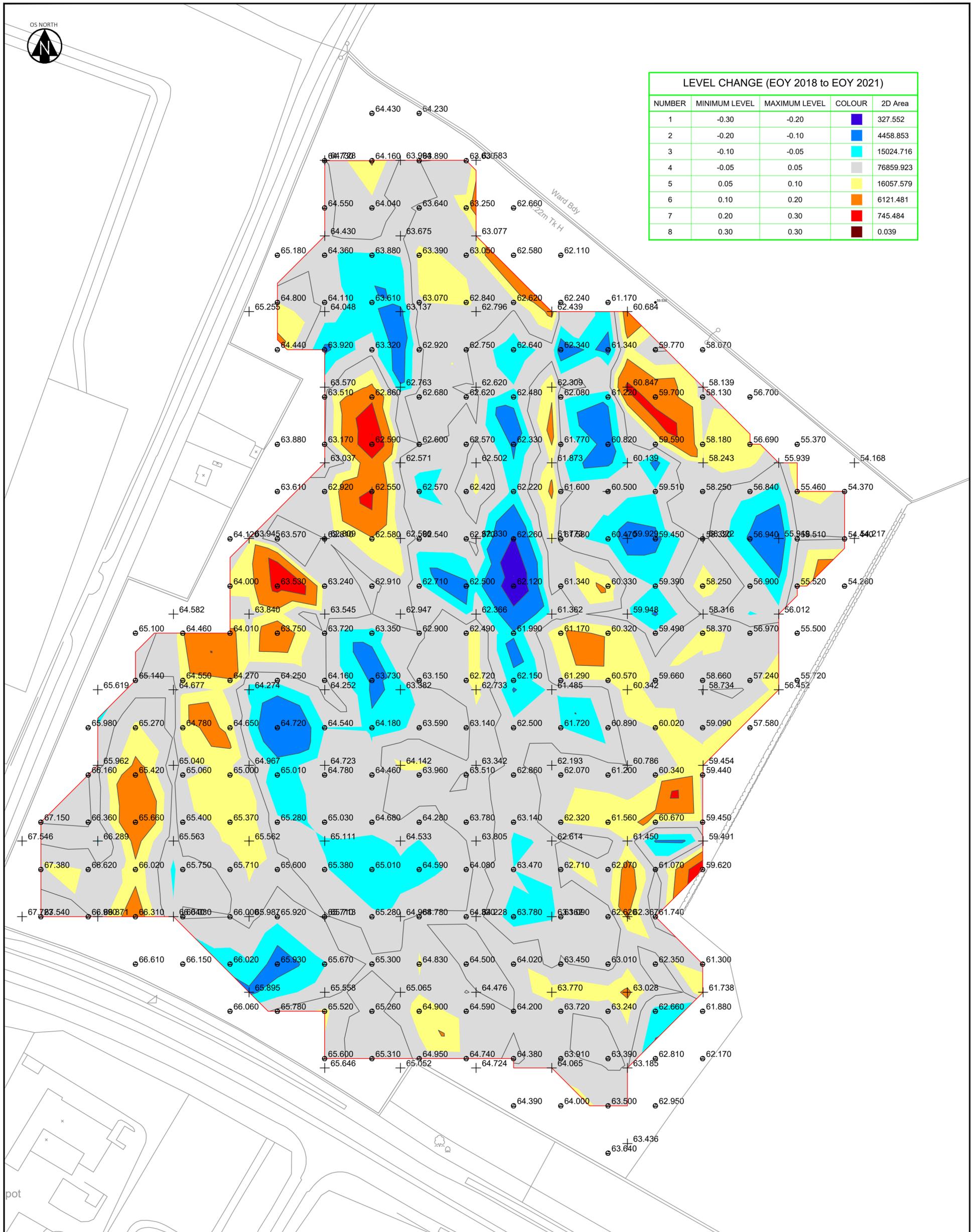
Date : 01/08/2016      Scale : 1/1250

Drawing Number	Paper size	Rev
D1.R/08/2016/JM	A1	

OS NORTH



LEVEL CHANGE (EOY 2018 to EOY 2021)				
NUMBER	MINIMUM LEVEL	MAXIMUM LEVEL	COLOUR	2D Area
1	-0.30	-0.20	Dark Blue	327.552
2	-0.20	-0.10	Blue	4458.853
3	-0.10	-0.05	Cyan	15024.716
4	-0.05	0.05	Light Blue	76859.923
5	0.05	0.10	Yellow	16057.579
6	0.10	0.20	Orange	6121.481
7	0.20	0.30	Red	745.484
8	0.30	0.30	Dark Red	0.039



KEY	
2018 EOY SPOTHEIGHTS	⊙ 59.530
2021 EOY SPOTHEIGHTS	+ 56.452

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:  
-TPN EOY18  
-TPN EOY21

REVISIONS					
REV.	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY
P1	NS	21.06.22	EC	21.06.22	AB
REVISION NOTES/COMMENTS					
FIRST ISSUE					
NS					
21.06.22					

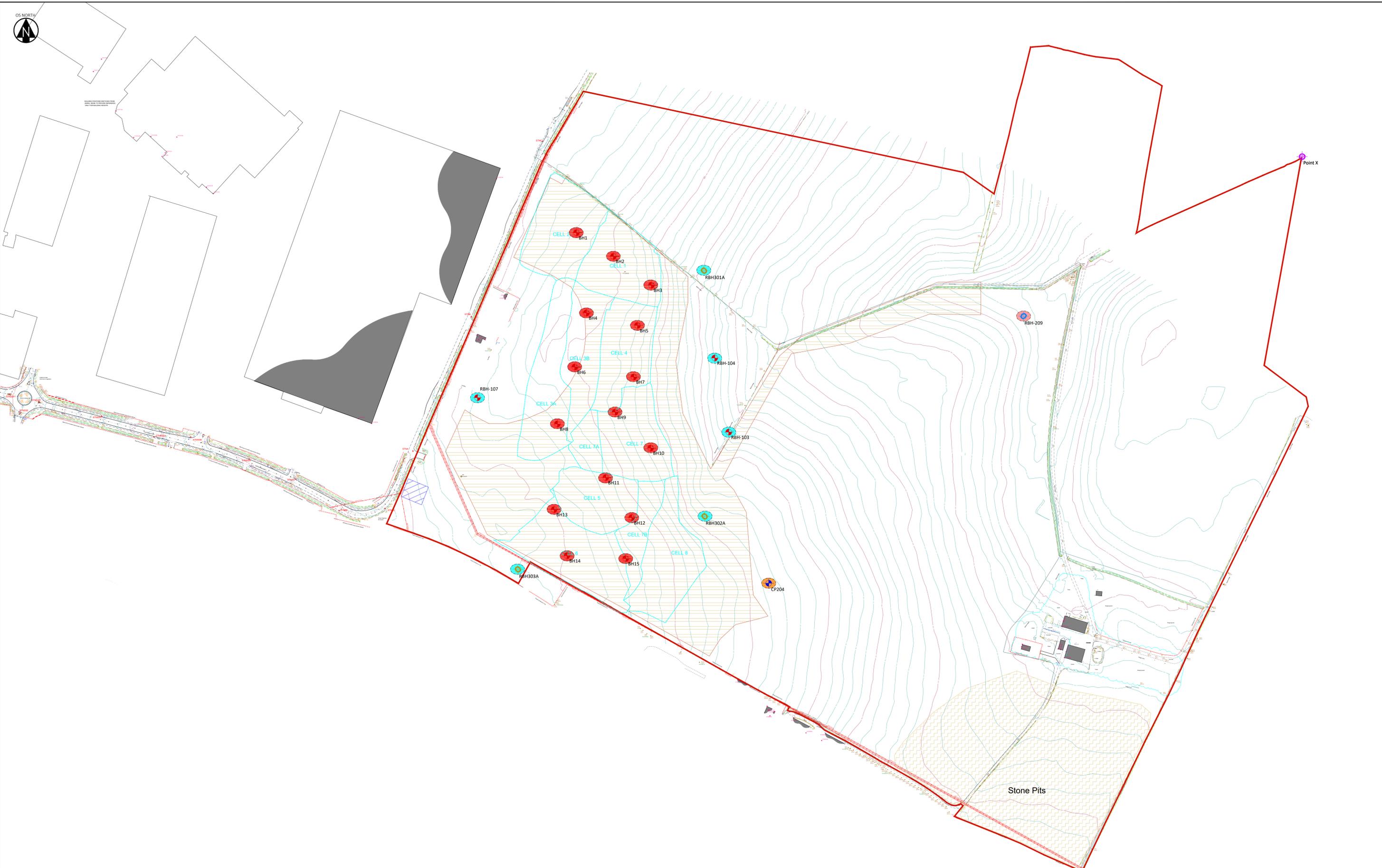
**Hydrock**

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CLIENT		EQUITES NEWLADS (THRAPSTON EAST) LTD	
PROJECT		LAND ADJACENT HALDENS PARKWAY THRAPSTON	

TITLE			
COMPARISON OF END OF YEAR TOPOGRAPHIC SURVEYS			
2018 Vs 2021			
HYDROCK PROJECT NO.		SCALE @ A2	
C-18443		1:1250	
PURPOSE OF ISSUE			STATUS
SUITABLE FOR INFORMATION			S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)			REVISION
18443-HYD-XX-XX-DR-GE-6000			P1

## Appendix E Monitoring Infrastructure



**KEY**

Detailed Site Investigation

- Cable Percussion Borehole
- Rotary Borehole
- 2022 Boreholes
- BH Rotary
- Monitoring Point
- Surface Water
- Point X
- Mick George Boreholes
- Cable Percussion Borehole

**Site Boundary (approximate)**

- Mick George Landfill Cell Boundaries
- Permit boundary
- GPR: Area of disturbed ground/assumed stone pits

**Borehole Installed Strata Key**

- Corbrash Limestone Formation
- Blisworth Limestone Formation
- Kellaways Sand Member
- Landfill - Made Ground

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:
- This drawing has been based on the Stafury Drawing 'Huntingden Road, Thrapston. Topographic Survey'. Ref: 11521a-Q, dated 10/03/21.
- Locations subject to change following walkover and subject to discussions and agreement.
- Relocations shown at the farm building and yard areas. Subject to discussions and agreement.
- No known archaeological, ecological or arbicultural restrictions.
- Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MG310/51 dated: 25/11/2014.
- The location of Mick George borehole B18 is approximate and based on WYG Borehole Location Plan Drawing A109017-BLP-018.

POI	NO	DATE	BY	DATE	BY
Monitoring locations updated					
FIRST ISSUE					
REV					

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CLIENT  
**MICK GEORGE LTD**

PROJECT

TITLE <b>POST CLOSURE MONITORING PLAN</b>	
HYDROCK PROJECT NO. <b>23880</b>	SCALE @ A0 <b>1:1500</b>
PURPOSE OF ISSUE <b>SUITABLE FOR INFORMATION</b>	STATUS <b>S2</b>
DRAWING NO. (PROJECT CODE ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER) <b>23880-HYD-XX-ZZ-DR-GE-1008</b>	REVISION <b>P02</b>



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP204

Page No. 1 of 1

Method: Cable Percussion	Date(s): 23/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501699.41, 278124.65	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 59.28m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Firm dark brown slightly gravelly sandy CLAY with occasional roots up to 1mm diameter. Gravel is angular to rounded fine to coarse of flint and chalk. Sand is fine to medium.	0.40	(0.40)	58.88		
0.40 - 1.00	B			(AGRICULTURALLY DISTURBED TOPSOIL)					
1.00	SPT	N=12 (2,3,3,3,3,3)		Firm brown slightly sandy CLAY with occasional roots up to 1mm diameter. Sand is fine.	1	(1.10)			
1.00 - 1.45	D			(KELLAWAYS SAND MEMBER)					
1.50 - 2.00	B			Stiff brown grey, light brown and orange brown slightly sandy silty CLAY. Sand is fine.	1.50		57.78		
1.50 - 2.00	B			(KELLAWAYS SAND MEMBER)					
2.00	SPT	N=19 (2,3,5,4,5,5)			2	(1.50)			
3.00	SPT	N=24 (1,2,3,5,7,9)		Stiff grey silty CLAY.	3		56.28		
3.00 - 3.45	D			(KELLAWAYS SAND MEMBER)					
3.00 - 4.00	B								
3.00 - 4.00	B								
4.00	SPT	50/235mm (3,5,9,12,20,9)		... Becoming very stiff below 4.00m	4	(2.00)			
4.00 - 4.45	D								
4.00 - 4.50	B								
4.00 - 6.00	B								
4.50 - 5.00	B								
5.00	SPT	N=38 (3,5,7,9,11,11)		Very stiff grey CLAY with occasional shell fragments.	5		54.28		
5.00 - 5.45	D			(KELLAWAYS CLAY MEMBER)					
5.00 - 6.00	B								
6.00	D				6				
6.00	D								
6.50	SPT	N=40 (5,7,9,9,11,11)			7	(2.95)			
6.50 - 6.95	D								
7.50	D								
8.00	SPT	50/10mm (25,50)		LIMESTONE.	8	7.95	51.33		
8.00	D			(CORNBRAsh LIMESTONE FORMATION)	8.00	(0.05)	61.28		
8.00	D			End of Borehole at 8.00m					
8.00	ES								

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 8.00m, borehole terminated. 3. Gas and groundwater monitoring well installed. 4. Response zone from 1.00m to 8.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	23/11	0800	8.00	2.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015









Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-107

Page No. 2 of 2

Method: Dynamic Sampled & Rotary Cored	Date(s): 01/07/2021 - 06/07/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501330.63, 278359.16	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 64.40m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min. If. Mean Max							
									Strong light grey LIMESTONE. Fractures are medium spaced open wavy 2mm aperture. (CORNBRAsh LIMESTONE FORMATION)	11.00	(1.50)	52.90		
									Very stiff to hard blueish grey CLAY with abundant shell fragments. (BLISWORTH CLAY FORMATION)	12.00	(0.50)	52.40		
									End of Borehole at 12.00m					
										13				
										14				
										15				
										16				
										17				
										18				
										19				
										20				

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 2.0m bgl. Rotary core to 12.0m bgl. 3) Gas and groundwater monitoring pipe installed to 11.00m bgl. Response zone between 9.50m bgl to 11.00m bgl. 4) ER = 73%.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)





Method: Rotary Cored	Date(s): 01/12/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501617.48, 278519.91	Checked By: JC	Flush: Water , Water
Hydrock Project No: 23880	Ground Level: 57.36m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min Mean Max							
4.20 - 5.70	4.20 - 5.70	C		100	100	55	13 15 34		Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to rounded fine and medium of flint and quartz. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	57.06		
									Firm yellowish brown mottled grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint. (GLACIAL TILL)	1.20	(0.90)	56.16		
									Firm yellowish brown mottled grey sandy CLAY. (KELLAWAYS SAND MEMBER)	2.20	(2.80)			
5.70 - 7.20 5.70 - 7.50	5.70 - 7.20	C		100 100	100 100	50	6 35 70		Very stiff dark grey silty CLAY. (KELLAWAYS CLAY MEMBER)	4.00	(1.00)	53.36		
									Medium strong grey carbonaceous shelly LIMESTONE. Fractures are subhorizontal undulating with some orange brown surface staining. (CORNBURASH FORMATION)	5.00	(1.70)	52.36		
7.20 - 7.50	7.20 - 7.50	C		100	100				Very stiff dark grey silty CLAY. some fine sand sized pyrite and shell fragments. (BLISWORTH CLAY FORMATION)	6.70	(0.80)	50.66		
End of Borehole at 7.50m										7.50		49.86		

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 4.20m, rotary cored to 7.50m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 5.00 and 7.20m.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
Comaccio 305	01/12	1130			152		Water	Grey				
Comaccio 305	01/12	1630			152		Water	Grey				



Method: Rotary Cored	Date(s): 30/11/2022 - 01/12/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501618.60, 278209.15	Checked By: JC	Flush: Water
Hydrock Project No: 23880	Ground Level: 59.38m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min Mean Max							
7.30 - 8.80	7.30 - 8.80	C					6 20 35		Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to rounded fine and medium flint and quartz. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	58.98		
									Firm yellowish brown mottled grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse of flint. (GLACIAL TILL)	1.30	(0.90)	58.08		
8.80 - 10.30	8.80 - 10.30	C				5 15 30			Firm yellowish brown sandy silty CLAY. (KELLAWAYS SAND MEMBER)	1.30		58.08		
									Stiff dark grey mottled orange brown silty CLAY. (KELLAWAYS CLAY MEMBER)	3.30	(2.00)	56.08		
									Stiff dark grey silty CLAY with shell fragments. (KELLAWAYS CLAY MEMBER)	3.80	(0.50)	55.58		
									Medium strong grey carbonaceous shelly LIMESTONE. Fractures are subhorizontal undulating. (CORNBURASH FORMATION)	8.10	(4.30)	51.28		
									Very stiff dark grey silty CLAY. some fine sand sized pyrite and shell fragments. (BLISWORTH CLAY FORMATION)	9.50	(0.80)	49.88		

Continued on Next Sheet

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
Comacc hio 305	30/11	1200			152		Water					1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 7.30m, rotary cored to 10.30m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 7.30 and 9.80m.
Comacc hio 305	30/11	1615	0.00		152		Water					
Comacc hio 305	01/12	0800	10.30	0.00	152		Water					
Comacc hio 305	01/12	1130			152		Water					



Project: Thrapston Landfill Permit Surrender

Borehole No  
BH302A

Page No. 2 of 2

Method: Rotary Cored	Date(s): 30/11/2022 - 01/12/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501618.60, 278209.15	Checked By: JC	Flush: Water
Hydrock Project No: 23880	Ground Level: 59.38m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min. Mean Max							
									Very stiff dark grey silty CLAY. some fine sand sized pyrite and shell fragments. (BLISWORTH CLAY FORMATION) End of Borehole at 10.30m	10.30		49.08		
										11				
										12				
										13				
										14				
										15				
										16				
										17				
										18				
										19				
										20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 7.30m, rotary cored to 10.30m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 7.30 and 9.80m.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Thrapston Landfill Permit Surrender

Borehole No  
BH303A

Page No. 1 of 2

Method: Rotary Cored	Date(s): 28/11/2022 - 30/11/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501381.51, 278142.33	Checked By: JC	Flush: Water
Hydrock Project No: 23880	Ground Level: 65.63m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
									Firm yellowish brown slightly sandy slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	65.23		
									Firm yellowish brown mottled grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse of flint. (GLACIAL TILL)	1.20	(0.80)	64.43		
									Grey slightly gravelly CLAY. Gravel is sub-rounded fine to coarse of chalk and flint. (GLACIAL TILL)	6.00	(4.80)	59.63		
									Light grey CLAY. (PROBABLE GLACIAL TILL)	7.00	(2.00)			
									Yellowish brown SAND. (KELLAWAYS SAND MEMBER)	8.00	(3.50)	57.63		

Continued on Next Sheet

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
Comaccio 305	28/11	0800			152		Water	Grey				1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 11.70m, rotary cored to 14.70m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 12.00 and 14.00m.
Comaccio 305	28/11	1620	7.50	1.50	152		Water	Grey				
Comaccio 305	29/11	0800	7.50	1.50	152		Water	Grey becoming orange				
Comaccio 305	29/11	1600	14.70	1.50	152	4.00	Water	Grey				
Comaccio 305	30/11	0800	14.50	1.50	152		Water	Grey				



Project: Thrapston Landfill Permit Surrender

Borehole No  
BH303A

Page No. 2 of 2

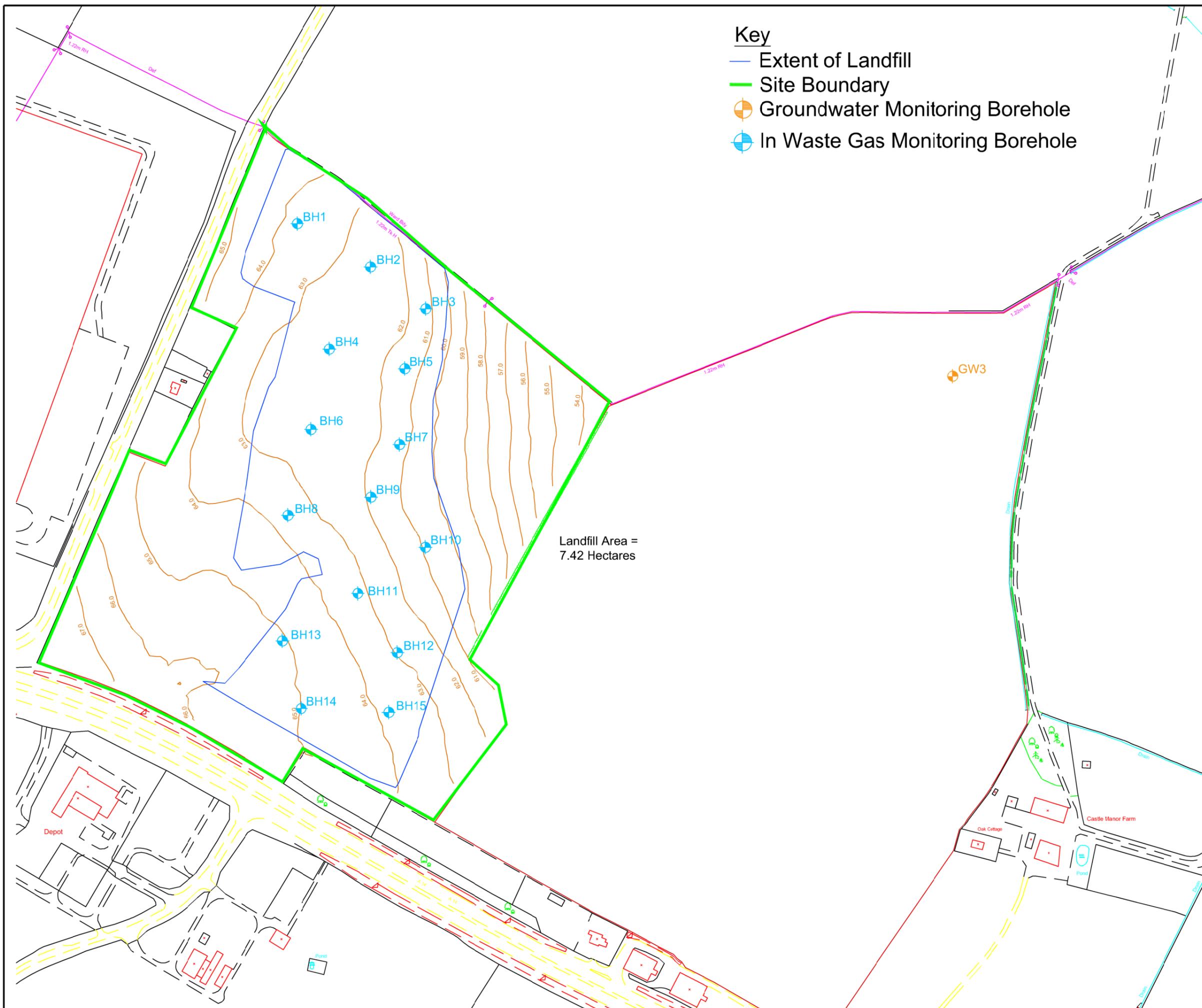
Method: Rotary Cored	Date(s): 28/11/2022 - 30/11/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501381.51, 278142.33	Checked By: JC	Flush: Water
Hydrock Project No: 23880	Ground Level: 65.63m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If: Mean Max							
11.70 - 13.20	11.70 - 13.20	C					4 10 13		Yellowish brown SAND. (KELLAWAYS SAND MEMBER)	11				
									Stiff dark grey CLAY. (KELLAWAYS CLAY MEMBER) NO RECOVERY: Presumed to be stiff dark grey CLAY. (KELLAWAYS CLAY MEMBER)	11.50 11.70	(0.20)	54.13 53.93		
				67	67	15			Firm yellow brown sandy CLAY. (KELLAWAYS CLAY MEMBER) Medium Strong yellowish brown carbonaceous oolitic LIMESTONE. Recovered as non-intact. (CORNBURASH FORMATION)	12.20 12.29	(0.09)	53.43 53.34		
13.20 - 14.70	13.20 - 14.70	C					5 10 10		Medium strong grey medium bedded carbonaceous shelly LIMESTONE. Fractures are sub-horizontal to vertical, open undulating. (CORNBURASH FORMATION)	12.77	(0.48)	52.86		
				100	100	9			Very stiff dark grey shelly CLAY. (BLISWORTH CLAY FORMATION)	14.11	(1.34)	51.52		
									Very stiff blue grey mottled orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	14.41 14.50	(0.30) (0.09)	51.22 51.13		
									End of Borehole at 14.50m	14.50				
										15				
										16				
										17				
										18				
										19				
										20				

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
	30/11	1200					Water					1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 11.70m, rotary cored to 14.70m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 12.00 and 14.00m.

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

- Key**
- Extent of Landfill
  - Site Boundary
  - Groundwater Monitoring Borehole
  - In Waste Gas Monitoring Borehole



REV	DESCRIPTION	BY	CHK	APP	DATE
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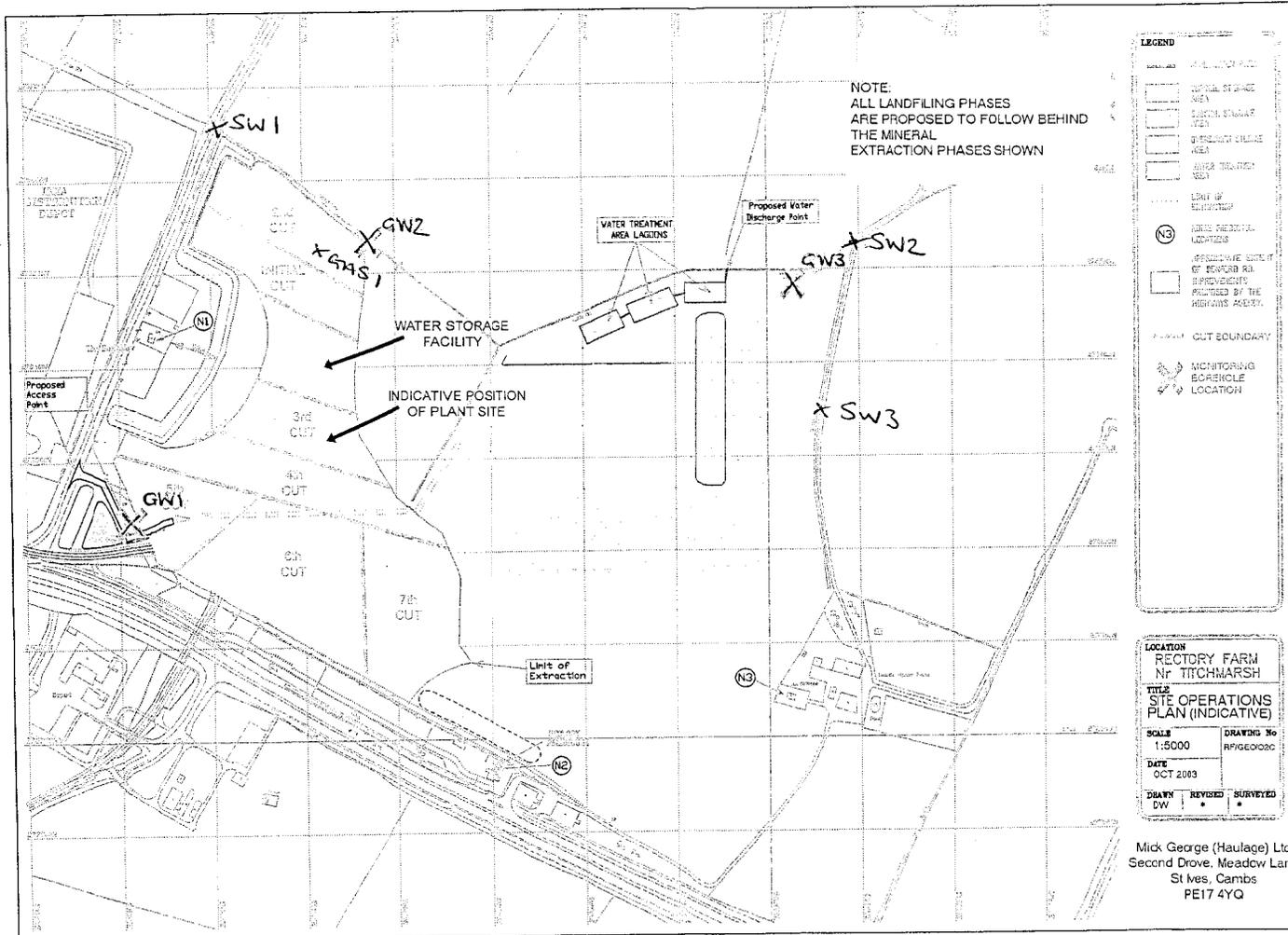
Mick George Limited

GENEVA BUILDING  
LAKE VIEW DRIVE  
SHERWOOD BUSINESS PARK  
ANNESLEY, NOTTINGHAM  
NG15 0ED  
TEL: +44 (0)1623 684 550  
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www.wyg.com

Project:  
**MGL Borehole Installation**  
Thrapston Groundwater  
Monitoring Boreholes

Drawing Title:  
**Borehole  
Location  
Plan**

Scale @	A3	Drawn	Date	Checked	Date	Approved	Date
1:3000		AE	6.8.18	MH	6.8.18	MJ	6.8.18
Project No.	Office	Type	Drawing No.		Revision		
Plan	8146	ENV	A109017-BLP-01B				





# Appendix D Environmental Permit



ENVIRONMENT  
AGENCY

## Variation Notice with introductory note

Pollution Prevention and Control (England & Wales) Regulations 2000

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Rectory Farm Quarry

Mick George (Haulage) Limited  
Rectory Farm Quarry  
Titchmarsh Road  
Thrapston  
Northamptonshire  
NN14 4NJ

Variation Notice Number

PP3233XK

Permit number

EP3837LU

# Rectory Farm Quarry

## Permit Number PP3233SK

### Introductory note

*This introductory note does not form a part of the permit*

The following notice is issued under regulation 17 of The Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I.2000 No. 1973 (as amended) (the Regulations) to vary the conditions of a permit issued under the Regulations to operate an installation. The notice comprises schedule 1 containing conditions to be deleted, schedule 2 conditions to be amended and schedule 3 conditions to be added.

The variation has been initiated at the request of the operator. The effect of this variation is to increase the annual tonnage of waste to be accepted at the installation. There are no substantial changes to the Permit as a result of this variation.

<b>Status Log of the permit</b>		
Detail	Date	Response Date
Application BT98791Y	Duly made 28/04/03	
Additional Information received	Request dated 29/08/03	Response dated 24/09/03
	Request dated 20/10/03	Response dated 23/10/03
		Response dated 27/10/03
		Response dated 31/10/03
		Response dated 21/11/03
Permit determined	05/07/04	
Variation notice EP3837LU issued	17/10/06	
Variation notice PP3233XK issued	11/01/08	

<b>Other existing Licences/Authorisations/Registrations relating to this site</b>		
Holder	Reference Number	Date of issue
Mick George (Haulage)Ltd	PRNNF/12740 01 (Discharge consent)	08/07/02

End of Introductory Note

**Variation Notice**

Pollution Prevention and Control  
(England and Wales) Regulations 2000

## Variation Notice

Permit number

BT9879IY

Variation number

PP3233XK

The Environment Agency (the Agency) in exercise of its powers under Regulation 17 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No 1973) hereby varies the permit held by you

**Mick George (Haulage) Limited** ("the operator"),

whose registered office is

**Second Drove**

**Meadow Lane**

**St Ives**

**Cambridgeshire PE17 4YQ**

company registration number 2417831

to operate an installation at

**Rectory Farm Quarry**

**Titchmarsh Road**

**Thrapston**

**Northamptonshire NN14 4NJ**

to the extent set out in schedules 1 to 3 of this variation notice.

The notice shall take effect from 11 January 2008

Signed

Date

	11/01/2008
---	------------

Andy Baxendale Area Manager (Northern)

Authorised to sign on behalf of the Agency

**SCHEDULE 1 – CONDITIONS TO BE DELETED**

1. All conditions and schedules are deleted

**SCHEDULE 2 – CONDITIONS TO BE AMENDED**

2. None

**SCHEDULE 3 – CONDITIONS TO BE ADDED**

3. The following conditions are added to the permit

# Conditions

## 1. Management

### 1.1 *General management*

- 1.1.1 The Activities shall be managed and operated:
- (a) in accordance with a management system, which identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents and non-conformances and those drawn to the attention of the operator as a result of complaints; and
  - (b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the Activities.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

### 1.2 *Accidents that may cause pollution*

- 1.2.1 The operator shall:
- (a) maintain and implement an accident management plan;
  - (b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;
  - (c) make any appropriate changes to the plan identified by a review.

### 1.3 *Finance*

- 1.3.1 The financial provision for meeting the obligations under this permit set out in the agreement made between the operator and the Agency dated 5<sup>th</sup> July 2004 shall be maintained by the operator throughout the subsistence of this permit and the operator shall produce evidence of such provision whenever required by the Agency.
- 1.3.2 The operator shall ensure that the charges it makes for the disposal of waste in the landfill cover the cost of operating the landfill, as far as possible the cost of the financial provision required by condition 1.3.1 and thus the estimated costs for the closure and aftercare of the landfill.

## **1.4 Site security**

- 1.4.1 Site security measures shall prevent unauthorised access to the site, as far as practicable.

## **2. Operations**

### **Permitted activities**

- 2.1.1 The operator is authorised to carry out the activities specified in schedule 1 table S1.1 (the "Activities").

### **2.2 The site**

- 2.2.1 The Activities shall not extend beyond the Site, being the land shown edged in red on the site plan at schedule 2 to this permit.

### **2.3 Operating techniques**

- 2.3.1 The Activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1 table S1.2, unless otherwise agreed in writing by the Agency.

### **2.4 Off-site conditions**

- 2.4.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake monitoring for the parameters, at the locations and at not less than the frequencies specified, in the following tables in schedule 4 to this permit

- (a) surface water specified in table S4.5
- (b) groundwater specified in table S4.2 and S4.6
- (c) landfill gas specified in table S4.3

### **2.5 Improvement programme**

- 2.5.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Agency.

### **2.6 Pre-operational conditions**

There are no pre-operational conditions in this permit.

### **2.7 Engineering**

- 2.7.1 No construction of any new cell shall commence until the operator has submitted construction proposals and the Agency has confirmed that it is satisfied with the construction proposals.
- 2.7.2 The construction of a new cell shall take place only in accordance with the approved construction proposals unless:
- (a) any change to the approved construction proposals would have no impact on the performance of any element of the design; or

- (b) a change has otherwise been agreed in writing by the Agency.
- 2.7.3 No disposal of waste shall take place in a new cell until the operator has submitted a CQA Validation Report and the Agency has confirmed that it is satisfied with the CQA Validation Report.
- 2.7.4 No construction of landfill Infrastructure shall commence until the operator has submitted relevant construction proposals or a written request to use previous construction proposals and the Agency has confirmed that it is satisfied with the construction proposals.
- 2.7.5 The construction of the Landfill Infrastructure shall take place only in accordance with the approved construction proposals unless:
  - (a) any change to the approved construction proposals would have no impact on the performance of any element of the design; or
  - (b) a change has otherwise been agreed in writing by the Agency.
- 2.7.6 The operator shall submit a CQA Validation Report as soon as practicable following the construction of the relevant Landfill Infrastructure.
- 2.7.7 Where pollution controls are immediately necessary to prevent an incident or accident, then conditions 2.7.4 and 2.7.5 do not apply and the relevant Landfill Infrastructure may be constructed, provided that the construction proposals are submitted to the Agency as soon as practicable.
- 2.7.8 For the purposes of conditions 2.7.1, 2.7.3 and 2.7.4, the Agency shall be deemed to be satisfied where it has not, within the period of 4 weeks from the date of receipt of the relevant construction proposals or CQA Validation Report, either:
  - (a) confirmed whether or not it is satisfied; or
  - (b) informed the operator that it requires further information.

## **2.8 Waste acceptance**

- 2.8.1 Wastes shall only be accepted for disposal if:
  - (a) they are listed in schedule 3, and
  - (b) they are inert waste, and
  - (c) they are not liquid waste (including waste waters but excluding sludge), and
  - (d) all the relevant waste acceptance procedures set out in schedule 1 of the Landfill Regulations have been completed, and
  - (e) they fulfil the relevant waste acceptance criteria, and
  - (f) they have not been diluted or mixed solely to meet the relevant waste acceptance criteria, and
  - (g) they are wastes which have been treated, except for wastes for which treatment is not technically feasible.

### **2.8.2 The operator shall visually inspect:**

- (a) without unloading it, waste that is not in an enclosed container or enclosed vehicle on arrival at the landfill; and

(b) waste at the point of deposit;

and shall satisfy itself that it conforms to the basic characterisation documentation submitted by the holder.

- 2.8.3 Where the operator has taken samples to establish that the waste is in conformity with the documentation submitted by the holder then the samples taken shall be retained for at least one month and results of any analysis for at least two years.
- 2.8.4 The operator on accepting each delivery of waste shall provide a receipt to the person delivering it.
- 2.8.5 The total quantity of waste that shall be deposited in the landfill shall be limited by the pre-settlement levels shown on drawing submitted in the Improvement Programme Condition 5.
- 2.8.6 The quantity of waste that is deposited in the landfill in any year shall not exceed the limits in schedule 1 table S1.5.
- 2.8.7 The operator shall maintain and implement a system which ensures that a record is made of the quantity, characteristics, date of delivery and, where practicable, origin of any waste that is received for disposal or recovery and of the identity of the producer, or in the case of multiple collection vehicles, of the collector of such waste. Any information regarded by the operator as commercially confidential shall be clearly identified in the record.

## **2.9 *Closure, aftercare and decommissioning***

- 2.9.1 The operator shall maintain and operate the Activities so as to prevent or where that is not practicable, to minimise, any pollution risk on closure and decommissioning.

## **3. Emissions and monitoring**

### **3.1 *Emissions to water, air or land***

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 4 tables S4.1 .

### **3.2 *Emissions to groundwater***

- 3.2.1 There shall be no emission from the activities into groundwater of any substance in List I (as defined by the Groundwater Regulations) contrary to those Regulations.
- 3.2.2 There shall be no emission from the activities into groundwater of any substance in List II (as defined in the Groundwater Regulations) so as to cause pollution (as defined in those Regulations).
- 3.2.3 The trigger levels for emissions into groundwater for the parameter(s) and monitoring point(s) set out in schedule 4 table S4.2 of shall not be exceeded.
- 3.2.4 The operator shall submit to the Agency a review of the Hydrogeological Risk Assessment:
- (a) between 9 and 6 months prior to the fourth anniversary of the granting of the permit, and

- (b) between 9 and 6 months prior to every subsequent 4 years after the fourth anniversary of the granting of the permit.

### **3.3 Fugitive emissions of substances**

- 3.3.1 Fugitive emissions of substances (excluding odour, noise and vibration) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.3.2 Litter or mud arising from the activities shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures have been used to prevent or where that is not practicable to minimise, the litter and mud.
- 3.3.3 Litter or mud arising from the activities shall be cleared from affected areas outside the Site as soon as practicable.
- 3.3.4 All liquids, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.
- 3.3.5 The limits for landfill gas set out in schedule 4, table S4.3, shall not be exceeded.

### **3.4 Odour**

- 3.4.1 Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the Site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures to prevent or where that is not practicable to minimise the odour.

### **3.5 Noise and vibration**

- 3.5.1 Emissions from the Activities shall be free from noise and vibration at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures to prevent or where that is not practicable to minimise the noise and vibration.

### **3.6 Monitoring**

- 3.6.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the monitoring for the parameters, specified in the following tables in schedule 4 to this permit:
- (a) Point source emissions specified in tables S4.1;
  - (b) Groundwater specified in tables S4.2 and S4.6;
  - (c) Landfill gas specified in tables S4.3 and S4.4;
  - (d) Surface water specified in table S4.5

3.6.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.6.3 A topographical survey of the site referenced to Ordnance Datum shall be carried out:

- (a) annually, and
- (b) prior to the disposal of waste in any new cell or new development area of the landfill, and
- (c) following closure of the landfill or part of the landfill.

The topographical survey shall be used to produce a plan of a scale adequate to show the surveyed features of the site.

### **3.7 Transfers off-site**

3.7.1 Records of all the wastes sent off site from the activities, for either disposal or recovery, shall be maintained.

## **4. Information**

### **4.1 Records**

4.1.1 All records required to be made by this permit shall:

- (a) be legible;
- (b) be made as soon as reasonably practicable;
- (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
- (d) be retained, unless otherwise agreed in writing by the Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
  - (i) the results of groundwater monitoring;
  - (ii) sub-surface landfill gas monitoring;
  - (iii) waste types and quantities;
  - (iv) topographical surveys; and
  - (v) the specification and as built drawings of the basal, sidewall and capping engineering systems

4.1.2. Any records required to be made by this permit shall be supplied to the Agency within 14 days where the records have been requested in writing by the Agency.

4.1.3. All records required to be held by this permit shall be held on the site and shall be available for inspection by the Agency at any reasonable time.

## 4.2 Reporting

- 4.2.1 A report or reports on the performance of the activities over the previous year shall be submitted to the Agency by 31 January (or other date agreed in writing by the Agency) each year. The report(s) shall include as a minimum:
- (a) a review of the results of the monitoring and assessment carried out in accordance with this permit against the relevant assumptions, parameters and results in the risk assessments submitted with the Application;
  - (b) where the operator's management system encompasses annual improvement targets, a summary report of the previous year's progress against such targets;
  - (c) the annual production/treatment set out in schedule 5 table S5.2.
  - (d) details of any contamination or decontamination of the site which has occurred;
  - (e) the topographical surveys required by condition 3.6.3 other than those submitted as part of a CQA validation report;
  - (f) the volumetric difference (reported in cubic metres) between the most recent topographical survey and the previous annual topographical survey i.e. the additional volume of the landfill void that is occupied by waste;
  - (g) an assessment of the settlement behavior of the landfill body based on the difference between the most recent topographical survey and previous annual topographical survey for the areas of the landfill which did not receive waste between the surveys;
  - (h) a calculation of the remaining capacity (reported in cubic metres) derived from the pre-settlement contours and the most recent topographical survey;
  - (i) the compliance testing undertaken in the period;
- 4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 5 table S5.1;
  - (b) for the reporting periods specified in schedule 5 table S5.1 and using the forms specified in schedule 5 table S5.3; and
  - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.

- 4.2.3 A summary report of the waste types and quantities accepted and removed from the site shall be made for each quarter. It shall be submitted to the Agency within one month of the end of the quarter and shall be in the format required by the Agency.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding 4 years, submit to the Agency, within 6 months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.
- 4.2.5 All reports and notifications required by the permit shall be sent to the Agency using the contact details supplied in writing by the Agency

### **4.3 Notifications**

- 4.3.1 The Agency shall be notified without delay following the detection of:
- (a) any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution;
  - (b) the breach of a limit specified in the permit;
  - (c) any significant adverse environmental effects.
- 4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 6 to this permit within the time period specified in that schedule.
- 4.3.3. Prior written notification shall be given to the Agency of the following events and in the specified timescales:
- (a) as soon as practicable prior to the permanent cessation of any of the permitted activities;
  - (b) as soon as practicable prior to the cessation of the landfill disposal activities, for a period likely to exceed 1 month; and
  - (c) at least 7 days prior to the resumption of the landfill disposal activities after a cessation notified under (b) above.

- 4.3.5 Where the Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.6 The Agency shall be notified within 7 days of any changes in technically competent management and the name of any incoming person together with evidence that such person has the required technical competence.
- 4.3.7 The Agency shall be provided, within 14 days of the operator or any relevant person being convicted of a relevant offence, (unless such information has already been notified to the Agency), with details of the nature of the offence, the place and date of conviction, and the sentence imposed.
- 4.3.8 The Agency shall be notified within 14 days of the operator and/or any relevant person lodging an appeal against a conviction for any relevant offence and of the outcome when the appeal is decided.
- 4.3.9 The Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- (a) any change in the operator's trading name, registered name or registered office address;
  - (b) any change to particulars of the operator's ultimate holding company (including details of an ultimate holding company where an operator has become a subsidiary); and
  - (c) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

#### **4.4 Interpretation**

- 4.4.1 In this permit the expressions listed in schedule 7 shall have the meaning given in that schedule.

# Schedule 1 - Operations

<b>Table S1.1 Activities</b>		
<b>Activity listed in schedule 1 of the PPC Regulations</b>	<b>Description of specified activity</b>	<b>Limits of specified activity</b>
Section 5.2 Part A (1) (b), The disposal of waste in a landfill.	Landfill for inert waste (landfill classification under the Landfill Regulations 2002)	Receipt, handling, storage and disposal of wastes, consisting of the types and quantities specified in conditions 2.8, as an integral part of landfilling.
<b>Directly Associated Activity</b>		
Water discharges to controlled waters.	Discharges of site drainage from the landfill.	From surface water management system to point of entry to controlled waters.

**Table S1.2: Operating techniques**

Description	Parts	Date Received
Application	The response to questions 1.1-1.3, 2.1-2.12 in part B of the application form version 2 November 2000 and given in Volume I, II III and IV of the application (excluding the response to questions 1.1-1.3, 2.1-2.12 in part B of the application form version 2 November 2000 and given in Volume I,II,III and IV of the application)	28/04/2003
Response to letter dated 29/08/03	The response to letter dated 29/08/03 is given in letter dated 24/09/03 REF: DW-T2/4	24/09/2003
Response to schedule 4 Notice dated 29/08/2003	Response to questions 0.1 , 1.1.1-1.1.5, 1.1.10-1.1.15, 1.1.27-1.1.32, 1.2.28-1.2.29, 2.1.1, 2.2.1, 2.2.6, 2.2.8, 2.3.16, 2.3.34, 2.3.42, 2.3.48, 2.3.63, 2.3.67-2.3.68, 2.3.70-2.3.71, 2.3.85, 2.4.1, 2.4.4, 4.1.1-4.1.2, 4.3.4, of the schedule 4 notice dated 29/08/2003 given in appendices 1- 24 and volumes I - V replaces questions 1.1- 1.3 and 2.1- 2.12 in part B of the application form version 2 November 2000 and with supporting information given in Volume I , II, III and IV .	24/09/2003
Response to letter dated 20/10/2003	The response to question 1.1.1 of the letter dated 20/10/03 ref: BT9879 given in plan reference number RF/REC/01a dated Oct 2003 replaces plan reference RF/SR/01 given in response to question 1.1.1 of the schedule 4 notice dated Sept 2003	23/10/2003
Response to letter dated 20/10/2003	Response to question 1.1.27 and 1.1.30 of the letter dated 20/10/03 ref:BT9879 given in plans referenced RF/GEO/02c Oct 2003 and RF/SR/06a Oct 2003 replaces Plans reference RF/SR/06 dated Sept 03 and RF/GEO/02a dated Sept 2003 in response to questions 1.1.27 and 1.1.30 of the schedule 4 notice dated 29/08/03	23/10/2003
Response to letter dated 20/10/2003	Response to question 1.1.31 of the letter dated 20/10/2003 ref:BT9879 given in letter dated 23/10/2003 ref:DW/SB-T2/4 supplements the response to question 1.1.31 of the schedule 4 notice dated 29/08/03 given in appendix 12 .	23/10/2003
Response to the letter dated 20/10/2003	Response to question 2.4.1 of the letter dated 20/10/2003 given in amended Appendix F of appendix 23 replaces the response to the schedule 4 notice dated 29/08/03 given in appendix F of appendix 23.	23/10/2003
Response to letter dated 20/10/2003	Response to questions 2.2.1 and 2.2.8 of the letter dated 20/10/2003 given in the document entitled Rectory Farm Waste Acceptance Criteria and Procedures-Rev A dated Oct 2003 replaces the response to questions 2.2.1 and 2.2.8 of the schedule 4 notice dated 29/08/03 given in appendix 14	27/10/2003
Response to letter dated 20/10/2003	Response to question 2.3.34 of the letter dated 20/10/2003 given in the letter dated 27/10/2003 REF: DW/JB-T2/4 supplements the response to question 2.3.34 of the schedule 4 notice dated 29/08/03.	27/10/2003

**Table S1.2: Operating techniques**

Description	Parts	Date Received
Response to letter dated 20/10/2003	Response to question 2.3.48 of the letter dated 20/10/2003 given in Gas Monitoring Action Plan Rev A dated Oct 2003 and the amended questions 2.3.48 and 2.3.49 of Part B of the application form replaces the response given to question 2.3.48 of the schedule 4 notice dated 29/08/03 and questions 2.3.48 and 2.3.49 of Part B of the application form submitted in response to question 0.1 of the schedule 4 notice dated 29/08/03	27/10/2003
Response to letter dated 20/10/2003	Response to question 2.4.1 of the letter dated 20/10/2003 given in the letter dated 27/10/03 Ref:DW/JB-T2/4 replaces the response given to question 2.4.1 of the schedule 4 notice dated 29/08/03 in question 2.4.1 of part B of the application form submitted in response to question 0.1 of the schedule 4 notice dated 29/08/03.	27/10/2003
Response to letter dated 20/10/2003	Response to question 1.1.12 of the letter dated 20/10/2003 given in the letter dated 31/10/2003 REF: DW/JB-T2/4 in section 1. Question 2.1.12 supplements the response given to question 1.1.12 of the schedule 4 notice dated 29/08/03 given in appendix 24	31/10/2003
Schedule 4 notice dated 29/08/2003	Response to question 1.1.31 of the schedule 4 notice dated 29/08/2003 given in the letter dated 21/11/03 REF: DW/JB-T2/4 supplements the response given to question 1.1.31 of the schedule 4 notice dated 29/08/03 given in appendix 12	21/11/2003
E-mail from Dan Walker Marwalk Developments Limited dated 01/03/04 ref:DW-T2/4	Information in e-mail supplements information contained in appendix 15 of the schedule 4 notice response dated 29/08/03	01/03/2004
E-mail from Dan Walker Marwalk Developments Limited dated 08/04/04	Information in e-mail on groundwater monitoring suite supplements information contained in the schedule 4 notice response dated 29/08/03	08/04/04
Application	The response to questions 2.11 in Part B of the application form version 2 November 2000 and given in volume III and volume IV of the supporting information (excluding the response given to question 2.11 in part B of the application form version 2 November 2000 and given in volume III and IV of the supporting information.)	28/04/2003
Response to Schedule 4 Notice Dated 29/08/2003	Response to question 0.1 of the schedule 4 notice dated 29/08/2003 given in appendix 2 in question 2.5 of the application form dated December 2002, restoration concept plan reference RF/WP/03a within appendix 3 and improvement conditions 1, 2 and 3 replaces the response given to questions 2.11 in part B of the application form version 2 November 2000 and given in Volume III and volume IV of the supporting information.	24/09/2003

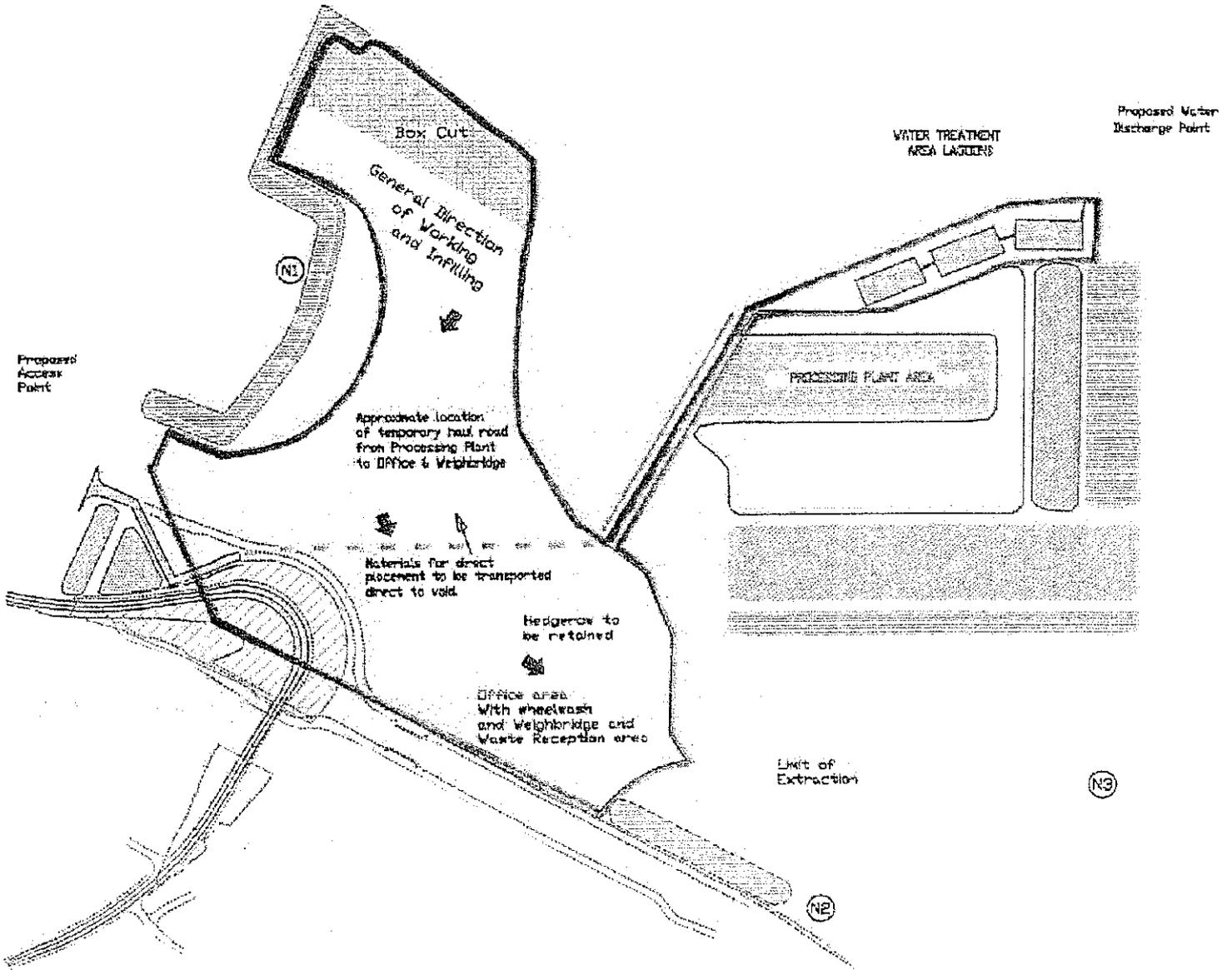
**Table S1.3 Improvement programme requirements**

Reference	Requirement	Date
IC 1	A permitted installation closure plan shall be produced in consultation with the Agency and in accordance with council directive 1999/31/EC on the Landfill of Waste (26 April 1999). It shall specify the detailed procedure the operator proposes to implement upon the closure of the permitted landfill. The closure plan will be subject to approval by the Agency in writing and shall not be considered accepted or acceptable until such approval is given.	31/03/09
IC 2	A permitted installation post-closure aftercare and restoration plan shall be produced in consultation with the Agency in accordance with council directive 1999/31/EC on the landfill of waste (26 April 1999). It shall specify the detailed procedures the operator proposes to implement upon the permitted landfill being considered by the Agency to be in post closure and after care phase of its operations. The plan will be subject to approval by the Agency in writing and shall not be considered accepted or acceptable until such approval is given.	31/03/09
IC 3	A permitted installation decommissioning plan prior to surrender shall be produced in consultation with the Agency and in accordance with council directive 1999/31/EC on the landfill of waste (26 April 1999). It shall specify the detailed procedures the operator proposes to implement upon the Permitted installation being considered by the Agency to be suitable to decommission prior to surrender. The plan will be subject to approval by the Agency in writing and shall not be considered accepted or acceptable until such approval is given.	31/03/09
IC 4	Proposals for the location of the additional in waste boreholes for the monitoring of landfill gas to be retrofitted shall be submitted to the Agency and will be subjected to approval by the Agency in writing and shall not be considered accepted or acceptable until such approval is given.	1 month after each phase completion
IC 5	A drawing showing the pre-settlement levels of the landfill shall be submitted to the Agency for approval. The total quantity of waste that shall be deposited in the landfill shall be limited by the pre-settlement levels shown in the drawing as required in Condition 2.8.5.	31/12/06

**Table S1.5 Annual Waste Input Limits**

Category	Limit Tonnes/ Year
Inert Waste	300 000

# Schedule 2 - Site plan



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## Schedule 3 - List of permitted wastes

### Wastes that may be accepted without testing at a landfill for inert waste

EWG Code	Description	Restrictions
17 01 01	Concrete	Selected C&D waste only <sup>(a)</sup>
17 01 02	Bricks	Selected C&D waste only <sup>(a)</sup>
17 01 03	Tiles and ceramics	Selected C&D waste only <sup>(a)</sup>
17 01 07	Mixtures of concrete, bricks, tiles and ceramics	Selected C&D waste only <sup>(a)</sup>
17 05 04	Soil and stones	Excluding topsoil, peat; excluding soil and stones from contaminated sites

- (a) Selected construction and demolition waste (C & D waste): with low contents of other types of materials (like metals, plastic, organics, wood, rubber, etc). The origin of the waste must be known.

No C & D waste from constructions, polluted with inorganic or organic dangerous substances, e.g. because of production processes in the construction, soil pollution, storage and usage of pesticides or other dangerous substances, etc., unless it is made clear that the demolished construction was not significantly polluted.

No C & D waste from constructions, treated, covered or painted with materials, containing dangerous substances in significant amounts.

## Schedule 4 – Emissions and monitoring

**Table S4.1 Point source emissions to water (other than sewer) – emission limits and monitoring requirements**

Emission point Ref. & Location	Parameter	Source	Limit (incl unit)	Reference Period	Monitoring Frequency	Monitoring Standard or Method
Proposed water discharge Point (consent number PRNNF/12740 01) located on drawing number RF/SR/06a as Proposed water discharge point.	pH	Surface water	6-9		Quarterly	In accordance with Agency Guidance LFTGN02 - 'Monitoring of Landfill Leachate, Groundwater and Surface Water'
	Suspended Solids		40 mg/l		Quarterly	
	Visible Oils		None visible		Monthly	
	Ammonium N		1 mg/l		Quarterly	

**Table S4.2 Trigger levels for emissions into groundwater and monitoring requirements**

Monitoring point reference <sup>(1)</sup>	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
GW2	Cadmium	0.1 ug/l		Quarterly	In accordance with Agency Guidance LFTGN02 - 'Monitoring of Landfill Leachate, Groundwater and Surface Water'
GW3 <sup>(2)</sup>	Chloride	250 mg/l			
	Ammonium N	1 mg/l			
	Nickel	20 ug/l			

(1) Identified on drawing number RF/Geo/02c dated Oct 2003

(2) Off-site monitoring point

**Table S4.3 Landfill gas in external monitoring boreholes – limits and monitoring requirements**

Monitoring point Ref. /description <sup>(1)</sup>	Parameter	Limit (including units)	Monitoring frequency	Monitoring standard or method
GW1	Methane	1 %v/v	Quarterly	In accordance with Agency Guidance LFTGN03 – 'Guidance on the Management of Landfill Gas'
GW2	Carbon Dioxide	1.5 %v/v		
GW3 <sup>(2)</sup>	Oxygen	no limit		
	Atmospheric pressure	no limit		
	Temperature	no limit		
	Meteorological data	no limit		

(1) Identified on drawing number RF/Geo/02c dated Oct 2003

(2) Off-site monitoring point

**Table S4.4 Landfill gas – other monitoring requirements**

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
In waste monitoring borehole GAS1	Methane	Quarterly	In accordance with Agency Guidance LFTGN03 – 'Guidance on the Management of Landfill Gas'	
	Carbon Dioxide			
	Oxygen			
	Atmospheric pressure			
	Differential pressure (Note 1)			
	Temperature			
	Meteorological Data.			

Note 1 Differential pressure monitoring only to be undertaken in the event of methane and/or carbon dioxide trigger level breaches.

**Table S4.5 Surface water – other monitoring requirements**

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
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**Table S4.5 Surface water – other monitoring requirements**

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
SW1	pH	Quarterly	In accordance with Agency Guidance LFTGN02 -	'Monitoring of Landfill Leachate, Groundwater and Surface Water'
SW2 <sup>(1)</sup>	Suspended solids			
SW3 <sup>(1)</sup>	Ammonium N	Monthly		
	Visible oil/grease			
	TOC	Annually		
	Se			
	Sb			
	Hg			
	Al			
	Mg			
	SO4			
	Cl			
	Fe			
	Cd			
	Cr			
	Cu			
	Ni			
	Pb			
	Zn			
	Fluorides			
	BTEX			
	PCBs			
	PAHs			
	TDS			
	DOC			
Lagoons	pH	Annually	In accordance with Agency Guidance LFTGN02 -	'Monitoring of Landfill Leachate, Groundwater and Surface Water'
Water storage area	Suspended solids			
	Visible oil/grease			
	Ammonium N			

(1) Off-site monitoring point

**Table S4.6 Groundwater – other monitoring requirements**

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
GW1	Water level	Quarterly	In accordance with Agency Guidance LFTGN02 - 'Monitoring of Landfill Leachate, Groundwater and Surface Water'	
	pH			
	Ammonium N			
	Cl			
	Cd			
	Ni	Annually		
	Electrical Conductivity			
	TON			
	TOC			
	Ca			
	Mg			
	Na			
	K			
	Total alkalinity			
	SO4			
	Fe			
	Mn			
	Cr			
	Cu			
	Pb			
Zn				
GW2	Water level	Quarterly	In accordance with Agency Guidance LFTGN02 - 'Monitoring of Landfill Leachate, Groundwater and Surface Water'	
GW3 <sup>(1)</sup>	pH	Annually		
	Electrical Conductivity			
	TON			
	TOC			
	Ca			
	Mg			
	Na			
	K			
	Total alkalinity			
	SO4			
	Fe			
	Mn			
	Cr			
	Cu			
	Pb			
	Zn			

(1) Off-site monitoring point

## Schedule 5 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

**Table S5.1 Reporting of monitoring data**

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to water Parameters as required by condition 3.6.1	Proposed water discharge Point (consent number PRNNF/12740 01) located on drawing number RF/SR/06a as Proposed water discharge point.	Every 3 months	05/07/04
Groundwater Parameters as required by condition 3.6.1	GW1, GW2, GW3	Every 3 Months	05/07/04
Landfill gas lateral migration Parameters as required by condition 3.6.1	GW1, GW2, GW3	Every 3 months	05/07/04
Other Landfill gas monitoring Parameters as required by condition 3.6.1	In waste monitoring borehole GAS1	Every 3 months	1 month after each phase completion
Other surface water monitoring Parameters as required by condition 3.6.1	SW1, SW2, SW3, lagoons, water storage area	Every 3 months	05/07/04

**Table S5.2: Annual production/treatment**

Surface water and/ or groundwater: Disposed of off site; Disposed of to any onsite effluent treatment plant.	Cubic metres/year

**Table S5.3 Reporting forms**

Media/parameter	Reporting Format	Date of Form
Controlled water	Form water 1 or other reporting format to be agreed in writing with the Agency	
Groundwater	Form groundwater 1 or other reporting format to be agreed in writing with the Agency	
Landfill gas	Form Gas 1 or other reporting format to be agreed in writing with the Agency	
Waste Return	Waste Return Form RATS2E	
Landfill topographical surveys and interpretation	Reporting format to be agreed in writing with the Agency	

## Schedule 6 - Notification

This page outlines the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the PPC Regulations.

### Part A

Permit Number	
Name of operator	
Location of Installation	
Time and date of the detection	

<b>(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution</b>	
<b>To be notified within 24 hours of detection</b>	
Date and Time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

<b>(b) Notification requirements for the breach of a limit</b>	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

<b>Time periods for notification following detection of a breach of a limit</b>	
Parameter	Notification period

<b>(c) Notification requirements for the detection of any significant adverse environmental effect</b>	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

**Part B to be supplied as soon as practicable**

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the installation in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

\* authorised to sign on behalf of Mick George (Haulage) Limited

## Schedule 7 - Interpretation

"Accident" means an accident that may result in pollution.

"Annually" means once every Year.

"Application" means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under schedule 4 to the PPC Regulations

"Authorised Officer" means any person authorised by the Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in Section 108(4) of that Act.

"Background concentration" means such concentration of that substance as is present in:

- For emissions to surface water, the surface water quality up-gradient of the site; or
- For emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.
- For emissions of landfill gas, the ground or air outside the site and not attributable to the site

"Construction Proposals" means written information, at a level of detail appropriate to the complexity and pollution risk, on the design, specifications of materials selected, stability assessment (where relevant) and the construction quality assurance (CQA) programme in relation to the new cell or Landfill Infrastructure.

"CQA Validation Report" means the final "as built" construction and engineering details of the new cell or of the Landfill Infrastructure. It must provide a comprehensive record of the construction and must include, where relevant:

- The results of all testing required by the CQA programme - this must include the records of any failed tests with a written explanation, details of the remedial action taken, referenced to the appropriate secondary testing;
- Plans showing the location of all tests;
- "As-built" plans and sections of the works;
- Copies of the site engineer's daily records;
- Records of any problems or non-compliances and the solution applied;
- Any other site specific information considered relevant to proving the integrity of the new cell or Landfill Infrastructure;
- Validation by a qualified person that all of the construction has been carried out in accordance with the construction proposals.

"Fugitive emission" means an emission to air, water or land from the Activities which is not controlled by an emission or background concentration limit.

"Groundwater Regulations" means the Groundwater Regulations SI 1998 No. 2746, and words and expressions used in this permit which are also used in the Regulations shall have the same meanings as in those Regulations.

"Landfill Infrastructure" means any specified element of the:

- permanent capping;
- temporary capping (i.e. engineered temporary caps not cover materials);
- leachate abstraction systems;
- leachate transfer, treatment and storage systems;
- surface water drainage systems;
- leachate monitoring wells;
- groundwater monitoring boreholes;
- landfill gas monitoring boreholes;
- landfill gas management systems;

within the Site.

"Landfill Regulations" means the Landfill (England and Wales) Regulations SI 2002 No. 1559, and words and expressions used in this permit which are also used in the Regulations shall have the same meanings as in those Regulations.

"Land Protection Guidance" means Agency guidance "H7 - Guidance on the protection of land under the PPC Regime: Application site report and site protection monitoring programme".

"Liquids" means any liquid other than leachate within the engineered landfill containment system.

"LFTGN 05" means Environment Agency Guidance for monitoring enclosed landfill gas flares, September 2004.

"LFTGN 08" means Environment Agency Guidance for monitoring landfill gas engines, September 2004.

"New Cell" means any new cell, part of a cell or other similar new area of the Site where waste

deposit is to commence after issue of this permit and can comprise:

- groundwater under-drainage system;
- permanent geophysical leak location system;
- leak detection layer;
- sub-grade;
- barriers;
- liners;
- leachate collection system;
- leachate abstraction system;
- separation bund/layer;
- cell or area surface water drainage system;
- side wall subgrade and containment systems;

for the new cell.

"No impact" means that the change made to the construction process will not alter the agreed design criteria, specification or performance.

"notify without delay" or "notified without delay" means that a telephone call can be used, whereas all other reports and notifications must be supplied in writing, either electronically or on paper.

"PPC Regulations" means the Pollution, Prevention and Control (England and Wales) Regulations SI 2000 No.1973 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"Quarter" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"Relevant person" and "relevant conviction" shall have the meanings given to them in the Environmental Protection Act 1990

"Review of the Hydrogeological Risk Assessment" means a written review of the hydrogeological risk assessment included in the Application, together with any other parts of the Application that addressed the requirements of the Groundwater Regulations. The review shall assess whether the activities of disposal or tipping for the purpose of disposal of waste authorised by the permit continue to meet the requirements of the Groundwater Regulations

"Site Protection and Monitoring Programme" means a document which meets the requirements for Site Protection and Monitoring Programmes described in the Land Protection Guidance.

"Technically competent management" and "technical competence" shall have the meanings given to them in the Environmental Protection Act 1990.

"Waste code" means the six digit code referable to a type of waste in accordance with the List of Wastes (England) Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

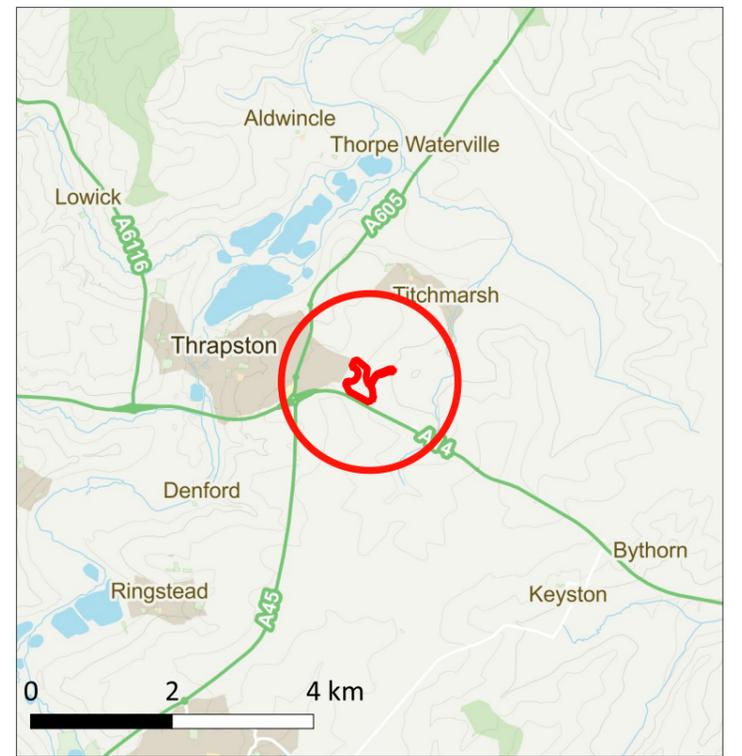
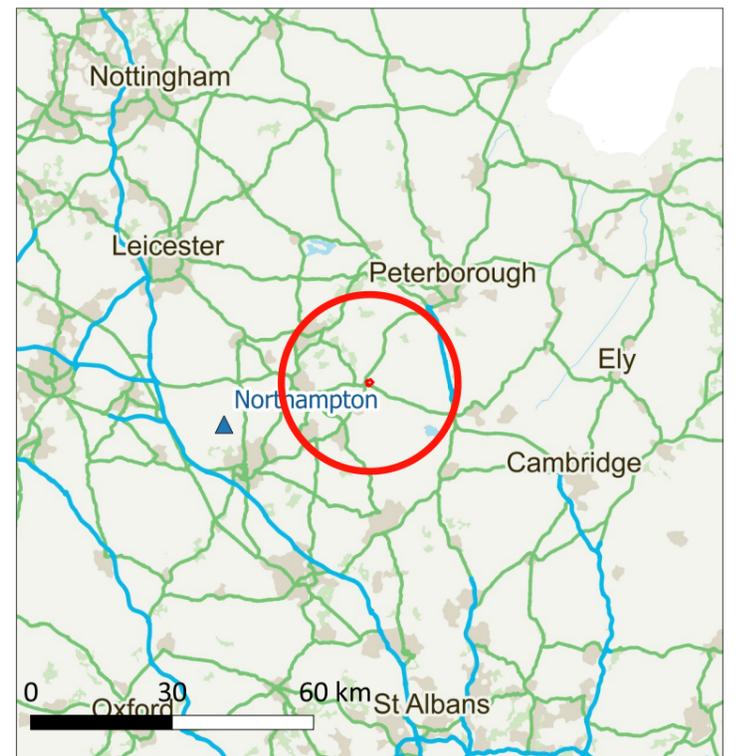
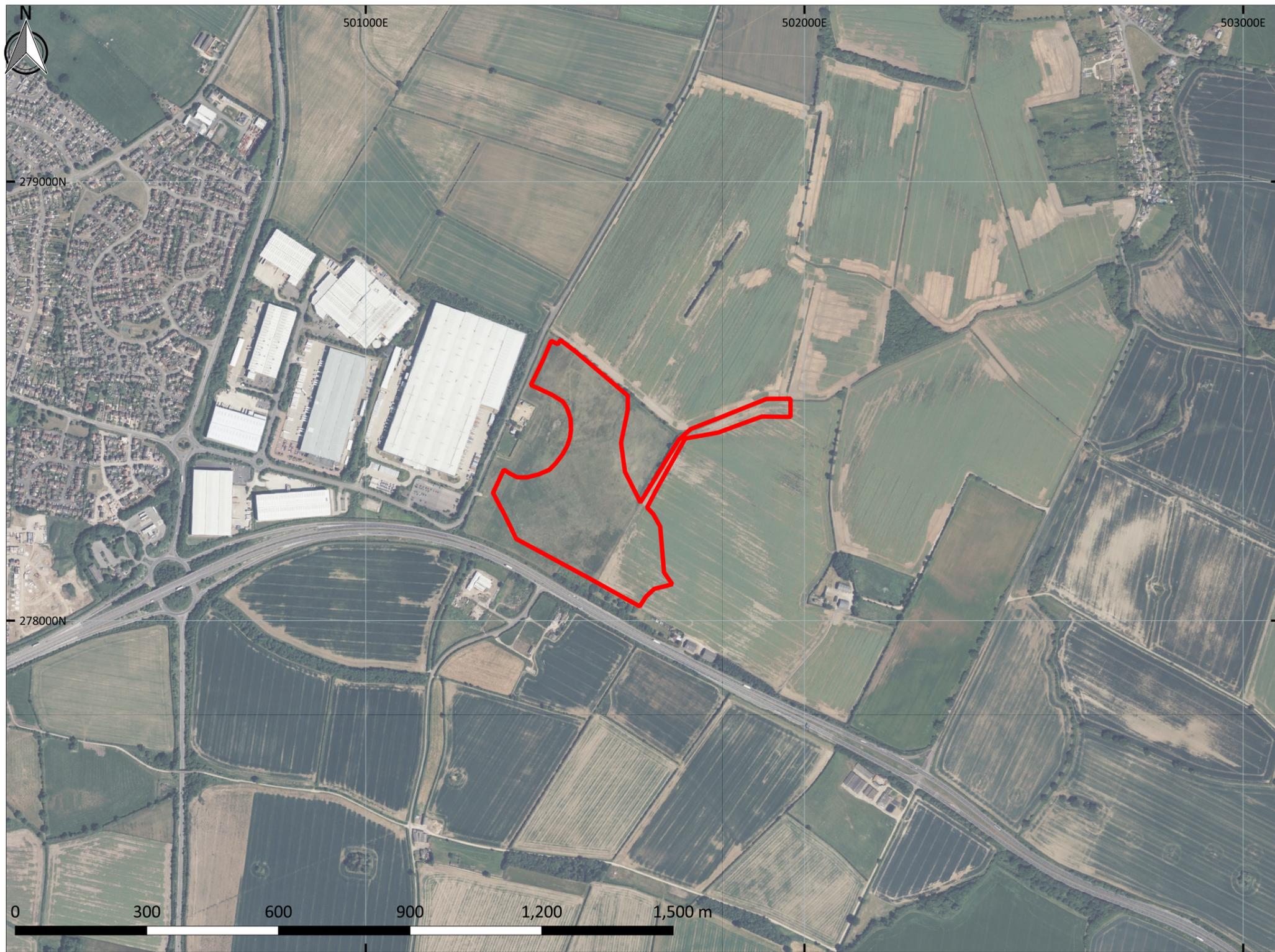
"Year" means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means the standards included in Environment Agency Guidance for Monitoring Enclosed Landfill Gas Flares LFTGN 05 or Guidance for Monitoring Landfill Gas Engine Emissions LFTGN 08.

END OF PERMIT

# Appendix E Drawings



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**KEY PLAN**

Permit Boundary

**NOTES**

1. Contains OS data © Crown copyright and database right (2022)

**REVISIONS**

REV.	DRAWN BY INITIALS	CHECKED BY INITIALS	DATE	REVISION NOTES/COMMENTS
P01	LH	EC	17/06/22	First issue
P02	LW	EC	28/04/23	Second issue



**TITLE**  
**SITE LOCATION PLAN**

HYDROCK PROJECT NO.  
23880

SCALE @ A3  
1:10,000

CLIENT  
Mick George Ltd

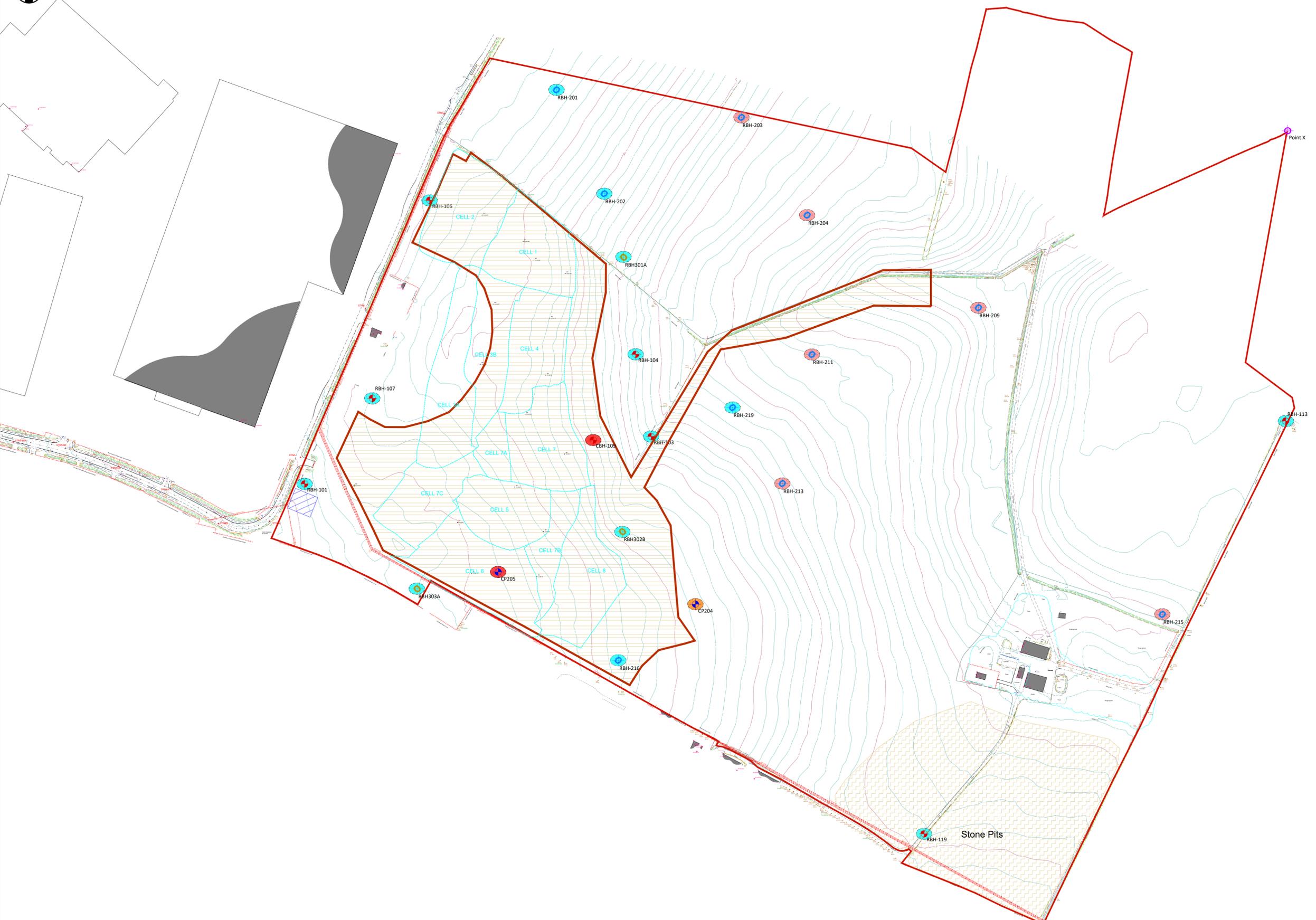
PURPOSE OF ISSUE  
SUITABLE FOR INFORMATION

STATUS  
S2

PROJECT  
Thrapston Landfill Permit Surrender

DRAWING NO.  
23880-HYD-XX-XX-DR-GE-1001

REVISION  
P02



- KEY**
- Site Investigation Boreholes (June/July 2021)
  - RBH Cable Percussion Borehole
  - RBH Rotary Percussion / Core Borehole
  - Detailed Site Investigation
  - RBH Cable Percussion Borehole
  - RBH Rotary Borehole
  - 2022 Boreholes
  - RBH Rotary
  - Monitoring Point
  - Point X
  - Surface Water

- Site Boundary (approximate)
- Mick George Landfill Cell Boundaries
- Permit boundary
- GPR: Area of disturbed ground/assumed stone pits

- Borehole Installed Strata Key**
- Cornbrash Limestone Formation
  - Blisworth Limestone Formation
  - Landfill - Made Ground
  - Kellaways Sand Member

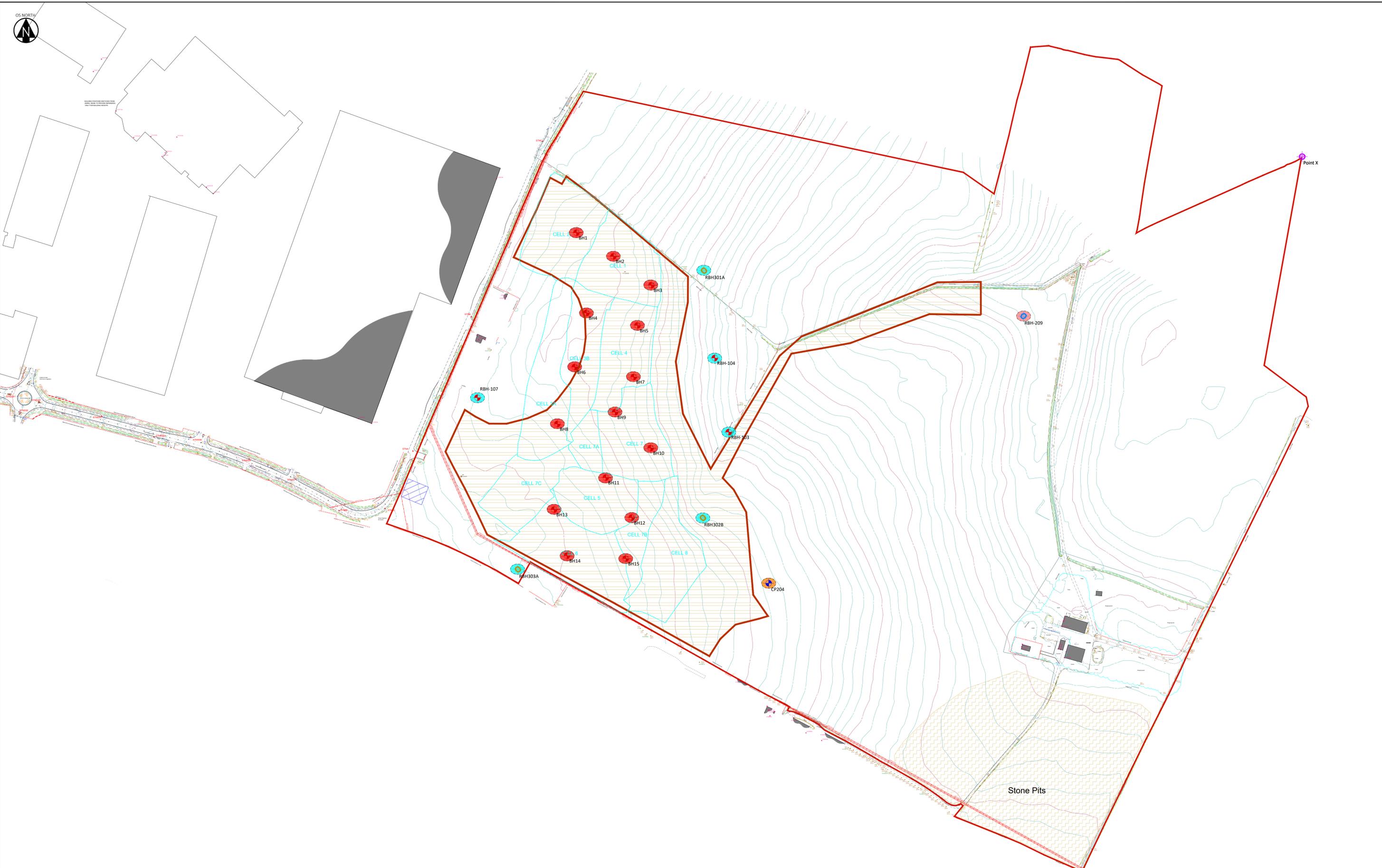
**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:
- This drawing has been based on the Statutory Drawing "Huntingdon Road, Thrapston. Topographic Survey". Ref: 11521a-G, dated 10/03/21.
- Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MG11051-dated: 25/11/2014 and MG11078-dated 15/09/2010

REV.	ISSUED	DATE	BY	CHECKED	DATE	APPROVED	DATE
1	Issue	28/04/22	EC	28/04/22	EC	28/04/22	

REV.	ISSUED	DATE	BY	CHECKED	DATE	APPROVED	DATE
1	Issue	28/04/22	AB	08/12/22	EC	08/12/22	
2	Issue	28/11/22	EC	28/11/22	EC	28/11/22	
3	Issue	14/11/22	EC	14/11/22	EC	14/11/22	
4	Issue	28/07/22	EC	28/07/22	EC	28/07/22	

		Haverhill Park Holesby Road Sproughton Northampton NN6 8LD T: +44 (0) 1604 842888 e: northampton@hydrock.com or visit www.hydrock.com	<b>TITLE</b> Permit Surrender Monitoring Plan
<b>CLIENT</b> MICK GEORGE LTD	<b>HYDROCK PROJECT NO.</b> 23880	<b>SCALE @ A0</b> 1:1500	<b>PURPOSE OF ISSUE</b> SUITABLE FOR INFORMATION
<b>PROJECT</b> THRAPSTON LANDFILL PERMIT SURRENDER	<b>DRAWING NO.</b> (PROJECT CODE ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER) 23880-HYD-XX-ZZ-DR-GE-1007	<b>STATUS</b> S2	<b>REVISION</b> P06



**KEY**

Detailed Site Investigation

- Cable Percussion Borehole
- Rotary Borehole
- 2022 Boreholes
- BH Rotary
- Monitoring Point
- Surface Water
- Point X
- Mick George Boreholes
- Cable Percussion Borehole

**Site Boundary (approximate)**

- Mick George Landfill Cell Boundaries
- Permit boundary
- GPR: Area of disturbed ground/assumed stone pits

**Borehole Installed Strata Key**

- Corbrash Limestone Formation
- Blisworth Limestone Formation
- Kellaways Sand Member
- Landfill - Made Ground

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:
- This drawing has been based on the Statutory Drawing "Huntingdon Road, Thrapston. Topographic Survey". Ref: 11521a-G, dated 20/03/21.
- Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MG310/51 dated: 25/11/2014 and MG310/8 dated 15/09/2010
- The location of Mick George borehole B18 is approximate and based on WVG Borehole Location Plan Drawing A109017-BLP-018.

PO3	Updated	28/04/21	EC	28/04/21	EC	28/04/21	
PO2	Monitoring locations updated	21/10/22	EC	21/10/22	EC	21/10/22	
PO1	FIRST ISSUE	22/10/21	EC	22/10/21	EC	22/10/21	
REV.	REVISION/NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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**CLIENT**  
MICK GEORGE LTD

**PROJECT**

**TITLE**  
POST CLOSURE MONITORING PLAN

**HYDROCK PROJECT NO.**  
23880

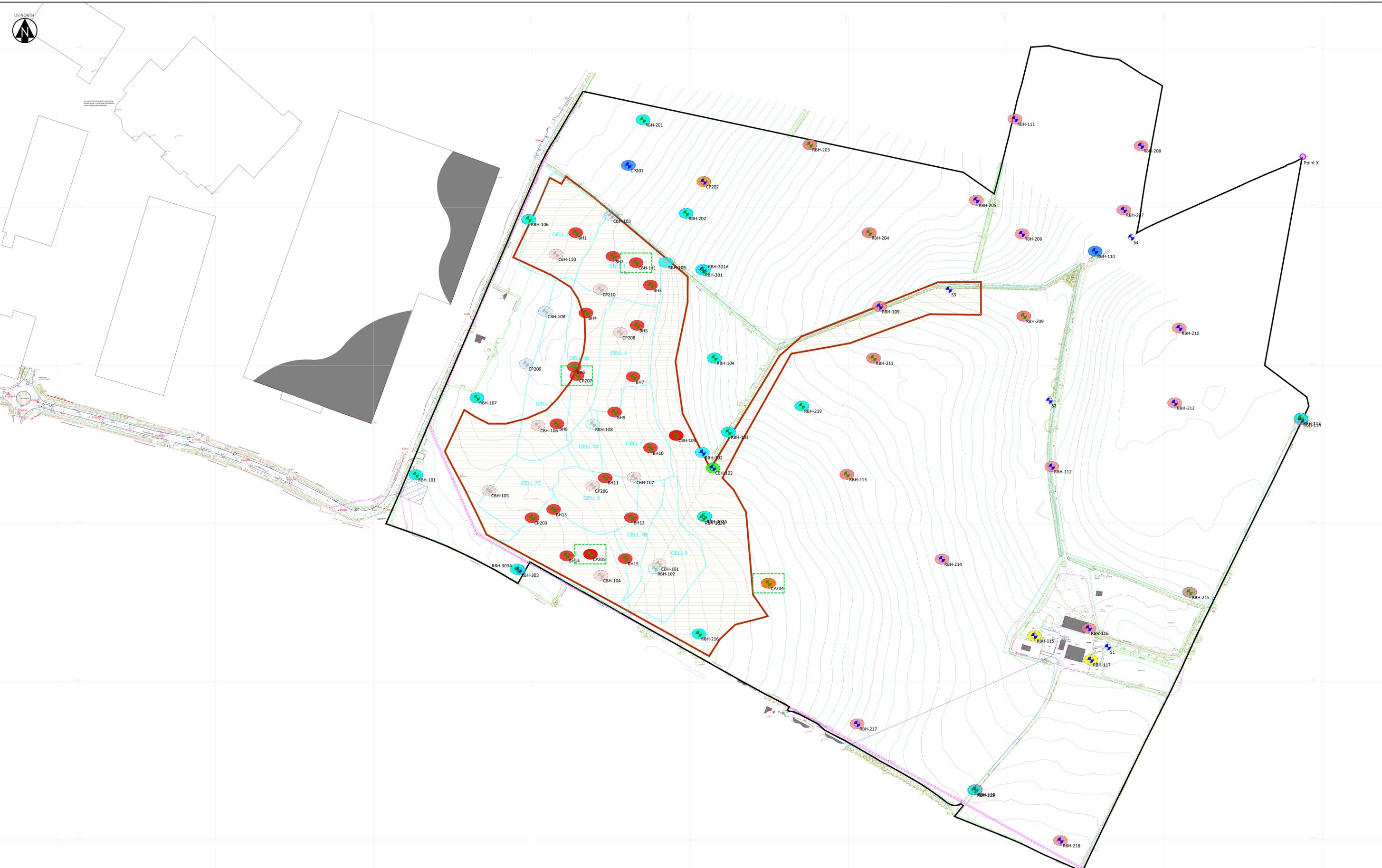
**SCALE @ A0**  
1:1500

**PURPOSE OF ISSUE**  
SUITABLE FOR INFORMATION

**DRAWING NO.** (PROJECT CODE ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER)  
23880-HYD-XX-ZZ-DR-GE-1008

**STATUS**  
S2

**REVISION**  
P03



**KEY**

	Permit Boundary
	Mick George Landfill Cell Boundaries
	Proposed Site Development Boundary (approximate)

	Landfill / Made Ground		Combrash Limestone Formation
	Kellaways Sand Member		Blisworth Limestone Formation
	Kellaways Clay Member		Blisworth Clay Formation
	Superficial Deposits		Decommissioned borehole, Colour indicates original screened strata

	Location subject to continuous gas monitoring
--	---

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:
- This drawing has been based on the Station Drawing, "Huntingdon Road, Thrapston. Topographic Survey", Ref: 11521a-0, dated 10/03/21.
- Locations subject to change following walkover and subject to discussions and agreement.
- Relocations shown at the farm building and yard areas. Subject to discussions and agreement.
- No known archaeological, ecological or arboricultural restrictions.
- Permit boundaries derived from Permit EP3837LU

POD	Issue	28/04/23	EC	25/04/23	EC	28/04/23	
POI	First Issue	24/02/2023	LW	04/02/2023	EC	04/02/2023	
REV	REVISION/NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT  
**MICK GEORGE LIMITED**

PROJECT  
**LAND ADJACENT HALDEN PARKWAY THRAPSTON**

TITLE <b>INSTALLED MONITORING POINTS</b>	
HYDROCK PROJECT NO. <b>23880</b>	SCALE @ A0 <b>1:1500</b>
PURPOSE OF ISSUE <b>SUITABLE FOR INFORMATION</b>	STATUS <b>S2</b>
DRAWING NO. (PROJECT CODE, ORIGINATOR, ZONE LEVEL, TYPE, ROLE NUMBER) <b>23880-HYD-XX-ZZ-DR-GE-1012</b>	REVISION <b>P02</b>



**KEY**

Site Investigation Boreholes (June/July 2021)

- Cable Percussion Borehole
- Rotary Percussion / Core Borehole

Detailed Site Investigation

- Cable Percussion Borehole
- Rotary Borehole
- 2022 Boreholes
- BH Rotary
- Monitoring Point
- Surface Water
- Point X

- Site Boundary (approximate)
- Mick George Landfill Cell Boundaries
- Permit boundary

**Borehole Installed Strata Key**

- Cornbrash Limestone Formation
- Blisworth Limestone Formation
- Landfill / Made Ground
- Kellaways Sand Member
- Decommissioned borehole. Colour indicates original screened strata

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:
- This drawing has been based on the Statutory Drawing "Huntingdon Road, Thrapston. Topographic Survey". Ref: 11521a-G, dated 20/03/21.
- Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MG310/1 dated: 25/11/2014 and MG310/8 dated 15/09/2010

REV.	REVISION/NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT  
**MICK GEORGE LTD**

PROJECT  
**THRAPSTON LANDFILL PERMIT SURRENDER**

TITLE <b>Permit Surrender Surface water, Leachate and Groundwater Monitoring dataset locations</b>	
HYDROCK PROJECT NO. <b>23880</b>	SCALE @ A0 <b>1:1500</b>
PURPOSE OF ISSUE <b>SUITABLE FOR INFORMATION</b>	STATUS <b>S2</b>
DRAWING NO. (PROJECT CODE ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER) <b>23880-HYD-XX-ZZ-DR-GE-1018</b>	REVISION <b>P01</b>



**KEY**

Site Investigation Boreholes (June/July 2021)

- Cable Percussion Borehole
- Rotary Percussion / Core Borehole

Detailed Site Investigation

- Cable Percussion Borehole
- Rotary Borehole

2022 Boreholes

- BH Rotary

Monitoring Point

- Surface Water
- Point X

**KEY**

- Site Boundary (approximate)
- Mick George Landfill Cell Boundaries
- Permit boundary

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:
- Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MG310/11 dated: 25/11/2014 and MG310/8 dated 15/09/2010

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PROJECT  
THRAPSTON LANDFILL PERMIT SURRENDER

TITLE  
Receptors

HYDROCK PROJECT NO.  
23880

SCALE @ A0  
1:1500

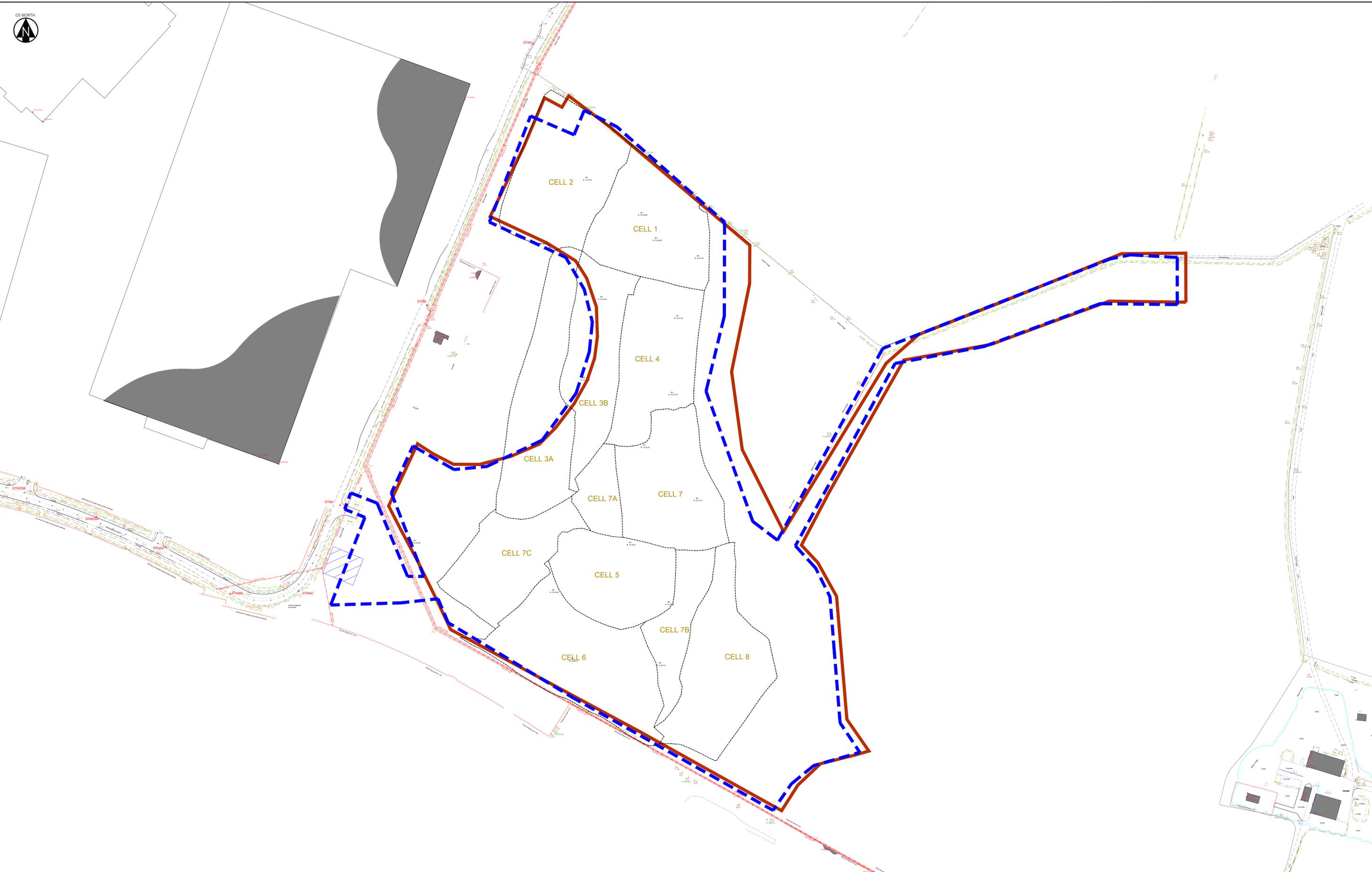
PURPOSE OF ISSUE  
SUITABLE FOR INFORMATION

DRAWING NO. (PROJECT CODE ORIGINATOR ZONE LEVEL/TYPE ROLE NUMBER)  
23880-HYD-XX-ZZ-DR-GE-1019

STATUS  
S2

REVISION  
P01

REV.	DATE	DESCRIPTION	DATE	APPROVED BY	DATE



**KEY**

	Mick George Landfill Cell Boundaries
	Landfill Permit Boundary (EPR3837LU), As per variation PP3233XK, Schedule 2 - Site Plan dated 11/01/2008
	EA Permitted Waste Sites Authorised Landfill Site Boundaries

**NOTES**

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. This drawing has been based on the following drawings and information:
4. This drawing has been based on the Stafford Drawing 'Huntingdon Road, Thrapston, Topographic Survey', Ref: 11521a-G, dated 10/03/11.
5. Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MG310/1 dated: 25/11/2014 and MG310/8 dated 15/09/2010

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REV.	DATE	CHECKED BY	DATE	APPROVED BY	DATE

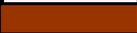
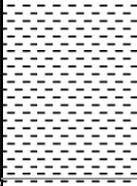
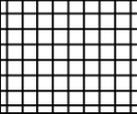
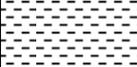
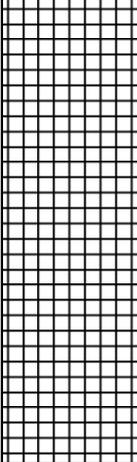
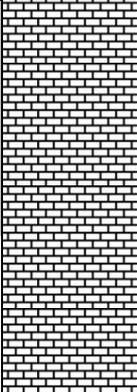
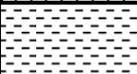
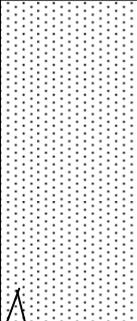
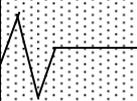
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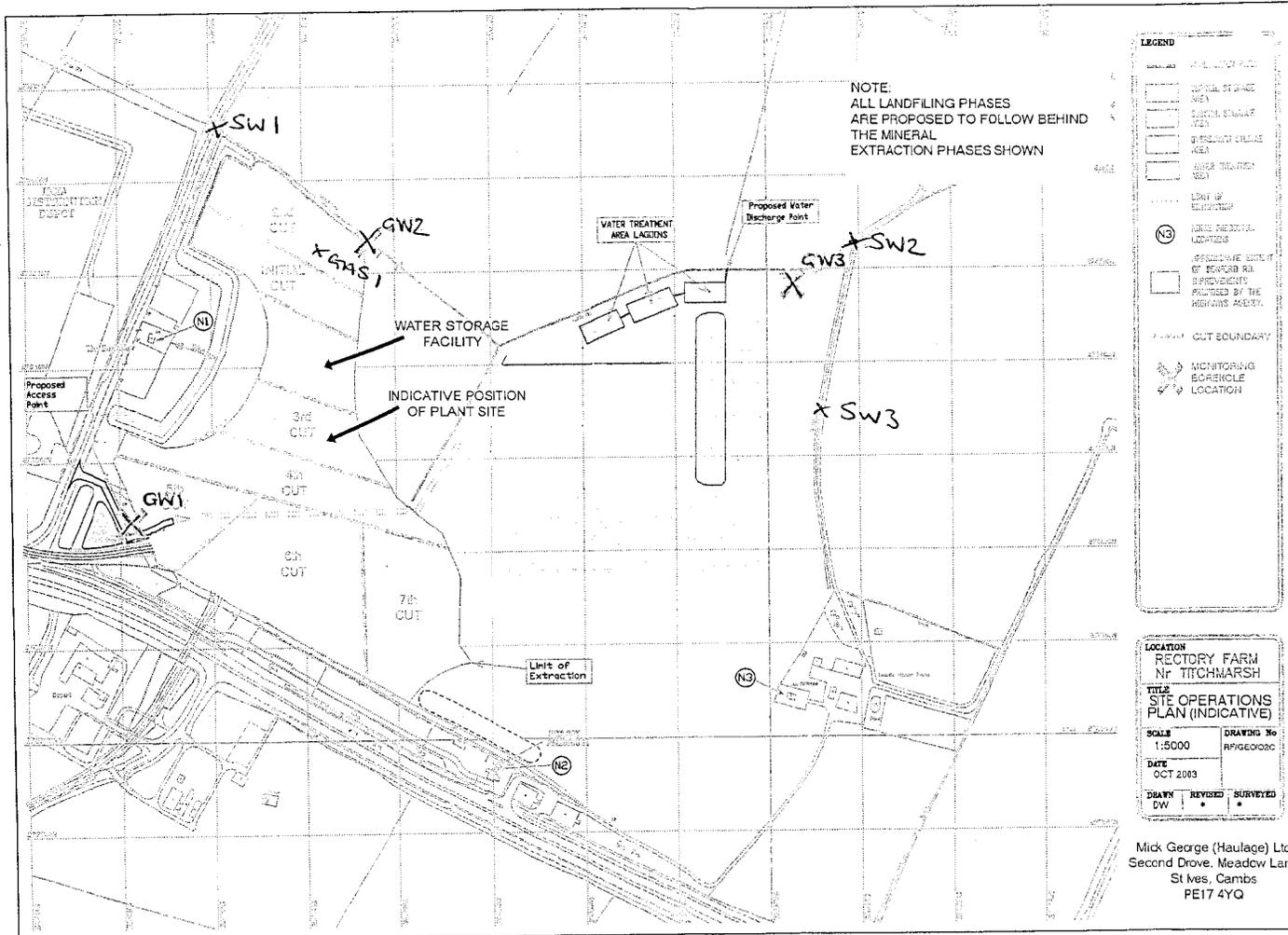
CLIENT  
**MICK GEORGE LTD**

PROJECT  
**THRAPSTON LANDFILL PERMIT SURRENDER**

TITLE <b>PERMIT AND CELL BOUNDARIES</b>	
HYDROCK PROJECT NO. <b>23880</b>	SCALE @ AD <b>1:1000</b>
PURPOSE OF ISSUE <b>SUITABLE FOR INFORMATION</b>	STATUS <b>S2</b>
DRAWING NO. (PROJECT CODE ORIGINATOR ZONE LEVEL TYPE SOLE NUMBER) <b>23880-HYD-XX-ZZ-DR-GE-1021</b>	REVISION <b>P01</b>

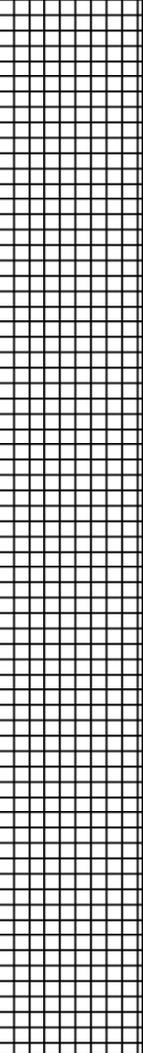
# Appendix F Long Term Monitoring Locations

LOCATION		Thrapston		SITE REF	T2/4
METHOD		Borehole using Rotary Flush Rig		NUMBER	GW3
DATE		10th September 2003		SHEET	1/2
CASING	LEGEND	LITHOLOGY	DEPTH	THICKNESS	COMMENTS
	 	Brown <b>TOPSOIL</b> Yellowish Brown <b>CLAY</b> <b>(KELLAWAYS CLAY)</b>	0.2m  1.3m	0.2m  1.1m	  Casing to 1.5m
		Grey <b>LIMESTONE</b> <b>(CORNBASH LIMESTONE)</b>	2.1m	0.8m	
		Brownish Grey <b>CLAY (BLISWORTH CLAY)</b>	2.5m	0.4m	
		Creamy Yellow-Grey <b>LIMESTONE</b> <b>(BLISWORTH LIMESTONE)</b>	5.7m	3.2m	
		Strong Grey <b>LIMESTONE</b> with occasional Grey Clay Bands <b>(BLISWORTH LIMESTONE)</b>	8.4m	<del>5.7m</del> <b>2.7m</b>	Installation: screened section / gravel filter pack from 6.0m to 12.0m
		Slightly Sandy Grey <b>CLAY</b> <b>(RUTLAND FORMATION)</b>	8.9m	0.5m	
	 	Weak fine grained light Grey, Silty, <b>SANDSTONE</b> <b>(STAMFORD MEMBER)</b>	12.0m	3.1m	Water at 12m



LOCATION			Thrapston	SITE REF		T2/4
METHOD			Borehole using Rotary Flush Rig	NUMBER		GW1
DATE			21st August 2003	SHEET		1/1
CASING	LEGEND	LITHOLOGY	DEPTH	THICKNESS	SAMPLE	
Casing		Dry Brown Topsoil/ Clayey SubSOIL	0.6m	0.6m		
		Firm to stiff Brown Slightly Grey CHALK, and flinty stoney clay, becoming stiffer and darker in colour from 3m down <b>(TILL (OADBY MEMBER))</b>	3.6m	3.0m		
		Hardstone/ ROCK Layer <b>(TILL (OADBY MEMBER))</b>	3.9m	0.3m		
		Firm to stiff Brown Slightly Grey CHALK, and flinty stoney clay, becoming stiffer and darker in colour from 3m down <b>(TILL (OADBY MEMBER))</b>	6.0m	2.1m		
		Stiff Brown CLAY <b>(TILL (LOWER TILL))</b>	6.2m	0.2m		
		Broken sand and Gritty GRAVEL <b>(GLACIOFLUVIAL SAND AND GRAVEL)</b>	10.1m	3.9m	Groundwater Struck @ 9.5m	
	Grey ROCK <b>(OXFORD CLAY)</b>	10.5m	10.4m 0.4m	End of Casing End of Hole		

LOCATION		Thrapston		SITE REF		T2/4
METHOD		Borehole using Rotary Flush Rig		NUMBER		GW2
DATE		10th September 2003		SHEET		1/2
CASING	LEGEND	LITHOLOGY	DEPTH	THICKNESS	COMMENTS	
		Previously Drilled and Cased using a shell + Auger rig			Bentonite seal from 0-2m	
			7.3m	7.3m	Backfill from 12-2m	
		Strong Grey <b>LIMESTONE</b> , with occasional thin bands of clay <b>(CORNBRAsh LIMESTONE)</b>	9.6m <b>8.9m</b>	1.6m		
		Grey <b>CLAY</b> <b>(BLISWORTH CLAY)</b>			Bentonite seal from 12-10m	
			11.7m	2.8m		

LOCATION		Thrapston		SITE REF	T2/4
METHOD		Borehole using Rotary Flush Rig		NUMBER	GW2
DATE		10th September 2003		SHEET	2/2
CASING	LEGEND	LITHOLOGY	DEPTH	THICKNESS	COMMENTS
		Grey <b>LIMESTONE</b> , with occasional thin bands of clay <b>(BLISWORTH LIMESTONE)</b>			Gravel Filter from 24-12m
			18.6m	7.2m	
		Weak Fine Grained Silty Grey <b>SANDSTONE</b> <b>(STAMFORD MEMBER)</b>			

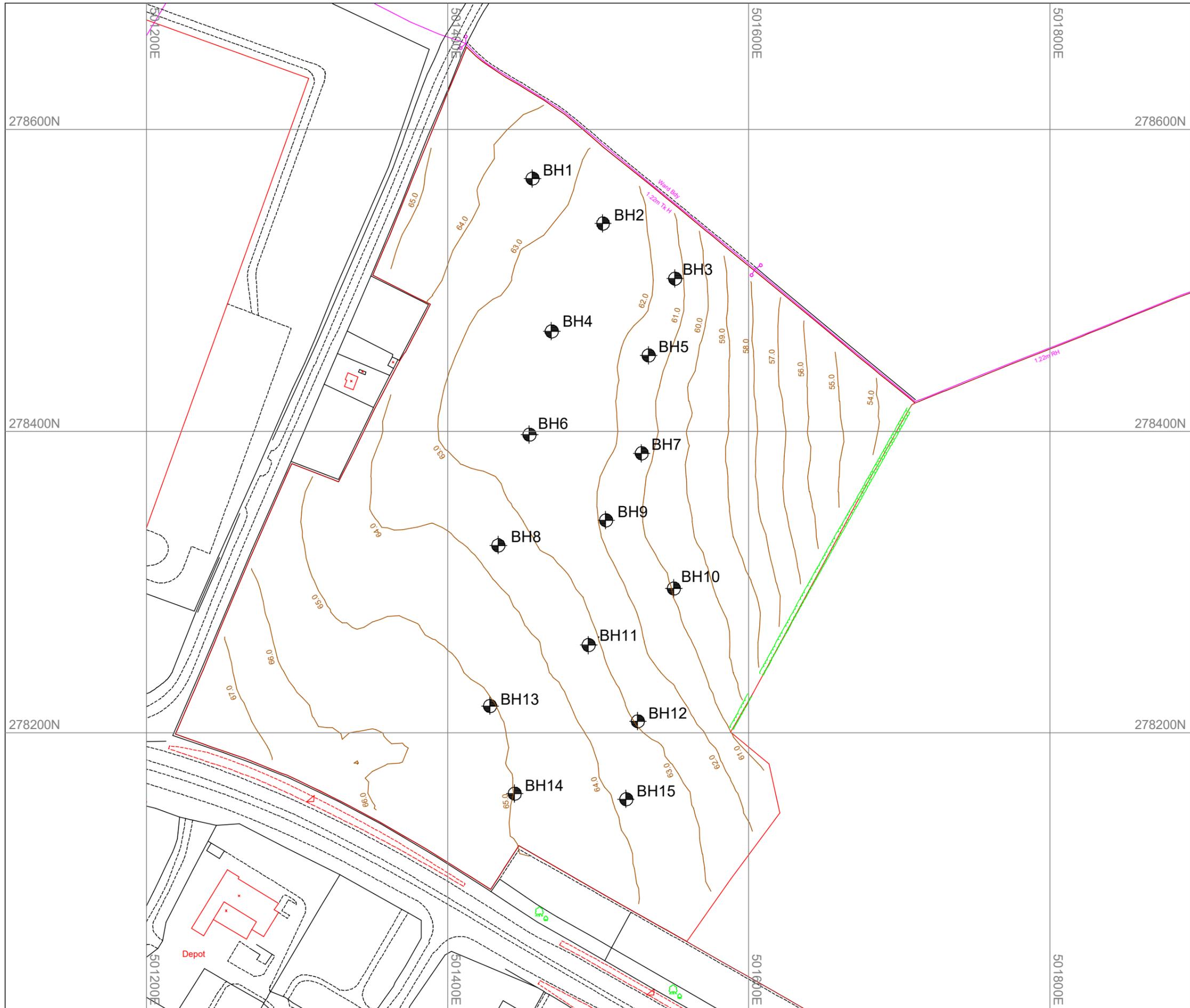
*Thrapston IPPC Application*

*Scaled Borehole Logs*

*Scale: 2cm=1m*



# Appendix G Mick George (Operator) in-waste Boreholes



**Notes**  
 Grid and levels relative to OS active GPS network.  
 Reproduced from Ordnance Survey digital map data.  
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Number	Easting	Northing	Elevation [mAOD]	
			Cap	Ground
BH1	501456	278568	63.75	63.35
BH2	501503	278538	62.87	62.42
BH3	501551	278501	61.72	61.30
BH4	501469	278466	62.97	62.54
BH5	501533	278450	61.82	61.47
BH6	501454	278398	62.87	62.45
BH7	501529	278385	61.71	61.31
BH8	501433	278324	63.89	63.49
BH9	501505	278341	62.22	61.82
BH10	501550	278296	61.19	60.82
BH11	501493	278258	63.59	63.19
BH12	501526	278208	63.33	62.93
BH13	501428	278218	65.44	65.01
BH14	501444	278160	65.30	64.88
BH15	501518	278156	64.12	63.75

Rev	Date	Description

**MICK GEORGE** 

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Client  
**Mick George Limited**

Project  
**Thrapston**

Title  
**In Waste Boreholes As Built**

Drawn : JM      Approved : SR

Date : 18/09/2018      Scale : 1/2500

Drawing No. <b>T_IWBH</b>	Paper size <b>A3</b>	Revision
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## **Thrapston Landfill Site**

# Construction Quality Assurance Plan for the Drilling of In Waste Gas Monitoring Boreholes

A109017

Mick George Ltd

July 2018

Prepared on behalf of WYG Engineering Limited.



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**creative minds safe hands**



## Document control

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Project:	Thornhaugh Landfill Site		
Client:	Mick George Limited		
Job Number:	A109017 QP01		
File Origin:	\\southampton14\Data\Projects\Mick George (G05059)\A109017 (MGL Boreholes Installation 2018)/Reports		

Revision:	1 <sup>st</sup> Draft		
Date:	13/08/2018		
Prepared by: Alex Edward	Checked by: Michael Jones	Approved By: Michael Jones	
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**Drawings**

- MG310/51 – Cell Location Plan
- A109071-BLP-01 – In Waste Borehole Location Plan

**Appendices**

- Appendix A – Proposed In Waste Gas Monitoring Borehole Design
- Appendix B – Typical CQA Proforma



## 1.0 General

### 1.1 Project Description

- 1.1.1 This document has been prepared to consolidate the details of the Construction Quality Assurance (CQA) procedures that shall be adopted during the drilling of in waste landfill gas monitoring boreholes at Thrapston Inert Landfill Site (the Site). The site location and layout is shown on Drawing Number MG310/51.
- 1.1.2 Thrapston Inert Landfill is located at approximately 0.5km east of Thrapston in Northamptonshire at National Grid Reference TL 01463 78375. The site is owned and operated by Mick George Limited.
- 1.1.3 The area surrounding the site is mainly rural in nature and is comprised of agricultural land. Adjacent to the south of the site is the A14, and a postal distribution centre adjacent to the south west corner of the site. There are also numerous farmhouses within 1,000m of the site as well as areas of woodland and trees. 600m to the north of the site is the small village of Titchmarsh. The western boundary is abutted by Islington Road.
- 1.1.4 The River Nene and associated lakes are located 1300m to the north east of the site, running from north west to south east.
- 1.1.5 According to British Geological Survey the geological setting of the site consists of both Sandstone and Siltstone, and Clay Deposits. The Sandstone and Siltstone Deposits of the Kellaways Sand Member were formed in an environment previously dominated by shallow seas. The Oxford Clay Formation beneath the Kellaways Sand Member was formed in an environment dominated by shallow seas.
- 1.1.6 According to the Environment Agency website, the site partially overlies a Secondary A – Bedrock Designation (Sand & Gravel River Terrace Deposits), which is classed as a Minor Aquifer High on the groundwater vulnerability map. These sand and gravel materials have been extracted as part of the quarrying operations.
- 1.1.7 The site is not located within a Groundwater Source Protection Zone (GSPZ).
- 1.1.8 The site has been engineered with an artificial geological barrier to the base and reshaped side slopes with a maximum permeability of  $1.0 \times 10^{-7}$  m/sec and a thickness of 1.0 metre measured perpendicular to the slope.

# Thrapston Landfill Site Construction Quality Assurance Plan for the Drilling of In Waste Gas Monitoring Boreholes



## Project Team Members

CQA Project Manager	-	WYG – Marc Holzer
CQA Project Engineer	-	WYG – TBC
Client Contact	-	Mick George Limited – Stuart Richardson

## **1.2 Responsibilities of Team Members**

### CQA Project Manager

- 1.2.1 The CQA Project Manager retains overall responsibility for the project, together with the review and approval of the Construction Quality Assurance procedures.

### CQA Project Engineer

- 1.2.2 The CQA Project Engineer shall be responsible for:-
- Project and technical management and shall attend any pre-contract and progress meetings;
  - Establishment and implementation of the on-site CQA procedures through the thorough training of the Operator's staff if required;
  - The daily implementation of the procedures detailed in the CQA Plan including material receipt, inspection and documentation;
  - The CQA Project Engineer will monitor and supervise the drilling works. Typical CQA pro forma used by the CQA Project Engineer on site are shown at Appendix B.
  - Provision of the certification for the final third party CQA Validation Report, a copy of which is to be forwarded to the Environment Agency.

### Contractor

- 1.2.3 The contractor for the drilling of the in waste boreholes at the Site shall be appointed Mick George Limited. Any party undertaking the work will be appropriately trained prior to commencement of the works.

### Environment Agency Liaison

- 1.2.4 The Client shall inform the Environment Agency of the start date of the construction works.
- 1.2.5 Notification of any changes to the specification or CQA plan, prior to or during the drilling



works will be sent to the EA by the CQA Project Manager for their comments and approval.

- 1.2.6 During the drilling works any comments that inspecting Environment Agency Officers have during site visits with regards to the CQA activities should be made directly to the CQA Engineer whilst on site.

### 1.3 Definitions

- 1.3.1 For clarification the following definitions are given:-

1.3.2 **Construction Quality Assurance (CQA)** – A planned and systematic pattern of all protocols and actions employed to provide confidence that items or services meet contractual and regulatory requirements, and will perform satisfactorily in service.

1.3.3 **CQA** refers to the protocols and actions employed by the CQA Engineer, to ensure conformity of the systems being constructed and installed to this CQA Plan, the Drawings and Specification. CQA is provided by a third party independent from production and installation.

1.3.4 **CQA Plan** – This document which includes site information, outline of the design, CQA procedures, construction specification and any testing regimes if required.

1.3.5 **CQA Validation Report** - The CQA Project Engineer will produce and submit the CQA Validation Report to the Environment Agency upon completion of the works or every six months during construction. All Environment Agency's queries, comments and correspondence regarding the CQA Validation Report should be addressed to the CQA Project Engineer, who will then arrange for the relevant information to be forwarded to the Environment Agency.



## 2.0 Project Details

### 2.1 Outline of Works

2.1.1 The works to be carried out at Thrapston will comprise the drilling of 15 in waste boreholes as shown on Drawing Number A109017-BLP-01.

### 2.2 Design Details

2.2.1 The in-waste landfill gas monitoring boreholes will be drilled to penetrate the majority of the depth of waste but will terminate above the geological barrier with a minimum 1m stand-off. The depths of the boreholes have been calculated using up to date survey data as given in the Table 1 below:-

**Table 1 – borehole details**

Borehole Number	Eastings	Northings	Restored Elevation (mAOD)	Clay Liner Elevation (mAOD)	Proposed Final Borehole Depth (m)	Standoff to Liner (m)	Base of Zone 1 Depth BGL (m)	Base of Zone 2 Depth BGL (m)
BH1	501440	278574	63.82	54.90	7.92	1	6.92	7.92
BH2	501503	278539	62.54	54.71	6.83	1	5.83	6.83
BH3	501550	278501	61.30	55.30	5.00	1	4.00	5.00
BH4	501468	278466	62.50	54.34	7.16	1	6.16	7.16
BH5	501532	278450	62.42	54.36	7.06	1	6.06	7.06
BH6	501452	278397	62.57	54.51	7.06	1	6.06	7.06
BH7	501528	278384	61.30	54.10	6.20	1	5.20	6.20
BH8	501432	278324	63.58	54.39	8.19	1	7.19	8.19
BH9	501503	278339	61.83	53.99	6.84	1	5.84	6.84
BH10	501550	278296	60.90	53.55	6.35	1	5.35	6.35
BH11	501492	278258	63.21	54.30	7.91	1	6.91	7.91
BH12	501526	278206	62.94	55.12	6.82	1	5.82	6.82
BH13	501427	278217	65.06	54.80	9.26	1	8.26	9.26
BH14	501443	278158	65.00	54.74	9.26	1	8.26	9.26
BH15	501518	278155	63.80	54.40	8.40	1	7.40	8.40

# Thrapston Landfill Site

## Construction Quality Assurance Plan for the Drilling of In Waste Gas Monitoring Boreholes



- 2.2.1 Drilling to the zone 1 depth for each borehole (as defined in the above Table) may proceed in accordance with standard drilling practices. Drilling between the zone 1 depth and the zone 2 depth must be carried out in increments of 300mm or less and the CQA Engineer must inspect the arisings on removal. The drill operator must also be more alert to changes in the drilling environment. Drilling will not take place in zone 3 which is defined as up to 1m above the mineral liner.
- 2.2.2 If during the works the drilling rig encounters any obstacles that prevent drilling at the preferred location, drilling will be restarted as close as possible to the original location under the direction of the CQA Project Engineer and where necessary with approval from the EA.
- 2.2.3 In the event that a borehole is over drilled such that the integrity of the mineral liner is compromised a minimum 1.5m bentonite seal will be applied to the base of the borehole as soon as the breach becomes apparent. The bentonite seal will be installed as a series of 300mm lifts of bentonite pellets, verified by the use of a plum line and hydrated in between each lift. The details of the breach will be notified to the Environment Agency as soon as is practicable and will be included in the CQA Validation Report. The drilling operator is required to ensure that sufficient bentonite and water is to hand at the drilling location prior to the commencement of drilling operations.
- 2.2.4 The generalised design for the In Waste Boreholes is shown in Appendix A. However the general design for the boreholes will be as follows:-
- 50mm HDPE slotted pipe will be installed from the bottom of the plain lining to the base of the borehole. The connections between the slotted, plain pipe will be threaded and screwed together. The base of the slotted pipework will be capped by a threaded end cap;
  - A bentonite seal will be used for at least 1m below the ground level. The remainder of the slotted section will be filled with non-calcareous pea gravel (5 to 10 mm gravel);
  - 50mm plain HDPE pipe will be emplaced for at least 2m below the ground level to the top of the screened section. The top of the slotted pipe will be air tight and completed with a removable "bung style" gas tap;
  - Headworks will be installed above ground level to protect the pipe from damage, comprising a lockable steel cover set in concrete. The boreholes will be locked, secure from vandalism and accidental loss and/or damage. All boreholes will be clearly marked and visible to all site operatives; and
  - All arisings will be suitably disposed of with the current working area of the site.



## **3.0 Drilling and Installation Methodology**

### **3.1 Drilling**

- 3.1.1 The boreholes will be drilled using a cable percussion drilling rig. Cable percussion drilling uses gravity to impel the auger into the ground and as such the trajectory of the auger is always vertical, correspondingly, the verticality of the borehole is always maintained.
- 3.1.2 The depth of the borehole will be continually monitored using a plumb line dropped into the borehole each time the auger is removed to clear the arisings.
- 3.1.3 Drilling will proceed unimpeded in zone one. As the auger enters zone two drilling will proceed in 300mm increments and the arisings will be inspected at each increment to verify that they contain no trace of the basal mineral liner. No drilling is anticipated in zone three. Drilling will cease once the target depth has been attained.
- 3.1.4 In the event that material from the basal mineral liner is found in the arisings during drilling in zone two drilling operations will immediately cease and the measures outlined in 2.2.4 will be instigated.

### **3.2 Installation**

- 3.2.1 Once the target depth has been reached the individual components of the permanent casing will be assembled and installed into the borehole.
- 3.2.2 The gravel and bentonite back filling of the annulus between the edge of the borehole and the permanent casing will be achieved by slowly pouring the material into the borehole whilst agitating the top of the casing to prevent bridging. If bridging is suspected, then a weighted plumb line will be used to tamp the top of the backfill to reinstate the flow of material down the borehole.
- 3.2.3 Where temporary casing has been installed during the drilling process it will be withdrawn incrementally one section at a time after the permanent casing has been installed. As each section is removed the gravel/bentonite backfill will be installed into the cleared section of the borehole.



## **4.0 Construction Quality Assurance**

### **4.1 Documentation**

- 4.1.1 An effective CQA plan depends on the recognition of all construction activities that should be monitored and on assigning responsibilities for the monitoring of each activity. This is accomplished and verified by supervision and documentation. The CQA Project Engineer will supervise and document all quality assurance requirements.
- 4.1.2 The CQA Project Engineer will provide the Employer with signed records to verify that all the borehole installations have been carried out in accordance with this CQA Plan and will also maintain a file of relevant drawings and specifications, the CQA Plan and daily logs which can be made available upon request to the Contractor, Employer or EA officers.

### **4.2 Daily Record Keeping**

- 4.2.1 Standard report procedures will include preparation of a CQA pro formas as shown in Appendix A.
- 4.2.2 As a minimum the following will also be recorded in the CQA Project Engineer pro formas:-
- Observations on weather conditions;
  - Equipment and personnel on-site;
  - Photographic evidence of each boreholes drilled;
  - Any design, location and / or specification changes may be necessary during monitoring unit installation works;
  - Summary of activity on site; and
  - Any other extraordinary events which take place on site and are not recorded elsewhere.

### **4.3 Construction Quality Assurance Validation Report**

- 4.3.1 Following completion of the installation of the in waste monitoring boreholes, the CQA Project Engineer will submit to the Employer and EA a signed final Construction Quality Assurance Validation report (CQA VR) on the supervised works and documentation completed during the time period of the specified works.

# Thrapston Landfill Site Construction Quality Assurance Plan for the Drilling of In Waste Gas Monitoring Boreholes



4.3.2 The CQA VR will describe the in waste monitoring borehole installation works. The report will detail that the work was carried out in accordance with the requirements and objectives of the specification and this CQA Plan. The summary document will provide all necessary supporting information. As a minimum, the CQAR will include:

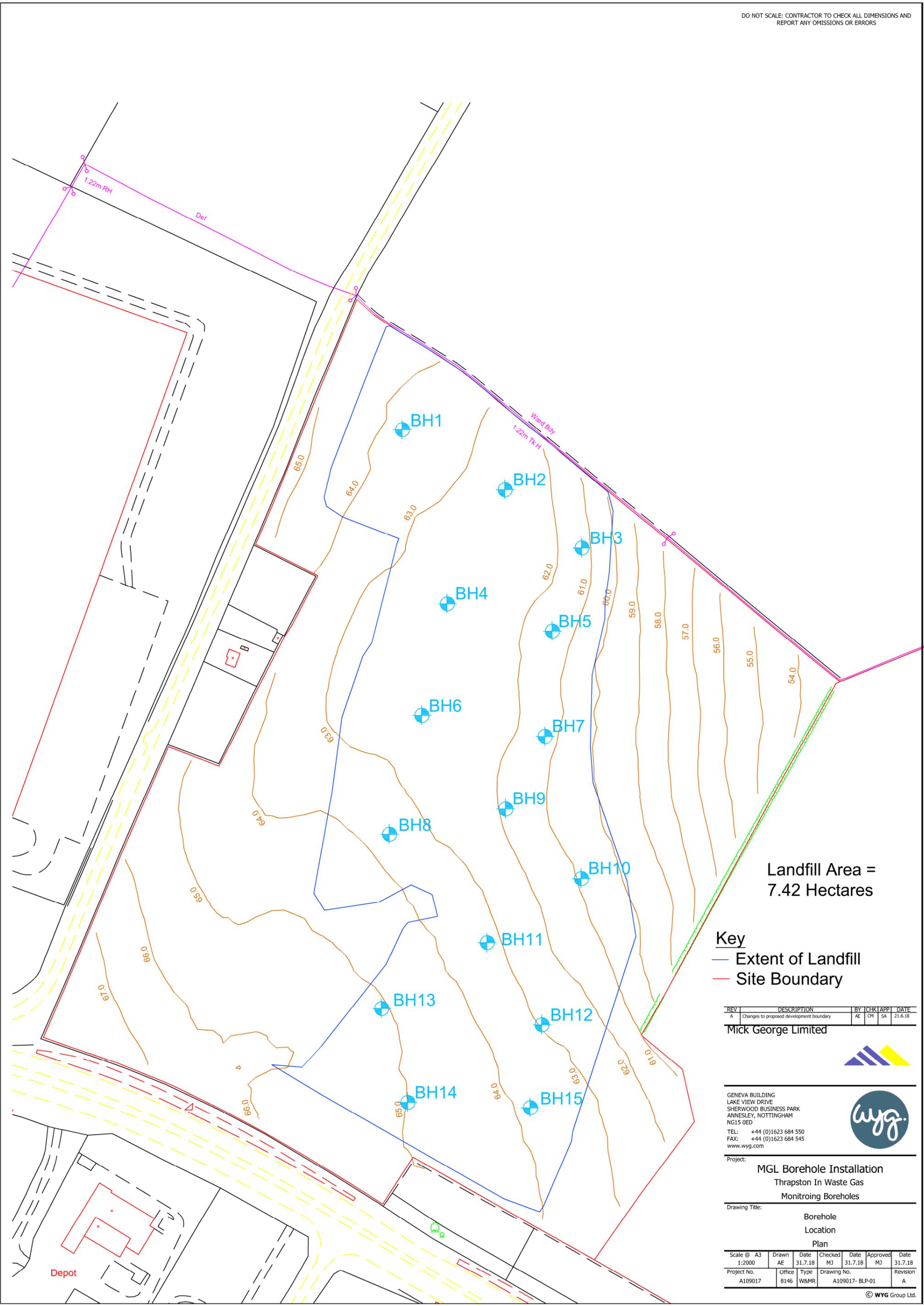
- Summaries of all drilling and monitoring borehole installation activities and details;
- Drilling logs and site check sheets;
- Changes from design and material specifications; and
- Details of any failures or problems and any remedial measures taken during the works



## **Drawings**

MG310/51 – Cell Location Plan

A109071-BLP-01 - In waste Borehole Location Plan



Landfill Area =  
7.42 Hectares

**Key**  
— Extent of Landfill  
— Site Boundary

REV	DESCRIPTION	BY	CHK	APP	DATE
A	Changes to proposed development boundary	AE	CM	SA	21.6.18

Mick George Limited



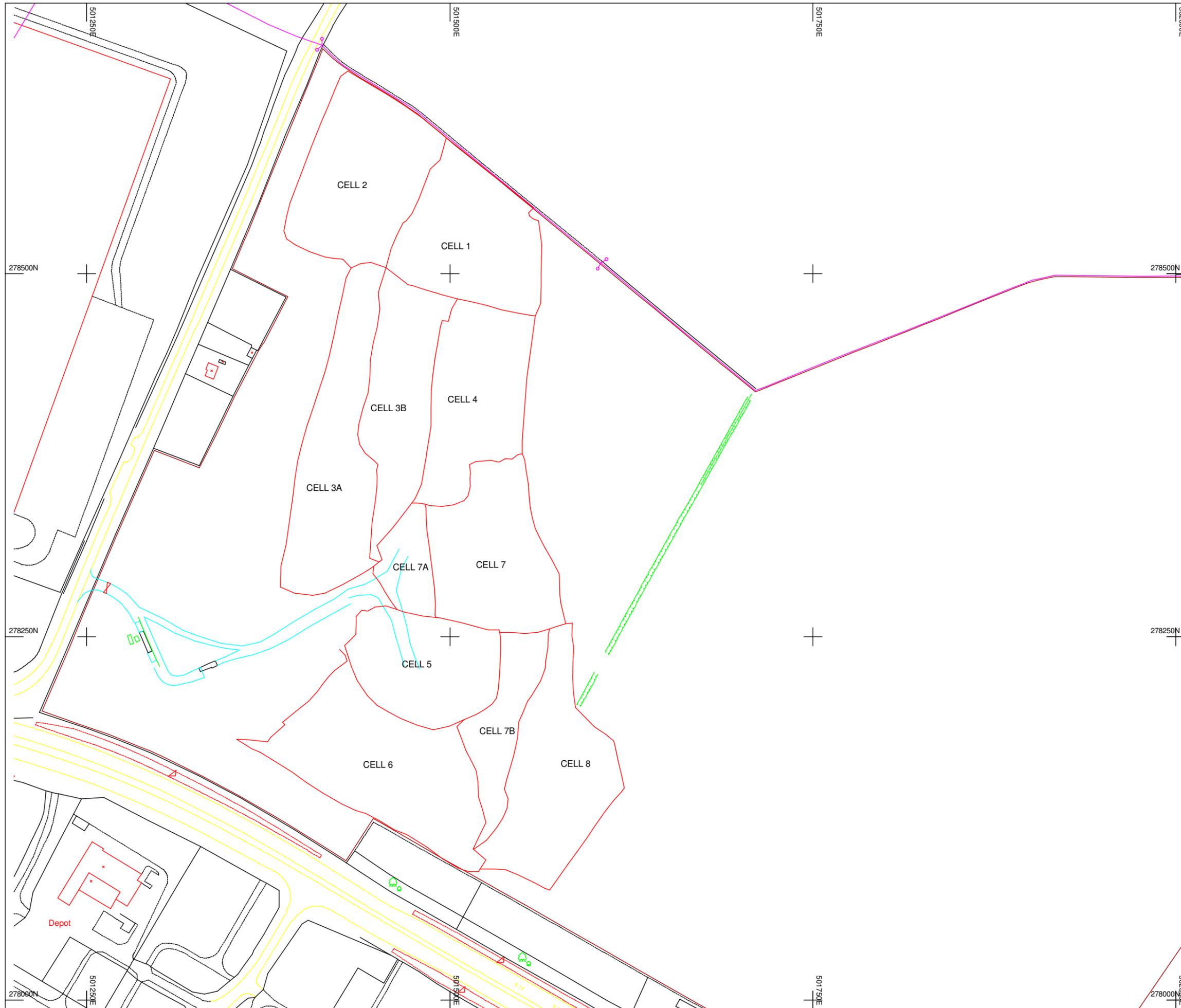
GENEVA BUILDING  
 LAKE VIEW DRIVE  
 SHERWOOD BUSINESS PARK  
 ANNESLEY, NOTTINGHAM  
 NG15 0ED  
 TEL: +44 (0)1623 684 550  
 FAX: +44 (0)1623 684 545  
 www.wyg.com



Project:  
**MGL Borehole Installation**  
 Thrapston In Waste Gas  
 Monitoring Boreholes

Drawing Title:  
 Borehole  
 Location  
 Plan

Scale @	A3	Drawn	Date	Checked	Date	Approved	Date
1:2000	AE	31.7.18	MJ	31.7.18	MJ	31.7.18	
Project No.	Office	Type	Drawing No.		Revision		
A109017	8146	W&MR	A109017- BLP-01		A		



**Notes**  
 Grid and levels relative to OS active GPS network.  
 Reproduced from Ordnance Survey Superplan Data  
 © Crown copyright all rights reserved

Rev	Date	Description

**MICK GEORGE** 

SECOND DROVE  
 MEADOW LANE  
 St. IVES  
 CAMBRIDGESHIRE  
 PE27 4YQ  
 Tel : 01480 498099 Fax : 01480 498077  
 www.mickgeorge.co.uk

Client  
**Mick George Limited**

Project  
**Thrapston Quarry**

Title  
**Cell location plan**

Drawn : IRM      Approved : MEG

Date : 25/11/2014      Scale : 1/2500

Drawing No. <b>MG310/51</b>	Paper size <b>A3</b>	Revision
--------------------------------	-------------------------	----------

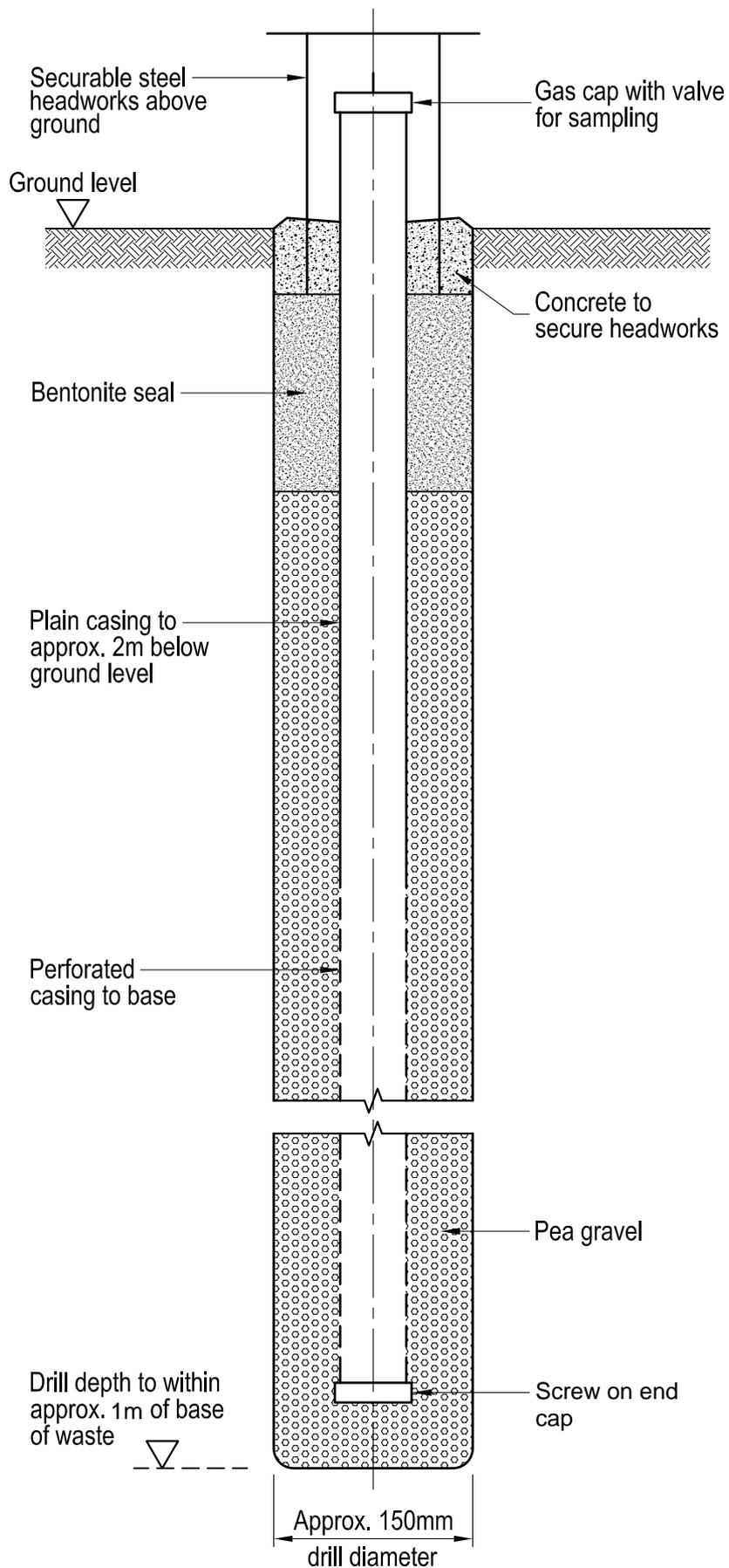


## **Appendices**



## **Appendix A**

Proposed In Waste Gas Monitoring Borehole Design



Thrapston Landfill Site  
Construction Quality Assurance Plan for the Drilling of In Waste  
Gas Monitoring Boreholes



## **Appendix B**

Typical CQA Pro forma



### DAILY RECORD SHEET FOR CQA PROJECT ENGINEER FOR BOREHOLE DRILLING

<b>Client:</b>	<b>Site:</b>	<b>Project:</b>
<b>Date:</b>	<b>Weather:</b>	
<b>Start:</b>	<b>Finish:</b>	
<b>Activities Undertaken</b>		
<b>Borehole Reference Number</b>		
<b>Drilling Rig details</b>		
<b>Check for Services</b>		
<b>Drilling of Boreholes</b>		
<b>Samples Taken (Including Lab Reference No.):</b>		
<b>Photographs Taken (Description / Frame):</b>		
<b>Installation Details</b>		
<b>Disposal of Arisings</b>		
<b>Planned Works for the following Day:</b>		

**Signed:**

**(CQA Project Engineer)**

**Dated:**



<b>RECORD OF COMMUNICATION</b>	
<b>CONTRACT NUMBER</b>	<b>DATE</b>
<b>CQA PROJECT ENGINEER</b>	<b>TIME</b>
<b>OTHER PARTY</b>	
<b>SUMMARY DISCUSSION</b>	
<b>AGREEMENT/CONCLUSION</b>	
<b>FURTHER ACTION REQUIRED</b>	
<b>SIGNED</b>	<b>DATE</b>



**Mick George Limited**

**Thrapston Inert Landfill Site**

**Construction Quality Assurance Report  
for the In-Waste Monitoring Borehole  
Installation – August/September 2018**

**May 2019**

**MICK GEORGE** 

The logo graphic for Mick George, featuring three parallel diagonal lines that form a stylized mountain or peak shape. The lines are dark blue, with the rightmost line being yellow.

WYG EPT Limited, Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED.



## Document Control

Project: Thrapston Landfill Site - In Waste Borehole CQA  
Client: Mick George Limited  
Job Number: A109017  
File Origin: \\southampton14\Data\Projects\Mick George (G05059)\A109017 (MGL Boreholes Installation 2018)

### Document Checking:

Prepared by:	Michael Jones	Signed:	MJ
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Checked by:	Marc Holzer	Signed:	
-------------	-------------	---------	---

Verified by:		Signed:	
--------------	--	---------	--

Issue	Date	Status
1	May 2019	1 <sup>st</sup> Draft



## Contents Page

1.0	General .....	1
1.1	Project Description .....	1
2.0	Outline of the Drilling Works .....	2
2.1	Outline of Works .....	2
3.0	Construction Quality Assurance .....	3
3.1	General .....	3
3.2	Supervision .....	3
3.3	Daily Records .....	3
3.4	Logging .....	3
4.0	Certification .....	5

## Drawings

MGL-A109017-BLP-01B                      Site Location and In Waste Gas Well Locations

## Appendices

Appendix A – Borehole Logs

Appendix B – Daily Record Sheets

## Plates

Plate 1 – A-frame of Cable percussion rig set up – Drilling underway

Plate 2 – Installation of gravel down borehole

Plate 3 – Installing bentonite in top of borehole to create watertight clay seal

Plate 4 – Pouring wet concrete on top of Bentonite seal to secure borehole

Plate 5 – Metal protective casing secured in place by concrete around top of standpipe

Plate 6 – Example of material arisings from borehole



## 1.0 General

### 1.1 Project Description

1.1.1 The site is located at National Grid Reference TL 01470 78354, 0.5km East of Thrapston in Northamptonshire. The site is owned by and was operated by Mick George Limited. The location of the site is shown on Drawing Number MGL-A109017-BLP-01B.

1.1.2 This report documents the methods of construction, quality control and quality assurance employed during the drilling and installation of the in-waste monitoring boreholes at Thrapston Landfill Site.

1.1.3 The proposed works comprised the drilling and installation of ten vertical in-waste gas monitoring boreholes.

The specification of the gas wells comprised:-

- A drilled excavation of 150mm diameter;
- 63mm OD perforated pipe (from base to 2m BGL) with an end cap fitted;
- Annulus back filled with gravel in perforated section (up to 1.2m BGL);
- Between 1.2m and 0.2m sealed with bentonite;
- Protective metal casing installed and secured in place by concrete at 0.2m BGL to ground level; and
- Standpipe fitted with gas bung to allow for gas monitoring.

1.1.4 The drilling of the in-waste monitoring boreholes was undertaken by Tony Bedford Limited.

1.1.5 WYG Environment (WYG) carried out the CQA monitoring and recording.

1.1.6 This report has been prepared to document the installation of gas monitoring boreholes carried out between 27<sup>th</sup> and 31<sup>st</sup> August and 10<sup>th</sup> September 2018.



## 2.0 Outline of the Drilling Works

### 2.1 Outline of Works

- 2.1.1 The works comprised the drilling of 11 in waste monitoring boreholes (BH1 to 15) 150mm diameter boreholes using cable percussive drilling methods to between 5.00 m and 9.30 m depth below ground level at the positions shown on Drawing No. MGL-A109017-BLP-01B.
- 2.1.2 Prior to the drilling works, the borehole locations were surveyed by WYG Environment and the position identified by a wooden peg.
- 2.1.3 The in-waste borehole installation records are shown on the drilling logs presented in Appendix A.
- 2.1.4 The in-waste boreholes were drilled directly into waste. All drilling was done in accordance with the CQA plan methodology. Drill depths are shown in Table 1 below:-

**Table 1 – Summary of in waste borehole installation depths**

Well No.	Drill Depth and Installation Depth (mbgl)
BH1	7.20
BH2	6.30
BH3	5.00
BH4	7.16
BH5	6.10
BH6	7.06
BH7	6.30
BH8	8.10
BH9	6.80
BH10	6.40
BH11	7.91
BH12	6.90
BH13	9.26
BH14	9.30
BH15	8.40

- 2.1.5 The waste that was encountered was dry apart from in Borehole 6, 7, 8, 9, 12 and 15 where small amounts of water were found during the drilling process.
- 2.1.6 Progress of the works is detailed on the records presented in Appendix B and details of the installations are provided on the drilling records presented in Appendix A.



## **3.0 Construction Quality Assurance**

### **3.1 General**

- 3.1.1 WYG provided a CQA Engineer to carry out supervision of the drilling works at Thrapston Landfill Site.
- 3.1.2 The CQA Programme was instigated to ensure that all engineering works were carried out in accordance with the client's requirements.
- 3.1.3 The CQA Engineer was responsible for:-
- Supervision;
  - Daily Records; and
  - Logging.

### **3.2 Supervision**

- 3.2.1 The CQA Engineer was present at various times during the drilling works. The CQA Engineer made sure the boreholes were installed at the correct location denoted by the wooden pegs installed by the surveyor.
- 3.2.2 Prior to the commencement of the drilling works the CQA Engineer confirmed the target drill depths with the drilling contractor.

### **3.3 Daily Records**

- 3.3.1 The CQA Engineer recorded daily progress, events and any problems during the works, and the records are presented at Appendix B.

### **3.4 Logging**

- 3.4.1 The CQA Engineer was present at various stages of the drilling and well construction works. A description of the waste encountered, leachate observations and installations are presented on the borehole records presented in Appendix A. A photographic record of the works is also contained herein.
- 3.4.2 Checks were carried out by the CQA Engineer on the storage of materials used during the drilling works. Deliveries of pipe were checked by the CQA Engineer to ensure that the condition



of the materials was satisfactory.

3.4.3 The CQA Engineer checked the casing was installed to the specified depth.

3.4.4 The depth of the gravel was checked by means of a tape measure and the method of installation was such that bridging of the gravel was avoided.

3.4.5 The upper bentonite seal was hydrated during installation and the depth checked during installation to ensure that the minimum 1m thickness was achieved.



## 4.0 Certification

4.1.1 On the basis of the independent monitoring and measuring works carried out by the CQA Engineer, we hereby certify that:-

- The CQA supervision and documentation were carried out in accordance with the approved specification; and
- The installation of the gas wells was carried out in accordance with the approved Specification.

4.1.2 We hereby certify that the installation of the gas wells at Thrapston Landfill Site as detailed herein has been constructed in accordance with the approved Specification.

A handwritten signature in black ink, appearing to read 'Marc Holzer'.

.....  
**Marc Holzer**  
**CQA Project Engineer**

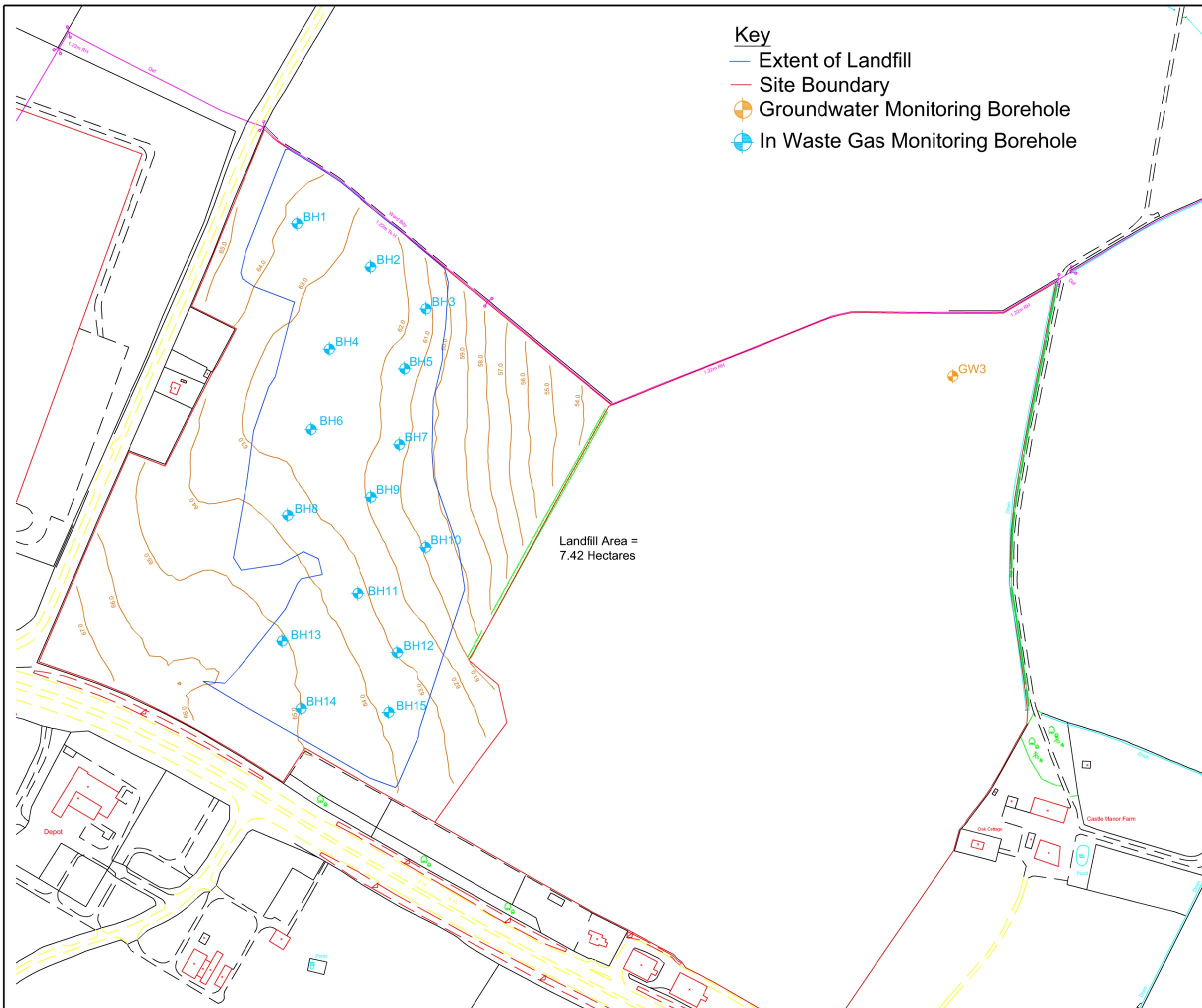
17.5.19  
**Date**



## **Drawing**

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

- Key**
- Extent of Landfill
  - Site Boundary
  - Groundwater Monitoring Borehole
  - In Waste Gas Monitoring Borehole



REV	DESCRIPTION	BY	CHK	APP	DATE
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Mick George Limited

GENEVA BUILDING  
LAKE VIEW DRIVE  
SHERWOOD BUSINESS PARK  
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NG15 0ED  
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FAX: +44 (0)1623 684 545  
www.wyg.com

Project:  
**MGL Borehole Installation**  
Thrapston Groundwater  
Monitoring Boreholes

Drawing Title:  
**Borehole  
Location  
Plan**

Scale @	A3	Drawn	Date	Checked	Date	Approved	Date
1:3000		AE	6.8.18	MH	6.8.18	MJ	6.8.18
Project No.	Office	Type	Drawing No.		Revision		
Plan	8146	ENV	A109017-BLP-01B				



## **Appendices**

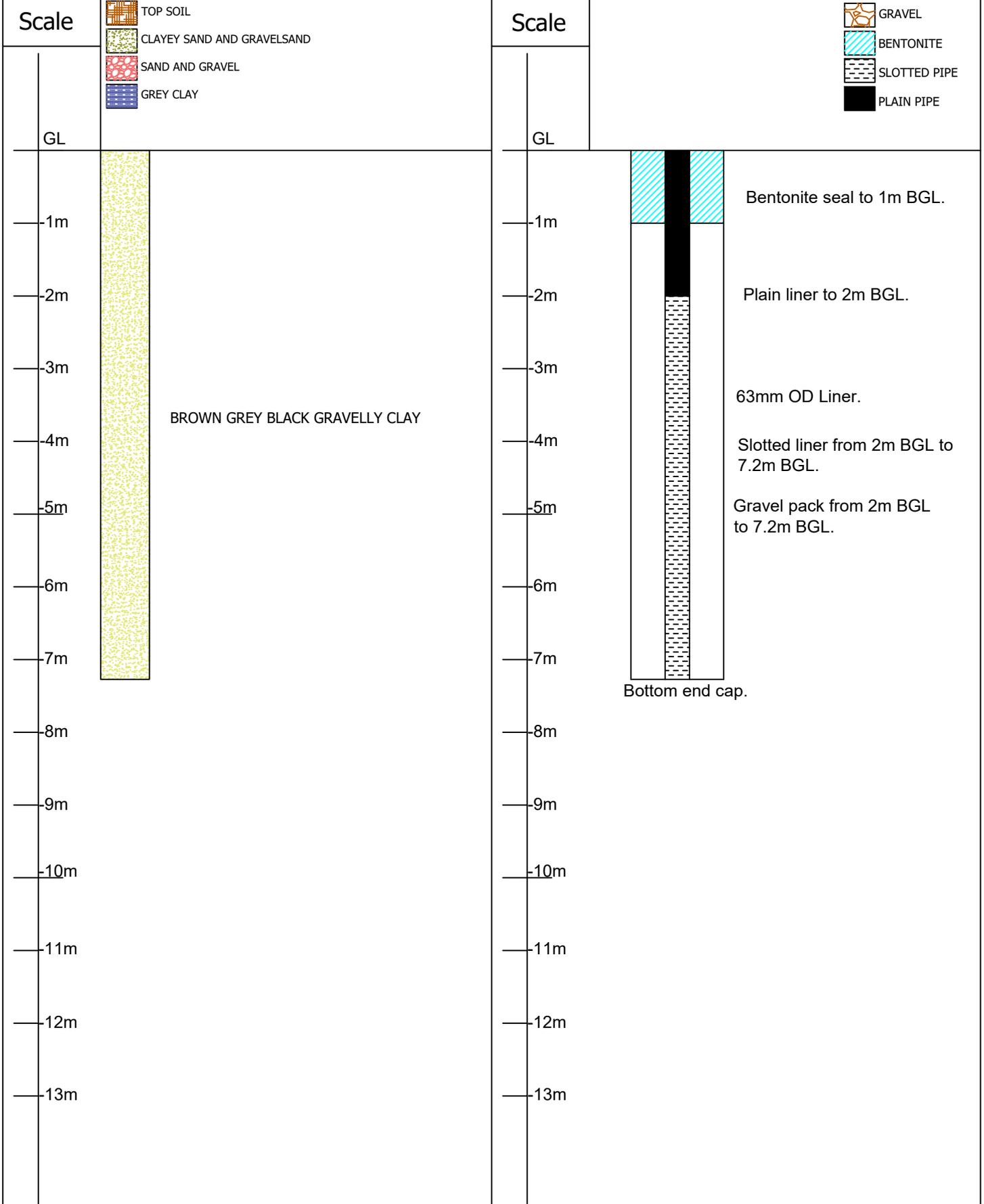


## **Appendix A – Borehole Logs**

Start Date: 28.8.19	Site/BH ID: Borehole 1	
Finish Date: 28.8.19	Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm	Client: Mick George Limited	RIG: Cable Percussion
Northings: 501435	Eastings: 278574	Ground Level (mAOD): 63.80

Drilling Details	Installation Details
------------------	----------------------

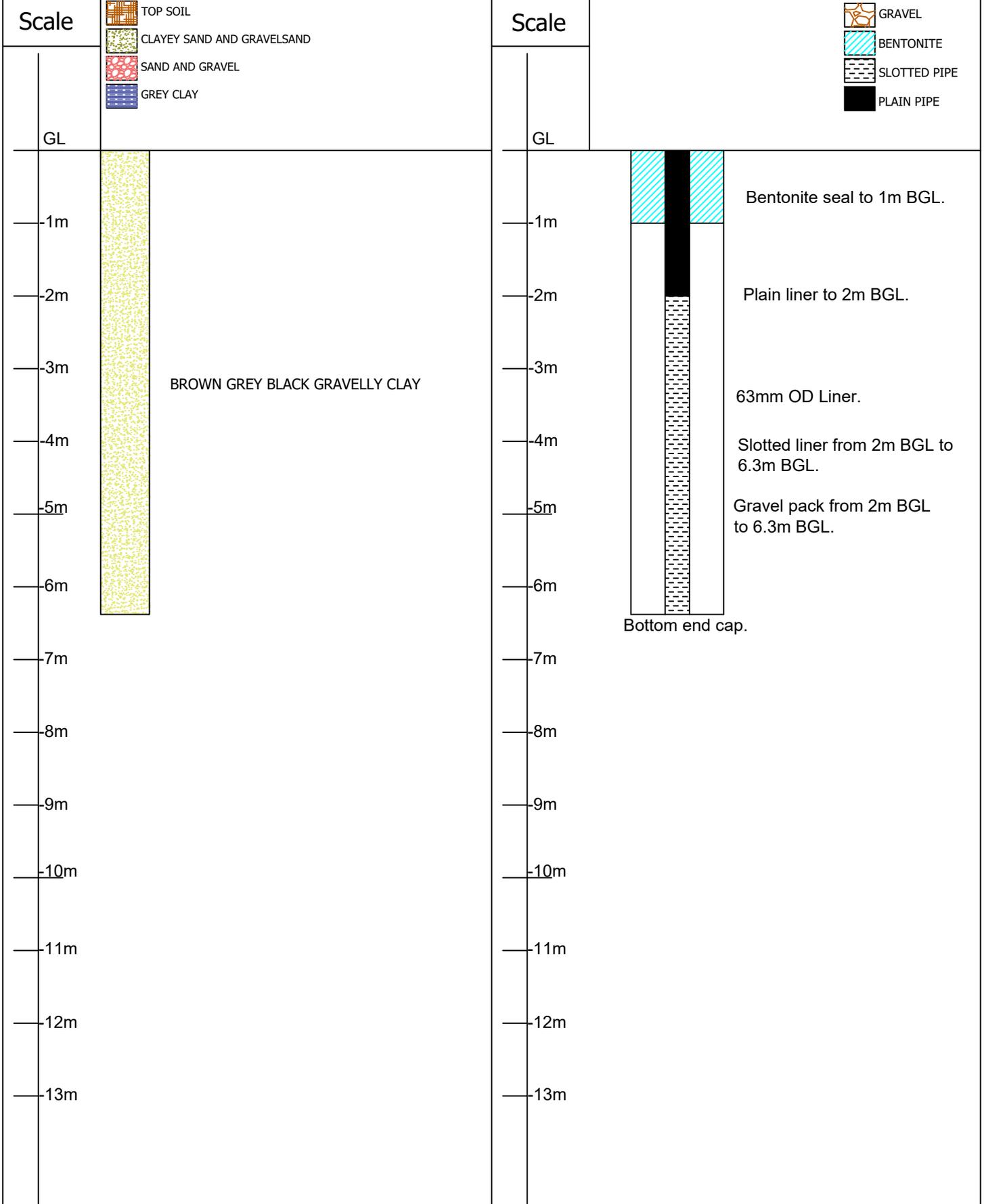
Displacement Levels	Installation Description
---------------------	--------------------------



Start Date: 28.8.19		Site/BH ID: Borehole 2	
Finish Date: 28.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501498	Eastings: 278537	Ground Level (mAOD): 62.50	

Drilling Details	Installation Details
------------------	----------------------

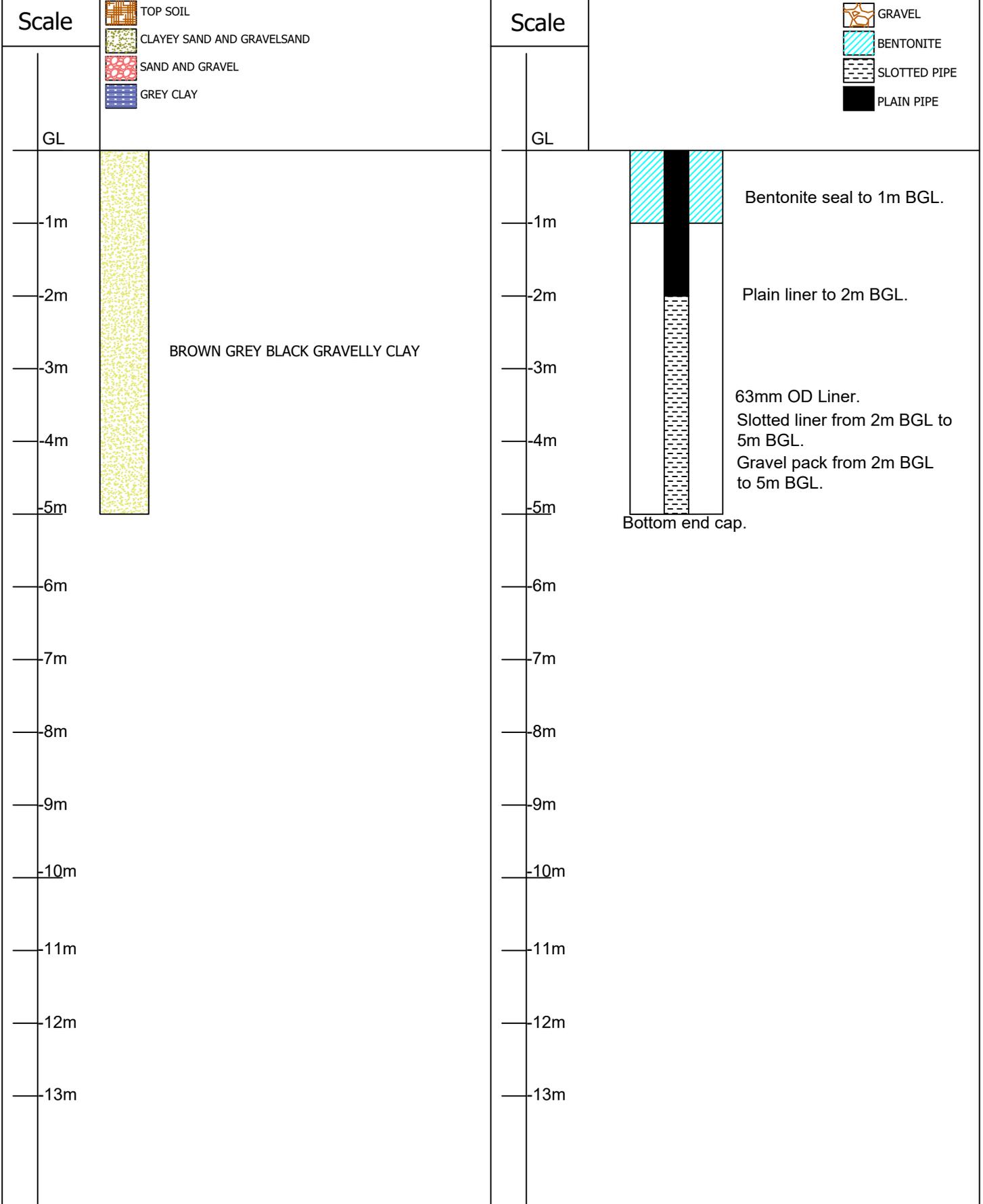
Displacement Levels	Installation Description
---------------------	--------------------------



Start Date: 29.8.19		Site/BH ID: Borehole 3	
Finish Date: 29.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501546	Eastings: 278501	Ground Level (mAOD): 61.30	

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

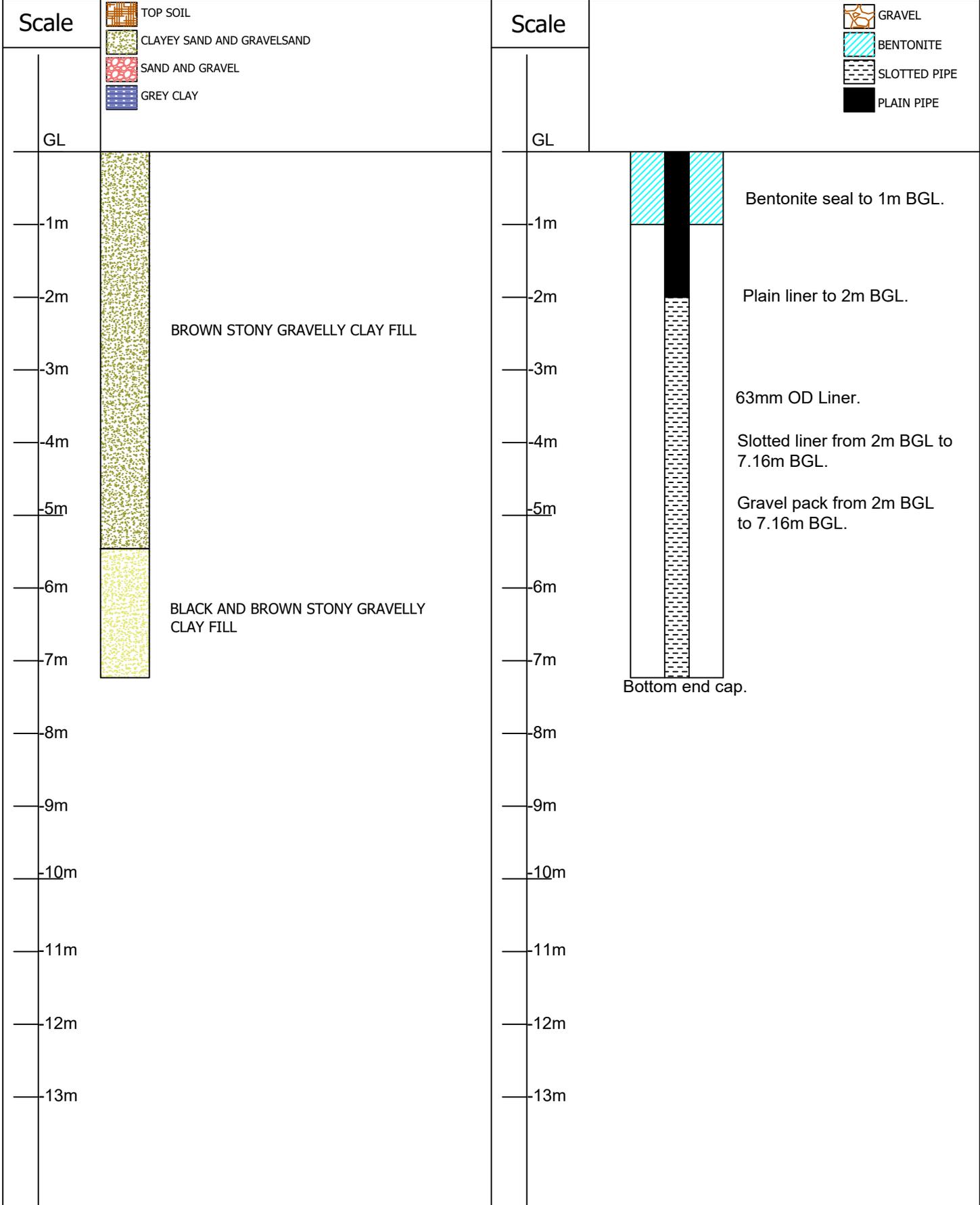
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 10.9.19		Site/BH ID: Borehole 4	
Finish Date: 10.9.18		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501463	Eastings: 278467	Ground Level (mAOD): 62.60	

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

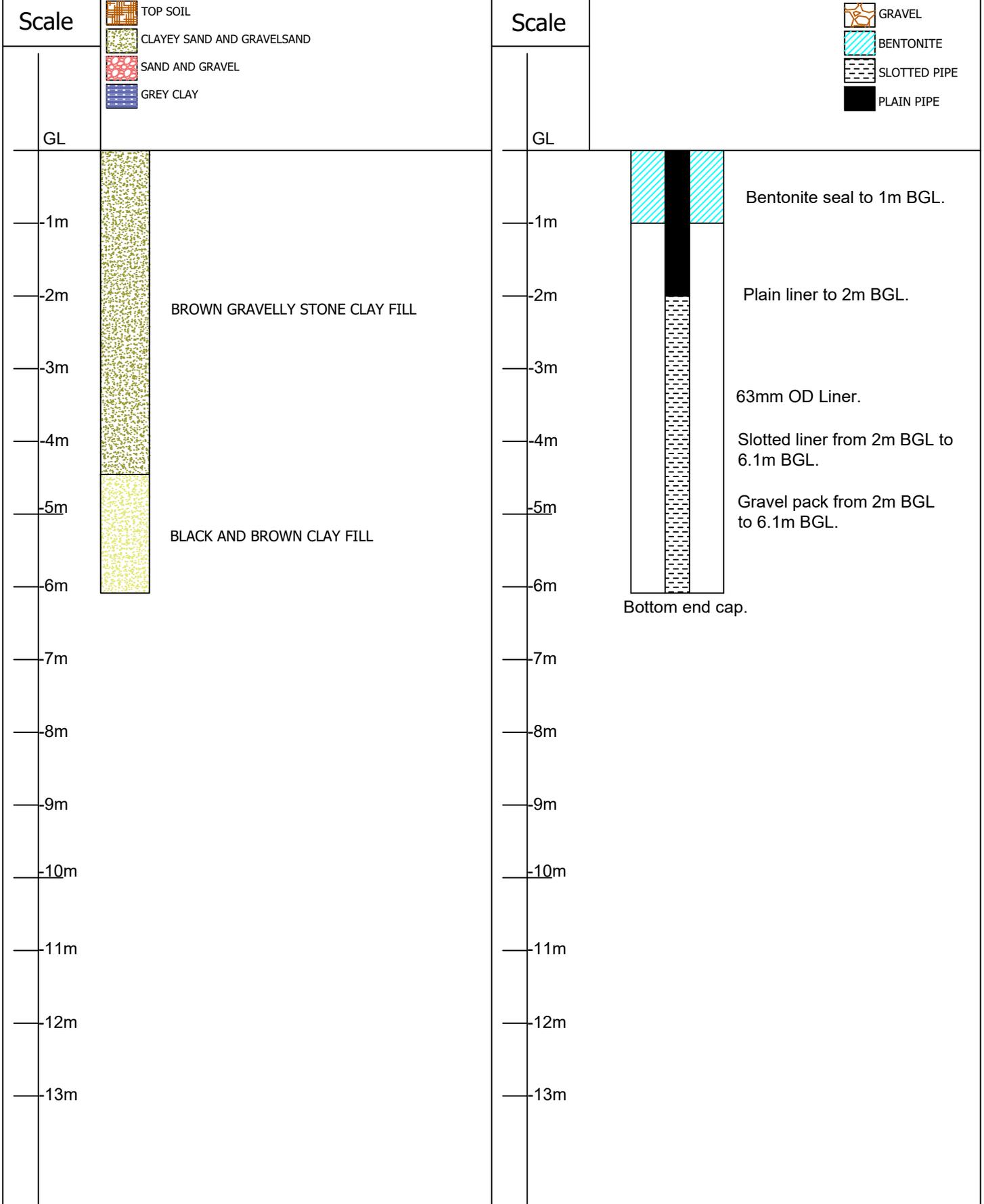
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 29.8.19		Site/BH ID: Borehole 5	
Finish Date: 29.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501528	Eastings: 278450	Ground Level (mAOD): 61.40	

Drilling Details	Installation Details
------------------	----------------------

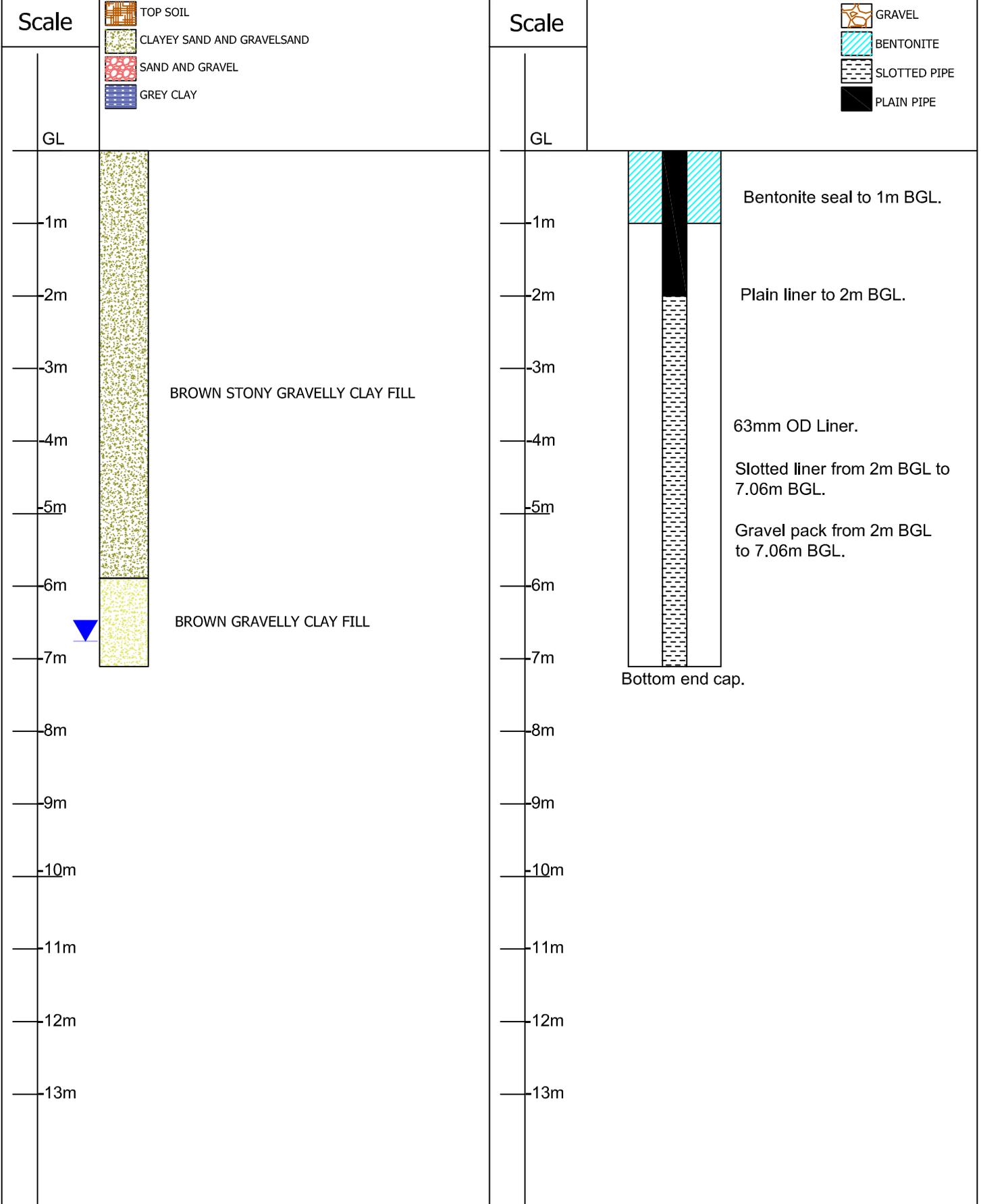
Displacement Levels	Installation Description
---------------------	--------------------------



Start Date: 10.9.19		Site/BH ID: Borehole 6	
Finish Date: 10.9.18		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501447	Eastings: 278398	Ground Level (mAOD): 62.50	

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

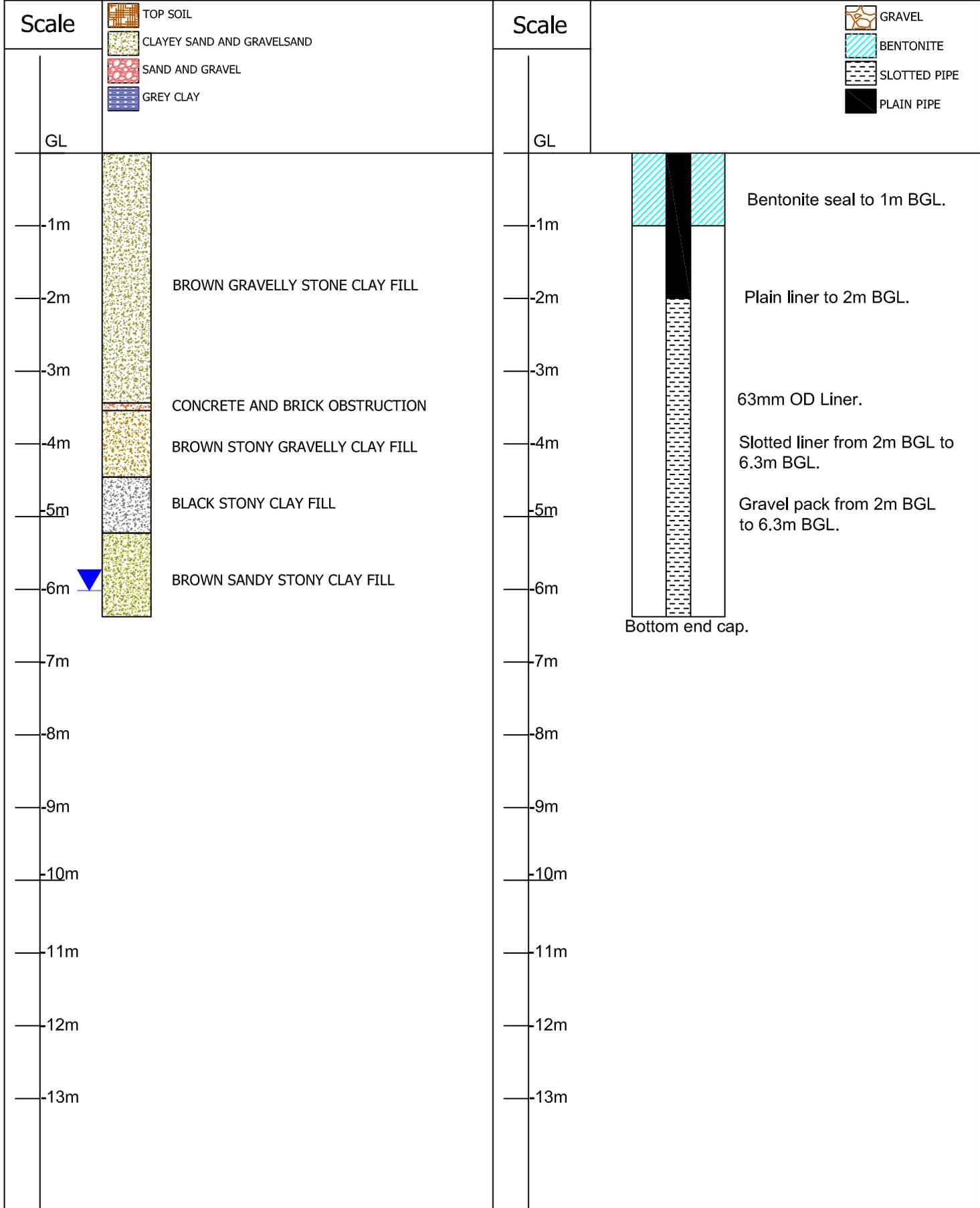
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 29.8.19	Site/BH ID: Borehole 7	
Finish Date: 29.8.19	Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm	Client: Mick George Limited	RIG: Cable Percussion
Northings: 501523	Eastings: 278385	Ground Level (mAOD): 61.30

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

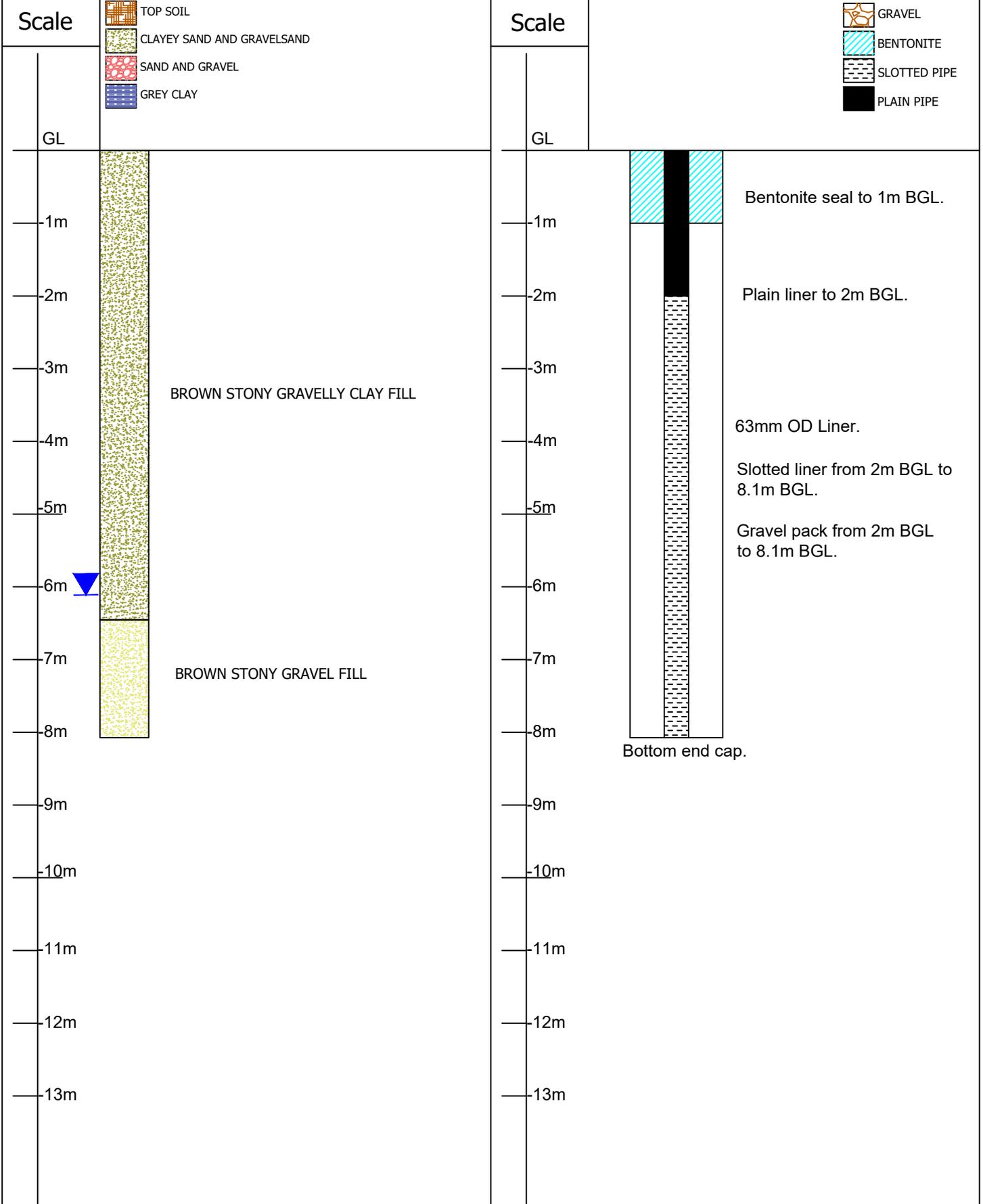
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 10.9.19		Site/BH ID: Borehole 8	
Finish Date: 10.9.18		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501427	Eastings: 278324	Ground Level (mAOD): 63.60	

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

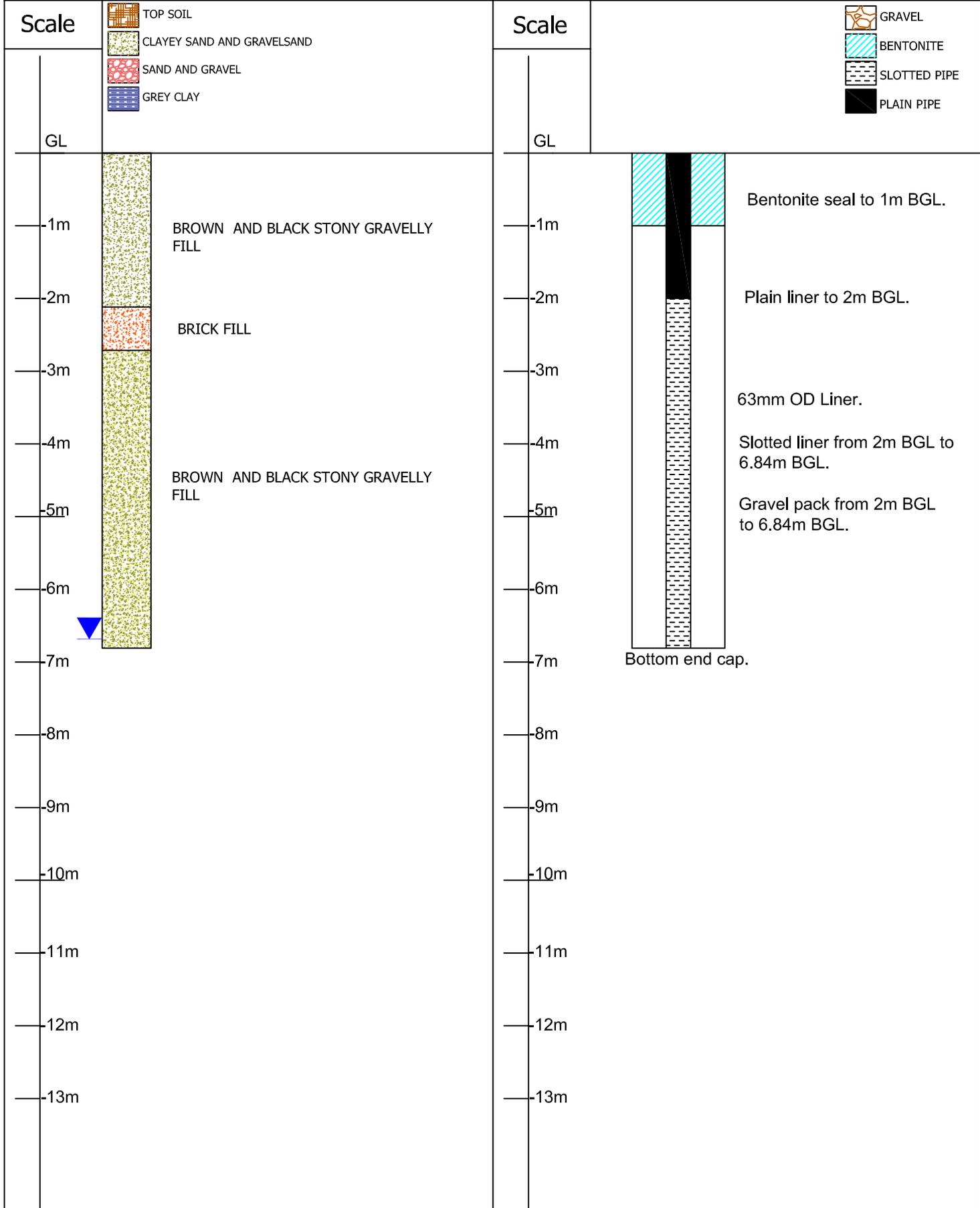
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 29.8.19		Site/BH ID: Borehole 9	
Finish Date: 29.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501499	Eastings: 278340	Ground Level (mAOD): 61.90	

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

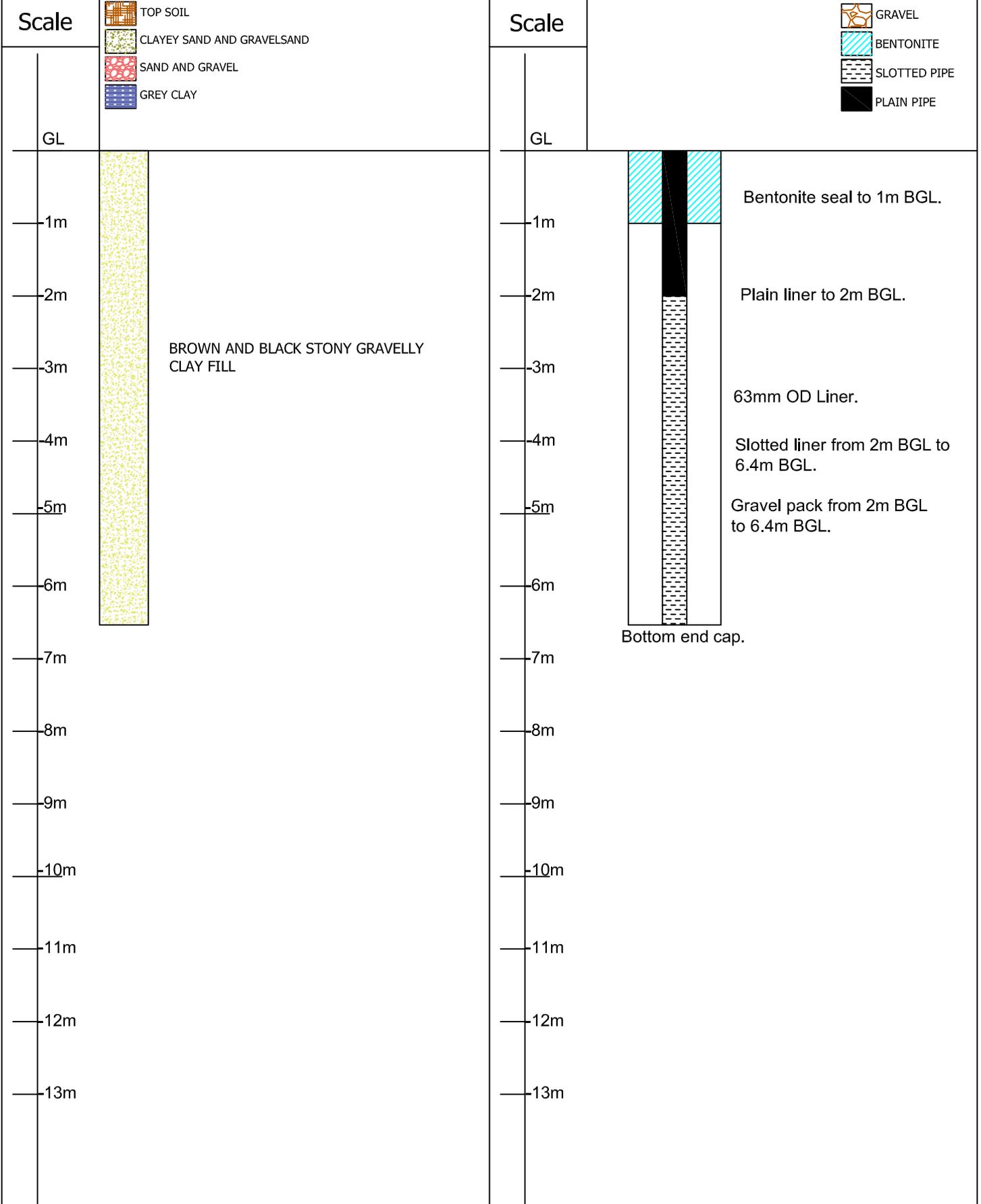
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 30.8.19		Site/BH ID: Borehole 10	
Finish Date: 30.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501546	Eastings: 278297	Ground Level (mAOD): 60.90	

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

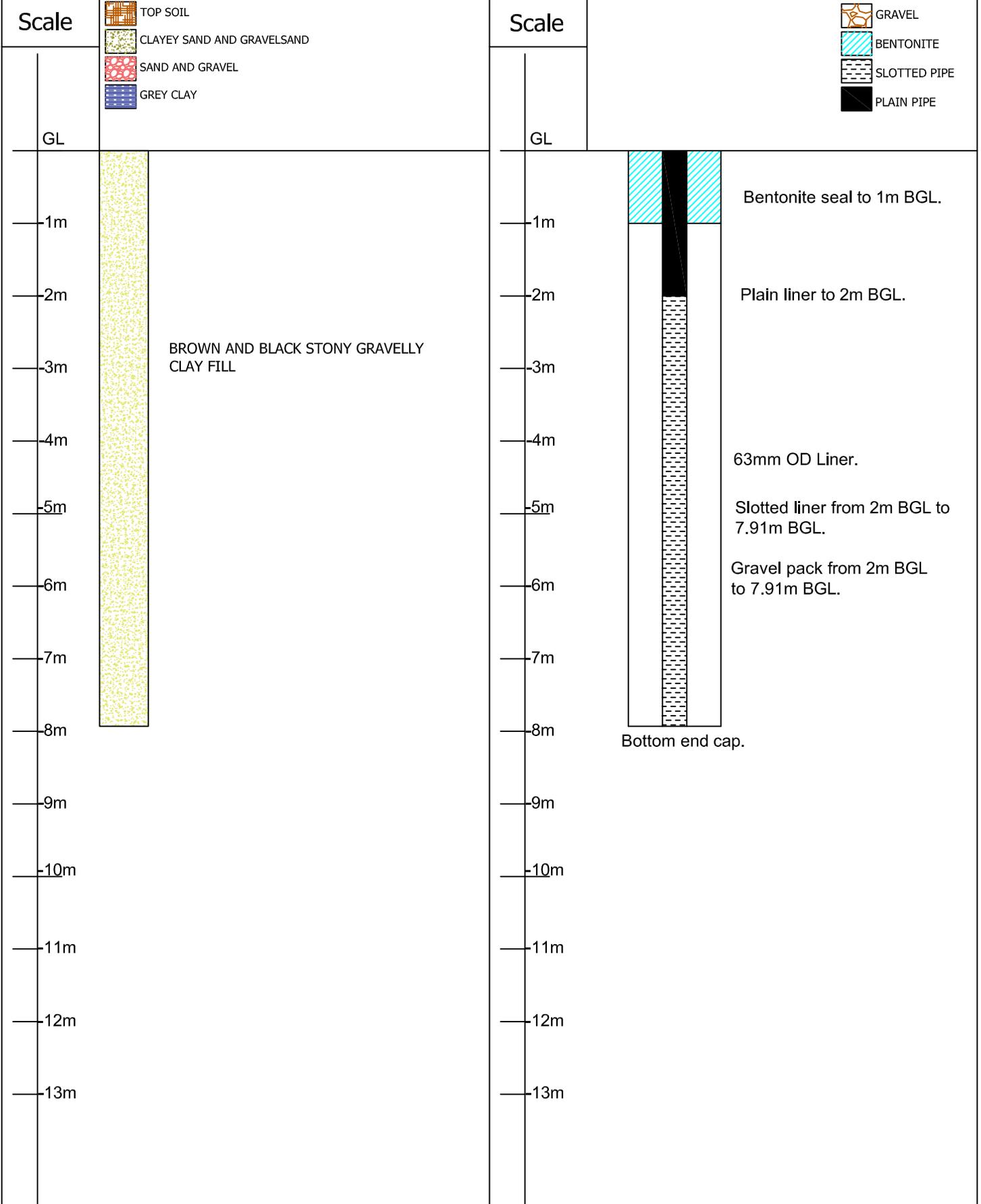
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 30.8.19		Site/BH ID: Borehole 11	
Finish Date: 30.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501487	Eastings: 278258	Ground Level (mAOD): 63.20	

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

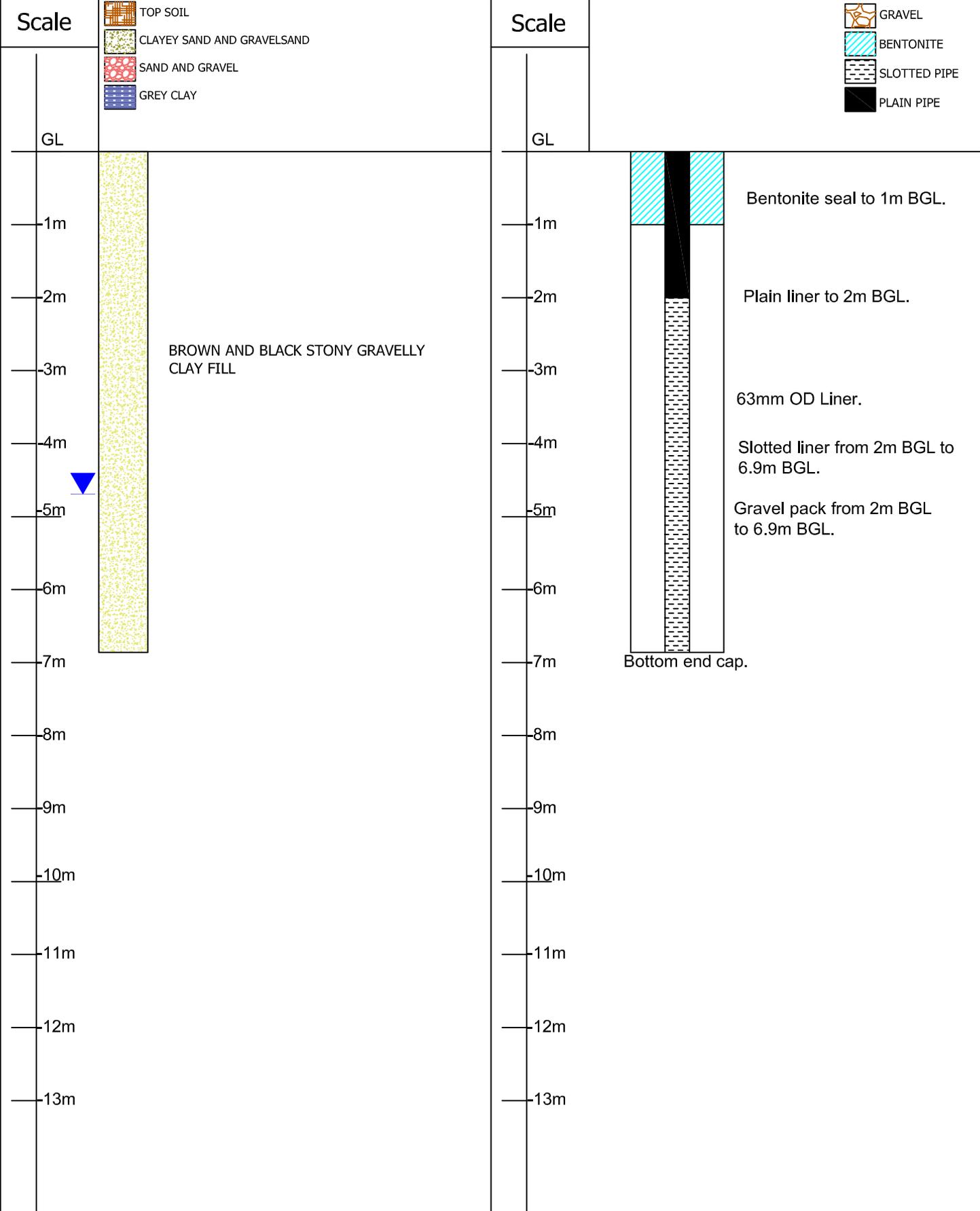
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 30.8.19		Site/BH ID: Borehole 12	
Finish Date: 30.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501521	Eastings: 278207	Ground Level (mAOD): 62.95	

<b>Drilling Details</b>	<b>Installation Details</b>
-------------------------	-----------------------------

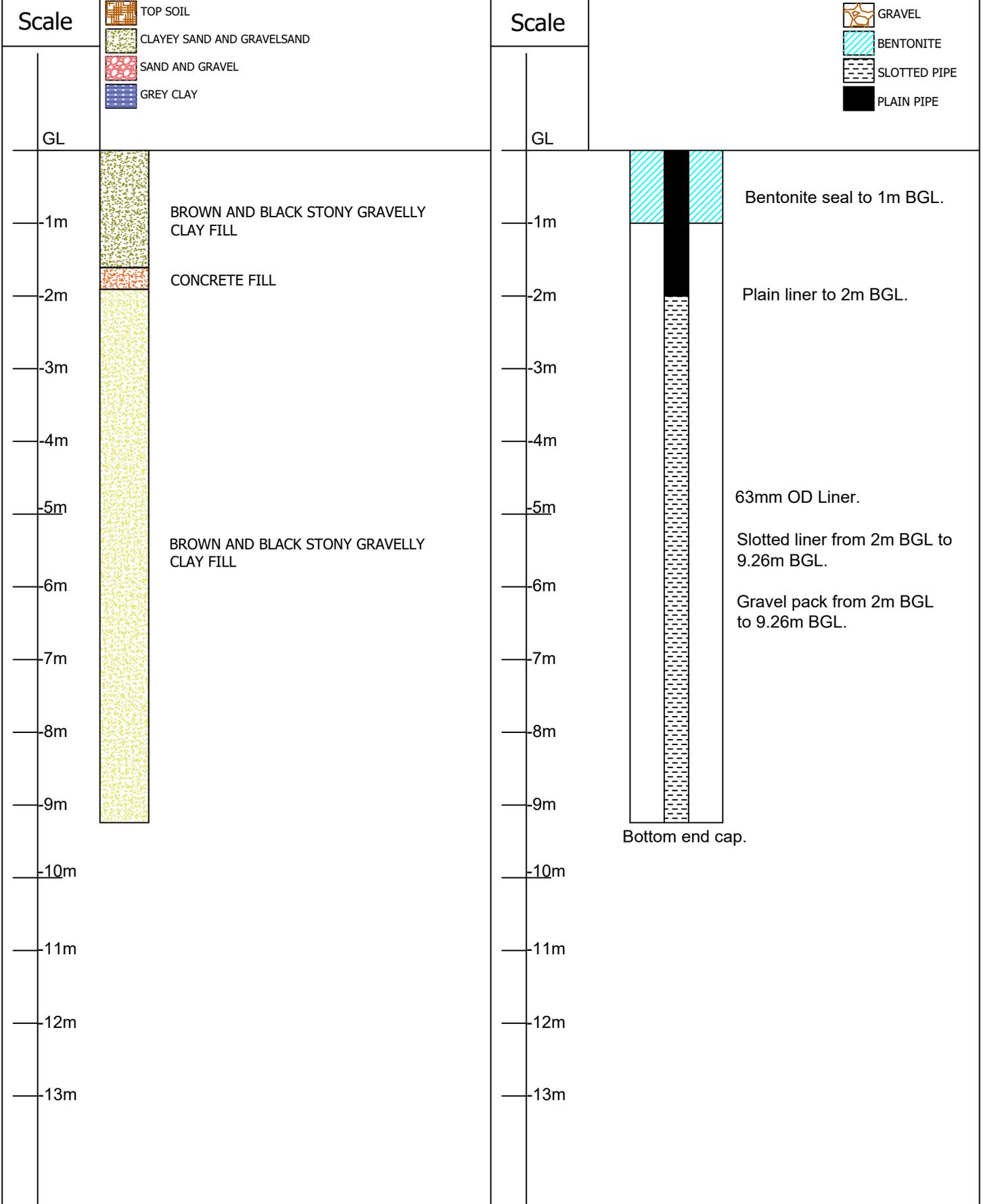
<b>Displacement Levels</b>	<b>Installation Description</b>
----------------------------	---------------------------------



Start Date: 31.8.19		Site/BH ID: Borehole 13	
Finish Date: 31.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501422	Eastings: 278217	Ground Level (mAOD): 65.20	

Drilling Details	Installation Details
------------------	----------------------

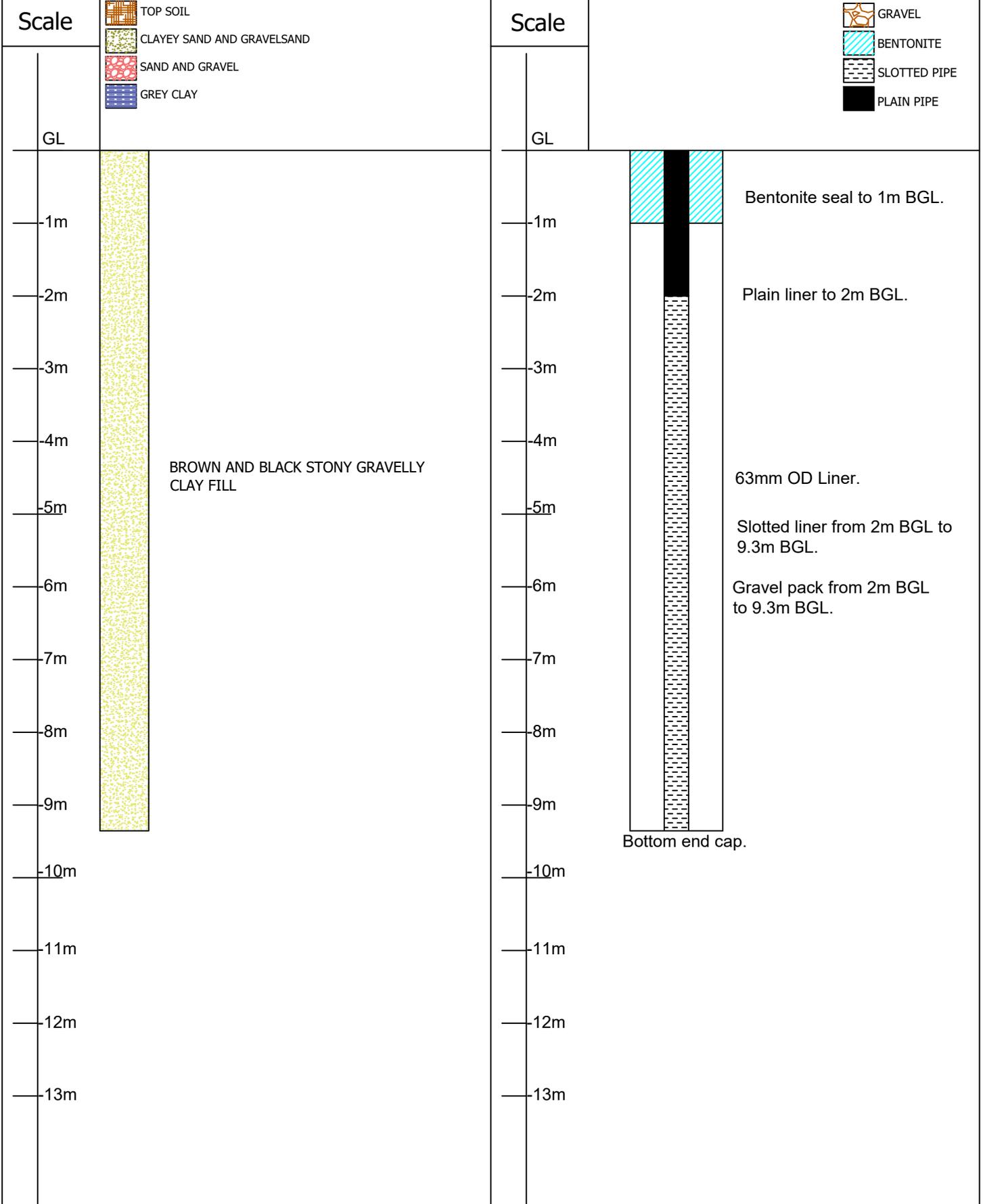
Displacement Levels	Installation Description
---------------------	--------------------------



Start Date: 31.8.19		Site/BH ID: Borehole 14	
Finish Date: 31.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501438	Eastings: 278159	Ground Level (mAOD): 65.00	

Drilling Details	Installation Details
------------------	----------------------

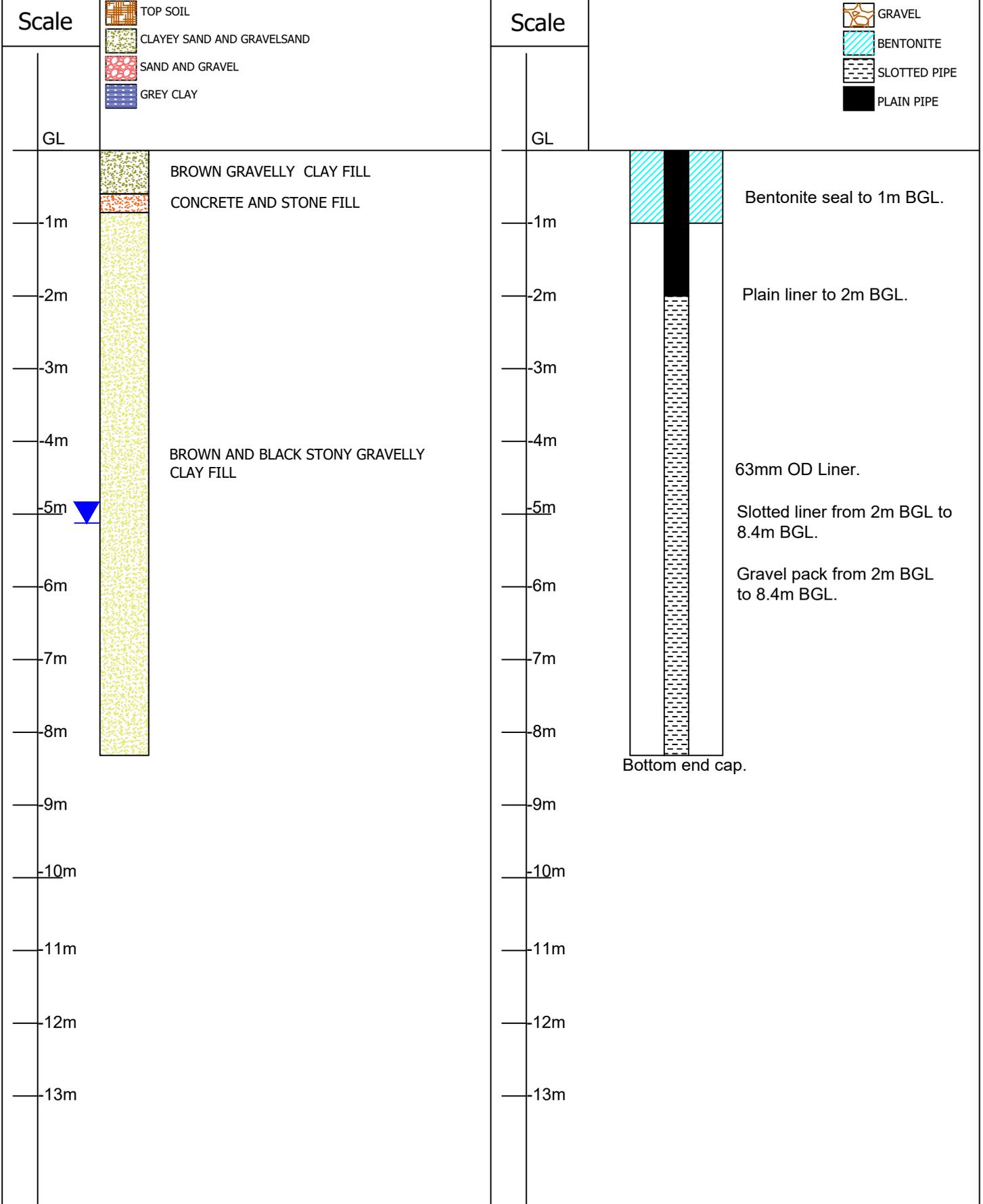
Displacement Levels	Installation Description
---------------------	--------------------------



Start Date: 31.8.19		Site/BH ID: Borehole 15	
Finish Date: 31.8.19		Contractor: T Bedford	Driller: K Davey
Bore Diameter: 150mm		Client: Mick George Limited	RIG: Cable Percussion
Northings: 501514	Eastings: 278156	Ground Level (mAOD): 64.70	

Drilling Details		Installation Details	
------------------	--	----------------------	--

Displacement Levels		Installation Description	
---------------------	--	--------------------------	--





## **Appendix B – Daily Records**

## DAILY RECORD SHEET

<b>Client:</b> MICK GEORGE		<b>Site:</b> Thrapston Landfill Site		<b>Project:</b> Drilling Of In Waste Gas Monitoring Boreholes	
<b>Date:</b> 10.09.18		<b>Weather:</b> partly cloudy <b>Overnight:</b> <b>AM:</b> mostly cloudy <b>PM:</b> mostly cloudy			
<b>Start:</b> 8:00		<b>Finish:</b> 15:15			
<b>Activities Undertaken (Tick Box)</b>					
Subgrade/Formation Preparation		Compaction of Clay		Protection Layer Placement	
Clay Conditioning		Geomembrane Placement		Restoration Soils Placement	
Engineered Clay Placement		Geotextile Placement		GCL Placement	
BES Placement		Drainage Blanket Installation		Leachate Sump & Collection Pipework	
<b>Earthworks Details</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Description of Works (General Fill / Liner etc)					
Grid Reference					
Material					
Layer Thickness					
Layer Number (Where applicable)					
Compaction (Passes) (Where applicable)					
Volumes Placed (m <sup>3</sup> ) (Today / Total)		/	/	/	/
<b>Geomembrane</b>		Area Placed (m <sup>2</sup> )	Fusion Seams (m)	Extrusion Seams (m)	Patches/Repairs
Total Rolls Used		Today	Today	Today	Today
Total Batches Used		Total	Total	Total	Total
<b>Geotextile</b>		Total Rolls Used	Area Placed (m <sup>2</sup> ) Today		
		Total Batches Used	Area Placed (m <sup>2</sup> ) Total		
Have Works Complied with Relevant Method Statements			Yes	No	
Do All Works Comply With the Specification:			Yes	No	
<b>General Details / Comments / Problems Encountered / Deviation from Method Statements and Specification</b>					
7:45 – 8:30: drillers, CQA on site, drillers setting up equipments ahead of drilling					
8:15: Stuart (Mick George) on site					
09:10: BH08 drilling commences from mAOD 63.58 (target depth 8.19m BGL)					
<ul style="list-style-type: none"> <li>- 0m – 6m: top soil (brown and stony) then greyish to dark clay</li> <li>- 6m – 8.1m: no recovery – still outer casing is installed (5No pieces x 1.5m), then wet, sloppy clay.</li> <li>- 8.1m BGL: target reached.</li> </ul>					
10:45: BH06 drilling commences mAOD 62.57 (target depth 7.06m BGL)					
<ul style="list-style-type: none"> <li>- 0m – 5.9m: top soil with some brown stones then grey to dark clay.</li> <li>- 6.9m – 7.06m: no recovery – still outer casing is installed (5No pieces x 1.5m), wet, sloppy clay.</li> <li>- 7.06m BGL: target reached.</li> </ul>					
13:00: Tony Bedford on site with more gravels					
13:15: BH04 drilling commences / completed from mAOD 62.50 (target depth, 7.16m BGL)					
<ul style="list-style-type: none"> <li>- 0m – 5.4m: top soil with some brown stones then grey to dark clay.</li> <li>- 5.4m – 7.16m: no recovery – still outer casing is installed (5No pieces x 1.5m), wet, sloppy clay.</li> <li>- 7.16m BGL: target reached.</li> </ul>					

The below was performed on BH08, BH06, BH04

- All targets depth reached, 50mm pipe installed leading with slotted section (with end cap) at the bottom + 2m plain pipe. Gas cap with valve is placed on top.
- Pea gravel (5-10mm) is added to the annulus
- Hydrated bentonite installed from 1m bgl
- Concrete is installed from 200m gbl to ground level with securable steel head works

**Problems Encountered**

**Samples Taken:**

**Plant Working:**

**Photographs Taken (Description / Frame):** pictures taken

**Visitors to Site / Meetings:**

**Signed:** Jules Ndonga (CQA Engineer) **Dated:** 10.09.18

**Signed:** (Site Manager) **Dated:**



## Plates

**Plate 1 – A-frame of cable percussion rig set up – Drilling underway**



**Plate 2 – Installation of gravel down borehole**





**Plate 3 – Installing bentonite in top of borehole to create watertight clay seal**



**Plate 4 – Metal protective casing secured in place by concrete around top of standpipe**

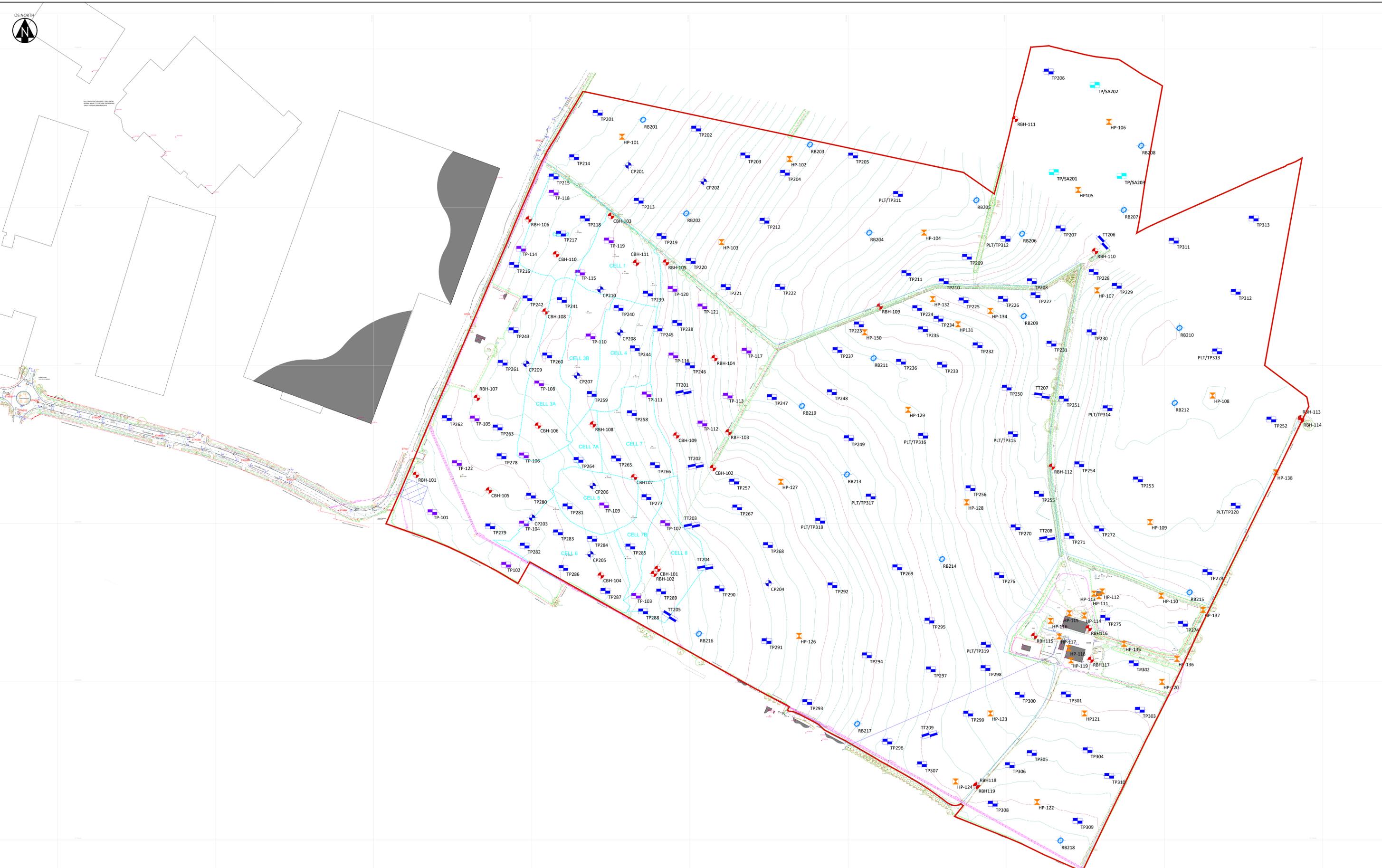




**Plate 5 – Example of clay arisings from borehole**



# Appendix H Hydrock 2022 Site Investigations Data



**KEY**

Trial Pit	No Access
Cable Percussion Borehole	Hydrock welfare compound
Rotary Percussion / Core Borehole	Mick George Landfill Cell Boundaries
Hand Dug Excavation Pit	
Made Ground encountered	

**Detailed Site Investigation November/December 2021**

Cable Percussion Borehole
Rotary Borehole
Trial Pit
Soakaway
Trial Trench

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:
- This drawing has been based on the Station Drawing "Huntingdon Road, Thrapston. Topographic Survey", Ref: 11511-a-0, dated 10/03/21.
- Locations subject to change following walkover and subject to discussions and agreement.
- Relocations shown at the farm building and yard areas. Subject to discussions and agreement.
- No known archaeological, ecological or arboricultural restrictions.
- Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MC310/51 dated: 25/11/2014.

**LOCATIONS UPDATED FOLLOWING SURVEY**

POG	NO	DATE	BY	DATE	BY
	2480122	NT	24/01/21	AR	24/01/21

**CLIENT DETAILS UPDATED**

POS	NO	DATE	BY	DATE	BY
NT	1512/21	NT	15/12/21	AR	15/12/21
AR	08/13/21	NT	08/13/21	AR	08/13/21
AR	27/07/21	AR	27/07/21	AR	27/07/21
AR	14/06/21	AR	14/06/21	AR	14/06/21
AR	20/09/21	AR	20/09/21	AR	20/09/21

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or visit www.hydrock.com

**CLIENT**  
EQUITES NEWLANDS (THRAPSTON EAST) LTD

**PROJECT**  
LAND ADJACENT HALDEN PARKWAY THRAPSTON

**TITLE**  
EXPLORATORY HOLE LOCATION PLAN

HYDROCK PROJECT NO. C-18443	SCALE @ A0 1:1500
PURPOSE OF ISSUE SUITABLE FOR INFORMATION	STATUS S2
DRAWING NO. (PROJECT CODE, ORIGINATOR, ZONE LEVEL, TRK, ROLE NUMBER) 18443-HYD-XX-ZZ-DR-GE-1004	REVISION PO6



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-101**

Page No. 1 of 2

Method: Cable Percussion	Date(s): 22/06/2021	Logged By: NT	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501554.83, 278145.92	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 62.98m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30 - 1.10	B			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded brick, quartz, sandstone and limestone. One piece of yellow plastic. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.68		
1.20	SPT	N=6 (1,1,1,1,2,2)		Soft light greyish and orangish brown slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse, angular to sub-angular brick, concrete, flint, limestone, igneous rock and asphalt and occasional (LANDFILL - MADE GROUND)	1	(1.40)			
1.20 - 1.65 1.20 - 10.50	D AMAL				1.70		61.28		
2.00	SPT	N=8 (1,1,1,2,2,3)		Soft greenish grey and yellowish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to angular, chalk, limestone and rare fine brick and ash. (LANDFILL - MADE GROUND)	2				
2.00 2.00 - 2.45	ES D								
3.00	SPT	N=6 (1,1,1,1,2,2)			3				
3.00 - 3.45	D								
4.00	SPT	N=6 (0,1,1,1,2,2)			4				
4.00 4.00 - 4.45	ES D								
5.00	SPT	N=8 (2,2,2,2,2,2)			5				
5.00 - 5.45	D								
6.00	D				6				
6.50	SPT	N=11 (2,2,2,3,3,3)							
6.50 - 6.95 7.00	D ES				7				
7.50	D								
8.00	SPT	N=11 (2,2,2,3,3,3)			8				
8.00 - 8.45	D								
9.00	D				9				
9.50	SPT	N=40 (3,3,6,8,12,14)							
9.50 - 9.95 9.80 - 10.50	D B			Very dense brown coarse SAND.	9.80		53.18		

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 10.70m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 10.50m bgl. Response zone between 10.0m bgl and 10.50m bgl. 4) ER = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-101**

Page No. 2 of 2

Method: Cable Percussion	Date(s): 22/06/2021	Logged By: NT	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501554.83, 278145.92	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 62.98m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill	
Depth (m)	Type	Results								
10.60	SPT	50/40mm (25,50)		Very dense brown coarse SAND. (KELLAWAYS SAND MEMBER)	10.50	(0.70)	52.48			
10.60 - 10.70	D			Firm grey thinly laminated CLAY. (KELLAWAYS CLAY MEMBER)	10.60	(0.10)	52.38			
				Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	10.70	(0.10)	52.28			
				End of Borehole at 10.70m						
				12						
				13						
				14						
				15						
				16						
				17						
				18						
				19						
				20						

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 10.70m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 10.50m bgl. Response zone between 10.0m bgl and 10.50m bgl. 4) ER = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-102**

Page No. 1 of 1

Method: Cable Percussion	Date(s): 24/06/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501624.68, 278272.72	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 57.78m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.40 - 1.00	B			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded brick, quartz, sandstone and limestone. (TOPSOIL - MADE GROUND)	0.40	(0.40)	57.38		
1.20	SPT	N=7 (1,1,1,2,2,2)		Loose to medium dense orangish brown slightly clayey slightly gravelly SAND with occasional rootlets. Gravel is fine to coarse, angular to sub-rounded sandstone, and mudstone. (KELLAWAYS SAND MEMBER)	1				
1.20 - 1.65 1.20 - 2.00	D B						(2.60)		
2.00	SPT	N=12 (1,2,2,3,3,4)		Firm closely fissured bluish grey slightly silty CLAY with occasional fine shell fragments. (KELLAWAYS CLAY MEMBER)	2				
2.00 - 2.45	D								
3.00	SPT	N=11 (1,2,2,2,3,4)			3		54.78		
3.00 - 3.45 3.00 - 4.00	D B								
4.00	SPT	N=15 (2,2,3,4,4,4)			4				
4.00 - 4.45	D						(2.00)		
5.00	SPT	50/15mm (25,50)		Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) End of Borehole at 5.04m	5		52.78		
5.00 - 5.04	D					5.00 5.04	(0.04)	52.74	

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 5.04m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 5.00m bgl. Response zone between 3.00m bgl to 5.00m bgl. 4) ER = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Method: Cable Percussion	Date(s): 06/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501499.71, 278589.48	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 62.75m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.20 - 1.00	B			Firm to stiff brown slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded flint, quartz, limestone and chalk. (TOPSOIL - MADE GROUND)	0.20	(0.20)	62.55		
1.20	SPT	N=7 (1,1,1,2,2,2)		Soft to firm dark grey brown, slightly sandy gravelly CLAY with occasional rootlets. Gravel is fine to coarse, sub-angular to sub-rounded limestone, flint, brick, sandstone and chalk. (LANDFILL - MADE GROUND)	1.30	(1.10)	61.45		
1.20 - 1.65 1.30 1.30 - 2.00	D ES B			Firm dark brown and grey slightly silty gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded, chalk, flint and sandstone. Occasional gravel sized shell fragments. (GLACIAL TILL)	2.00	(0.70)	60.75		
2.00	SPT	N=8 (1,1,1,2,2,3)		Firm becoming stiff bluish grey slightly silty CLAY with occasional relict rootlets and coarse sand sized selenite crystals. (GLACIAL TILL)	3.60	(1.60)	59.15		
2.00 - 2.45 2.00 - 3.00	D B				4.00	(0.40)	58.75		
3.00 - 3.45	U	(79,100%)			5.00	(2.00)			
3.60	ES			Stiff bluish grey slightly gravelly CLAY. Gravel is fine to medium, sub-angular to rounded flint and quartz. (GLACIAL TILL)	6.00	(3.50)	56.75		
4.00	SPT	N=35 (1,2,6,9,9,11)		Dense to very dense orange brown gravelly SAND. Gravel is fine to coarse, sub-angular to sub-rounded limestone, flint, sandstone and ironstone. Sand is medium. (GLACIOFLUVIAL DEPOSITS)	6.50				
4.00 - 4.45 4.30 - 5.00 4.30 - 6.00	D B AMAL				6.50				
5.00	SPT	50/135mm (9,12,25,25)			6.50				
5.00 - 5.50	B				6.50				
5.50	ES				6.50				
5.50 - 6.00	B				6.50				
6.00 - 6.50	B			Very dense to medium dense orange brown SAND and GRAVEL. Gravel is fine to coarse, sub-angular to sub-rounded flint, ironstone, siltstone and shell fragments. (GLACIOFLUVIAL DEPOSITS)	6.50				
6.50	SPT	50/170mm (5,10,16,24,10)			6.50				
6.50 - 7.00	B				6.50				
7.00	ES				6.50				
7.50 - 8.00	B				6.50				
8.00	SPT	N=22 (5,6,5,5,5,7)			6.50				
9.00	D				6.50				
9.50	SPT	50/10mm (24,50)		Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	9.50	(0.05)	53.25		
9.50	D			End of Borehole at 9.50m	9.55		53.20		

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.55m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 9.50m bgl. 2) Response zone between 4.50m bgl and 9.50m bgl. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Method: Cable Percussion	Date(s): 23/06/2021	Logged By: SP	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501485.56, 278134.83	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 64.43m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Soft brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded chalk and rare flint. (TOPSOIL - MADE GROUND)	0.20	(0.20)	64.23		
0.50 - 1.00	B			Soft orange brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-rounded to rounded flint and chalk. (LANDFILL - MADE GROUND)	0.50	(0.30)	63.93		
0.70	ES			Firm grey locally black mottled sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded chalk, rare limestone and rare fine brick. (LANDFILL - MADE GROUND)	1.00	(0.50)	63.43		
1.00	D			Orange brown sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-rounded to rounded flint and sandstone. (LANDFILL - MADE GROUND)	1.30	(0.30)	63.13		
1.20	SPT	N=10 (3,3,2,3,2,3)		Firm brown mottled dark brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium, angular to sub-angular flint, brick, sandstone and bituminous material. (LANDFILL - MADE GROUND)					
1.20	ES								
1.20 - 1.65	D								
1.30 - 2.00	B								
2.00	SPT	N=7 (1,1,1,2,2,2)			2				
2.00 - 2.45	D								
3.00	SPT	N=7 (0,1,1,2,2,2)			3				
3.00 - 3.45	D								
3.45	D								
4.00	SPT	N=9 (1,1,2,2,2,3)			4				
4.00 - 4.45	D								
5.00	SPT	N=11 (2,2,2,3,3,3)			5				
5.00 - 5.45	D					(7.60)			
6.00	D				6				
6.50	SPT	N=14 (2,2,3,3,4,4)			7				
6.50 - 6.95	D								
7.00	ES				7				
7.00 - 8.00	B								
8.00	SPT	N=20 (3,3,4,5,5,6)			8				
8.00 - 8.45	D								
9.00 - 9.50	B			Firm orange brown and bluish grey sandy CLAY. (KELLAWAYS SAND MEMBER)	8.90		55.53		
9.50	SPT	N=16 (3,3,4,4,4,4)		Medium dense orange clayey SAND. (KELLAWAYS SAND MEMBER)	9.50		54.93		
9.50 - 9.95	D				10		(1.00)		

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 11.10m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 8.50m bgl. Response zone between 1.00m bgl and 8.50m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-104**

Page No. 2 of 2

Method: Cable Percussion	Date(s): 23/06/2021	Logged By: SP	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501485.56, 278134.83	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 64.43m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
10.50 - 11.00	B			Medium dense orange clayey SAND. (KELLAWAYS SAND MEMBER)	10.50		53.93		
11.00	SPT	50/30mm (25,50)		Very stiff dark grey CLAY. (KELLAWAYS CLAY MEMBER)		(0.50)			
11.00 - 11.10	D			Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) <small>End of Borehole at 11.10m</small>	11.00 11.10		53.43 53.33		
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 11.10m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 8.50m bgl. Response zone between 1.00m bgl and 8.50m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CBH-105

Page No. 1 of 2

Method: Cable Percussion	Date(s): 21/06/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501343.72, 278243.36	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 65.47m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30 - 0.80	B			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to rounded quartz, flint, brick and sandstone. (TOPSOIL - MADE GROUND)	0.30	(0.30)	65.17		
1.20	SPT	N=10 (0,0,0,1,1,8)		Stiff mottled light brown slightly sandy slightly gravelly CLAY with some roots. Gravel is fine to coarse, sub-angular to rounded chalk, brick, sandstone and limestone. Low cobble content of brick. (LANDFILL - MADE GROUND)	1.20	(0.90)	64.27		
1.20 - 1.65	D			Soft yellow and grey brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium. sub-angular to sub-rounded chalk, brick and ash. (LANDFILL - MADE GROUND)		(0.90)			
2.00	SPT	N=17 (2,2,3,4,5,5)			2.10		63.37		
2.00 - 2.45	D			Firm light greyish and orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded flint, chalk and sandstone. (GLACIAL TILL)					
3.00	SPT	N=9 (1,2,2,2,2,3)			3				
3.00 - 3.45	D								
4.00	SPT	N=14 (2,2,2,3,4,5)			4				
4.00 - 4.45	D			Firm grey slightly gravelly CLAY with occasional sand sized selenite crystals, shell fragments and purple relict rootlets. Gravel is fine to medium, angular to rounded flint, quartz, chalk, sandstone and mudstone. (GLACIAL TILL)	4.10		61.37		
4.10 - 5.00	B								
5.00	SPT	N=24 (3,4,5,6,6,7)			5				
5.00 - 5.45	D					(2.40)			
6.00	D				6				
6.50	SPT	50/220mm (6,13,13,17,20)			6.50		58.97		
6.50 - 6.87	D			Dense to very dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)					
7.00 - 8.00	B				7				
8.00	SPT	N=44 (4,6,8,10,12,14)			8				
9.00	D				9				
9.50	SPT	50/210mm (7,11,13,20,17)			9.50				
					10				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 11.26m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 2.00m bgl. Response zone between 1.00m bgl and 2.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-105**

Page No. 2 of 2

Method: Cable Percussion	Date(s): 21/06/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501343.72, 278243.36	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 65.47m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
10.50	D			Dense to very dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)	10.60		54.87		
11.00 - 11.20	U	(100,0%)		Brown becoming grey thinly laminated slightly sandy CLAY. (KELLAWAYS CLAY MEMBER)	11	(0.60)			
11.20	SPT	50/10mm (25,50)			11.20		54.27		
11.20	D			Grey LIMESTONE. (CORNBRAH LIMESTONE FORMATION) End of Borehole at 11.26m	11.26	(0.06)	54.21		
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 11.26m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 2.00m bgl. Response zone between 1.00m bgl and 2.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-106**

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Method: Cable Percussion	Date(s): 05/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501408.26, 278325.57	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 63.96m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Soft brown sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to angular flint, quartz, sandstone and rare fine brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.66		
0.30 - 1.00	B			Firm brown sandy slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint, sandstone, ironstone and rare brick. (LANDFILL - MADE GROUND)		(0.90)			
0.70	ES				1				
1.20	SPT	N=26 (1,4,5,7,7,7)		Medium dense red brown slightly clayey gravelly SAND. Gravel is fine to coarse, sub-angular to sub-rounded sandstone and siltstone. (LANDFILL - MADE GROUND)	1.20		62.76		
1.20 - 1.65	D					(1.30)			
1.20 - 2.00	B								
2.00	SPT	N=26 (3,5,7,7,6,6)			2				
2.20	D								
2.20	ES								
2.50 - 3.00	B				2.50		61.46		
3.00	SPT	N=12 (1,2,3,3,3,3)		Soft dark greenish grey and dark brown slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse, angular to rounded quartz, brick, ash and limestone. (LANDFILL - MADE GROUND)	3				
3.00 - 3.45	D								
4.00	SPT	N=19 (8,4,5,5,4,5)			4				
4.00 - 4.45	D								
5.00	SPT	N=8 (1,2,2,2,2,2)			5				
5.00	ES								
5.00 - 5.45	D								
6.00	D				6				
6.50	SPT	N=16 (1,3,5,5,3,3)							
6.50 - 6.95	D				7				
7.50	D								
7.50	ES			... At 7.50m bgl: Gravel of furnace slag with sulphurous odour encountered.					
8.00	SPT	N=9 (1,2,3,1,2,3)			8				
8.00 - 8.45	D								
9.00	D				9				
9.00	ES								
9.50	SPT	N=15 (3,3,3,4,4,4)			9.60		54.36		
9.50 - 9.95	D			Firm dark brown and grey CLAY. (KELLAWAYS CLAY MEMBER)					
9.60 - 10.50	B				10				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 10.56m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. Response zone between 3.00m bgl and 9.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-106**  
Page No. 2 of 2

Method: Cable Percussion	Date(s): 05/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501408.26, 278325.57	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 63.96m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
10.50	SPT	50/10mm (25,50)		Firm dark brown and grey CLAY. (KELLAWAYS CLAY MEMBER)	10.50	(0.90)	53.46		
10.50 - 10.56	D			Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) End of Borehole at 10.56m	10.56	(0.06)	53.40		
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 10.56m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. Response zone between 3.00m bgl and 9.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	

Method: Cable Percussion	Date(s): 24/06/2021	Logged By: SP	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501531.33, 278258.74	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 61.90m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30	ES			Soft light greyish brown slightly gravelly CLAY with many rootlets. Gravel is fine to coarse, sub-angular to angular flint, chalk sandstone and brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	61.60		
0.40	D								
0.50 - 1.00	B			Soft orange brown sandy slightly gravelly CLAY. Gravel is fine to medium, angular to sub-angular flint, chalk, sandstone and brick. (LANDFILL - MADE GROUND)	0.70	(0.40)	61.20		
1.00	ES								
1.20	SPT	N=9 (2,2,2,2,2,3)							
1.20 - 1.65	D								
2.00	SPT	N=4 (0,0,0,1,1,2)							
2.00 - 2.45	D								
3.00	SPT	N=7 (2,1,1,1,2,3)		... At 3.0m bgl: Timber.					
3.00 - 3.45	D								
5.00	SPT	N=11 (3,2,1,2,3,5)							
5.00 - 5.45	D			Firm light brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular chalk and brick. (LANDFILL - MADE GROUND)	5.00	(4.30)	56.90		
6.00	D								
6.50	SPT	N=12 (3,3,3,3,3,3)		... At 6.50m bgl: Brown and blue grey.					
6.50 - 6.95	D								
7.50	D			... At 7.50m bgl: Soft.					
8.00	SPT	N=9 (1,1,1,2,3,3)							
8.00 - 8.45	D								
8.50 - 9.40	B								
9.40	D				9.40		52.50		
9.50	SPT	50/10mm (25,50)		Very stiff dark grey slightly sandy CLAY with frequent shells. (KELLAWAYS CLAY MEMBER)	9.50	(0.10)	52.40		
9.50 - 9.53	D			Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)	9.54	(0.04)	52.36		
				End of Borehole at 9.53m	10				

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
												1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.53m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 9.50m bgl. Response zone between 1.50m bgl and 9.50m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.



Method: Cable Percussion	Date(s): 08/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501418.18, 278468.21	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 62.74m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded limestone, flint and quartz.	0.20	(0.20)	62.54		
0.20	D			(TOPSOIL - MADE GROUND)	0.40	(0.20)	62.34		
0.40 - 1.00	B			Brown slightly clayey gravelly SAND. Gravel is fine to coarse, sub-angular to sub-rounded limestone.					
				(LANDFILL - MADE GROUND)					
				Soft to firm grey and orange brown slightly gravelly CLAY. Gravel is fine to medium, sub-rounded limestone, quartz, flint and brick.					
				(LANDFILL - MADE GROUND)					
1.20	SPT	N=7 (1,1,1,2,2,2)				(1.60)			
1.20 - 1.65	D								
2.00	SPT	N=10 (1,2,3,2,3,2)					60.74		
2.00 - 2.45	ES D			Firm brown becoming grey slightly gravelly CLAY. Gravel is fine to coarse, subangular to rounded sandstone, quartz, flint and chalk, with occasional shell fragments.	2.00				
				(GLACIAL TILL)					
3.00 - 3.45	D								
3.40	SPT	N=14 (3,4,4,3,3,4)							
4.00	SPT	N=22 (2,3,4,5,6,7)							
4.00 - 4.45	D B			Medium dense to very dense orange brown slightly clayey, gravelly SAND. Gravel is fine to coarse, sub-angular to sub-rounded flint.					
4.00 - 5.00				(GLACIOFLUVIAL DEPOSITS)					
5.00	SPT	50/125mm (9,15,27,23)				(2.20)			
5.10	D								
6.00	D								
6.50	SPT	50/135mm (7,13,25,25)							
7.00	ES								
7.50	D								
8.00	SPT	N=37 (7,12,12,8,8,9)							
8.00	ES								
9.30	SPT	50/0mm (25)		Very dense to dense light brown and mottled dark grey, gravelly SAND. Gravel is fine to coarse, sub-angular to sub-rounded limestone, sandstone and ironstone.	9.30				
				(KELLAWAYS SAND MEMBER)	9.31	(0.01)	53.44		
				Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)			53.43		
				End of Borehole at 9.31m					

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.31m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 4.00m bgl. Response zone between 1.00m bgl and 4.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Method: Cable Percussion	Date(s): 05/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501581.82, 278312.47	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 59.53m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.40 - 1.00	B			Soft light brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, angular to sub-rounded brick, flint and chalk. (TOPSOIL - MADE GROUND)	0.40	(0.40)	59.13		
1.00	D			Firm dark brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is fine to coarse, angular to sub-rounded quartz, limestone, sandstone and chalk. (LANDFILL - MADE GROUND)	1.00	(0.60)	58.53		
1.20	SPT	N=7 (1,0,1,2,2,2)		Soft to firm orange brown sandy slightly gravelly CLAY with occasional pockets of brown and grey clay with occasional roots. Gravel is fine to coarse, sub-angular to sub-rounded flint, limestone, brick and sandstone. (LANDFILL - MADE GROUND)	1.20				
1.20	ES				1.20				
1.20 - 1.65	D				1.65				
1.20 - 2.00	B				2.00				
2.00	SPT	N=4 (0,1,1,1,1,1)			2.00				
2.00	ES				2.00				
2.00 - 2.45	D				2.45				
3.00	SPT	N=10 (1,1,1,2,3,4)			3.00				
3.00	ES				3.00				
3.00 - 3.45	D				3.45				
4.00	SPT	N=8 (2,2,2,2,2,2)		Soft dark grey and light orange brown slightly sandy slightly gravelly CLAY with occasional fine sand sized selenite crystals in dark grey pockets and medium sand sized shell fragments. Gravel is fine to coarse, sub-angular to sub-rounded brick, sandstone, limestone and quartz. One fragment of wood. (LANDFILL - MADE GROUND)	4.00	(0.50)	55.13		
4.00 - 4.45	D			Soft becoming firm grey brown becoming firm slightly gravelly CLAY. Gravel is fine to coarse, sub-angular sandstone. (KELLAWAYS CLAY MEMBER)	4.45	(0.60)	54.53		
4.40 - 5.00	B				5.00				
5.00	SPT	N=14 (2,2,3,3,4,4)		Stiff dark grey slightly silty, slightly gravelly CLAY with occasional medium sand sized shell fragments. Gravel is fine to medium. sub-angular pyritic sandstone. (KELLAWAYS CLAY MEMBER)	5.00				
5.00	ES				5.00				
5.00 - 5.45	D				5.45				
5.00 - 5.50	B				5.50				
5.50 - 6.00	B				6.00				
6.00 - 6.50	B				6.50				
6.50	SPT	50/5mm (25,50)		Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)	6.50	(0.04)	53.03		
6.50 - 6.54	D			End of Borehole at 6.54m	6.54		52.99		

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.31m bgl. 3) Gas and groundwater monitoring pipe installed to 4.00m bgl. Response zone between 1.00m bgl and 4.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-110**

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Method: Cable Percussion	Date(s): 07/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501430.73, 278540.62	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 63.53m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.00	ES			Soft dark brown slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, angular to sub-rounded flint, brick, ironstone and limestone. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.23		
0.27 0.30	ES D				Soft to firm dark brown and orange brown sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded limestone and chalk with occasional shell fragments. (LANDFILL - MADE GROUND)	1.20	(0.90)	62.33	
0.70 - 1.20	B			Firm brown and grey slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-rounded flint, brick, ironstone and chalk. (LANDFILL - MADE GROUND)		2.00			
1.20	SPT	N=9 (1,1,2,2,2,3)			Soft bluish grey and orange brown slightly silty slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular limestone, brick and glass. (LANDFILL - MADE GROUND)	2.00 - 2.45			
1.20 - 1.65 1.20 - 2.00	D B			Soft grey and brown slightly silty slightly gravelly CLAY with mild hydrocarbon odour and occasional specks of selenite. Gravel is fine to coarse, angular brick and chalk. (LANDFILL - MADE GROUND)		3.00			
2.00	SPT	N=8 (0,1,2,2,2,2)			Medium dense to dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)	3.00 - 3.45			
2.00 - 2.45	D			Stiff mottled greyish brown and blueish grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded sandstone, chalk, ironstone and limestone. (KELLAWAYS CLAY MEMBER)		4.00		59.53	
3.00	SPT	N=12 (1,2,3,2,4,3)			Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)	4.00 - 4.45			
3.00 3.00 - 3.45	ES D			Medium dense to dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)		5.00			
4.00	SPT	N=4 (0,0,1,1,1,1)			Stiff mottled greyish brown and blueish grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded sandstone, chalk, ironstone and limestone. (KELLAWAYS CLAY MEMBER)	5.00 - 5.45			
4.00 - 4.45	D			Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)		5.00			
5.00	SPT	N=5 (1,1,1,1,1,2)			Medium dense to dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)	5.00 - 5.45			
5.00 5.00 - 5.45	ES D			Stiff mottled greyish brown and blueish grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded sandstone, chalk, ironstone and limestone. (KELLAWAYS CLAY MEMBER)		6.00			
6.00	D				Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)	6.50		57.03	
6.50	SPT	N=4 (1,3,1,1,1,1)		Medium dense to dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)		6.50 - 6.95			
6.50 6.50 - 6.95	ES D				Stiff mottled greyish brown and blueish grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded sandstone, chalk, ironstone and limestone. (KELLAWAYS CLAY MEMBER)	7.50			
7.50	D			Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)		8.00			
8.00	SPT	N=20 (3,3,5,5,5,5)			Medium dense to dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)	8.00 - 8.45			
8.00 - 8.45	D			Stiff mottled greyish brown and blueish grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded sandstone, chalk, ironstone and limestone. (KELLAWAYS CLAY MEMBER)		8.50		55.23	
8.50 - 9.50	B				Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)	8.50 - 9.50		55.03	
9.50	SPT	50/20mm (25,50)		End of Borehole at 9.59m		9.50		54.03	
9.50 - 9.59	D					9.59		53.94	

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.59m bgl. 3) Gas and groundwater monitoring pipe installed to 8.00m bgl. Response zone between 2.00m bgl and 8.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Method: Cable Percussion	Date(s): 06/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501531.33, 278527.19	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 62.08m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.20	ES			Soft dark brown slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded quartz, flint and brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	61.88		
1.20	SPT	N=7 (1,1,2,2,1,2)		Soft dark greyish brown slightly sandy gravelly CLAY with occasional roots. Gravel is fine to coarse angular to rounded brick, quartz, ironstone, chalk, flint, limestone and sandstone. (LANDFILL - MADE GROUND)	1.30	(1.10)	60.78		
1.20 - 1.65	D			Soft to firm dark brownish grey and locally greenish grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to sub-rounded brick, limestone, ash, flint, sandstone, ironstone, concrete, plastic and timber. (LANDFILL - MADE GROUND)	2.00				
1.30 - 2.00	B								
2.00	SPT	N=18 (2,2,4,4,5,5)		... Between 3.10m and 4.00m bgl: Potential Asbestos Containing Material (fibres).	3.00				
2.00 - 2.45	D								
3.00	SPT	N=14 (2,2,5,5,2,2)							
3.00 - 3.45	D			Firm to stiff blueish grey and in parts brown slightly gravelly CLAY with rare coarse gravel sized shell fragments. Gravel is fine to medium sub-angular to rounded quartz, brick, flint and sandstone. (LANDFILL - MADE GROUND)	4.00				
3.10	ES								
3.10 - 4.00	B								
4.00	SPT	N=5 (2,4,1,1,1,2)							
4.00 - 4.45	D			Firm to stiff blueish grey gravelly CLAY with occasional carbonaceous material. Gravel is fine to coarse sub-angular to sub-rounded quartz, flint, siltstone and sandstone. (LANDFILL - MADE GROUND)	5.00				
5.00	SPT	N=8 (1,2,2,2,2,2)							
5.00 - 5.45	D								
6.00	D								
6.00	ES								
6.50	SPT	N=8 (2,2,2,2,2,2)		Stiff blueish grey CLAY with frequent shell fragments. (KELLAWAYS CLAY MEMBER)	6.95				
6.50 - 6.95	D								
7.50	D								
7.50	D								
7.90 - 8.40	B								
8.00	SPT	N=23 (7,4,4,5,7,7)							
8.00 - 8.45	D			Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	9.23				
8.40	ES								
8.40 - 9.20	B								
9.20	SPT	50/5mm (25,50)							
9.20 - 9.23	D			... Between 9.20m and 9.23m bgl: Very limited recovery End of Borehole at 9.23m	9.23	(0.04)	52.85		

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.23m bgl. 3) Gas and groundwater monitoring pipe installed to 8.00m bgl. Response zone between 2.00m bgl and 8.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP201

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Method: Cable Percussion	Date(s): 22/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501522.17, 278652.92	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 63.34m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth magl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill	
Depth (m)	Type	Results								
0.20 0.30 - 1.00	ES B			Firm dark brown slightly gravelly sandy CLAY with occasional roots up to 1mm diameter. Gravel is angular to rounded fine to coarse of flint and chalk. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL) Stiff grey brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of chalk and flint. Sand is fine to medium. (GLACIAL TILL)	0.30	(0.30)	63.04			
1.20 1.20 - 1.65 1.20 - 2.00	SPT ES D B	N=16 (2,2,3,4,4,5)								
2.00 2.00 - 2.45 2.20	SPT D ES	N=23 (3,3,4,5,6,8)								
3.00 3.00 - 3.45 3.00 - 4.00	SPT D B	N=27 (2,3,5,7,7,8)		Stiff grey brown and dark grey CLAY with rare shell fragments. (GLACIAL TILL)	2.90		60.44			
4.00 4.00 - 4.45	SPT D	N=37 (3,5,7,10,10,10)		... Becoming very stiff below 4.00m						
5.00 5.00 - 5.37	SPT D	50/225mm (5,7,11,14,25)			5.37		57.97			
				End of Borehole at 5.37m						

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 5.37m, borehole terminated on suspected flint boulder. 3. Gas and groundwater monitoring well installed. 4. Response zone from 1.00m to 5.37m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	22/11	0800	5.37	2.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP202

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Method: Cable Percussion	Date(s): 23/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501617.49, 278632.47	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 59.78m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth magl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.20 0.30 - 1.00 0.30 - 1.00	ES B B			Firm dark brown slightly gravelly sandy CLAY with occasional roots up to 1mm diameter. Gravel is angular to rounded fine to coarse of flint and chalk. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL) Firm dark grey slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and chalk (GLACIAL TILL)	0.30	(0.30)	59.48		
1.20 1.20 - 1.65 1.20 - 2.00 1.20 - 2.20	SPT D B B	N=11 (1,2,2,3,3,3)			1	(1.70)			
2.00 2.00 - 2.45	SPT D	N=38 (1,3,5,11,11,11)		Very stiff dark grey and orange brown CLAY with occasional gravel sized silt and sand patches. (KELLAWAYS SAND MEMBER)	2		57.78		
3.00 3.00 - 3.45 3.00 - 4.00 3.00 - 4.00	SPT D B B	N=29 (3,4,7,7,7,8)		Stiff grey sandy CLAY. (KELLAWAYS SAND MEMBER)	3		56.88		
4.00 4.00 - 4.45	SPT D	N=40 (3,5,9,10,10,11)		... <i>Becoming very stiff below 4.00m</i>	4	(2.00)			
5.00 5.00 5.00 - 5.45 5.00 - 6.00 5.00 - 6.00	SPT ES D B B	N=20 (3,4,4,5,5,6)		Stiff grey CLAY with occasional shell fragments. (KELLAWAYS CLAY MEMBER)	5				
6.50 6.50 - 6.95	SPT D	N=50 (4,6,8,10,15,17)		... <i>Becoming very stiff below 6.50m</i>	6	(2.25)			
7.00 7.00 7.20	D D SPT	50/10mm (25,50)		LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) <i>End of Borehole at 7.20m</i>	7.15 7.20		52.63 52.58		
					8				
					9				
					10				

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 7.20m, borehole terminated. 3. Gas and groundwater monitoring well installed 4. Response zone from 1.20m to 7.20m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	23/11	0800	7.20	2.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP203

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Method: Cable Percussion	Date(s): 16/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501400.40, 278207.49	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 65.57m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30	ES			Firm brown gravelly CLAY with occasional rootlets (TOPSOIL - MADE GROUND)	0.30	(0.30)	65.27		
0.30 - 0.60	B			Orangish brown very clayey gravelly SAND. Gravel is angular to sub angular fine to coarse of brick and limestone.	0.60	(0.30)	64.97		
0.60 - 1.00	B			(LANDFILL - MADE GROUND)					
1.00	ES			Firm greenish grey slightly sandy gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of chalk, brick and limestone.	1.00	(0.40)	64.57		
1.20	SPT	N=10 (2,2,2,2,3,3)		(LANDFILL - MADE GROUND)					
1.20 - 1.65	D			Firm blackish grey mottled grey slightly sandy gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of chalk, flint, brick and limestone.					
1.20 - 2.00	B			(LANDFILL - MADE GROUND)					
2.00	SPT	N=10 (1,2,2,2,3,3)							
2.00	ES								
2.00 - 2.45	D								
2.00 - 3.00	B								
3.00	SPT	N=9 (4,2,2,2,2,3)							
3.00	ES								
3.00 - 3.45	D								
3.00 - 4.00	B								
3.00 - 6.00	B								
4.00	SPT	N=11 (1,2,3,2,3,3)							
4.00	ES								
4.00 - 4.45	D								
4.00 - 5.00	B								
5.00	SPT	N=15 (1,2,3,3,4,5)							
5.00	ES								
5.00 - 5.45	D								
5.00 - 6.00	B								
6.00	ES								
6.50	SPT	N=15 (2,2,3,4,3,5)					(10.90)		
6.50 - 6.95	D								
7.00 - 8.00	B								
7.00 - 9.50	B								
8.00	SPT	N=20 (4,4,5,5,5,5)							
8.00	ES								
8.00 - 8.45	D								
8.00 - 9.00	B								
9.00 - 9.50	B								
9.50	SPT	N=17 (2,3,4,4,4,5)							
9.50 - 9.95	D								
10.00 - 11.00	B								

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 11.9m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 10.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	16/11	0800	11.96	8.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No

CP203

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Method: Cable Percussion	Date(s): 16/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501400.40, 278207.49	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 65.57m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness m	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
11.00	SPT	N=18 (3,3,4,4,5,5)		Firm blackish grey mottled grey slightly sandy gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of chalk, flint, brick and limestone. (LANDFILL - MADE GROUND)	11				
11.00 - 11.45	D								
11.00 - 11.90	B								
11.90	SPT	50/10mm (25,50)		LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) End of Borehole at 11.90m	11.90	0.06	53.67		
					11.96		53.61		
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 11.9m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 10.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
												Groundwater: No Groundwater seepages observed



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP204

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Method: Cable Percussion	Date(s): 23/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501699.41, 278124.65	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 59.28m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Firm dark brown slightly gravelly sandy CLAY with occasional roots up to 1mm diameter. Gravel is angular to rounded fine to coarse of flint and chalk. Sand is fine to medium.	0.40	(0.40)	58.88		
0.40 - 1.00	B			(AGRICULTURALLY DISTURBED TOPSOIL)					
1.00	SPT	N=12 (2,3,3,3,3,3)		Firm brown slightly sandy CLAY with occasional roots up to 1mm diameter. Sand is fine.	1	(1.10)			
1.00 - 1.45	D			(KELLAWAYS SAND MEMBER)					
1.50 - 2.00	B			Stiff brown grey, light brown and orange brown slightly sandy silty CLAY. Sand is fine.	1.50		57.78		
1.50 - 2.00	B			(KELLAWAYS SAND MEMBER)					
2.00	SPT	N=19 (2,3,5,4,5,5)			2	(1.50)			
3.00	SPT	N=24 (1,2,3,5,7,9)		Stiff grey silty CLAY.	3		56.28		
3.00 - 3.45	D			(KELLAWAYS SAND MEMBER)					
3.00 - 4.00	B								
3.00 - 4.00	B								
4.00	SPT	50/235mm (3,5,9,12,20,9)		... Becoming very stiff below 4.00m	4	(2.00)			
4.00 - 4.45	D								
4.00 - 4.50	B								
4.00 - 6.00	B								
4.50 - 5.00	B								
5.00	SPT	N=38 (3,5,7,9,11,11)		Very stiff grey CLAY with occasional shell fragments.	5		54.28		
5.00 - 5.45	D			(KELLAWAYS CLAY MEMBER)					
5.00 - 6.00	B								
6.00	D				6				
6.00	D								
6.50	SPT	N=40 (5,7,9,9,11,11)			7	(2.95)			
6.50 - 6.95	D								
7.50	D								
8.00	SPT	50/10mm (25,50)		LIMESTONE.	8	7.95	51.33		
8.00	D			(CORNBRAsh LIMESTONE FORMATION)	8.00	(0.05)	61.28		
8.00	D			End of Borehole at 8.00m					
8.00	ES								

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 8.00m, borehole terminated. 3. Gas and groundwater monitoring well installed. 4. Response zone from 1.00m to 8.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	23/11	0800	8.00	2.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP205

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Method: Cable Percussion	Date(s): 15/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501474.22, 278161.36	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 64.52m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
1.20	SPT	N=8 (1,1,2,2,2,2)		Firm brown gravelly CLAY with occasional rootlets (TOPSOIL - MADE GROUND) Firm to stiff brown slightly sandy gravelly CLAY. Gravel is angular to sub angular fine to coarse of brick and limestone. (LANDFILL - MADE GROUND)	0.20	(0.20)	64.32		
2.00	SPT	N=9 (1,2,2,2,2,3)		Firm greenish grey blackish grey and grey slightly sandy gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of chalk, brick and limestone (LANDFILL - MADE GROUND)	1.20	(1.00)	63.32		
3.00	SPT	N=8 (1,2,1,2,2,3)							
4.00	SPT	N=15 (3,3,3,4,4,4)							
5.00	SPT	N=11 (2,2,2,3,3,3)							
6.50	SPT	N=11 (2,2,2,3,3,3)							
8.00	SPT	N=12 (2,2,3,3,3,3)							
9.50	SPT	N=14 (2,2,3,3,4,4)		Firm yellowish brown, grey and brown mottled slightly gravelly sandy CLAY. Gravel is sub angular fine to coarse of flint. (LANDFILL - MADE GROUND)	9.00	(7.80)	55.52		
					10	(2.00)			

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 11.06m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 9.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	15/11	0800	11.06	9.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP205

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Method: Cable Percussion	Date(s): 15/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501474.22, 278161.36	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 64.52m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrum- entation / Backfill
Depth (m)	Type	Results							
11.00	SPT	50/10mm (25,50)		Firm yellowish brown, grey and brown mottled slightly gravelly sandy CLAY. Gravel is sub angular fine to coarse of flint. (LANDFILL - MADE GROUND)	11.00		53.52		
				Stiff grey gravelly CLAY. Gravel is angular to sub angular fine to medium of mudstone. (KELLAWAYS CLAY MEMBER) LIMESTONE. (CORNBRAH LIMESTONE FORMATION) End of Borehole at 11.06m	11.06	(0.01)	53.46		
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 11.06m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 9.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
												Groundwater: No Groundwater seepages observed

Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP206

Page No. 1 of 2

Method: Cable Percussion	Date(s): 23/11/2021	Logged By: TB	Drilled By:
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501477.07, 278247.79	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 63.67m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Firm dark brown slightly gravelly sandy CLAY with occasional roots up to 2mm diameter. Gravel is angular to rounded fine to coarse of flint and chalk. Sand is fine to medium. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.37		
0.30	ES								
0.30 - 1.00	B			Stiff grey brown slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of chalk and flint. (LANDFILL - MADE GROUND)		(0.90)			
0.30 - 1.00	B								
0.60	ES								
1.20	SPT	N=12 (2,2,3,3,3,3)		Stiff dark brown and dark grey slightly gravelly sandy CLAY. Gravel is angular to rounded fine to coarse of chalk, flint and brick. (LANDFILL - MADE GROUND)	1.20		62.47		
1.20 - 1.65	D								
1.20 - 2.00	B								
1.60	ES								
2.00	SPT	N=8 (1,2,2,2,2,2)			2.00				
2.00	ES								
2.00 - 2.45	D								
2.00 - 3.00	B								
2.00 - 3.00	B					(2.80)			
2.60	ES								
3.00	SPT	N=12 (1,2,3,3,3,3)			3.00				
3.00	ES								
3.00 - 3.45	D								
3.00 - 4.00	B								
3.00 - 4.00	B								
3.60	ES								
4.00	SPT	N=17 (1,2,3,3,4,7)		Stiff grey brown and dark grey slightly gravelly sandy CLAY. Gravel is angular to rounded fine to coarse of chalk, flint and brick. Sand is fine to medium. (LANDFILL - MADE GROUND)	4.00		59.67		
4.00	ES								
4.00 - 4.45	D								
4.00 - 5.00	B								
4.00 - 5.00	B								
4.60	ES								
5.00	SPT	N=9 (1,2,2,2,2,3)			5.00				
5.00	ES								
5.00 - 5.45	D								
5.50	ES								
5.50 - 6.50	B								
5.50 - 6.50	B								
5.60	ES								
6.50	SPT	N=8 (1,2,2,2,2,2)			6.50				
6.50 - 6.95	D								
6.60	ES								
7.00	ES								
7.00 - 8.00	B								
7.00 - 8.00	B								
7.60	ES								
8.00	SPT	N=8 (1,1,2,2,2,2)			8.00				
8.00 - 8.45	D								
8.50 - 9.50	B								
8.60	ES								
9.50	SPT	N=13 (1,1,2,3,4,4)			9.50				
9.50	ES								
9.50 - 10.50	B								
9.50 - 10.50	B								
					10				
					10.00		53.67		

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 10.60m, borehole terminated. 3. Gas and groundwater monitoring well installed, 4. Response zone from 1.00m to 10.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	23/11	0000	10.60	9.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CP206**  
Page No. 2 of 2

Method: Cable Percussion	Date(s): 23/11/2021	Logged By: TB	Drilled By:
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501477.07, 278247.79	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 63.67m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
9.50 - 9.95 9.60	D ES			Very stiff grey CLAY. (KELLAWAYS CLAY MEMBER)		(0.50)			
10.60	SPT	50/5mm (25,50)		LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) <small>End of Borehole at 10.60m</small>	10.50 10.60	(0.10)	53.17 53.07		
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 10.60m, borehole terminated. 3. Gas and groundwater monitoring well installed, 4. Response zone from 1.00m to 10.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
												Groundwater: No Groundwater seepages observed <small>Logged in general accordance with BS5930:2015</small>



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP207

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Method: Cable Percussion	Date(s): 19/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501457.14, 278387.20	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 62.50m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30 - 1.00	B			Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to sub angular fine to coarse of limestone and flint (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.20		
1.00	ES			Firm brown gravelly CLAY. Gravel is angular to sub rounded fine to coarse of flint, bricks and limestone. (LANDFILL - MADE GROUND)	1.20	(0.90)	61.30		
1.20	SPT	N=5 (1,1,1,1,1,2)		Firm to stiff grey and brown mottled gravelly CLAY. Gravel is angular to rounded fine to coarse of flint, bricks and chalk (LANDFILL - MADE GROUND)	1.20	(0.80)	61.30		
1.20 - 1.65	D								
1.20 - 2.00	B								
2.00	SPT	N=11 (1,1,2,3,3,3)		Soft to firm blackish grey, grey and brown mottled slightly sandy gravelly CLAY with occasional rootlets and partially decomposed organic material. Gravel is angular to sub angular fine to coarse of sandstone, chalk, limestone and bricks (LANDFILL - MADE GROUND)	2.00	(6.00)	60.50		
2.00	ES								
2.00 - 2.45	D								
2.00 - 3.00	B								
2.00 - 3.00	B								
3.00	SPT	N=8 (2,2,2,2,2,2)							
3.00	ES								
3.00 - 3.45	D								
3.00 - 4.00	B								
3.00 - 4.00	B								
4.00	SPT	N=8 (2,2,2,2,2,2)							
4.00	ES								
4.00 - 4.45	D								
4.00 - 5.00	B								
5.00	SPT	N=10 (1,1,2,2,3,3)							
5.00	ES								
5.00 - 5.45	D								
5.00 - 6.00	B								
6.50	SPT	N=11 (1,1,2,2,3,4)							
6.50	ES								
6.50 - 6.95	D								
6.50 - 7.50	B								
6.50 - 7.50	B								
8.00	SPT	N=13 (2,2,2,3,4,4)		Firm to stiff brown mottled grey slightly sandy gravelly CLAY. Gravel is sub angular to rounded fine to coarse of chalk, flint and limestone. (LANDFILL - MADE GROUND)	8.00	(1.00)	54.50		
8.00	ES								
8.00 - 8.45	D								
8.00 - 9.00	B								
8.00 - 9.00	B								
9.00	SPT	50/50mm (25,50)		Weak grey LIMESTONE. Recovered in (angular) coarse gravel sized fragments. (CORNBURASH LIMESTONE FORMATION)	9.00	(0.40)	53.50		
9.40	SPT				9.40		53.10		
9.40	D			End of Borehole at 9.40m					

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 9.40m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 8.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	19/11	0800	9.40	8.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP208

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Method: Cable Percussion	Date(s): 18/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501511.81, 278441.64	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 62.00m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30 0.30 - 1.00	ES B			Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to sub angular fine to coarse of limestone and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	61.70		
1.00 1.20 1.20 - 1.65 1.20 - 2.00	ES SPT D B	N=6 (1,1,1,1,2,2)		Firm brown gravelly CLAY. Gravel is angular to sub rounded fine to coarse of flint and limestone. (LANDFILL - MADE GROUND)	1.00	(0.70)	61.00		
2.00 2.00 2.00 - 2.45 2.00 - 3.00	SPT ES D B	N=8 (1,1,1,2,2,3)		Firm to stiff grey and brown mottled gravelly CLAY. Gravel is angular to rounded fine to coarse of flint and chalk (LANDFILL - MADE GROUND)	2.00	(2.00)			
3.00 3.00 3.00 - 3.45 3.00 - 4.00	SPT ES D B	N=11 (3,5,5,2,2,2)		Soft to firm blackish grey, grey and brown mottled slightly sandy gravelly CLAY with occasional rootlets and partially decomposed organic material. Gravel is angular to sub angular fine to coarse of sandstone, chalk, limestone (LANDFILL - MADE GROUND)	3.00		59.00		
4.00 4.00 4.00 - 4.45 4.00 - 5.00	SPT ES D B	N=9 (1,1,2,2,2,3)		Firm blackish grey mottled grey slightly sandy gravelly CLAY with low cobble content. Gravel is sub angular to sub rounded fine to coarse of chalk, flint bricks and limestone. Cobbles are angular of limestone. (LANDFILL - MADE GROUND)	4.00	(2.00)			
5.00 5.00 5.00 - 5.45 5.00 - 6.00	SPT ES D B	N=9 (1,2,2,3,2,2)		Firm orange brown slightly sandy clay. (KELLAWAYS SAND MEMBER)	5.00		57.00		
6.50 6.50 - 6.95 7.00 - 8.00	SPT D B	N=25 (14,7,9,7,7,2)		Firm grey CLAY. (KELLAWAYS CLAY MEMBER)	6.80	(1.80)	55.20		
8.00 8.00 - 8.45 8.00 - 9.00	SPT D B	N=19 (5,5,4,5,5,5)		LIMESTONE (CORNBRASH LIMESTONE FORMATION)	8.00	(0.85)	54.00		
9.00	SPT	50/50mm (13,12,50)		End of Borehole at 9.00m	9.00	(0.15)	53.00		

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 9.00m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 9.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	18/11	0800	9.00	6.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CP209**  
Page No. 1 of 1

Method: Cable Percussion	Date(s): 17/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501393.06, 278402.11	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 62.96m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30 0.30 - 1.00	ES B			Firm brown gravelly CLAY with occasional rootlets (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.66		
				Firm brown slightly sandy gravelly CLAY. Gravel is angular to sub rounded fine to coarse of chalk, brick, limestone and flint. (LANDFILL - MADE GROUND)		(0.70)			
1.00 1.20	ES SPT	N=13 (2,2,3,3,3,4)		Firm grey gravelly CLAY. Gravel is sub angular fine to medium of chalk. (GLACIAL TILL)	1.00		61.96		
1.20 - 1.65 1.20 - 2.00 1.20 - 4.00	D B B								
2.00	SPT	N=10 (1,1,2,2,3,3)			2	(2.00)			
2.00 2.00 - 2.45 2.00 - 3.00	ES D B								
3.00	SPT	N=19 (2,2,3,4,6,6)		Firm to stiff grey gravelly CLAY with rare medium sized selenite crystals and occasional shell fossils. Gravel is angular to sub rounded fine to coarse of flint (GLACIAL TILL)	3		59.96		
3.00 3.00 - 3.45 3.00 - 4.00	ES D B					(1.00)			
4.00	SPT	N=48 (6,8,9,11,12,16)		Dense orangish brown gravelly fine to coarse SAND. Gravel is sub angular to rounded fine to coarse of flint. (GLACIOFLUVIAL DEPOSITS)	4		58.96		
4.00 4.00 - 4.45 4.00 - 4.45 4.00 - 5.00 4.00 - 8.00	ES D D B B								
5.00	SPT	N=42 (7,8,9,11,10,12)			5	(2.00)			
5.00 5.00 - 6.00	ES B								
6.50	SPT	N=32 (1,3,5,7,9,11)		Dense brown very gravelly medium to coarse SAND. Gravel is angular to sub angular fine to coarse of limestone and flint (GLACIOFLUVIAL DEPOSITS)	6		56.96		
7.00 - 8.00	B				7	(2.00)			
8.00	SPT	54/275mm (5,9,11,12,14,17)		LIMESTONE (CORNBRAsh LIMESTONE FORMATION)	8		54.96		
8.00 8.00 8.00	D D ES			End of Borehole at 8.28m	8.28	(0.28)	54.68		
					9				
					10				

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 8.275m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 4.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	17/11	0800	9.10	4.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Method: Cable Percussion	Date(s): 18/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501486.70, 278496.13	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 62.59m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to sub angular fine to coarse of limestone and flint (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.29		
0.30 - 1.00	B				Firm brown gravelly CLAY. Gravel is angular to sub rounded fine to coarse of flint and limestone. (LANDFILL - MADE GROUND)				
1.20	SPT	N=7 (1,1,1,1,2,3)				(1.70)			
1.20	ES								
1.20 - 1.65	D								
1.20 - 2.00	B								
2.00	SPT	N=22 (2,4,5,6,7,4)		Firm to stiff grey mottled brown gravelly CLAY. Gravel is angular to rounded fine to coarse of flint and chalk. (LANDFILL - MADE GROUND)	2.00		60.59		
2.00	ES								
2.00 - 2.45	D								
2.00 - 3.00	B								
3.00	SPT	N=7 (1,1,1,2,2,2)				(2.00)			
3.00	ES								
3.00 - 3.45	D								
3.00 - 4.00	B								
4.00	SPT	N=12 (1,2,3,3,3,3)		Firm grey mottled light brown gravelly CLAY with occasional rootlets and rare bands of blackish grey organic clay. Gravel is sub angular to rounded fine to coarse of chalk and flint. (LANDFILL - MADE GROUND)	4.00		58.59		
4.00	ES								
4.00 - 4.45	D								
4.00 - 5.00	B								
5.00	SPT	N=10 (1,1,2,2,3,3)				(2.00)			
5.00 - 5.45	D								
5.50	ES								
5.50 - 6.50	B								
6.50	SPT	N=13 (2,2,3,3,3,4)		Firm to stiff brown mottled grey gravelly CLAY with rare rootlets. Gravel is sub angular to rounded fine to coarse of chalk, flint and limestone. (LANDFILL - MADE GROUND)	6.00		56.59		
6.50 - 6.95	D								
7.00	ES								
7.00 - 8.00	B								
8.00	SPT	N=18 (4,4,4,5,5,4)		Medium dense brown sandy GRAVEL. Sand is coarse. Gravel is sub angular to sub rounded fine to coarse of limestone and flint. (GLACIOFLUVIAL DEPOSITS)	8.00		54.59		
8.00	ES								
8.00 - 8.45	D								
8.00 - 9.00	B								
9.00	SPT	50/95mm (8,11,28,22)		LIMESTONE (CORNBRAsh LIMESTONE FORMATION) End of Borehole at 9.10m	9.00		53.59		
9.00	ES				9.10	(0.10)	53.50		

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 9.10m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 8.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	18/11	0800	9.10	9.10	7		N/A				

Groundwater: No Groundwater seepages observed  
 Logged in general accordance with BS5930:2015

Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501514.00, 278689.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 64.20m OD	Plant: Hand tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Firm to stiff, brown slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-rounded flint, brick and chalk with occasional shell fragments. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	63.90	
				Firm to stiff light brown and light grey gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded chalk, flint, quartz and siltstone. (GLACIAL TILL)	0.70	(0.40)	63.50	
				----- Base of Excavation at 0.70m				
					1			
					2			

General Remarks:  
1) Hand pit completed at 0.70m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP102

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Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: MA	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501726.00, 278661.00	Stability: Stable	Dimensions: 0.30m Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 56.50m OD	Plant: Hand tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Stiff brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint sandstone and limestone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	56.20	
0.50	D			Firm yellowish brown and grey mottled slightly sandy CLAY. (KELLAWAYS SAND MEMBER)		(0.70)		
0.80	D							
----- Base of Excavation at 1.00m -----					1.00		55.50	
2								

General Remarks:  
1) Hand pit completed at 1.00m bgl. 2) Hand pit backfilled upon completion.





Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP104

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Method: Hand-dug Pit	Date(s): 15/07/2021	Logged By: MA	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501896.00, 278568.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 51.00m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Firm brown slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse sub-angular to sub-rounded quartz, flint, limestone and brick. (AGRICULTURALLY DISTURBED TOPSOIL)		(0.22)	50.78	
0.22	D			Soft orangish brown sandy slightly gravelly CLAY with occasional roots and rootlets. Gravel is fine to coarse angular to sub-rounded brick, ceramic, jet, flint and limestone. (MADE GROUND)  ... Between 0.42m and 0.49m bgl: Sand lense.	0.22	(0.27)	50.78	
				Dark grey non-intact LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) Base of Excavation at 0.51m	0.49 0.51	(0.02)	50.51 50.49	

General Remarks:  
1) Hand pit completed at 0.51m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 15/07/2021	Logged By: MA	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502091.00, 278622.00	Stability: Stable	Dimensions: 0.30m <input type="text"/>	Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 46.50m OD	Plant: Hand tools		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	D			Firm brown gravelly CLAY with occasional rootlets. Gravel is fine to coarse angular to sub-angular brick, limestone, jet and ironstone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.34	(0.34)	46.16	
0.00	ES							
				Dark yellowish grey non-intact LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	0.46	(0.12)	46.04	
				----- Base of Excavation at 0.46m				
1								
2								

General Remarks:  
1) Hand pit completed at 0.46m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 15/07/2021	Logged By: MA	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502130.00, 278708.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 46.50m OD	Plant: Hand tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	D			Soft to firm brown slightly gravelly CLAY with occasional petrified wood and rootlets. Gravel is fine to coarse sub-angular limestone and brick. (AGRICULTURALLY DISTURBED TOPSOIL)	0.28	(0.28)	46.22	
0.00	ES							
0.28	ES			Soft to firm orangish brown sandy CLAY with fine to coarse sub-angular limestone lithorelicts. (BLISWORTH LIMESTONE FORMATION)	0.71	(0.43)	45.79	
				Dark brown non-intact LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	0.72	(0.01)	45.76	
				Base of Excavation at 0.72m				

General Remarks:  
1) Hand pit completed at 0.72m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: MA	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502115.00, 278495.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 46.00m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Stiff brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone sandstone with frequent cobbles of sub-rounded limestone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.20	(0.20)	45.80	
0.50	D			Stiff yellowish brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone sandstone and flint. (HEAD DEPOSITS)	0.60	(0.40)	45.40	
0.65	D			Stiff yellowish brown mottled light grey slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone. (HEAD DEPOSITS)	0.70	(0.10)	45.30	
				----- Base of Excavation at 0.70m				
1								
2								

General Remarks:  
1) Hand pit completed at 0.70m bgl. 2) Hand pit backfilled upon completion.





Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP109

Page No. 1 of 1

Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: MA	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502182.00, 278202.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 49.10m OD	Plant: Hand tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Stiff brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone sandstone with frequent cobbles of sub-rounded limestone lithorelicts. (AGRICULTURALLY DISTURBED TOPSOIL)	0.20	(0.20)	48.90	
0.40	D			Stiff friable orangish brown slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse limestone with frequent cobbles of sub-angular limestone. (CORNBASH LIMESTONE FORMATION)	0.60	(0.40)	48.50	
				... From 0.55m bgl: Becoming yellowish brown and very friable.				
				Base of Excavation at 0.60m				
1								
2								

General Remarks:  
1) Hand pit completed at 0.60m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 12/07/2021	Logged By: MA	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502196.00, 278109.00	Stability: Stable	Dimensions: 0.30m x 0.30m
Hydrock Project No: C-18443-C	Ground Level: 47.35m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to medium sub-angular flint. (TOPSOIL - MADE GROUND)  ... At 0.10m bgl: Becoming light brown.		(0.43)	46.92	
0.43	ES			Soft orangish brown sandy CLAY. (HEAD DEPOSITS)		(0.57)	46.35	
----- Base of Excavation at 1.00m -----					1.00		46.35	
2								

General Remarks:  
1) Hand pit completed at 1.00m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 12/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502117.76, 278107.68	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 47.39m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse angular to sub-angular flint and brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	47.09	
				Soft light grey and in parts light brown slightly gravelly CLAY. Gravel is fine to medium sub-angular chert. (BLISWORTH CLAY FORMATION)	0.93	(0.63)	46.46	
Base of Excavation at 0.93m					1			
					2			

General Remarks:  
1) Hand pit completed at 0.93m bgl. 2) Hand pit backfilled upon completion.





Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
**HP112A**  
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Method: Hand-dug Pit	Date(s): 12/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502124.00, 278114.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 47.26m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse angular to sub-rounded brick, limestone, flint and quartz. (TOPSOIL - MADE GROUND)	0.16	(0.16)	47.10	
				Soft brown slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse sub-angular to sub-rounded limestone and flint. (HEAD DEPOSITS)	0.42	(0.26)	46.84	
				Soft light grey and in parts light brown slightly gravelly CLAY. Gravel is fine to medium sub-angular chert. (BLISWORTH CLAY FORMATION)	0.80	(0.38)	46.46	
----- Base of Excavation at 0.80m -----								
					1			
					2			

General Remarks:  
1) Hand pit completed at 0.80m bgl. 2) Hand pit backfilled upon completion.



Method: Hand-dug Pit	Date(s): 12/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502110.00, 278111.81	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 47.57m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets and occasional roots. Gravel is fine to coarse sub-angular brick, plastic, limestone, flint and jet. (TOPSOIL - MADE GROUND)		(0.54)	47.03	
				Firm orangish brown sandy slightly gravelly CLAY. Gravel is fine to medium sub-angular to sub-rounded limestone, quartz and flint. (HEAD DEPOSITS)	0.54	(0.26)	46.77	
0.80	ES			Soft to firm light grey and in parts light brown slightly gravelly CLAY with occasional purple rootlets. Gravel is fine to medium sub-angular chert. (BLISWORTH CLAY FORMATION)	0.80	(0.11)	46.66	
----- Base of Excavation at 0.91m -----					0.91			
					1			
					2			

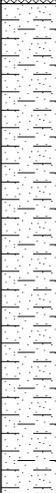
General Remarks:  
1) Hand pit completed at 0.91m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 12/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502098.01, 278084.93	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 47.50m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse angular to sub-rounded brick, flint, ash, jet. (TOPSOIL - MADE GROUND)		(0.33)	47.17	
				Firm orangish brown sandy slightly gravelly CLAY with frequent rootlets, occasional pockets of dark brown topsoil. Gravel is fine to coarse sub-angular limestone and jet. (MADE GROUND)		(0.52)		
				... From 0.75m bgl: Becoming gravelly with occasional roots.				
				Firm greenish grey slightly gravelly CLAY with occasional purple relict rootlets. Gravel is fine to coarse sub-angular limestone and siltstone. (HEAD DEPOSITS)		(0.12)	46.65	
				Base of Excavation at 0.97m			46.53	
					1			
					2			

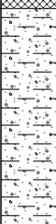
General Remarks:  
1) Hand pit completed at 0.97m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 12/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502080.39, 278087.62	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 48.25m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse angular to sub-rounded brick, sandstone, flint and jet. (TOPSOIL - MADE GROUND)		(0.37)		
0.37	ES			Soft orangish brown sandy CLAY. (HEAD DEPOSITS)	0.37		47.88	
				Soft orange brown sandy slightly gravelly CLAY. Gravel is fine to medium sub-angular to sub-rounded flint and chalk. (HEAD DEPOSITS)	1.03	(0.12)	47.22	
				Base of Excavation at 1.15m	1.15		47.10	
					2			

General Remarks:  
1) Hand pit completed at 1.15m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 12/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502056.70, 278077.61	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 48.49m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets, occasional roots, occasional petrified wood and rare plastic. Gravel is fine to coarse angular to sub-rounded flint, brick, limestone, quartz. (TOPSOIL - MADE GROUND)		(0.57)	47.92	
				Soft orangish brown sandy slightly gravelly CLAY with occasional roots and rootlets. Gravel is fine to medium sub-angular to sub-rounded chalk and flint. (HEAD DEPOSITS)	0.57	(0.29)	47.63	
				Light orangish brown clayey slightly gravelly SAND with occasional rootlets. Gravel is fine to coarse sub-angular to sub-rounded limestone, flint and chalk. (HEAD DEPOSITS)	0.86	(0.35)	47.28	
----- Base of Excavation at 1.21m -----					1.21			

General Remarks:  
1) Hand pit completed at 1.21m bgl. 2) Hand pit backfilled upon completion.



Method: Hand-dug Pit	Date(s): 13/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502077.00, 278051.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 48.70m OD	Plant: Hand tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.16	ES			CONCRETE. (MADE GROUND)	0.20	(0.20)	48.50	
0.30 0.30	D ES			CONCRETE onto very soft greenish brown gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded brick and ceramic. (MADE GROUND)  ... Between 0.30m and 0.70m bgl: Cobbles of concrete.	0.36	(0.16)	48.34	
				Soft mottled greenish brown, orangish brown and dark grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint, concrete, ash. (MADE GROUND)	0.50	(0.14)	48.20	
				Soft mottled greenish brown, orangish brown and dark grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint, concrete, ash. (MADE GROUND)	0.70	(0.20)	48.00	
				----- Base of Excavation at 0.70m				
1								
2								

General Remarks:  
1) Hand pit completed at 0.70m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP119

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Method: Hand-dug Pit	Date(s): 13/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502079.00, 278023.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 48.70m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Light brown clayey GRAVEL. Gravel is fine to coarse angular to sub-rounded limestone, brick. (MADE GROUND)  ... At 0.10m bgl: Cobble of limestone.  ... At 0.20m bgl: Becoming dark brown.		(0.49)	48.21	
0.49 0.49	D ES		▼	Soft light brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium sub-angular flint. (HEAD DEPOSITS)		(0.51)	47.70	
----- Base of Excavation at 1.00m -----					1.00		47.70	
2								

General Remarks:  
1) Hand pit completed at 1.00m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP120

Page No. 1 of 1

Method: Hand-dug Pit	Date(s): 13/07/2021	Logged By: JM	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502197.00, 278000.00	Stability: Stable	Dimensions: 0.30m <input type="text"/>	Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 49.20m OD	Plant: Hand tools		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
				Soft dark brown CLAY with frequent roots and rootlets. (AGRICULTURALLY DISTURBED TOPSOIL)	0.05	(0.05)	49.15		
				Firm light brown slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse sub-angular limestone and flint. (HEAD DEPOSITS)		(0.55)			
				Light yellowish brown non-intact LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	0.60 0.61	(0.01)	48.60 48.69		
				Base of Excavation at 0.61m					

General Remarks:  
1) Hand pit completed at 0.61m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502099.00, 277960.00	Stability: Stable	Dimensions: 0.30m x 0.30m
Hydrock Project No: C-18443-C	Ground Level: 50.20m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Stiff brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone sandstone and flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	49.90	
0.60	ES			Stiff brown gravelly CLAY. Gravel is angular to sub-rounded fine to coarse chalk flint sandstone limestone concrete coal and brick. (MADE GROUND)		(0.60)		
0.80	D							
0.85	D							
Base of Excavation at 0.90m					0.90		49.30	
					1			
					2			

General Remarks:  
1) Hand pit completed at 0.90m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP122

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Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: JM	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502039.00, 277848.00	Stability: Stable	Dimensions: 0.30m <input type="text"/>	Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 52.40m OD	Plant: Hand tools		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Stiff brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone sandstone with rare brick. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	52.00	
0.60 0.65	D D			Stiff dark brown mottled reddish brown slightly gravelly CLAY. Gravel is sub-rounded to rounded fine flint chalk and mixed lithologies. (MADE GROUND)	1.00	(0.60)	51.40	
----- Base of Excavation at 1.00m -----								
2								

General Remarks:  
1) Hand pit completed at 1.00m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
**HP123**

Page No. 1 of 1

Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501980.00, 277960.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 51.10m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Firm brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone sandstone with rare brick. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	50.80	
0.50	ES			Firm brown slightly sandy slightly gravelly CLAY with rare dark brown fibrous peaty patches. Gravel is angular to sub-rounded fine to coarse flint limestone sandstone chalk slate and rare brick. (MADE GROUND)		(0.70)		
0.80	D							
----- Base of Excavation at 1.00m -----					1.00		50.10	
2								

General Remarks:  
1) Hand pit completed at 1.00m bgl. 2) Hand pit backfilled upon completion.



Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501936.00, 277874.00	Stability: Stable	Dimensions: 0.30m x 0.30m
Hydrock Project No: C-18443-C	Ground Level: 52.30m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone sandstone with rare brick. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	51.90	[Diagonal Hatching]
0.50	ES			Firm greyish brown gravelly CLAY. Gravel is angular to sub-rounded fine to coarse brick sandstone limestone chalk and bituminous materials with rare plastics. (MADE GROUND)	0.55	(0.15)	51.75	[Cross-hatching]
0.80	D			Firm dark grey mottled brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse sandstone limestone chalk with occasional brick. (MADE GROUND)	1.00	(0.45)	51.30	[Cross-hatching]
0.85	D							
----- Base of Excavation at 1.00m -----								

General Remarks:  
 1) Hand pit completed at 1.00m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP126

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Method: Hand-dug Pit	Date(s): 14/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501738.00, 278058.00	Stability: Stable	Dimensions: 0.30m x 0.30m
Hydrock Project No: C-18443-C	Ground Level: 58.50m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone sandstone and flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	58.20	
0.50	D			Orangish brown slightly gravelly clayey SAND. Gravel is sub-rounded fine to coarse sandstone and ironstone. Sand is fine to medium. (KELLAWAYS SAND MEMBER)	0.60	(0.30)	57.90	
0.80	D			Yellowish brown gravelly coarse SAND. Gravel is sub-angular to rounded fine and medium sandstone and limestone. (KELLAWAYS SAND MEMBER)	1.00	(0.40)	57.50	
----- Base of Excavation at 1.00m								

General Remarks:  
1) Hand pit completed at 1.00m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP127

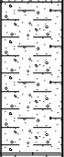
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Method: Hand-dug Pit	Date(s): 15/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501715.00, 278253.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 57.20m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Brown clayey slightly gravelly SAND with occasional rootlets. Gravel is fine to coarse sub-angular to rounded quartz, ironstone and limestone. (AGRICULTURALLY DISTURBED TOPSOIL)		(0.34)		
0.34 0.34	D ES			Firm to stiff orangish brown and in parts light grey sandy slightly gravelly CLAY with frequent rootlets. Gravel is coarse angular brick. (LANDFILL - MADE GROUND)  ... At 0.76m bgl: Cobble of brick.	0.34	(0.77)	56.86	
				Base of Excavation at 1.11m	1.11		56.09	
2								

General Remarks:  
1) Hand pit completed at 1.11m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 15/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501950.00, 278227.00	Stability: Stable	Dimensions: 0.30m x 0.30m
Hydrock Project No: C-18443-C	Ground Level: 49.50m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Firm brown slightly sandy slightly gravelly CLAY with occasional rootlets and petrified wood. Gravel is fine to coarse sub-angular to sub-rounded limestone and brick. (AGRICULTURALLY DISTURBED TOPSOIL)		(0.25)	49.25	
0.25 0.25	D ES			Stiff orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to rounded quartz, limestone and flint. (HEAD DEPOSITS)		(0.20)	49.05	
				Grey non-intact LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) Base of Excavation at 0.46m	0.45 0.46	(0.01)	49.04	

General Remarks:  
1) Hand pit completed at 0.46m bgl. 2) Hand pit backfilled upon completion.





Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP130

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Method: Hand-dug Pit	Date(s): 16/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501821.00, 278442.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 50.00m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft brown and in parts light brown slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse angular to sub-rounded flint, brick, limestone and jet. (AGRICULTURALLY DISTURBED TOPSOIL)		(0.49)	49.51	
0.49 0.49 0.50	D ES D			Firm to stiff light orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium sub-angular ironstone and flint. (MADE GROUND)		(0.45)	49.06	
				Base of Excavation at 0.95m				
					1			
					2			

General Remarks:  
1) Hand pit completed at 0.95m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 16/07/2021	Logged By: JM	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501939.00, 278452.00	Stability: Stable	Dimensions: 0.30m <input type="text"/>	Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 48.70m OD	Plant: Hand tools		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 0.00	D ES			Firm brown and in parts light grey slightly sandy slightly gravelly CLAY with occasional rootlets and pockets of soft grey clay. Gravel is fine to coarse sub-angular to sub-rounded ironstone, flint, limestone and brick. (AGRICULTURALLY DISTURBED TOPSOIL)	0.34	(0.34)	48.36	
				Orangish brown slightly clayey slightly gravelly SAND. Gravel is fine to coarse sub-angular to sub-rounded flint, chalk and limestone. (MADE GROUND)	0.72	(0.38)	47.98	
0.72 0.73	D D			Firm light greenish blueish grey slightly gravelly CLAY. Gravel is fine to medium sub-angular chert and ironstone. (MADE GROUND)	0.85	(0.13)	47.85	
				Grey non-intact LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	0.86	(0.01)	47.84	
				Base of Excavation at 0.86m				

General Remarks:  
1) Hand pit completed at 0.86m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 16/07/2021	Logged By: JM	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501907.00, 278484.00	Stability: Stable	Dimensions: 0.30m <input type="text"/>	Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 47.70m OD	Plant: Hand tools		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular jet, flint and limestone. (AGRICULTURALLY DISTURBED TOPSOIL)		(0.26)	47.44	
0.26 0.26	D ES			Stiff light brown and in parts light grey slightly sandy CLAY with occasional fine to coarse limestone lithorelicts. (BLISWORTH CLAY FORMATION)	0.26	(0.20)	47.44	
				Grey non-intact LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	0.46 0.47	(0.01)	47.24 47.23	
				Base of Excavation at 0.47m				

General Remarks:  
1) Hand pit completed at 0.47m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
HP134

Page No. 1 of 1

Method: Hand-dug Pit	Date(s): 15/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501980.00, 278469.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 47.10m OD	Plant: Hand tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Firm brown and in places light grey slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse angular to sub-angular brick, limestone, jet and ironstone. (AGRICULTURALLY DISTURBED TOPSOIL)		(0.33)	46.77	
0.33	D			Firm greenish orangish brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular chert and flint. (MADE GROUND)	0.33	(0.45)	46.32	
0.78	ES			Firm orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular flint. (MADE GROUND)	0.78	(0.16)	46.16	
				Grey non-intact LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	0.94	(0.01)	46.15	
				Base of Excavation at 0.95m	0.95			

General Remarks:  
 1) Hand pit completed at 0.95m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 12/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502149.00, 278048.00	Stability: Stable	Dimensions: 0.30m x 0.30m
Hydrock Project No: C-18443-C	Ground Level: 48.60m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Dark brown gravelly SAND with frequent rootlets and occasional roots. Gravel is fine to medium sub-angular limestone. (TOPSOIL - MADE GROUND)	0.10	(0.10)	48.50	
				Brown slightly clayey gravelly SAND. Gravel is fine to coarse sub-angular limestone and brick. (MADE GROUND) ... At 0.10m bgl: Rubber tube. ... At 0.20m bgl: Becoming light brown.		(0.43)		
				Light brown non-intact LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) Base of Excavation at 0.53m	0.53	(0.01)	48.07	

General Remarks:  
1) Hand pit completed at 0.53m bgl. 2) Hand pit backfilled upon completion.

Method: Hand-dug Pit	Date(s): 13/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502216.00, 278029.00	Stability: Stable	Dimensions: <input type="text" value="0.30m"/> Scale: 1:10
Hydrock Project No: C-18443-C	Ground Level: 48.70m OD	Plant: Hand tools	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.17 0.17	D ES			CONCRETE. (MADE GROUND)	0.17	(0.17)	48.53	
				CONCRETE onto soft reddish brown very gravelly CLAY. Gravel is fine to coarse sub-angular asphalt and limestone. (MADE GROUND)	0.30	(0.13)	48.40	
				Soft light brown very gravelly CLAY. Gravel is fine to coarse sub-angular limestone, brick and asphalt. (MADE GROUND)	0.47	(0.17)	48.23	
				... Below 0.44m bgl: No asphalt present.				
				Base of Excavation at 0.47m				

General Remarks:  
1) Hand pit completed at 0.47m bgl. 2) Hand pit backfilled upon completion.



Method: Hand-dug Pit	Date(s): 13/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502249.00, 278091.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 47.50m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets and occasional roots. Gravel is fine to medium sub-angular brick and flint. (TOPSOIL - MADE GROUND)	0.12	(0.12)	47.38	
0.12 0.12	D ES			Soft light orangish brown slightly gravelly CLAY with occasional roots, rootlets and petrified wood. Gravel is fine to coarse sub-angular brick, limestone. (MADE GROUND)		(0.53)		
				Firm light brown slightly silty slightly gravelly CLAY with occasional purple relict rootlets and roots. Gravel is fine to coarse limestone and flint. (HEAD DEPOSITS)	0.65	(0.21)	46.85	
				Base of Excavation at 0.86m	0.86		46.64	
					1			
					2			

General Remarks:  
1) Hand pit completed at 0.86m bgl. 2) Hand pit backfilled upon completion.



Method: Hand-dug Pit	Date(s): 13/07/2021	Logged By: JM	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502340.00, 278269.00	Stability: Stable	Dimensions: 0.30m <input type="text"/> 0.30m
Hydrock Project No: C-18443-C	Ground Level: 49.26m OD	Plant: Hand tools	Scale: 1:10

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.14	ES			CONCRETE. (MADE GROUND)	0.14	(0.14)	49.12	
				CONCRETE onto reddish greyish brown gravelly SAND. Gravel is angular to sub-angular limestone, asphalt. (MADE GROUND)	0.28	(0.14)	48.98	
				Light brown non-intact LIMESTONE. Recovered as orange brown slightly clayey GRAVEL. (CORNBASH LIMESTONE FORMATION)	0.51	(0.23)	48.75	
				Light brown non-intact LIMESTONE. (CORNBASH LIMESTONE FORMATION)	0.62	(0.01)	48.74	
				Base of Excavation at 0.51m				

General Remarks:  
 1) Hand pit completed at 0.51m bgl. 2) Hand pit backfilled upon completion.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
PLT/TP311

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Method: Trial Pit	Date(s): 08/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501863.18, 278616.93	Stability: No collapse	Dimensions: 2.81m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 52.31m OD	Plant: 14T Tracked Excavator	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	51.91	
0.50	D			Soft light brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	0.90	(0.50)	51.41	
0.95 - 1.05 0.95 - 1.05	B B			Stiff very closely fissured brown and grey brown slightly gravelly CLAY. Gravel is angular to rounded of limestone and flint. Sand is fine to medium. (HEAD DEPOSITS)	1.10	(0.20)	51.21	
1.30 - 1.60	B			Light brown slightly clayey SAND & GRAVEL. Gravel is angular fine to coarse of limestone. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	1.65	(0.55)	50.66	
				LIMESTONE. (CORNBASH LIMESTONE FORMATION)	1.70	(0.05)	50.61	
				Base of Excavation at 1.70m	2			
					3			
					4			
					5			

General Remarks:  
1) Pit terminated at 1.70m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 08/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501999.17, 278560.12	Stability: No collapse	Dimensions: 2.80m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 49.24m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	48.74	
0.60 0.60	ES HSV	57kPa		Firm brown and grey brown CLAY. (BLISWORTH CLAY FORMATION)	1.50	(1.00)	47.74	
1.60 1.60	D HSV	93kPa		Stiff grey and orange brown slightly sandy CLAY. (BLISWORTH CLAY FORMATION)	2.20	(0.70)	47.04	
2.30	D			Stiff very closely fissured grey silty CLAY. (BLISWORTH CLAY FORMATION)	2.50	(0.30)	46.74	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION) Base of Excavation at 2.55m	2.55	(0.05)	46.69	

General Remarks:  
1) Pit terminated at 2.55m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
PLT/TP313

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Method: Trial Pit	Date(s): 10/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502266.72, 278417.90	Stability: No collapse	Dimensions: 2.79m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 49.76m OD	Plant: 14T Tracked Excavator	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.35	(0.35)	49.41	
0.50	D			Soft brown and light brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse of limestone. Sand is fine to medium. (CORNBASH LIMESTONE FORMATION)	0.65	(0.30)	49.11	
0.80 - 1.00	B			Light brown slightly clayey gravelly SAND. Gravel is angular fine to coarse limestone. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	1	(0.80)		
1.50 1.60	HSV D	44kPa		Firm blue grey and grey CLAY with rare silt sized selenite crystal (BLISWORTH CLAY FORMATION)	1.45		48.31	
2.50	D				2	(1.55)		
					3.00		46.76	
				Base of Excavation at 3.00m				
					4			
					5			

General Remarks:  
1) Pit completed at 3.00m. 2) Groundwater not encountered. 3) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
PLT/TP314

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Method: Trial Pit	Date(s): 07/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502128.18, 278345.98	Stability: No collapse	Dimensions: 2.78m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 48.95m OD	Plant: 14T Tracked Excavator	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)		(0.40)	48.55		
0.60	D			Soft brown slightly gravelly sandy CLAY. Gravel is angular to rounded fine to coarse of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)		(0.50)	48.05		
1.00	ES	67kPa		Firm brown, orange brown and light brown slightly sandy silty CLAY. Sand is fine. (CORNBURASH LIMESTONE FORMATION)	1	(0.20)	47.85		
1.00 - 1.10	B			Firm blue grey CLAY with occasional silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	1.10	(1.10)			
1.00 - 1.10	B								
1.20	D								
1.20	HSV								
2.30	D			Stiff very closely fissured grey silty CLAY. (BLISWORTH CLAY FORMATION)	2.20	(0.30)	46.75		
3.00	D			Stiff friable grey silty CLAY. (BLISWORTH CLAY FORMATION)	2.50	(0.50)	46.45		
				Base of Excavation at 3.00m	3.00		45.95		
					4				
					5				

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
PLT/TP315

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Method: Trial Pit	Date(s): 30/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502008.42, 278313.13	Stability: No collapse	Dimensions: 0.60m x 2.77m
Hydrock Project No: C-18443-C	Ground Level: 46.95m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	46.55	
0.50 0.50	D HSV	65kPa		Firm brown and green grey slightly gravelly CLAY. Gravel is angular to sub rounded flint and limestone. (HEAD DEPOSITS)	0.90	(0.50)	46.05	
0.90 - 1.20	B			Brown and light brown slightly gravelly clayey SAND. Gravel is angular to rounded fine to coarse of flint and limestone. Sand is fine to coarse. (HEAD DEPOSITS)	1.25	(0.35)	45.70	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	1.30	(0.05)	45.65	
				Base of Excavation at 1.30m				
2								
3								
4								
5								

General Remarks:  
1) Pit terminated at 1.30m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
PLT/TP316

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Method: Trial Pit	Date(s): 30/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501894.88, 278311.17	Stability: No collapse	Dimensions: 2.76m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 51.02m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	50.62	
0.50	ES			Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to sub rounded fine to medium of flint and limestone. Sand is fine. (HEAD DEPOSITS)	0.65	(0.25)	50.37	
0.70 - 1.20	B			Brown dark brown slightly clayey slightly sandy GRAVEL. Gravel is angular fine to coarse of limestone. Sand is fine to medium. (CORNBASH LIMESTONE FORMATION)	1.25	(0.60)	49.77	
1.30	D	95kPa		Stiff grey and orange brown slightly sandy CLAY. Sand is fine. (CORNBASH LIMESTONE FORMATION)	1.40	(0.15)	49.62	
1.30	D			LIMESTONE. (CORNBASH LIMESTONE FORMATION)	1.45	(0.05)	49.57	
1.30	HSV			Base of Excavation at 1.45m				
					2			
					3			
					4			
					5			

General Remarks:  
1) Pit terminated at 1.45m due to encountering limestone rock. 2) Groundwater not encountered. 3) Backfilled with arisings.

Groundwater: No groundwater encountere



Method: Trial Pit	Date(s): 10/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501764.67, 278203.66	Stability: No collapse	Dimensions: 2.75m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 56.31m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	55.91	
0.50	D			Soft orange brown sandy CLAY. Sand is fine to medium. (KELLAWAYS SAND MEMBER)	0.80	(0.40)	55.51	
1.00 1.00	D HSV	11kPa		Soft light grey and orange brown silty CLAY. (KELLAWAYS SAND MEMBER)	1.80	(1.00)	54.51	
2.00 - 2.20 2.00 - 2.20	B B			Light grey and orange brown slightly clayey SILT. (KELLAWAYS SAND MEMBER)	2.70	(0.90)	53.61	
2.80 2.80	D HSV	52kPa		Firm grey and orange brown CLAY. (KELLAWAYS CLAY MEMBER)	3.00	(0.30)	53.31	
				Base of Excavation at 3.00m	3.00		53.31	

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
PLT/TP319

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Method: Trial Pit	Date(s): 30/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501974.31, 278046.91	Stability: No collapse	Dimensions: 2.70m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 50.78m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	50.38	
0.50	D			Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint. Sand is fine to medium. (HEAD DEPOSITS)	0.60	(0.20)	50.18	
0.70 - 1.20	B			Soft brown slightly sandy gravelly CLAY. Gravel is angular to rounded fine to coarse of flint and limestone. (HEAD DEPOSITS)	1.80	(1.20)	48.98	
1.90 1.90	D HSV	73kPa		Firm to stiff grey and green grey mottled CLAY. (BLISWORTH CLAY FORMATION)	2.80	(1.00)	47.98	
2.90	D			Firm to stiff grey and orange brown slightly sandy CLAY. (BLISWORTH CLAY FORMATION)	3.10	(0.30)	47.68	
				Base of Excavation at 3.10m				

General Remarks:  
1) Pit completed at 3.10m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
PLT/TP320

Page No. 1 of 1

Method: Trial Pit	Date(s): 10/12/2021	Logged By: TB	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502290.10, 278222.66	Stability: No collapse	Dimensions: 0.60m x 2.80m	Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 48.73m OD	Plant: 14T Tracked Excavator		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	48.33	
0.50	ES			Soft light brown and brown slightly gravelly sandy CLAY with occasional roots less than 2mm. Gravel is angular fine to medium of limestone. Sand is fine to coarse (CORNBASH LIMESTONE FORMATION)	1.00	(0.60)	47.73	
1.10 - 1.30	B			Light brown and cream SAND & GRAVEL. Gravel is angular fine to coarse of limestone and flint. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	1.40	(0.40)	47.33	
1.50 1.50	D HSV	61kPa		Firm blue grey and orange brown CLAY. (BLISWORTH CLAY FORMATION)	2.40	(1.00)	46.33	
2.50 - 2.70 2.50 - 2.70	B B			Firm grey and orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.60)	45.73	
				Base of Excavation at 3.00m	3.00		45.73	
4								
5								

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Method: Dynamic Sampled & Rotary Cored	Date(s): 22/06/2021 - 24/06/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501256.75, 278263.43	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 66.69m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
	10.00	SPT	50/160mm (2,5,9,21,20)						Coarse SAND & GRAVEL (drillers description due to no recovery). (GLACIOFLUVIAL DEPOSITS)	11	(3.80)	54.59		
12.37 - 12.50				13	0	0			Stiff slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded sandstone. (KELLAWAYS CLAY MEMBER)	12.10 - 12.40	(0.30)	54.29		
12.50 - 13.50									Non intact medium strong light grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	12.80	(0.40)	53.89		
13.50 - 14.50				85	49	11			Strong to very strong light grey LIMESTONE. Fractures are closely to medium spaced, rough, moderately open to wide. (CORNBRAsh LIMESTONE FORMATION)	13	(0.80)			
14.50 - 16.00	14.90 - 15.20	C		100	100	100			Very stiff to hard blueish grey CLAY with abundant shell fragments. (CORNBRAsh LIMESTONE FORMATION)	13.60 - 13.95	(0.35)	52.74		
									Strong to very strong light grey LIMESTONE. Fractures are closely to medium spaced, rough, moderately open to wide. (CORNBRAsh LIMESTONE FORMATION)	14.20	(0.25)	52.49		
				100					Very stiff to hard blueish grey CLAY with abundant shell fragments. (BLISWORTH CLAY FORMATION)	15	(1.80)			
									End of Borehole at 16.00m	16.00		50.69		

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 3.00m bgl then rotary cored to 16.00m bgl. 3) Gas and groundwater monitoring pipe installed to 12.00m bgl. Response zone between 12.00m bgl and 14.50m bgl. 4) ER = 59%.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)



Method: Dynamic Sampled & Rotary Cored	Date(s): 24/06/2021 - 25/06/2021	Logged By: SP	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501549.66, 278135.91	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 63.21m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
1.20 - 3.00	1.50	SPT	N=13 (2,2,2,3,3,5)	100					Stiff light brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse bricks. (LANDFILL - MADE GROUND)	1.20		62.01		
									Soft dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse angular flint, brick, sandstone and concrete. (LANDFILL - MADE GROUND)	1.40	(0.20)	61.81		
3.00 - 5.00	4.50	SPT	N=0 (0,0,0,0,0,0)	88					Stiff light brown mottled brown and grey slightly gravelly slightly sandy CLAY. Gravel is fine to coarse angular to sub-rounded flint, chalk and brick. (LANDFILL - MADE GROUND)	2.40		60.81		
									Very soft brown sandy slightly gravelly CLAY with decomposing plant odour. Gravel is fine to medium angular flint. (LANDFILL - MADE GROUND) ... From 3.0m to 3.7m bgl: No recovery.	3.70	(1.30)	59.51		
5.00 - 7.00	6.00	SPT	N=0 (0,0,0,0,0,0)	86					Stiff light brown mottled dark brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse angular to sub-rounded flint, chalk and bricks. (LANDFILL - MADE GROUND)					
									... Becoming slightly sandy and firm from 5.0m bgl. ... From 5.00m to 7.00m: Becoming soft to firm.					
7.00 - 9.00	7.50	SPT	N=7 (1,2,1,2,2,2)	86					... At 6.00m bgl: becoming soft and sandy with angular to subrounded fine to coarse flint and brick.					
									... From 9.00m - 10.00m bgl: Becoming soft to firm.					
9.00 - 11.00	9.00	SPT	N=14 (3,6,4,3,4,3)						Very stiff dark grey CLAY with abundant sand sized shells. (LANDFILL - MADE GROUND)	9.60		53.61		

Continued on Next Sheet

Progress and Observations								
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	

General Remarks:  
 1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 3.00m bgl then rotary cored to 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 13.00m bgl. Response zone between 11.00m bgl and 13.00m bgl. 4) ER = 59%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.



Method: Dynamic Sampled & Rotary Cored	Date(s): 24/06/2021 - 25/06/2021	Logged By: SP	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501549.66, 278135.91	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 63.21m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
11.00 - 12.00	10.50	SPT	50/50mm (2,7,50)	73					Very stiff dark grey CLAY with abundant sand sized shells. (LANDFILL - MADE GROUND)		(1.60)		[Cross-hatched pattern]	[Black bar]
12.00 - 13.50				95	36	13			Strong grey LIMESTONE. Fractures are horizontal, planar with no infill. (CORNBRAsh LIMESTONE FORMATION)	11.50	(0.30)	51.71	[Horizontal lines]	[Black bar]
									Very to extremely stiff grey CLAY with abundant shells. (CORNBRAsh LIMESTONE FORMATION)	11.60	(0.10)	51.61	[Horizontal lines]	
									Strong grey LIMESTONE. Fractures are horizontal, planar with no infill. (CORNBRAsh LIMESTONE FORMATION)	11.92	(0.32)	51.29	[Horizontal lines]	
13.50 - 14.50	14.50	SPT	50/200mm (7,10,14,20,16)	94	87	37			Very to extremely stiff grey CLAY with abundant shells. (BLISWORTH CLAY FORMATION)	12.35	(0.43)	50.86	[Horizontal lines]	[Black bar]
									Very stiff dark green CLAY with medium gravel sized pyritic sandstone with shells. (BLISWORTH CLAY FORMATION)					
				100					... From 13.50m bgl: Dark grey and dark green.		(2.15)		[Horizontal lines]	
									End of Borehole at 14.50m	14.50		48.71	[Horizontal lines]	

Progress and Observations									General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 3.00m bgl then rotary cored to 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 13.00m bgl. Response zone between 11.00m bgl and 13.00m bgl. 4) ER = 59%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	





Method: Dynamic Sampled & Rotary Cored	Date(s): 28/06/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501630.83, 278407.65	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 56.57m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.20	ES								Soft dark brown slightly sandy CLAY with occasional rootlets . (TOPSOIL - MADE GROUND)	0.45	(0.45)	56.12		
0.40 - 1.20	ES B								Fine and medium reddish brown gravelly SAND. Gravel is sub-angular fine of sandstone. (GLACIOFLUVIAL DEPOSITS)	1.20	(1.35)			
1.20 - 1.80	SPT B	N=8 (1,2,2,2,2,2)							Fine and medium yellowish brown clayey sandy GRAVEL. Gravel is sub-angular to angular of limestone. (GLACIOFLUVIAL DEPOSITS)	1.80	(0.40)	54.77		
1.80 - 2.20	B								Firm brown slightly gravelly sandy CLAY. Gravel is sub-angular fine and medium sandstone. (GLACIOFLUVIAL DEPOSITS)	2.20	(0.20)	54.37		
2.20 - 2.80	SPT B	N=9 (1,1,2,2,2,3)							Greyish brown sandy angular to sub-angular fine and medium GRAVEL of flint sandstone and ironstone. (GLACIOFLUVIAL DEPOSITS)	2.80	(0.40)	53.77		
2.80 - 3.50	B								Firm light grey mottled orange CLAY. (KELLAWAYS CLAY MEMBER)	3.50	(0.70)	53.07		
3.50 - 4.50	SPT	50/150mm (1,3,15,35)							Very weak grey LIMESTONE with orange weathering surfaces and occasional shells. Fractures are closely spaced horizontal to sub-vertical open undulating rough . (CORNBURASH LIMESTONE FORMATION) ... Between 4.02m and 4.10m: Firm dark grey sandy clay with frequent shell fragments.	4.50	(0.95)			
4.50 - 6.00	SPT	50/75mm (3,4,50)							Firm brownish grey sandy CLAY. (CORNBURASH LIMESTONE FORMATION) Brown fine to coarse slightly gravelly SAND. Gravel is sub-angular to sub-rounded fine to coarse sandstone and limestone. (CORNBURASH LIMESTONE FORMATION)	6.00	(0.80)			
6.00 - 7.20									Firm bluish grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine limestone. (CORNBURASH LIMESTONE FORMATION) Medium strong grey shelly LIMESTONE. Fractures are closely spaced horizontal open undulating rough. (CORNBURASH LIMESTONE FORMATION) Stiff fissured bluish grey CLAY. Fissures are extremely closely spaced randomly oriented smooth. (BLISWORTH CLAY FORMATION)	7.20	(1.00)			
									Brown fine to coarse slightly gravelly SAND. Gravel is sub-angular to sub-rounded fine to coarse sandstone and limestone. (BLISWORTH CLAY FORMATION) Firm dark grey slightly gravelly sandy CLAY with frequent shell fragments. Gravel is sub-angular to sub-rounded fine to coarse limestone. (BLISWORTH CLAY FORMATION) End of Borehole at 7.23m	7.23	(0.20)	49.37		

Progress and Observations									General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
	28/06	1330	7.20	2.50	152	4.00	Water		1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 3.75m bgl. Rotary core to 7.20. 3) Gas and groundwater monitoring pipe installed to 6.00m bgl. Response zone between 3.00m bgl to 5.00m bgl. 4) ER = 73%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
	28/06	2300							



Method: Dynamic Sampled & Rotary Cored	Date(s): 29/06/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501569.83, 278529.10	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 59.85m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth (m)	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.20 - 0.30	ES B								Firm slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is sub-angular to sub-rounded fine and medium sandstone and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	59.55		
0.30 - 0.80	ES								Orangish brown slightly clayey gravelly SAND. Gravel is angular to sub-rounded limestone flint sandstone and brick. (LANDFILL - MADE GROUND)	0.70	(0.40)	59.15		
0.80 - 1.20	D SPT	N=10 (1,1,2,2,3,3)							Firm dark grey mottled orangish brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse chalk limestone sandstone and brick. (LANDFILL - MADE GROUND)	1.20	(0.50)	58.65		
1.20 - 1.30	D								Firm orangish brown sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint chalk and limestone. (GLACIOFLUVIAL DEPOSITS)	1.50	(0.30)	58.35		
1.30 - 1.60	D								Orangish brown slightly clayey gravelly SAND. Gravel is sub-rounded fine and medium sandstone. (KELLAWAYS SAND MEMBER)	2.00	(1.00)	57.35		
1.60 - 2.00	SPT	N=19 (1,1,2,4,6,7)							Orangish brown SAND with rare gravels. Gravel is sub-rounded fine sandstone. (KELLAWAYS SAND MEMBER)	2.50		57.35		
2.00 - 2.20	D									3.00	(1.60)			
2.20 - 2.50	SPT	N=33 (3,7,7,7,10,9)								4.00				
2.50 - 3.00	B									4.10		55.75		
3.00 - 4.00										4.35	(0.25)	55.50		
4.00 - 4.20	SPT	N=11 (1,2,2,3,3,3)							Firm orangish brown sandy CLAY. (KELLAWAYS CLAY MEMBER)	4.60	(0.25)	55.25		
4.20 - 4.40	D								Firm grey slightly sandy CLAY. (KELLAWAYS CLAY MEMBER)	5.00				
4.40 - 5.00	D								... At 4.50m bgl: HSV 71/22 Firm light grey very sandy CLAY. (KELLAWAYS CLAY MEMBER)	5.70	(1.10)	54.15		
5.00 - 5.50										6.00				
5.50 - 7.00	SPT	N=26 (1,3,3,6,6,11)							Stiff fissured dark grey CLAY with occasional shell fragments. Fissure are extremely closely spaced randomly oriented smooth. (KELLAWAYS CLAY MEMBER)	6.90	(1.20)	52.95		
5.50 - 7.00	C			67	7	7				7.00				
5.50 - 7.00	D									7.00 - 8.50				
5.50 - 6.40	D													
6.40 - 6.50	D													
6.50 - 7.00	B													
7.00 - 8.50	SPT	50/0mm (25)							Weak grey Shelly LIMESTONE. Fractures are extremely closely spaced horizontal open planar rough. (CORNBRASH LIMESTONE FORMATION)	8.50	(2.30)			
7.00 - 8.50									... At 7.45m bgl: Orange weathering present.	9.20		50.65		
8.50 - 10.00										9.20 - 9.70				
8.50 - 10.00														
8.50 - 10.00	B								Stiff dark grey CLAY with frequent shell fragments. (BLISWORTH CLAY FORMATION)	9.70	(0.50)	50.15		
8.50 - 10.00										10.00	(0.30)	49.85		
8.50 - 10.00									Firm greenish grey CLAY. (BLISWORTH CLAY FORMATION)	10.00				
8.50 - 10.00									End of Borehole at 10.00m					

Progress and Observations									General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
	29/06 29/06	0905 1415	10.00	2.50	152	3.00	Water		1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 4.0m bgl. Rotary core to 10.0m bgl. 3) Gas and groundwater monitoring pipe installed to 9.50m bgl. Response zone between 6.50m bgl to 9.50m bgl. 4) ER = 73%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.





Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-106

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Method: Dynamic Sampled & Rotary Cored	Date(s): 01/07/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501396.07, 278584.79	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 64.67m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
11.00 - 12.50									Very dense brown coarse SAND. (KELLAWAYS SAND MEMBER)	11.00		53.67		
				80	63	46			Moderately strong light grey LIMESTONE. Fractures are medium spaced open no infill 2mm aperture. (CORNBURASH LIMESTONE FORMATION)	12	(1.50)			
									... Hard grey thinly laminated CLAY.	12.50		52.17		
12.50 - 14.00									Stiff blueish grey locally thinly bedded CLAY. 1 fissure at 45 degrees with frequent fossils. (BLISWORTH CLAY FORMATION)	13				
	13.20	HSV	130kPa	100					... At 13.20m bgl: HSV 130	14	(2.50)			
14.00 - 15.00	13.80 - 14.00 13.80	C HSV	98kPa	100					... At 13.80m bgl: HSV 98	15		49.67		
									End of Borehole at 15.00m	15.00				

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 3.0m bgl. Rotary core to 15.0m bgl. 3) Gas and groundwater monitoring pipe installed to 13.50m bgl. Response zone between 12.00m bgl to 13.50m bgl. 4) ER = 59%.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)





Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-107

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Method: Dynamic Sampled & Rotary Cored	Date(s): 01/07/2021 - 06/07/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501330.63, 278359.16	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 64.40m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min. Mean Max							
									Strong light grey LIMESTONE. Fractures are medium spaced open wavy 2mm aperture. (CORNBRAsh LIMESTONE FORMATION)	11.00	(1.50)	52.90		
									Very stiff to hard blueish grey CLAY with abundant shell fragments. (BLISWORTH CLAY FORMATION)	12.00	(0.50)	52.40		
									End of Borehole at 12.00m					

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 2.0m bgl. Rotary core to 12.0m bgl. 3) Gas and groundwater monitoring pipe installed to 11.00m bgl. Response zone between 9.50m bgl to 11.00m bgl. 4) ER = 73%.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Method: Dynamic Sampled & Rotary Cored	Date(s): 29/06/2021 - 30/06/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501476.72, 278321.77	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 62.64m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill	
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If.								Mean Max
1.20 - 1.50 100mm 100% rec	0.20	ES							Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine and medium brick flint and sandstone. (TOPSOIL - MADE GROUND)	0.40	(0.40)	62.24			
	0.50	ES							Firm orangish brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse flint limestone and brick. (LANDFILL - MADE GROUND)	0.80	(0.40)	61.84			
	1.20 - 1.50	L							Stiff brownish grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse limestone flint chalk and brick. (LANDFILL - MADE GROUND)						
	1.50	SPT	N=14 (1,1,2,2,7,3)						... From 1.50m bgl: Becoming firm		(2.20)				
	1.50 - 2.50	B													
	3.00	SPT	N=25 (1,1,2,2,7,14)								3.00		59.64		
	3.20	D							Stiff orangish brown mottled dark grey slightly sandy gravelly CLAY. Gravel is angular fine to coarse sandstone and flint. (LANDFILL - MADE GROUND)	3.45	(0.45)		59.19		
	3.60	ES							Soft grey and black mottled slightly gravelly slightly sandy CLAY. Gravel is angular to sub-rounded fine and medium flint and chalk. (LANDFILL - MADE GROUND)	3.70	(0.25)		58.94		
	3.80	D							Stiff brownish grey slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse flint chalk sandstone and brick. (LANDFILL - MADE GROUND)	4.00	(0.30)		58.64		
	4.20	D							Stiff brownish grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse limestone flint chalk and brick. (LANDFILL - MADE GROUND)	4.50	(0.50)		58.14		
5.50 - 5.70 100mm 100% rec	4.50	SPT	N=17 (2,1,3,3,6,5)						Stiff brownish grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse limestone flint chalk and brick. (LANDFILL - MADE GROUND)						
	5.50 - 5.70	C							Stiff greyish brown with occasional patches of black slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse brick flint limestone sandstone and chalk. (LANDFILL - MADE GROUND)		(1.50)				
	5.50 - 5.70	L													
	5.90	D													
	6.00	SPT	N=7 (2,1,1,1,2,3)						Soft greyish brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse flint sandstone limestone chalk and brick with rare Plastic and timber. (LANDFILL - MADE GROUND)	6.00			56.64		
9.50 - 10.50	6.50	D													
	7.50	SPT	N=15 (2,4,3,2,5,5)						... At 7.40m bgl: HSV 42/10		(2.85)				
	8.00	D							... From 7.80m bgl: Becoming firm						
	8.90	D							... At 8.50m bgl: HSV 51/18	8.85			53.79		
	9.00	SPT	N=26 (5,8,6,4,7,9)						Soft orangish brown very sandy CLAY with rare gravel. Gravel is sub-angular medium limestone. (GLACIOFLUVIAL DEPOSITS)	9.20	(0.35)		53.44		
	9.40	D							Orangish brown mottled dark brown laminated clayey SAND. (KELLAWAYS SAND MEMBER)		(0.80)				
	9.50 - 10.50	C					NI								

Continued on Next Sheet

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
	29/06	0845	13.00	9.00	168	4.00	Water	
	29/06	1245						

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 9.0m bgl. Rotary core to 13.5m bgl. 3) Gas and groundwater monitoring pipe installed to 12.50m bgl. Response zone between 9.50m bgl to 12.00m bgl. 4) ER = 59%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No RBH-108

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Method: Dynamic Sampled & Rotary Cored	Date(s): 29/06/2021 - 30/06/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501476.72, 278321.77	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 62.64m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill		
	Depth (m)	Type	Results	TCR	SCR	RQD	Min Mean Max									
10.50 - 12.00				40	31	10	2 4 10		Weak dark grey shelly LIMESTONE. Fractures are closely spaced horizontal to sub-horizontal open planar undulating rough. (CORNBURASH LIMESTONE FORMATION)		(1.40)					
							NI 7 47									
							NI 12 24			Very stiff dark grey slightly gravelly CLAY. Gravel is sub-rounded fine limestone. (CORNBURASH LIMESTONE FORMATION)		11.40		51.24		
										Weak dark grey shelly LIMESTONE. Fractures are closely spaced horizontal planar undulating rough closed with dark grey clayey infill. (CORNBURASH LIMESTONE FORMATION)		11.60	(0.20)	51.04		
12.00 - 13.50	12.20 - 13.20	B							Extremely weak LIMESTONE / very stiff dark grey CLAY with frequent shell fragments. (CORNBURASH LIMESTONE FORMATION)	12.00	(0.40)	50.64				
									Very stiff fissured bluish grey CLAY. Fissures are extremely closely spaced randomly oriented smooth. (BLISWORTH CLAY FORMATION)	12.20	(0.20)	50.44				
13.20 - 13.50	13.00	SPT	50/240mm (5,8,11,14,20,5)	100						13	(1.30)					
100mm 100% rec	13.20 - 13.50	L								13.50		49.14				
End of Borehole at 13.50m										14						
										15						
										16						
										17						
										18						
										19						
										20						

Progress and Observations									General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 9.0m bgl. Rotary core to 13.5m bgl. 3) Gas and groundwater monitoring pipe installed to 12.50m bgl. Response zone between 9.50m bgl to 12.00m bgl. 4) ER = 59%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	



Method: Dynamic Sampled & Rotary Cored	Date(s): 06/07/2021 - 07/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501840.12, 278474.19	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 49.44m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.10	ES								Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint and occasional brick and concrete. (AGRICULTURALLY DISTURBED TOPSOIL)	0.15	(0.15)	49.29		
1.00	SPT	N=10 (1,1,2,2,4,2)							Firm light brown sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular limestone and chalk. (HEAD DEPOSITS)	1.00	(0.85)	48.44		
1.50 - 1.60	B								Stiff greenish grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular chalk limestone and fossilized material. (HEAD DEPOSITS)	1.60	(0.90)			
1.60 - 1.90	C									1.90		47.54		
1.90 - 2.00	HSV SPT	82kPa 50/220mm (5,3,4,4,42)							Firm orange brown with grey veining sandy CLAY. Locally iron stained. (BLISWORTH CLAY FORMATION)	2.00	(0.60)			
2.50 - 3.50									Very weak light grey MUDSTONE. (BLISWORTH CLAY FORMATION)	2.50	(1.05)	46.94		
				96	96	89			Strong light grey occasionally dark grey LIMESTONE. Fractures are closely spaced open no infill wavy. (BLISWORTH CLAY FORMATION)	2.65		46.89		
3.50 - 5.00										3.40		46.04		
									Very weak dark grey MUDSTONE with abundant fossilized material. (BLISWORTH LIMESTONE FORMATION)	4.00				
5.00 - 6.00										89	87	65		
6.00 - 7.50										94	88	56		
										94	91	73		
7.50 - 9.00									Strong grey LIMESTONE. Fractures are medium spaced open 2-3mm aperture smooth to wavy. (BLISWORTH LIMESTONE FORMATION)	7.20		42.24		
									... From 7.80m to 7.85m: Very hard grey clay bands.	8.00	(1.80)			
									... From 8.60m to 8.90m: Very hard grey clay bands.	9.00		40.44		
									End of Borehole at 9.00m					

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 2.37m bgl then rotary cored to 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 11.00m bgl. Response zone between 9.50m bgl and 11.00m bgl. 4) ER = 73%.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-110

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Method: Dynamic Sampled & Rotary Cored	Date(s): 06/07/2021 - 07/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502115.96, 278547.57	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 44.74m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
									Light brown slightly clayey sandy fine to coarse sub-angular to angular limestone mudstone and asphalt GRAVEL. (MADE GROUND)	0.15	(0.15)	44.59		
									Yellow brown sandy fine to coarse sub-angular to angular limestone GRAVEL. (MADE GROUND)	0.40	(0.25)	44.34		
	1.50	SPT	N=25 (1,2,2,5,7,11)						Soft brown locally iron stained slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint and limestone. (ALLUVIUM)	1	(1.30)			
	1.50	D												
	2.00	B							Brown gravelly SAND. Gravel is sub-angular to rounded flint and chalk. (ALLUVIUM)	1.70		43.04		
	2.90	HSV	56kPa							2				
	3.00	SPT	N=23 (1,3,2,6,6,9)						Firm dark grey brown and blue sandy CLAY with occasional patches of black carbonaceous material. (ALLUVIUM)	2.80	(0.10)	41.84		
	3.60	D							Greenish grey fine SAND with occasional orange red staining. (HEAD DEPOSITS)	2.90				
	4.00	B							... From 2.90m to 3.50m: Greenish grey.	3				
	4.50	SPT	50/240mm (2,6,5,12,24,9)							4	(2.10)			
										5		39.74		
									No Recovery (Sand within flush). (HEAD DEPOSITS)	5.00				
										6	(2.00)			
										7		37.74		
									End of Borehole at 7.00m	7.00				
										8				
										9				
										10				

Progress and Observations

General Remarks:  
1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 4.89m bgl then rotary cored to 7.00m bgl. 3) Gas and groundwater monitoring pipe installed to 6.50m bgl. Response zone between 2.00m bgl and 6.50m bgl. 4) ER = 59%

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	



Method: Dynamic Sampled & Rotary Cored	Date(s): 05/07/2021 - 06/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502011.17, 278711.60	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 51.53m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
									Soft light brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded limestone and calcareous nodules. (AGRICULTURALLY DISTURBED TOPSOIL)	0.20	(0.20)	51.33		
	1.10	HSV	52kPa						Firm yellowish brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular limestone and fossilized material. (CORNBURASH LIMESTONE FORMATION)	0.80	(0.60)	50.73		
	1.50	SPT	N=17 (2,2,3,3,5,6)						Firm grey closely fissured CLAY with occasional yellow sand. (BLISWORTH CLAY FORMATION)	1.50	(0.70)	50.03		
	1.60 - 1.80	C							Stiff grey and yellow sandy CLAY. (BLISWORTH CLAY FORMATION)	2				
	1.90 - 2.00	HSV B	102kPa							2				
	2.00 - 2.80									(2.00)				
	3.00	SPT	50/290mm (3,3,6,5,7,32)							3				
	3.00 - 3.50	B								3.50		48.03		
	3.20 - 3.50	HSV C	115kPa						Very stiff thinly laminated grey and yellow CLAY with frequent shell fragments. (BLISWORTH CLAY FORMATION) ... From 3.50m to 4.50m: Weak MUDSTONE in patches.	4				
	3.50 - 3.75	U								4		(1.00)		
	3.50 - 3.75									4.50		47.03		
4.50 - 5.50									Moderately strong grey LIMESTONE. Fractures are closely spaced wavy open thin. (BLISWORTH LIMESTONE FORMATION)	4.90	(0.40)	46.63		
				58	32	23			Moderately strong grey LIMESTONE. Fractures are closely spaced wavy open thin. (BLISWORTH LIMESTONE FORMATION)	5				
										5		(0.70)		
5.50 - 6.00									Strong grey LIMESTONE with inclusions of up to 9cm orange sandstone. Fractures are closely to medium spaced open or sand filled wavy 1 to 2mm. (BLISWORTH LIMESTONE FORMATION)	5.60		45.93		
				96	86	60				6				
6.00 - 7.00										6		(1.40)		
				85	80	65				7				
7.00 - 8.00									Strong grey locally dark grey LIMESTONE. Fractures are closed to widely spaced open wavy. (BLISWORTH LIMESTONE FORMATION)	7.00		44.53		
				100	100	100				8				
8.00 - 9.00										8		(2.00)		
				100	100	100				9				
									End of Borehole at 9.00m	9.00		42.53		
										10				

Progress and Observations

General Remarks:  
1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 3.00m bgl then rotary cored to 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. Response zone between 5.00m bgl and 9.00m bgl. 4) ER = 59%.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	



Method: Dynamic Sampled & Rotary Cored	Date(s): 08/07/2021 - 09/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502057.22, 278272.31	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 46.51m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
	0.10	ES							Brown clayey slightly gravelly SAND. Gravel is fine to coarse sub-angular to angular limestone. (MADE GROUND)	0.10	(0.10)	46.41		
	0.50	ES							Yellow GRAVEL. Gravel is fine to coarse sub-angular to angular limestone. (MADE GROUND)	0.40	(0.30)	46.11		
	1.20	SPT	N=11 (1,1,2,3,2,4)						Firm orange brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular limestone and rare mudstone. (HEAD DEPOSITS)	1	(1.70)			
	1.30 - 1.60	B							... From 1.70m bgl: Fine chalk gravel is present.					
	2.00	D								2.10		44.41		
	2.50	SPT	N=18 (1,2,5,4,5,4)						Orange brown slightly sandy GRAVEL. Gravel is fine to coarse sub-angular to angular flint. (HEAD DEPOSITS)	2.40	(0.30)	44.11		
									Yellow brown clayey GRAVEL. Gravel is fine to coarse sub-angular to angular shells. (HEAD DEPOSITS)	2.90	(0.50)	43.61		
									... Between 2.50m and 2.90m bgl: Very clayey and wet.	3				
									Moderately strong yellow brown to grey LIMESTONE. Fractures are closely to widely spaced, open with no infill and up to 3cm wide. (BLISWORTH LIMESTONE FORMATION)		(1.10)			
									... Between 3.60m and 3.80m bgl: Soft clay.	4		42.51		
4.00 - 5.00				98	98	69			Strong grey LIMESTONE. Fractures are medium to widely spaced, open with no infill, wavy, up to 4cm wide. (BLISWORTH LIMESTONE FORMATION)	5				
5.00 - 6.50				91	91	80				6	(2.60)			
6.50 - 8.00	6.50 - 8.00	C								6.60		39.91		
	6.80	HSV	140kPa						Stiff blueish grey CLAY with frequent shell fragments and carbonaceous wood. (RUTLAND FORMATION)	7	(1.40)			
				100					... From 7.40m to 7.45m bgl: MUDSTONE.					
	7.90	HSV	140kPa							8		38.51		
									End of Borehole at 8.00m	8				
										9				
										10				

Progress and Observations

General Remarks:  
1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 2.50m bgl then rotary cored to 8.00m bgl. 3) Gas and groundwater monitoring pipe installed to 8.00m bgl. Response zone between 4.00m bgl and 8.00m bgl. 4) ER = 73%.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-113

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Method: Dynamic Sampled & Rotary Cored	Date(s): 13/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502372.86, 278333.16	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 49.45m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
									CONCRETE with plastic sheet at base. (MADE GROUND)	0.20	(0.20)	49.25		
									Pinkish grey slightly sandy GRAVEL. Gravel is fine to coarse sub-angular to angular granite. (MADE GROUND)	0.35	(0.15)	49.10		
									Yellow brown clayey GRAVEL with fine to coarse sub-angular to angular limestone lithorelicts. (CORNBURASH LIMESTONE FORMATION)	0.60	(0.25)	48.85		
									Grey weathered yellow brown GRAVEL with fine to coarse sub-angular to angular limestone lithorelicts. (CORNBURASH LIMESTONE FORMATION)	1.20	(0.60)	48.25		
									Yellowish brown slightly gravelly clayey SAND. Gravel is fine to coarse sub-angular to sub-rounded flint, mudstone and limestone. (CORNBURASH LIMESTONE FORMATION)	2.30	(1.10)	47.15		
									Firm blueish grey and orange mottled thinly laminated CLAY. (BLISWORTH CLAY FORMATION)	2.30	(0.70)	47.15		
									End of Borehole at 3.00m	3.00		46.45		

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Undertaken adjacent to RBH-114, log descriptions from RBH-114 applied. 3) Rotary open hole drilling from 1.20m to 3.00m bgl. 4) Gas and groundwater monitoring pipe installed to 2.00m bgl. Response zone between 1.00m bgl and 2.00m bgl.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	



Method: Dynamic Sampled & Rotary Cored	Date(s): 12/07/2021 - 13/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502367.94, 278335.23	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 49.38m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
	0.40	ES							CONCRETE with plastic sheet at base. (MADE GROUND)	0.20	(0.20)	49.18		
									Pinkish grey slightly sandy GRAVEL. Gravel is fine to coarse sub-angular to angular granite. (MADE GROUND)	0.35	(0.15)	49.03		
									Yellow brown clayey GRAVEL with fine to coarse sub-angular to angular limestone lithorelicts. (CORNBURASH LIMESTONE FORMATION)	0.60	(0.25)	48.78		
									Grey weathered yellow brown GRAVEL with fine to coarse sub-angular to angular limestone lithorelicts. (CORNBURASH LIMESTONE FORMATION)	1.20	(0.60)	48.18		
	2.00	SPT	N=12 (1,1,3,4,2,3)						Yellowish brown slightly gravelly clayey SAND. Gravel is fine to coarse sub-angular to sub-rounded flint, mudstone and limestone. (CORNBURASH LIMESTONE FORMATION) ... Between 1.20m and 2.50m bgl: no recovery.	2	(1.10)			
	2.60 - 2.90	B							Firm blueish grey and orange mottled thinly laminated CLAY. (BLISWORTH CLAY FORMATION)	2.30		47.08		
	2.70 - 3.00	B												
	3.20 - 3.40	HSV C	66kPa											
	3.20 - 3.50	HSV SPT	88kPa N=23 (1,3,4,5,6,8)								(2.50)			
	4.00 - 4.80	B												
	4.60 - 4.80	B												
5.00 - 6.50	4.70	HSV	96kPa						Strong blueish grey and brownish grey LIMESTONE. Fractures are medium spaced, wavy, open and infilled with orange sand and are 1mm wide. (BLISWORTH LIMESTONE FORMATION) ... Between 4.80m and 5.00m bgl: Limestone band. ... Between 5.35m and 5.60m bgl: Half of the core is orange brown SANDSTONE.	4.80		44.58		
				100	81	81								
6.50 - 7.50									... Between 6.70m and 6.75m bgl: Weak orange fine SANDSTONE.					
				80	72	63					(4.20)			
7.50 - 9.00									... From 8.90m bgl: Yellow brown clayey LIMESTONE.					
				100	93	80								
									End of Borehole at 9.00m	9.00		40.38		

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Rotary cored to 2.00m then dynamic sampled to 3.50m bgl then rotary cored to 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. Response zone between 5.00m bgl and 9.00m bgl. 4) ER = 73%.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**RBH-115**  
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Method: Dynamic Sampled & Rotary Cored	Date(s): 13/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502037.51, 278059.41	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 49.52m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
	0.20	ES							Brown slightly clayey slightly gravelly SAND with frequent rootlets. Gravel is fine to coarse sub-angular to angular limestone, jet, brick and concrete. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	49.22		
									Brown slightly clayey slightly gravelly SAND. Gravel is fine to coarse sub-angular to angular brick and limestone. (MADE GROUND)	0.50	(0.20)	49.02		
	1.50 - 2.00	B							Firm to stiff orange brown sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular limestone, flint and sandstone. (HEAD DEPOSITS)	1.50	(1.00)	48.02		
	2.50	HSV	88kPa						Stiff blueish grey and brown mottled CLAY. (BLISWORTH CLAY FORMATION)		(1.50)			
End of Borehole at 3.00m										3.00		46.52		

Progress and Observations									General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Rotary cored from 1.20m to 3.00m bgl. 3) Gas and groundwater monitoring pipe installed to 3.00m bgl. Response zone between 1.00m bgl and 3.00m bgl.					
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)						
							Water							



Method: Dynamic Sampled & Rotary Cored	Date(s): 09/07/2021 - 12/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502102.16, 278077.78	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 47.86m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
2.50 - 4.00	0.10	ES							Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse sub-angular to angular brick and limestone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.70	(0.70)	47.16		
	0.80	ES							Firm light brown and orange brown slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse sub-angular to angular limestone, chalk and flint. (HEAD DEPOSITS)	1.60	(0.90)	46.26		
	1.20	SPT	N=9											
	1.20	HSV	(1,1,2,2,2,3) 102kPa											
	1.80 - 2.10	C							Firm blueish grey and mottled brown CLAY. (BLISWORTH CLAY FORMATION)	2.60	(1.00)			
	2.00	HSV	86kPa						... Between 2.25m and 2.35m bgl: Orange fine sand.	2.60		45.26		
4.00 - 5.50	2.40	HSV	78kPa						Moderately strong light grey LIMESTONE. Fractures are closely spaced, open with no infill, wavy, from 1-3cm wide. (BLISWORTH LIMESTONE FORMATION)	3.50	(0.90)			
	2.50	SPT	50/0mm (4,21)	99	76	63			... Between 2.70m and 2.75m bgl: Non intact LIMESTONE. ... Between 3.20m and 3.35m bgl: Stiff dark grey clay.	4.40				
									Strong light grey fossiliferous LIMESTONE. Fractures are closely to widely spaced, wavy, open with no infill and are 1-5cm wide. (BLISWORTH LIMESTONE FORMATION)	5.30	(3.20)			
5.50 - 7.00				93	92	82				6.20				
									Weak dark grey fossiliferous MUDSTONE. (BLISWORTH LIMESTONE FORMATION)	6.70	(0.30)	41.16		
7.00 - 8.00									Strong grey laminated LIMESTONE. Fractures are widely spaced, planar, no infill and closed. (BLISWORTH LIMESTONE FORMATION)	7.70	(1.30)	40.86		
				100	100	100				8.30		39.56		
8.00 - 9.00									Weak dark grey SILTSTONE. (RUTLAND FORMATION)	8.30	(0.70)			
				100	100	100				9.00		38.86		
End of Borehole at 9.00m														

Progress and Observations									General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
							Water		1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 2.50m bgl then rotary cored to 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. Response zone between 6.00m bgl and 9.00m bgl. 4) ER = 73%.



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-117

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Method: Dynamic Sampled & Rotary Cored	Date(s): 13/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502106.50, 278027.18	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 48.31m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
									CONCRETE. (MADE GROUND)	0.16	(0.16)	48.15		
									Pink sandy GRAVEL. Gravel is fine to coarse sub-angular to angular granite. (MADE GROUND)	0.40	(0.24)	47.91		
									Greenish grey sandy clayey GRAVEL. Gravel is fine to coarse sub-angular to angular sandstone, limestone and concrete. (MADE GROUND)	0.70	(0.30)	47.61		
									Firm bluish grey CLAY. (BLISWORTH CLAY FORMATION) ... Hand pit terminated at 0.70m on Coal crossing pit.	1				
										2	(2.30)			
										3		45.31		
									End of Borehole at 3.00m	3.00				

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Rotary open hole drilling from 0.70m to 3.00m bgl. 3) Gas and groundwater monitoring pipe installed to 2.50m bgl. Response zone between 0.50m bgl and 2.50m bgl.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	





Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**RBH-118**  
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Method: Dynamic Sampled & Rotary Cored	Date(s): 07/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501963.01, 277869.60	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 51.89m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill	
	Depth (m)	Type	Results	TCR	SCR	RQD	Min. If. Mean Max								
10.50 - 11.00									Strong grey becoming light grey LIMESTONE. Fractures are widely to medium close spaced, open or mudstone infill, up to 4mm, wavy. (BLISWORTH LIMESTONE FORMATION)  ... Between 10.70m bgl and 11.00m bgl: Clay.						
10.50 - 11.00				100	100	100				11					
10.50 - 12.00				100	100	100				12.00		39.89			
End of Borehole at 12.00m															
										13					
										14					
										15					
										16					
										17					
										18					
										19					
										20					

Progress and Observations									General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Rotary drilling from 1.20m bgl. 3) Gas and groundwater monitoring pipe installed to 12.00m bgl. Response zone between 6.00m bgl and 12.00m bgl.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-119

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Method: Rotary Open	Date(s): 07/07/2021	Logged By: NT	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501961.97, 277868.51	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 51.92m OD		Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Brown clayey slightly gravelly SAND. Gravel is fine to coarse sub-angular grey limestone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.25	(0.25)	51.67		
								Orange brown clayey GRAVEL. Gravel is fine to coarse sub-angular to angular yellow brown limestone. (MADE GROUND)	0.55	(0.30)	51.37		
								Firm orange brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular limestone. (MADE GROUND)	1.10	(0.55)	50.82		
								Moderately strong yellow brown becoming grey non intact LIMESTONE. (CORNBASH LIMESTONE FORMATION)	2.80	(1.70)	49.12		
								End of Borehole at 2.80m	3.00				
									4.00				
									5.00				
									6.00				
									7.00				
									8.00				
									9.00				
									10.00				
									11.00				
									12.00				
									13.00				
									14.00				
									15.00				
									16.00				
									17.00				
									18.00				
									19.00				
									20.00				

Progress and Observations

General Remarks:

1) Inspection pit dug tp 1.20m bgl 2) Undertaken to 2.80 bgl using open hole drilling techniques. Description from RBH-118 applied. 3) Gas and groundwater monitoring pipe installed to 3.00m bgl. Response zone between 1.00m bgl and 3.50m bgl.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	



Method: Dynamic Sampled & Rotary Cored	Date(s): 29/11/2021	Logged By: TB	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501540.80, 278710.61	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 63.83m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.00 - 11.00							NI 0 0		Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to subangular fine to coarse of limestone and flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	63.53		
									Firm reddish brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of flint. (GLACIAL TILL)	0.80	(0.50)	63.03		
	1.00 - 1.10 - 1.50 - 1.20	D B SPT	N=55 (7,13,21,11,12,11)						Light grey and orangish brown mottled clayey SILT. (GLACIAL TILL)	1.00	(0.20)	62.83		
	1.50 - 1.50 - 2.00 - 1.50 - 2.00	ES B SPT							Stiff light grey and light brown mottled gravelly CLAY. Gravel is subangular to subrounded fine to coarse of chalk. (GLACIAL TILL)	1.55	(0.55)	62.28		
	2.00 - 2.30 - 3.00 - 3.00	B SPT B	N=46 (4,6,9,11,11,15)						Grey mottled orangish brown SILT. (GLACIAL TILL) ... Brown medium coarse sand band	2.00	(0.45)	61.83		
	3.00 - 3.75 - 3.70 - 4.00 - 4.00 - 5.00	SPT B D SPT B	N=60 (4,7,9,17,19,15)						Stiff grey gravelly CLAY. Gravel is subangular to subrounded fine to coarse of chalk. (GLACIAL TILL)	3.65	(1.65)	60.18		
	5.00 - 5.00 - 5.80 - 5.80 - 6.80 - 5.80 - 6.80	ES B B B							Firm to stiff brown grey slightly gravelly CLAY with frequent sand sized selenite crystals and occasional plant material (GLACIAL TILL) No Recovery (GLACIAL TILL)	3.80	(0.15)	60.03		
	5.00 - 5.00 - 5.80 - 5.80 - 6.80 - 6.80 - 6.50 - 6.80 - 7.00 - 8.00 - 7.00 - 8.00	SPT B B B SPT D B	N=50 (5,8,9,12,18,11)						Firm to stiff brown grey slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of flint. (GLACIAL TILL)	4.00	(0.20)	59.83		
	8.00 - 8.00 - 8.30 - 9.00 - 9.00 - 10.00 - 9.00 - 10.00 - 9.50	SPT D B SPT B B	50/270mm (9,8,8,12,14,16)						Firm to stiff bluish grey clayey SILT with frequent subangular fine to coarse mudstone lithorelicts. (KELLAWAYS SAND MEMBER)	5.80	(1.80)	58.03		
			48/180mm (12,12,18,18,12)						Stiff grey CLAY with occasional shell fossils and angular to subangular fine to medium mudstone lithorelicts. (KELLAWAYS CLAY MEMBER)	8.30	(2.50)	55.53		
			50/270mm (9,8,8,12,14,16)							8.30	(2.70)			
			N=41 (6,7,7,9,12,13)											

Continued on Next Sheet

Progress and Observations									General Remarks:	
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)		
Commachio 305	29/11	0800	15.00	1.50	100		Water		1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 15.00m bgl. 3) Gas and groundwater monitoring pipe installed to 15.00m bgl. 4) Response zone between 11.00m bgl and 12.50m bgl. 5) Er = 73%	
									Groundwater: Groundwater levels masked by use of water flush.	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-201

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Method: Dynamic Sampled & Rotary Cored	Date(s): 29/11/2021	Logged By: TB	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501540.80, 278710.61	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 63.83m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
10.00 - 11.00	B								Stiff grey CLAY with occasional shell fossils and angular to subangular fine to medium mudstone lithorelicts. (KELLAWAYS CLAY MEMBER)					
11.00 - 11.00	B													
11.00 - 12.50	SPT	50/20mm (23,2,50)					100	300	Strong to very strong medium bedded light grey LIMESTONE interbedded with a stiff grey shelly clay band between (11.80-12.00mbgl). Discontinuities are horizontal to sub horizontal 10 degrees 12.30mbgl, undulating rough partly open to open with clay infill at 11.80bgl. (CORNBRAsh LIMESTONE FORMATION)	11.00	52.83			
11.00 - 11.30	C						100	100						
11.80 - 12.10	C									12	(1.50)			
12.50 - 12.90	B									12.50		51.33		
13.00	D									12.90	(0.40)	50.93		
13.20 - 14.00	B									13	(0.30)	50.63		
14.00 - 15.00	B									14	(1.80)			
										15.00		48.83		
End of Borehole at 15.00m														

Progress and Observations

General Remarks:

1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 15.00m bgl. 3) Gas and groundwater monitoring pipe installed to 15.00m bgl. 4) Response zone between 11.00m bgl and 12.50m bgl. 5) Er = 73%

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)

Groundwater: Groundwater levels masked by use of water flush.





Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-202  
Page No. 2 of 2

Method: Dynamic Sampled & Rotary Cored Date(s): 01/12/2021 Logged By: TB Drilled By: Marshall Drilling  
 Client: Equites Newlands (Thrapston East) Ltd Co-ords: 501595.32, 278592.33 Checked By: CV Flush: Water  
 Hydrock Project No: C-18443-C Ground Level: 59.65m OD Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
11.45 - 12.00	11.00	SPT	N=50 (4,9,7,10,16,17)	100	0	0			Firm to stiff orange mottled greenish grey slightly sandy CLAY with frequent sub angular fine mudstone lithorelicts. Sand is fine (BLISWORTH CLAY FORMATION)	10.90	(1.40)	48.75		
	11.80 - 12.00	C		100	100	100			Firm to stiff fissured grey CLAY with sub angular fine to medium mudstone lithorelicts. Fissures are extremely closely spaced and randomly oriented. (BLISWORTH CLAY FORMATION)	11.45	(0.55)	48.20		
										Very strong light grey LIMESTONE interbedded with extremely weak green limestone. (BLISWORTH LIMESTONE FORMATION)	12.00	(0.55)	47.65	
End of Borehole at 12.00m										12.00				
										13				
										14				
										15				
										16				
										17				
										18				
										19				
										20				

Progress and Observations									General Remarks: 1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 12.00m bgl. 3) Gas and groundwater monitoring pipe installed to 8.50m bgl. 4) Response zone between 7.00m bgl and 8.50m bgl. 5) Er = 73%
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
									Groundwater: Groundwater levels masked by use of water flush.



Method: Dynamic Sampled & Rotary Cored	Date(s): 29/11/2021	Logged By: TB	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501751.81, 278679.22	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 55.81m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
									Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to subangular fine to coarse of limestone and flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	55.51		
									Firm reddish brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of flint (HEAD DEPOSITS)	0.80	(0.50)	55.01		
	1.20	SPT	N=11 (1,1,2,2,3,4)						Firm light grey and orangish brown mottled silty CLAY . (HEAD DEPOSITS)	1	(0.40)	54.61		
	1.20 - 2.20	B							Firm to stiff fissured yellow and orangish brown mottled brownish grey CLAY with frequent sub angular fine mudstone lithorelicts . Fissures are extremely closely spaced and horizontally oriented. (KELLAWAYS CLAY MEMBER)	2	(1.45)			
	2.50	D							Firm to stiff grey CLAY. (KELLAWAYS CLAY MEMBER)	2.50		53.16		
	2.50 - 2.60	D							... Frequent coarse grained sand sized selenite crystals. ... Occasional shell fossils apparent.	2.65	(0.65)			
	2.60 - 3.20	B							Strong thinly to medium bedded light grey LIMESTONE. Discontinuities: sub horizontal, closely to medium spaced, undulating open and clean (CORNBRAsh LIMESTONE FORMATION)	3	(0.90)			
	3.00 - 3.05	C							Stiff grey silty CLAY with sub angular fine to medium mudstone lithorelicts. (CORNBRAsh LIMESTONE FORMATION)	3.30	(0.40)	52.51		
	3.20	D	50/30mm (25,50)						Strong light grey LIMESTONE band . (CORNBRAsh LIMESTONE FORMATION)	3.30	(0.25)	50.96		
	3.30	SPT							Firm to stiff grey CLAY with occasional shell fossils (BLISWORTH CLAY FORMATION)	3.45 - 3.55				
	3.45 - 3.55	C		88	88	70			Firm orangish brown mottled grey slightly sandy CLAY. Sand is fine. (BLISWORTH CLAY FORMATION)	4.00 - 5.00				
									Firm orange mottled greenish grey slightly sandy CLAY with frequent sub angular fine mudstone lithorelicts. Sand is fine (BLISWORTH CLAY FORMATION)	4.20	(0.90)	51.61		
									Stiff grey silty CLAY with sub angular fine to medium mudstone lithorelicts. (CORNBRAsh LIMESTONE FORMATION)	4.60	(0.40)	51.21		
	4.75 - 5.00	C		100	25	23			Strong light grey LIMESTONE band . (CORNBRAsh LIMESTONE FORMATION)	4.75 - 5.00				
	4.85	D							Firm to stiff grey CLAY with occasional shell fossils (BLISWORTH CLAY FORMATION)	4.85	(0.25)	50.96		
	5.00 - 5.50	B							Firm orangish brown mottled grey slightly sandy CLAY. Sand is fine. (BLISWORTH CLAY FORMATION)	5.00 - 5.50				
	5.70	D							Firm orange mottled greenish grey slightly sandy CLAY with frequent sub angular fine mudstone lithorelicts. Sand is fine (BLISWORTH CLAY FORMATION)	5.50	(0.65)	50.31		
	6.00 - 7.00	B		100	0	0			Firm brown mottled green CLAY with angular to sub angular fine to coarse mudstone and limestone lithorelicts. (BLISWORTH CLAY FORMATION)	5.90	(0.40)	49.91		
									Strong light grey LIMESTONE band with occasional shell fossils. (BLISWORTH LIMESTONE FORMATION)	7.00 - 8.00				
	7.00 - 8.00	SPT	N=36 (1,1,4,6,8,18)						Very weak green MUDSTONE (BLISWORTH LIMESTONE FORMATION)	7.25	(0.20)	48.56		
									Strong to very strong thinly to medium bedded light grey LIMESTONE with frequent shell fossils interbedded with a very weak mudston (8.68 -8.74m). Discontinuities: Horizontal to sub horizontal 5 degrees very closely to medium spaced planar open clean with clay infill between 8.72m and 8.74m. (BLISWORTH LIMESTONE FORMATION)	7.45	(0.15)	48.36		
	8.00 - 8.15	C							Strong light grey LIMESTONE band with occasional shell fossils. (BLISWORTH LIMESTONE FORMATION)	7.60	(0.30)	48.21		
	8.20 - 8.25	C							Very weak green MUDSTONE (BLISWORTH LIMESTONE FORMATION)	7.75				
	8.35 - 8.65	C		100	97	75			Strong to very strong thinly to medium bedded light grey LIMESTONE with frequent shell fossils interbedded with a very weak mudston (8.68 -8.74m). Discontinuities: Horizontal to sub horizontal 5 degrees very closely to medium spaced planar open clean with clay infill between 8.72m and 8.74m. (BLISWORTH LIMESTONE FORMATION)	7.90	(1.10)	47.91		
	8.85 - 9.00	C							End of Borehole at 9.00m	9.00		46.81		

Progress and Observations									General Remarks: 1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. 4) Response zone between 7.00m bgl and 9.00m bgl. 5) Er = 73%.					
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)						
Commachio 205	29/11	0800	9.00	2.50	100		Water		Groundwater: Groundwater levels masked by use of water flush.					



Method: Dynamic Sampled & Rotary Cored	Date(s): 03/12/2021	Logged By: TB	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501826.78, 278567.84	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 52.26m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.00 - 4.60	0.60	D							Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to subangular fine to coarse of limestone and flint. (AGRICULTURALLY DISTURBED TOPSOIL) Orangish brown mottled grey very sandy CLAY. Sand is fine to medium (HEAD DEPOSITS)	0.30	(0.30)	51.96		
	1.20	SPT	N=22 (10,12,10,4,5,3)							1	(1.20)			
	1.60	D							Limestone band. Recovered as light grey clayey sandy GRAVEL. Gravel is angular to sub angular fine to coarse of limestone. (CORNBURASH LIMESTONE FORMATION)	1.50	50.76			
	1.60	D								1.60	(0.10)	50.66		
	1.60	ES								1.80	(0.20)	50.46		
	1.70	D								2.00	(0.20)	50.26		
	1.70	D							Firm light brown slightly gravelly sandy CLAY. Gravel is angular to sub angular fine to coarse of limestone (CORNBURASH LIMESTONE FORMATION)					
	1.90	D												
	2.00	SPT	N=9 (1,1,1,2,3,3)						Limestone band. Recovered as light grey sandy GRAVEL. Gravel is angular to sub angular fine to coarse of limestone. (CORNBURASH LIMESTONE FORMATION)					
	3.00	SPT	N=19 (4,5,3,4,5,7)						No Recovery	3		49.26		
	3.00 - 4.00	B							Firm orangish brown mottled grey and greenish grey sandy CLAY. Sand is fine to medium. (BLISWORTH CLAY FORMATION)					
	3.00 - 4.00	B												
	4.00	SPT	N=23 (2,3,4,6,6,7)							4				
	4.00	ES												
	4.00 - 4.60	B												
4.60 - 5.00	4.00 - 4.60	B												
	4.60 - 4.60	B							Strong to very strong thinly to medium bedded light grey and grey LIMESTONE with rare shell fossils. Discontinuities: Horizontal closely to medium spaced undulating rough open with shell fossils within the discontinuities. (BLISWORTH LIMESTONE FORMATION)	4.60		47.66		
5.00 - 6.50	5.10 - 5.30	C								5				
	5.70 - 6.00	C												
	6.10 - 6.50	C								6				
6.50 - 8.00									Medium strong to strong medium bedded grey LIMESTONE with frequent shell fossils. Discontinuities: Horizontal to sub horizontal 5 to 10 degrees, undulating, rough partly open clean. Vertical, undulating rough partly open with shell fossils within the discontinuities from 6.65 -6.93mbgl. (BLISWORTH LIMESTONE FORMATION)	6.50		45.76		
										7				
8.00 - 9.50									Very strong medium to thickly bedded light grey interbedded with grey LIMESTONE with occasional shell fossils and small to medium gravel sized vugs with depths ranging from 2mm to 15mm at 7.90mbgl and 8.90mbgl. Discontinuities: Horizontal medium to widely spaced, undulating rough partly open clean. Vertical from 9.43-9.50mbgl, planar rough open clean. (BLISWORTH LIMESTONE FORMATION)	7.85		44.41		
										8				
9.50 - 11.00										9				
										10				

Continued on Next Sheet

Progress and Observations									Returns (colour)	General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Water		
Commachio 305	03/12	0800	12.00	4.20	100		Water			1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 12.00m bgl. 3) Gas and groundwater monitoring pipe installed to 12.00m bgl. 4) Response zone between 4.50m bgl and 12.00m bgl. 5) Er = 73%
Groundwater: Groundwater levels masked by use of water flush.										







Method: Dynamic Sampled & Rotary Cored	Date(s): 03/12/2021	Logged By: TB	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502020.14, 278566.51	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 48.58m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.00 - 1.20									Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to subangular fine to coarse of limestone and flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	48.28		
									Soft to firm orangish brown mottled greenish grey slightly sandy CLAY. Sand is fine to coarse. (BLISWORTH CLAY FORMATION)	1	(0.90)	47.38		
1.20 - 1.60	1.20	SPT	N=27 (1,2,2,9,8,8)	100	0	0			Light brown very clayey gravelly SAND. Gravel is angular to sub angular fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	1.20	(0.40)	46.98		
1.60 - 2.60	1.50 - 1.60	C							Brown sub angular to sub rounded fine to coarse GRAVEL of limestone. (BLISWORTH LIMESTONE FORMATION)	1.60	(0.34)	46.64		
	1.60	SPT	50/10mm (25,50)	90	45	0	NI 92 150		LIMESTONE. Recovered as grey and brown slightly clayey sandy GRAVEL. Gravel is angular to subrounded fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	1.94	(0.26)	46.38		
2.60 - 4.00	2.40 - 2.50	C							Very strong light grey thinly bedded light grey LIMESTONE thinly interbedded with strong light brown Limestone with occasional shell fossils. Discontinuities: Horizontal, very closely to closely spaced, undulating rough open with fractured rock fragments within the discontinuities. (BLISWORTH LIMESTONE FORMATION)	2.20	(0.85)	45.53		
	2.75 - 2.80	C							Medium strong to strong thinly bedded grey LIMESTONE with frequent shell fossils. Discontinuities: Horizontal closely spaced undulating rough open with shell fossils within the discontinuities. (BLISWORTH LIMESTONE FORMATION)	3	(1.19)	44.34		
	3.10 - 3.15	C							Strong to very strong very thinly to thinly bedded light brown mottled light grey LIMESTONE with occasional shell fossils. Discontinuities: Horizontal very closely to closely spaced undulating rough open with shell fossils within the discontinuities. (BLISWORTH LIMESTONE FORMATION)	3.05	(1.66)	42.68		
4.00 - 5.50									Strong to very strong very thinly to medium bedded grey LIMESTONE interbedded with stiff dark grey clay at 6.77-6.82mbgl, 7.20 - 7.28mbgl. Discontinuities: Horizontal closely to medium spaced undulating smooth open with occasional clay infill locally. (BLISWORTH LIMESTONE FORMATION)	4	(1.75)	40.93		
	5.50 - 5.60	C							Extremely weak grey MUDSTONE. (RUTLAND FORMATION)	4.24	(0.35)	40.58		
	6.10 - 6.20	C					NI 182 360		End of Borehole at 8.00m	5.90				
6.50 - 8.00	6.60 - 6.80	C								7				
	7.00 - 7.15	C								7.65				
	7.40 - 7.60	C								8.00				

Progress and Observations									Returns (colour)	General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Water		
Commachio 205	03/12	0800	8.00	1.00	100		Water			1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 8.00m bgl. 3) Gas and groundwater monitoring pipe installed to 8.00m bgl. 4) Response zone between 1.00m bgl and 8.00m bgl. 5) Er = 73%.  Groundwater: Groundwater levels masked by use of water flush.



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-207

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Method: Rotary Open	Date(s): 21/12/2021	Logged By: Marshall Drilling	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502148.70, 278596.64	Checked By: CV	Flush: Water/Mist
Hydrock Project No: C-18443-C	Ground Level: 45.09m OD		Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Firm to stiff brown CLAY (Drillers Description). (AGRICULTURALLY DISTURBED TOPSOIL) CLAY (Drillers Description). (HEAD DEPOSITS)	0.30	(0.30)	44.79		
								LIMESTONE (Drillers Description). (BLISWORTH LIMESTONE FORMATION)	2.50		42.59		
								End of Borehole at 9.00m	9.00		36.09		

Progress and Observations

General Remarks:

1) Hand dug pit to 1.20m bgl 2) Rotary open hole to 9.0m bgl. 3) Gas and groundwater monitoring pipe installed to 9.0m bgl. 4) Response zone between 2.5m bgl and 9.0m bgl. 5) ER = 73%

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
Commachio 205	07/12	0800	9.00	0.00	100		Water/Mist	

Groundwater: Groundwater levels masked by use of water / mist flush.

Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No RBH-208  
Page No. 1 of 1

Method: Dynamic Sampled & Rotary Cored Date(s): 07/12/2021 Logged By: TB Drilled By: Marshall Drilling  
 Client: Equites Newlands (Thrapston East) Ltd Co-ords: 502170.64, 278677.82 Checked By: CV Flush: Water  
 Hydrock Project No: C-18443-C Ground Level: 47.16m OD Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.00 - 1.20									Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to sub angular fine to coarse of limestone and flint (AGRICULTURALLY DISTURBED TOPSOIL) Light brown very clayey gravelly SAND. Gravel is angular to sub angular fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	0.30	(0.30)	46.86		
1.20 - 2.50	1.20	SPT	50/270mm (5,6,6,10,13,21)	92	73	0	NI 20 100		Weak to medium strong thickly laminated to thinly bedded light brown LIMESTONE with frequent shell fossils from 2.80mbgl. Discontinuities. Horizontal very closely to closely spaced, planar rough open from 2.20 - 2.80mbgl. Horizontal to sub horizontal 5 degrees closely spaced undulating rough open with shell fossils within the discontinuities. (BLISWORTH LIMESTONE FORMATION)	1.20	(1.10)	45.96		
2.50 - 4.00							0 0 NI 0 0		Assumed Zone of Core loss (BLISWORTH LIMESTONE FORMATION) Non intact. Recovered as light brown slightly clayey sandy GRAVEL. Gravel is angular to sub rounded fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	2.50	(0.20)	44.66		
4.00 - 5.50							48 100 150		Strong thinly bedded grey mottled light grey LIMESTONE with occasional shell fossils. Discontinuities. Horizontal very closely to closely spaced, planar rough open with shell fossils within the discontinuities. (BLISWORTH LIMESTONE FORMATION)	3.00	(0.65)	44.16		
5.50 - 7.00							0		Assumed Zone of Core loss (BLISWORTH LIMESTONE FORMATION) Strong thinly bedded grey mottled light grey LIMESTONE with occasional shell fossils. Discontinuities. Horizontal very closely to closely spaced, planar rough open with shell fossils within the discontinuities. (BLISWORTH LIMESTONE FORMATION)	4.00	(0.35)	43.16		
7.00 - 8.00	7.00	SPT	50/160mm (7,10,15,23,12)	100	95	77	20 273 380		Strong to very strong thin to medium bedded grey LIMESTONE interbedded with medium spaced very weak dark grey mudstone Discontinuities: Horizontal closely to medium spaced undulating smooth open with occasional clay infill locally. (BLISWORTH LIMESTONE FORMATION)	4.40	(1.40)	42.76		
8.00 - 9.00							0		Strong to very strong medium bedded grey LIMESTONE interbedded with stiff dark grey clay at 6.45 - 6.60mbgl. Discontinuities: Horizontal closely to medium spaced undulating smooth open with occasional clay infill locally. (BLISWORTH LIMESTONE FORMATION)	5.80	(0.83)	41.36		
									Weak light green LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	6.63	(0.37)	40.53		
									Firm to stiff light green mottled grey slightly sandy CLAY. Sand is fine to medium. (RUTLAND FORMATION)	7.00	(0.39)	40.16		
									No Recovery.	7.39		39.77		
										8.00	(1.61)			
										9.00		38.16		
End of Borehole at 9.00m														

Progress and Observations									General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
Commachio 305	07/12	0800	9.00	1.00	100		Water		1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. 4) Response zone between 1.00m bgl and 9.00m bgl. 5) Er = 73%.  Groundwater: Groundwater levels masked by use of water flush.





Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-210

Page No. 1 of 1

Method: Rotary Open

Date(s): 21/12/2021

Logged By: Marshall Drilling

Drilled By: Marshall Drilling

Client: Equites Newlands (Thrapston East) Ltd

Co-ords: 502219.04, 278447.35

Checked By: CV

Flush: Water/Mist

Hydrock Project No: C-18443-C

Ground Level: 49.95m OD

Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Firm to stiff brown CLAY (Drillers Description). (AGRICULTURALLY DISTURBED TOPSOIL) CLAY (Drillers Description). (HEAD DEPOSITS)	0.30	(0.30)	49.65		
								Light brown gravelly sand. Gravel is angular fine to coarse limestone. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	0.65	(0.35)	49.30		
								Firm blue grey and grey CLAY with rare silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	1.45	(0.80)	48.50		
								LIMESTONE (Drillers Description). (BLISWORTH LIMESTONE FORMATION)	2	(2.55)			
									4.00		45.95		
									9.00		40.95		
								End of Borehole at 9.00m					
									10				
									11				
									12				
									13				
									14				
									15				
									16				
									17				
									18				
									19				
									20				

Progress and Observations

General Remarks:

1) Hand dug pit to 1.20m bgl 2) Rotary open hole to 9.0m bgl. 3) Gas and groundwater monitoring pipe installed to 9.0m bgl. 4) Response zone between 4.0m bgl and 9.0m bgl. 5) Er = 73%. 6) Descriptions to 4.00m bgl based on adjacent PLT/TP313 log.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
Commachio 205	21/12	0800	9.00	0.00	100		Water/Mist	

Groundwater: Groundwater levels masked by use of water / mist flush.

Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-211

Page No. 1 of 1

Method: Rotary Open	Date(s): 20/12/2021	Logged By: Marshall Drilling	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501832.23, 278409.15	Checked By: CV	Flush: Water/Mist
Hydrock Project No: C-18443-C	Ground Level: 50.97m OD		Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Firm to stiff brown CLAY (Drillers Description). (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	50.67		
								Firm orange and greenish grey mottled light brown slightly sandy CLAY. Sand is fine. (HEAD DEPOSITS)	1.00	(0.70)	49.97		
								Limestone recovered as angular fine to coarse GRAVEL. (CORNBRAH LIMESTONE FORMATION)	1.50	(0.50)	49.47		
								Firm to stiff brown mottled grey CLAY with occasional sand sized selenite crystals. (BLISWORTH CLAY FORMATION)	3.00	(2.50)			
								LIMESTONE. (Drillers Description) (BLISWORTH LIMESTONE FORMATION)	4.00		46.97		
									5.00	(5.00)			
									6.00				
									7.00				
									8.00				
									9.00		41.97		
End of Borehole at 9.00m													
									10.00				
									11.00				
									12.00				
									13.00				
									14.00				
									15.00				
									16.00				
									17.00				
									18.00				
									19.00				
									20.00				

Progress and Observations									General Remarks:				
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)					
Commachio 205	20/12	0800	9.00	0.00	100		Water/Mist		1) Hand dug pit to 1.20m bgl 2) Rotary open hole to 9.0m bgl. 3) Gas and groundwater monitoring pipe installed to 9.0m bgl. 4) Response zone between 1.5m bgl and 9.0m bgl. 5) Er = 73%. 6) Description to 4.00m bgl based on adjacent TP236 log.				
									Groundwater: Groundwater levels masked by use of water / mist flush.				



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-212

Page No. 1 of 1

Method: Rotary Open	Date(s): 22/12/2021	Logged By: Marshall Drilling	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502213.10, 278352.62	Checked By: CV	Flush: Water/Mist
Hydrock Project No: C-18443-C	Ground Level: 49.64m OD		Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Firm to stiff brown CLAY (Drillers Description). (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	49.34		
								CLAY (Drillers Description). (HEAD DEPOSITS)	0.65	(0.35)	48.99		
								Light brown gravelly sand. Gravel is angular fine to coarse limestone. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	1.45	(0.80)	48.19		
								Firm blue grey and grey CLAY with rare silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	2	(2.55)			
								LIMESTONE. (Drillers Description). (BLISWORTH LIMESTONE FORMATION)	4	(5.00)	45.64		
								End of Borehole at 9.00m	9.00		40.64		
									10				
									11				
									12				
									13				
									14				
									15				
									16				
									17				
									18				
									19				
									20				

Progress and Observations

General Remarks:

1) Hand dug pit to 1.20m bgl 2) Rotary open hole to 9.0m bgl. 3) Gas and groundwater monitoring pipe installed to 9.0m bgl. 4) Response zone between 4.0m bgl and 9.0m bgl. 5) Er = 73%. 6) Description to 4.00m bgl based on adjacent PLT/TP313 log.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
Commachio 205	22/12	0800	9.00	0.00	100		Water/Mist	

Groundwater: Groundwater levels masked by use of water / mist flush.

Logged in general accordance with BS5930:2015



Method: Dynamic Sampled & Rotary Cored	Date(s): 07/12/2021	Logged By: TB	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501798.49, 278262.17	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 54.11m OD		Scale: 1:50

Sample/Core Run (m) Smpt. Ø (mm) Smpt. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.00 - 1.00									Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to sub angular fine to coarse of limestone and flint (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	53.81		
1.00 - 2.00	1.00 - 2.00 1.20	B SPT	N=10 (1,1,1,2,3,4)	100	0	0			Firm to stiff orange and yellow mottled brownish grey slightly sandy CLAY with occasional calcareous nodules and selenite powder. Sand is fine. (KELLAWAYS CLAY MEMBER)	1	(2.50)			
2.00 - 3.00	2.00 2.00 - 2.00 2.00 - 2.80 2.00 - 2.80	SPT ES B	N=12 (1,2,2,3,3,4)	100	0	0				2				
3.00 - 4.00	2.80 2.80 3.00 3.25 - 3.50	B D SPT C	50/15mm (25,50)	90	90	85			Firm to stiff brown mottled grey CLAY with frequent sub angular fine mudstone lithorelicts. (KELLAWAYS CLAY MEMBER)	3	(0.20)	51.11		
4.00 - 5.50	4.30 - 4.50	C		49	39	39			Very strong thinly to medium bedded light grey LIMESTONE With occasional shell fossils interbedded with weak dark grey mudstone from 4.00 -4.15mbgl. Horizontal closely to medium spaced undulating rough open clean (CORNBURASH LIMESTONE FORMATION)	4	(1.60)			
5.50 - 7.00				100	100	100	1500 1500 1500		Stiff dark grey CLAY. (BLISWORTH CLAY FORMATION) No Recovery (BLISWORTH CLAY FORMATION)	4.60 4.74	(0.14)	49.51 49.37		
7.00 - 8.50	6.90 - 7.00 7.00 8.05 - 8.25	C SPT C	50/175mm (16,9,16,20,14)	100	95	95	80 250 400		Very weak thickly bedded orange mottled greenish grey and grey MUDSTONE. (BLISWORTH CLAY FORMATION)	5	(0.76)			
8.50 - 10.00	8.80 - 9.00	C		100	100	91	30 250 620		Stiff dark grey CLAY. (BLISWORTH CLAY FORMATION) Strong to very strong thinly to medium bedded light grey LIMESTONE with occasional shell fossils interbedded with very weak to weak mudstone band. Mudstone band is at 10.50- 10.65mbgl. Discontinuities: Horizontal closely to medium spaced undulating rough and smooth partly open to open clean with clay infill at 8.27-8.33mbgl. (BLISWORTH LIMESTONE FORMATION)	7 7.15	(0.15)	47.11 46.96		
									... Limestone has frequent shell fossils.	10	(4.85)			

Continued on Next Sheet

Progress and Observations									General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
Commachio 305	07/12	0800	12.00	1.50	100		Water		1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 12.00m bgl. 3) Gas and groundwater monitoring pipe installed to 12.00m bgl. 4) Response zone between 3.00m bgl and 12.00m bgl. 5) Er = 73%
Groundwater: Groundwater levels masked by use of water flush.									



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**RBH-213**  
Page No. 2 of 2

Method: Dynamic Sampled & Rotary Cored	Date(s): 07/12/2021	Logged By: TB	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501798.49, 278262.17	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 54.11m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min. If. Mean Max							
10.00 - 11.50	10.65 - 10.85	C		100	100	100			Strong to very strong thinly to medium bedded light grey LIMESTONE with occasional shell fossils interbedded with very weak to weak mudstone band. Mudstone band is at 10.50- 10.65mbgl. Discontinuities: Horizontal closely to medium spaced undulating rough and smooth partly open to open clean with clay infill at 8.27-8.33mbgl. (BLISWORTH LIMESTONE FORMATION)  ... Limestone is very dark grey	11				
11.50 - 12.00	11.30 - 11.50	C												
	11.85 - 12.00	C		100	100	100						42.11		
End of Borehole at 12.00m										12.00				
										13				
										14				
										15				
										16				
										17				
										18				
										19				
										20				

Progress and Observations									General Remarks: 1) Hand dug pit to 1.20m bgl. 2) Borehole completed at 12.00m bgl. 3) Gas and groundwater monitoring pipe installed to 12.00m bgl. 4) Response zone between 3.00m bgl and 12.00m bgl. 5) Er = 73%
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
									Groundwater: Groundwater levels masked by use of water flush.







Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-216

Page No. 1 of 1

Method: Rotary Open

Date(s): 10/12/2021

Logged By: Marshall Drilling

Drilled By: Marshall Drilling

Client: Equites Newlands (Thrapston East) Ltd

Co-ords: 501611.34, 278060.72

Checked By: CV

Flush: Water/Mist

Hydrock Project No: C-18443-C

Ground Level: 61.75m OD

Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Very soft brown clayey TOPSOIL (Drillers Description). (AGRICULTURALLY DISTURBED TOPSOIL)	0.20	(0.20)	61.55		
								Soft yellow sandy CLAY (Drillers Description). (GLACIAL TILL)	0.50	(0.30)	61.25		
								Firm to stiff brown CLAY (Drillers Description). (GLACIAL TILL)					
								Dense orange SAND & GRAVEL (Drillers Description). (KELLAWAYS SAND MEMBER)	3.20		58.55		
								Soft to firm grey CLAY (Drillers Description). (KELLAWAYS CLAY MEMBER)	7.20	(1.20)	54.55		
								Extremely strong grey LIMESTONE (Drillers Description). (CORNBASH LIMESTONE FORMATION)	8.40	(1.60)	53.35		
								Firm to stiff brown CLAY (Drillers Description). (BLISWORTH CLAY FORMATION)	10.00	(5.00)	51.75		
								End of Borehole at 15.00m	15.00		46.75		

Progress and Observations

General Remarks:

1) Hand dug pit to 1.20m bgl 2) Rotary open hole to 15.0m bgl. 3) Gas and groundwater monitoring pipe installed to 12.00m bgl. 4) Response zone between 8.50m bgl and 15.00m bgl.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
Commachio 305	10/12	0800	15.00	0.00	100		Water/Mist	

Groundwater: Groundwater levels masked by use of water / mist flush.







Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
RBH-219

Page No. 1 of 1

Method: Rotary Open	Date(s): 20/12/2021	Logged By:	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501741.64, 278348.72	Checked By: CV	Flush: Water/Mist
Hydrock Project No: C-18443-C	Ground Level: 53.50m OD		Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Firm to stiff brown CLAY (Drillers Description). (AGRICULTURALLY DISTURBED TOPSOIL) CLAY (Drillers Description). (KELLAWAYS CLAY MEMBER)	0.30	(0.30)	53.20		
								LIMESTONE (Drillers Description). (CORNBRAsh LIMESTONE FORMATION)	1.50	(1.20)	52.00		
								End of Borehole at 3.00m	3.00	(1.50)	50.50		
									4				
									5				
									6				
									7				
									8				
									9				
									10				
									11				
									12				
									13				
									14				
									15				
									16				
									17				
									18				
									19				
									20				

Progress and Observations

General Remarks:

1) Hand dug pit to 1.20m bgl 2) Rotary open hole to 3.0m bgl. 3) Gas and groundwater monitoring pipe installed to 3.00m bgl. 4) Response zone between 1.50m bgl and 3.00m bgl.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
Commachio 305	20/12	0800	3.00	0.00	100		Water/Mist	



Method: Trial Pit	Date(s): 01/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502060.27, 278644.30	Stability: No collapse	Dimensions: 2.60m
Hydrock Project No: C-18443-C	Ground Level: 48.44m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	48.14	
0.40 - 0.60	B			Stiff grey and orange brown slightly sandy CLAY. (BLISWORTH CLAY FORMATION)				
0.80	HSV	113kPa						
1.80	D					(2.40)		
2.80	D			Very stiff very closely fissured grey, green grey and orange brown silty CLAY with rare silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	2.70	(0.20)	45.74	
				LIMESTONE.	2.90		45.54	
				(BLISWORTH LIMESTONE FORMATION)	2.95	(0.05)	45.49	
				Base of Excavation at 2.95m				

General Remarks:  
 1) Trial pit completed at 2.95m due to encountering limestone rock. 2) Backfilled to 2.10m with gravel, then 0.80m of arisings. Soakaway monitoring pipes installed to base of pit, 3.00m of plain and 1.00m of slotted pipe, then 2.00m of plain to top of gravel.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No SA02

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Method: Trial Pit	Date(s): 01/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502112.12, 278754.50	Stability: No collapse	Dimensions: 2.90m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 49.00m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	48.70	
0.40 - 0.70	B			Firm brown, light brown and grey slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of limestone and flint. Sand is fine to medium. (HEAD DEPOSITS)	0.80	(0.50)	48.20	
1.00 1.00	D HSV	123kPa		Stiff grey and orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	1			
2.00	D				2	(2.00)		
2.90	D			Stiff very closely fissured grey and light brown silty CLAY with occasional silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	2.80	(0.15)	46.20	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	2.95 3.00	(0.05)	46.05 46.00	
				Base of Excavation at 3.00m				

General Remarks:  
 1) Trial pit terminated at 3.00m due to encountering limestone rock. 2) Backfilled between 2.95m and 0.95m bgl with gravel, then 0.95m of arisings. Soakaway monitoring pipes installed to base of pit 3.00m of plain and 1.00m of slotted pipe, then 2.00m of plain to top of gravel.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No SA03

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Method: Trial Pit	Date(s): 01/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502146.03, 278639.50	Stability: No collapse	Dimensions: 2.60m
Hydrock Project No: C-18443-C	Ground Level: 46.58m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.45	(0.45)	46.13	
0.50	D			Light brown slightly gravelly SAND. Gravel is angular to rounded fine to coarse of limestone and flint. (HEAD DEPOSITS)	0.95	(0.50)	45.63	
1.00 - 1.40	B			Light brown slightly clayey slightly silty gravelly SAND. Gravel is angular to rounded fine, to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	1.85	(0.90)	44.73	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	1.95	(0.10)	44.63	
				Base of Excavation at 1.90m	2			
					3			
					4			
					5			

General Remarks:  
 1) Trial pit terminated at 1.9m due to encountering limestone rock. 2) Backfilled to 1.00m with gravel, then 0.85m of arisings. Soakaway monitoring pipes installed to base of pit 1.00m of plain and 1.00m of slotted pipe, then 1.00m of plain to top of gravel.

Groundwater: No groundwater encountered.





Method: Trial Pit	Date(s): 21/06/2021	Logged By: NT	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501421.14, 278114.47	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 65.39m OD	Plant: JCB 3CX	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm light brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded flint and chalk. (TOPSOIL - MADE GROUND)	0.40	(0.40)	64.99	[Cross-hatch pattern]
0.50	ES		▼	Stiff greyish brown slightly sandy slightly gravelly CLAY with occasional orange cobbles sized sand pockets. Gravel is fine to coarse, sub-angular to rounded chalk and flint. (GLACIAL TILL)	0.70			[Dotted pattern]
0.70	D				0.70			
0.70	HSV	111kPa			1.20	(0.80)	64.19	[Dotted pattern]
1.70	B			Stiff light grey becoming bluish grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded chalk, flint and limestone. (GLACIAL TILL)	1.70			[Dotted pattern]
1.70	HSV	105kPa			2.80	(2.10)		[Dotted pattern]
2.80	D				3.30		62.09	[Dotted pattern]
				Base of Excavation at 3.30m				

General Remarks:  
 1) Trial pit completed at 3.30m bgl. 2) Backfilled with lightly compacted arisings.

Method: Trial Pit	Date(s): 30/06/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501523.30, 278098.62	Stability: Stable	Dimensions: 1.00m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 63.94m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly sandy CLAY with occasional rootlets and sub-angular to sub-rounded fine to coarse gravel of flint and brick. (TOPSOIL - MADE GROUND)	0.25	(0.25)	63.69	
0.50	D			Firm reddish brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse flint, brick and chalk. (LANDFILL - MADE GROUND)	0.40	(0.15)	63.54	
1.00	ES			Firm grey and brown mottled dark brown slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse flint, brick, chalk and sandstone. (LANDFILL - MADE GROUND)	1.05	(0.65)		
2.20	ES			Stiff reddish brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse flint, brick and chalk. (LANDFILL - MADE GROUND)	1.40	(0.35)	62.89	
2.90	D			Firm grey and brown mottled dark brown slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse flint, brick, chalk and sandstone. (LANDFILL - MADE GROUND)	2.00	(1.60)		
				... From 2.0m bgl: Cobbles sandstone, concrete and bituminous bound materials encountered.				
				... From 2.50m bgl: Becoming sandy.				
				Base of Excavation at 3.00m	3.00		60.94	

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501389.88, 278200.07	Stability: Stable	Dimensions: 1.00m <input type="text" value="2.50m"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 65.74m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown sandy CLAY with occasional angular fine to coarse gravel of flint, brick and glass. (TOPSOIL - MADE GROUND)	0.25	(0.25)	65.49	
				Reddish brown slightly gravelly clayey SAND. Gravel is sub-angular to sub-rounded fine to coarse sandstone, limestone, flint and brick. (LANDFILL - MADE GROUND)	0.50	(0.25)	65.24	
0.70	D			Stiff light grey, brown and dark grey slightly sandy gravelly CLAY. Gravel is angular to rounded fine to coarse flint, chalk, sandstone, bituminous bound materials and brick. (LANDFILL - MADE GROUND)	1.00	(1.50)		
1.40	D				2.00		63.74	
1.50	ES			Orangish brown gravelly SAND. Gravel is angular to rounded fine to coarse flint and brick. (LANDFILL - MADE GROUND)	2.30	(0.30)	63.44	
2.70	D			Stiff light grey, brown and dark grey slightly sandy gravelly CLAY with an humic odour. Gravel is angular to rounded fine to coarse flint, chalk, sandstone, bituminous bound materials and brick. (LANDFILL - MADE GROUND)	3.00	(0.70)	62.74	
Base of Excavation at 3.00m					3.00			
					4.00			
					5.00			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501327.51, 278334.30	Stability: Stable	Dimensions: 1.00m <input type="text"/> 2.50m
Hydrock Project No: C-18443-C	Ground Level: 64.30m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	ES			Stiff dark brown slightly sandy CLAY with rare to occasional angular to sub-rounded fine to medium flint. (TOPSOIL - MADE GROUND)	0.60	(0.60)	63.70	
1.10	D			Very stiff dark brown slightly sandy CLAY with occasional angular to sub-angular fine to medium flint. (GLACIAL TILL)	1.00	(0.40)	63.30	
1.40	D			Firm orange very sandy CLAY with rare angular fine to medium flint. (GLACIAL TILL)	1.20	(0.20)	63.10	
2.50	D			Stiff light grey mottled grey slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse flint and chalk. (GLACIAL TILL)	2.00	(1.80)		
2.90	D			... From 2.70m bgl: Becoming very stiff dark grey and brown mottled orangish brown in colour.	3.00		61.30	
				----- Base of Excavation at 3.00m	3.00			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501389.70, 278289.95	Stability: Stable	Dimensions: 1.00m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 64.62m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm dark brown slightly gravelly sandy CLAY. Gravel is angular to sub-angular fine to coarse flint, sandstone, brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	64.32	[Cross-hatch pattern]
				Firm dark grey and orangish brown slightly gravelly slightly sandy CLAY. Gravel is angular to sub-angular fine to coarse flint, sandstone, brick. (LANDFILL - MADE GROUND)	0.50	(0.20)	64.12	[Cross-hatch pattern]
				Stiff dark grey slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to coarse flint, brick and chalk. (LANDFILL - MADE GROUND)	1.00	(1.80)		[Cross-hatch pattern]
1.80	HSV	53kPa		... From 2.0m bgl: Becoming sandy.	2.00			[Cross-hatch pattern]
2.20	HSV	40kPa			2.30		62.32	[Cross-hatch pattern]
				CONCRETE. (LANDFILL - MADE GROUND)	2.50	(0.20)	62.12	[Cross-hatch pattern]
3.00 - 3.20	B			Light orange SAND. (GLACIOFLUVIAL DEPOSITS)	3.00	(0.70)		[Dotted pattern]
				Base of Excavation at 3.20m	3.20		61.42	[Dotted pattern]
					4.00			
					5.00			

General Remarks:  
 1) Trial pit completed at 3.20m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
**TP107**  
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Method: Trial Pit	Date(s): 30/06/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501568.24, 278201.92	Stability: Unstable.	Dimensions: 2.50m 1.00m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 61.93m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20 0.20	B ES			Dark brown slightly gravelly SAND with occasional rootlets. Gravel is sub-angular to sub-rounded fine to coarse flint. (TOPSOIL - MADE GROUND)		(0.35)	61.58	
				... From 0.30 to 0.60m bgl: Minor collapse of sides	0.35			
0.50	D			Stiff orangish brown slightly gravelly sandy CLAY. Gravel is angular fine to medium flint. (LANDFILL - MADE GROUND)		(0.25)	61.33	
					0.60			
1.50	ES			Stiff grey and brown mottled reddish brown slightly sandy gravelly CLAY. Gravel is angular fine to coarse brick, flint, sandstone, concrete, bituminous bound materials and chalk. (LANDFILL - MADE GROUND)		(1.90)		
					1			
					2			
					2.50		59.43	
					2.50			
2.80	D							
					3			
					4			
					5			

General Remarks:  
 1) Trial pit completed at 2.50m bgl. 2) From 0.30 to 0.60m bgl minor collapse of sides. 3) Backfilled with lightly compacted arisings.

Groundwater: Groundwater slow flow encountered at 3.00m bgl rising to 2.90m bgl after 10 minutes.



Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501409.25, 278377.11	Stability: Stable	Dimensions: 1.00m <input type="text" value="2.50m"/>	Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 62.93m OD	Plant: JCB 3CX		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown and reddish brown slightly gravelly slightly sandy CLAY. Gravel is angular to sub-angular fine to medium flint and brick. (TOPSOIL - MADE GROUND)	0.70	(0.70)	62.23	
1.00	D			Stiff brown mottled greyish brown and dark brown and orangish brown slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to coarse flint, brick and rare plastic. (LANDFILL - MADE GROUND)	1.40	(0.70)	61.53	
1.20 - 2.60	AMAL							
1.60	B			Soft dark grey slightly gravelly sandy CLAY with organic odour and rare plastic bag. Gravel is angular to rounded fine to medium flint, brick, glass and sandstone. (LANDFILL - MADE GROUND)	3.20	(1.80)	59.73	
				... From 2.50m bgl: Becoming soft with many cobbles of bricks.				
				Base of Excavation at 3.20m				

General Remarks:  
 1) Trial pit completed at 3.20m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.





Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TP110

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Method: Trial Pit	Date(s): 16/07/2021	Logged By: NT	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501472.36, 278436.44	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 62.40m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft to firm brown sandy slightly gravelly CLAY with frequent roots and rootlets. Gravel is sub-angular to angular fine to coarse flint (TOPSOIL - MADE GROUND)	0.35	(0.35)	62.05	
0.60	ES			Stiff brown and grey mottled slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular limestone brick sandstone flint concrete and chalk (LANDFILL - MADE GROUND)	1.00	(0.65)	61.40	
0.90 0.90	B HSV	93kPa		Soft locally firm brownish grey sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded chalk flint and rare brick (LANDFILL - MADE GROUND)	1.90	(0.90)	60.50	
1.50 1.50 1.60	D ES HSV	47kPa		Firm friable grey sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular brick and chalk with mild humic odour in black pockets. (LANDFILL - MADE GROUND)	2.60	(1.10)	59.40	
2.20	ES							
2.60	B							
Base of Excavation at 3.00m								
3.00								
4								
5								

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 30/06/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501615.62, 278326.03	Stability: Stable	Dimensions: 1.00m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 57.73m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30 0.30	B ES			Firm brown slightly sandy CLAY with occasional rootlets. (TOPSOIL - MADE GROUND)	0.40	(0.40)	57.33	
0.65	HSV	83kPa		Stiff light grey and brown slightly gravelly CLAY with frequent cobble sized pockets of orangish brown clayey sand. (GLACIAL TILL)	1.70	(1.30)	56.03	
1.20 1.20	D HSV	60kPa		Stiff brown and orangish brown slightly gravelly very sandy CLAY. Gravel is angular to rounded fine to medium flint. (GLACIAL TILL)	2.60	(0.90)	55.13	
2.40 - 2.50	B			Firm bluish grey mottled orangish brown CLAY with occasional to rare gravel of angular to sub-angular medium to coarse flint. (GLACIAL TILL)	3.00	(0.40)	54.73	
2.60 2.70	HSV D	47kPa						
2.90 - 3.30	B							
				Base of Excavation at 3.00m				
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501646.84, 278362.23	Stability: Stable	Dimensions: 1.00m x 8.00m
Hydrock Project No: C-18443-C	Ground Level: 55.65m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	ES			Firm brown slightly sandy CLAY with occasional rootlets. (TOPSOIL - MADE GROUND)	0.30	(0.30)	55.35	[Pattern]
0.35	ES			Stiff dark grey slightly gravelly CLAY with frequent large cobble sized pockets of reddish brown pockets of firm slightly gravelly sandy CLAY. Gravel is angular to rounded fine to medium flint. (LANDFILL - MADE GROUND)				[Pattern]
0.50	D							
0.80	HSV	62kPa				(1.00)		
1.40	D	53kPa		Firm greyish and orangish brown slightly gravelly sandy CLAY. Gravel is angular to rounded fine to medium flint. (LANDFILL - MADE GROUND)		(0.40)		[Pattern]
1.40	HSV							
				Stiff greyish brown sandy CLAY (BURIED TOPSOIL) ... At 1.70m bgl: Gravel chamber in the eastern side of the pit, no service encountered, pit extended south. ... At 1.90m bgl: Red brick pipe encountered, not broken left intact at base of pit. Pit extended south.	2.00	(0.30)	53.65	[Pattern]
2.40 - 2.50	B			Firm light brown mottled light grey CLAY with occasional angular medium to coarse gravel of flint. (GLACIAL TILL)		(0.70)		[Pattern]
2.90 - 3.00	B			Soft orangish brown and light brown mottled light grey very sandy CLAY with occasional angular medium sized gravel of chert. (GLACIOFLUVIAL DEPOSITS)	2.70	(0.20)	52.95	[Pattern]
				Strong grey limestone. (CORNBRAsh LIMESTONE FORMATION)	2.90	(0.10)	52.75	[Pattern]
				Base of Excavation at 3.00m	3.00		52.65	[Pattern]

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP114

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Method: Trial Pit	Date(s): 16/07/2021	Logged By: NT	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501393.11, 278547.05	Stability: Spalling within granular Made Ground.	Dimensions: 1.00m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 64.39m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft brown sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint and brick with frequent roots and rootlets. (TOPSOIL - MADE GROUND)	0.35	(0.35)	64.04	
0.50 0.60	ES B			Orange gravelly SAND. Gravel is fine to coarse sub-angular to sub-rounded limestone, brick and chalk. (LANDFILL - MADE GROUND)	1.30	(0.95)	63.09	
1.40 1.40	D HSV	47kPa		Soft to firm grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded chalk and rare brick. (LANDFILL - MADE GROUND)	1.90	(0.60)	62.49	
2.20 2.60	ES B			Dark grey to black clayey gravelly SAND with medium cobble content of brick and concrete. Gravel is fine to coarse sub-angular to angular brick sandstone concrete ash with occasional wood plastic metal rope and glass. With rare boulder of concrete and brick wall. (LANDFILL - MADE GROUND)	3.20	(1.30)	61.19	
3.40 3.40	D HSV	45kPa		Soft to firm grey and yellowish brown sandy gravelly CLAY. Gravel is sub-angular to angular chalk flint brick ash and concrete. (LANDFILL - MADE GROUND)	3.80	(0.60)	60.59	
Base of Excavation at 3.80m					4			
					5			

General Remarks:  
 1) Trial pit completed at 3.80m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: Seepage encountered at 3.20m bgl.



Method: Trial Pit	Date(s): 15/07/2021	Logged By: NT	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501461.33, 278516.20	Stability: Stable	Dimensions: 1.00m <input type="text" value="2.50m"/>	Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 62.65m OD	Plant: JCB 3CX		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft to firm brown sandy slightly gravelly CLAY with frequent roots and rootlets. Gravel is sub-angular to angular fine to coarse flint (TOPSOIL - MADE GROUND)	0.35	(0.35)	62.30	
0.60 0.60	ES HSV	67kPa		Firm orange sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint concrete brick and breeze block. (LANDFILL - MADE GROUND)	0.70	(0.35)	61.95	
1.00 1.20	D HSV	77kPa		Stiff brownish grey yellowish brown and orange brown mottled slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular sandstone brick and chalk with rare cobbles of concrete and sandstone. (LANDFILL - MADE GROUND)  <i>... Between 13.0m and 1.70m: Predominantly orange brown with cobble sized sand pockets.</i>	1.70	(1.00)	60.95	
1.60 1.60	B HSV	87kPa		Stiff grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded chalk and rare brick with black organic roots. (LANDFILL - MADE GROUND)	2.10	(1.40)		
2.00 2.20	ES HSV	86kPa			2.10			
2.50	D				3.10		59.55	
Base of Excavation at 3.10m								

General Remarks:  
 1) Trial pit completed at 3.10m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501578.67, 278412.68	Stability: Unstable/	Dimensions: 1.00m <input type="text" value="2.50m"/>	Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 59.30m OD	Plant: JCB 3CX		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Stiff dark brown slightly sandy CLAY with occasional angular fine gravel of flint. (TOPSOIL - MADE GROUND)	0.40	(0.40)	58.90	
				Stiff grey and brown CLAY with frequent cobble sized pockets of reddish brown slightly gravelly very sandy CLAY. Gravel is sub-angular to sub-rounded fine to medium flint. (GLACIAL TILL)	1	(1.70)		
2.20	B			Soft light brown very sandy CLAY. (GLACIOFLUVIAL DEPOSITS)	2.10	(0.30)	57.20	
2.60	B			Very soft light brown very sandy CLAY with rare to occasional sub-angular to rounded fine sandstone. (GLACIOFLUVIAL DEPOSITS)	2.40	(0.70)	56.90	
				Base of Excavation at 3.10m	3.10		56.20	
					4			
					5			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Sides unstable below 2.10m bgl. 3) Backfilled with lightly compacted arisings.



Method: Trial Pit	Date(s): 30/06/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501669.20, 278417.75	Stability: Stable	Dimensions: 1.00m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 54.46m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm dark brown sandy CLAY with occasional to rare angular fine to coarse flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	54.16	
				Dark grey and brown mottled orangish brown slightly gravelly slightly sandy CLAY with occasional cobble sized pockets of orangish brown slightly gravelly sandy CLAY. Gravel is angular to sub-angular fine to medium flint. (LANDFILL - MADE GROUND)	0.70	(0.40)	53.76	
1.00	B			Stiff greyish brown sandy CLAY (BURIED TOPSOIL)	1.40	(0.70)	53.06	
1.60	D			Firm greyish brown mottled reddish orange sandy CLAY. (GLACIOFLUVIAL DEPOSITS)	1.90	(0.50)	52.56	
2.00 - 2.10	B			Soft light orangish brown very sandy CLAY with rare rounded medium to coarse gravel of flint. (GLACIOFLUVIAL DEPOSITS)	2.20	(0.30)	52.26	
				Base of Excavation at 2.20m				

General Remarks:  
 1) Trial pit completed at 2.20m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 16/07/2021	Logged By: NT	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501426.70, 278621.18	Stability: Stable	Dimensions: 1.00m <input type="text" value="2.50m"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 64.35m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
0.10	ES			Soft brown sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint chalk and brick with frequent roots and rootlets. (TOPSOIL - MADE GROUND)	0.35	(0.35)	64.00		
0.70 0.70	B HSV	50kPa		Bluish grey slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded flint. (LANDFILL - MADE GROUND)	1.60	(1.25)	62.75		
1.80	ES			Black and grey sandy fine to coarse sub-angular to angular brick concrete sandstone and flint GRAVEL. (LANDFILL - MADE GROUND)	2.70	(1.10)	61.65		
2.80 2.80	D HSV	49kPa	▼	Soft to firm greenish grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular brick concrete ash and chalk. With low cobble content of brick and mild ash odour. (LANDFILL - MADE GROUND)	3.20	(0.50)	61.15		
				----- Base of Excavation at 3.20m -----					

General Remarks:  
 1) Trial pit completed at 3.20m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: Seepage encountered at 2.70m bgl.



Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501497.15, 278556.52	Stability: Stable	Dimensions: 1.00m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 62.54m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	D			Firm slightly sandy CLAY with occasional angular to sub-rounded fine to coarse gravel of flint and brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.24	
1.70	D		▼	Stiff dark grey and greyish brown mottled orangish brown slightly gravelly slightly sandy CLAY with occasional boulder sized pockets of orangish brown gravelly sandy clay, gravel is angular fine to coarse flint. Gravel is angular to rounded fine to coarse flint, brick. (LANDFILL - MADE GROUND)	2.10	(1.80)	60.44	
				... At 1.80m bgl: Perched groundwater in Made Ground .				
2.50	D			Stiff black and dark grey gravelly sandy CLAY. Gravel is angular to sub-angular fine to coarse chalk, flint, brick and timber. (LANDFILL - MADE GROUND)	2.40	(0.30)	60.14	
				Very stiff dark grey and greenish grey slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse flint, brick and chalk. (LANDFILL - MADE GROUND)	3.00	(0.60)	59.54	
				Base of Excavation at 3.00m	3.00			

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.





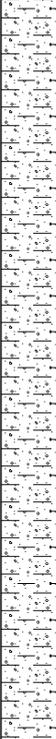
Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501614.94, 278473.95	Stability: Stable	Dimensions: 1.00m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 57.18m OD	Plant: JCB 3CX	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Stiff dark brown sandy CLAY with occasional angular medium to coarse flint. (TOPSOIL - MADE GROUND)	0.45	(0.45)	56.73	
1.00 1.00	D HSV	83kPa		Stiff dark grey and greyish brown mottled orangish brown slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to coarse flint, chalk and chert. (GLACIAL TILL)	1.00	(1.75)		
1.50 - 3.50	AMAL				2.20		54.98	
2.30 2.50 - 2.70	HSV B	87kPa		Stiff light grey and brown slightly sandy CLAY. (KELLAWAYS CLAY MEMBER)	3.00	(0.80)	54.18	
				Base of Excavation at 3.00m				
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 02/07/2021	Logged By: SP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501303.61, 278276.53	Stability: Stable	Dimensions: 1.00m <input type="text" value="2.50m"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 65.28m OD	Plant: JCB 3CX	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.40	ES			Firm light brown slightly gravelly slightly sandy CLAY. Gravel is sub-angular to rounded fine to medium flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	64.98	
				Dark brown slightly gravelly SAND. Gravel is angular to rounded fine to coarse flint and brick. (LANDFILL - MADE GROUND)	0.50	(0.20)	64.78	
1.00	D			Stiff light brown and grey slightly gravelly CLAY. Gravel is sub-angular to rounded fine to coarse chalk, flint, sandstone and limestone. (GLACIAL TILL)  ... From 0.75m bgl: Becoming grey mottled light brown in colour.	1			
2.00	D				2	(2.50)		
2.70	D				3			
Base of Excavation at 3.00m					3.00		62.28	
					4			
					5			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501483.37, 278719.47	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 64.56m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00	B			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	64.26	
0.00 - 0.30	B							
0.00 - 0.30	B							
0.40	ES			Stiff grey mottled light brown slightly gravelly CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse of flint and chalk (GLACIAL TILL)	0.60	(0.30)	63.96	
0.80	D			Firm brown mottled light grey slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of flint and chalk. (GLACIAL TILL)	1.50	(0.90)	63.06	
1.60	D			Firm to stiff brown mottled grey gravelly CLAY with low cobble and boulder content and occasional selenite powder. Gravel is subangular to rounded fine to coarse of flint and chalk. Cobbles and boulders are subangular to subrounded of flint. (GLACIAL TILL)	2.20	(0.70)	62.36	
1.60	D							
2.30	D			Firm to stiff orangish brown mottled grey slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of flint and chalk. (GLACIAL TILL)	2.40	(0.20)	62.16	
2.30	D							
2.30	ES			Firm reddish brown and grey mottled slightly gravelly very sandy CLAY with occasional sand sized selenite crystals. Gravel is subangular to rounded fine to medium of chalk and flint (GLACIAL TILL)	3.00	(0.60)	61.56	
3.00	D			Base of Excavation at 3.00m				

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.  
 No groundwater encountered.



Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501607.71, 278699.53	Stability: No collapse	Dimensions: 3.00m 0.60m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 61.75m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	61.45	
0.50	D			Stiff grey mottled light brown slightly gravelly CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse of flint and chalk. (GLACIAL TILL)	0.60	(0.30)	61.15	
0.80	D			Firm brown mottled light grey slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of flint and chalk. (GLACIAL TILL)	1.00	(0.40)	60.75	
1.00 1.00 - 2.00 1.00 - 2.80 1.00	B LB B HSV	88kPa		Firm to stiff brown mottled grey gravelly CLAY with low cobble and boulder content and occasional selenite powder. Gravel is subangular to rounded fine to coarse of flint and chalk. Cobbles and boulders are subangular to subrounded of flint. (GLACIAL TILL)	2.00	(1.40)		
2.00	HSV	91kPa			2.40		59.35	
2.50	D			Firm to stiff orangish brown mottled grey slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of flint and chalk. (GLACIAL TILL)	2.80	(0.40)	58.95	
				Firm reddish brown and grey mottled slightly gravelly very sandy CLAY with occasional sand sized selenite crystals. Gravel is subangular to rounded fine to medium of chalk and flint. (GLACIAL TILL)	3.00	(0.20)	58.75	
				Base of Excavation at 3.00m				

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.  
 No groundwater encountered.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP203  
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Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501669.91, 278665.65	Stability: No collapse	Dimensions: 0.60m x 2.70m
Hydrock Project No: C-18443-C	Ground Level: 58.57m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	58.27	
0.30 0.30 - 1.00 0.30 - 2.80	B LB B			Firm to stiff orangish brown mottled light grey sandy CLAY. Sand is fine (KELLAWAYS SAND MEMBER)	1.10	(0.80)	57.47	
1.20 1.20	D D			Orange and light grey mottled sandy SILT with sandstone lithorelicts. Sand is fine. Lithorelicts are sub angular fine to coarse. (KELLAWAYS SAND MEMBER)	1.90	(0.80)	56.67	
2.00 2.00 2.00	D D ES			Reddish brown mottled grey sandy clayey SILT with sandstone lithorelicts. Sand is fine. Lithorelicts are sub angular fine to coarse. (KELLAWAYS SAND MEMBER)	2.70	(0.80)	55.87	
2.80 2.80	D D			Reddish brown mottled bluish grey sandy clayey SILT with sandstone lithorelicts. Sand is fine. Lithorelicts are sub angular fine to coarse. (KELLAWAYS SAND MEMBER)	3.00	(0.30)	55.57	
Base of Excavation at 3.00m					3.00		55.57	
					4			
					5			

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.  
No groundwater encountered.



Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501720.16, 278643.60	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 56.05m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	55.75	
0.50	D			Firm to stiff orangish brown mottled light grey sandy CLAY. Sand is fine (KELLAWAYS SAND MEMBER)	0.90	(0.60)	55.15	
1.00	D			Firm to stiff reddish brown mottled light grey sandy CLAY. Sand is fine (KELLAWAYS SAND MEMBER)	1.60	(0.70)	54.45	
1.60 - 2.60	B			Firm orange mottled grey slightly sandy CLAY with occasional yellow selenite powder and mudstone lithorelicts. Lithorelicts are sub angular fine to medium. (KELLAWAYS CLAY MEMBER)	2.60	(1.00)	53.45	
2.70 2.70	D D			Firm bluish grey CLAY with frequent sub angular fine to medium mudstone lithorelicts. (KELLAWAYS CLAY MEMBER)	3.00	(0.40)	53.05	
				Base of Excavation at 3.00m	3.00		53.05	
					4			
					5			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.  
 No groundwater encountered.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP205

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Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501806.23, 278665.50	Stability: No collapse	Dimensions: 2.60m
Hydrock Project No: C-18443-C	Ground Level: 54.37m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	54.07	
0.50	ES			Firm light brown slightly gravelly slightly sandy CLAY. Gravel is sub angular fine to medium of flint. (HEAD DEPOSITS)	0.80	(0.50)	53.57	
1.00	D			Stiff brownish grey mottled light grey slightly gravelly CLAY with occasional rootlets. Gravel is sub angular to rounded fine to coarse of flint (HEAD DEPOSITS)	1.40	(0.60)	52.97	
1.50 1.50	D D			Firm to stiff brown mottled light grey CLAY with frequent medium sand sized selenite crystals. (KELLAWAYS CLAY MEMBER)	1.90	(0.50)	52.47	
2.00	D			Firm orange mottled grey slightly sandy CLAY with occasional yellow selenite powder, medium sand sized selenite crystals and mudstone lithorelicts. Lithorelicts are subangular fine to medium. (KELLAWAYS CLAY MEMBER)	2.40	(0.50)	51.97	
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	2.45	(0.05)	51.92	
				Base of Excavation at 2.45m				
					3			
					4			
					5			

General Remarks:  
 1) Trial pit completed at 2.45m bgl. 2) Backfilled with lightly compacted arisings.  
 No groundwater encountered.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP206

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Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502053.67, 278771.61	Stability: No collapse	Dimensions: 0.60m x 2.90m
Hydrock Project No: C-18443-C	Ground Level: 50.57m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	50.27	
0.50	D			Firm orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of flint (HEAD DEPOSITS)	0.50	(0.20)	50.07	
0.70	B			LIMESTONE BAND. Recovered as angular fine to coarse GRAVEL (CORNBURASH LIMESTONE FORMATION)	0.70	(0.20)	49.87	
0.70 - 1.80	B			Light brown very clayey sandy GRAVEL with frequent shell fossils. Gravel is angular to sub angular fine to coarse of limestone. (CORNBURASH LIMESTONE FORMATION)	0.90	(0.20)	49.67	
0.80	D			Stiff yellowish brown mottled light grey CLAY (BLISWORTH CLAY FORMATION)	1.00	(0.20)	49.47	
1.10 - 1.80	B			Soft to firm red brown and grey mottled CLAY with frequent shell fossils. (BLISWORTH CLAY FORMATION)	1.10	(0.70)	48.77	
1.80	HSV	45kPa		Firm reddish brown mottled grey CLAY (BLISWORTH CLAY FORMATION)	1.80	(0.40)	48.37	
1.90	D				2.00	(0.40)	48.37	
2.20	HSV	72kPa		Firm to stiff bluish grey mottled green (turquoise) CLAY (BLISWORTH CLAY FORMATION)	2.20	(0.40)	47.97	
2.30	D				2.60	(0.40)	47.57	
3.00	D			Friable orangish brown mottled green(turquoise) CLAY (BLISWORTH CLAY FORMATION)	3.00	(0.40)	47.57	
				----- Base of Excavation at 3.00m	3.00		47.57	
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.  
 No groundwater encountered.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP207

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Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502068.78, 278573.32	Stability: No collapse	Dimensions: 2.60m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 46.23m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	45.93	
0.50	D			Red clayey fine to medium SAND. (HEAD DEPOSITS)		(1.00)		
1.40	D			Light brown clayey sandy angular to sub angular fine to coarse limestone and flint GRAVEL with frequent shell fossils. (HEAD DEPOSITS)	1.30	(0.20)	44.93	
				Yellow brown angular fine to coarse limestone GRAVEL. (HEAD DEPOSITS)	1.50	(0.30)	44.73	
1.80 - 2.60	B			Light brown very clayey sandy angular to sub angular fine to coarse of limestone and flint GRAVEL with frequent shell fossils. (HEAD DEPOSITS)	1.80	(0.80)	44.43	
				LIMESTONE (BLISWORTH LIMESTONE FORMATION)	2.60	(0.05)	43.63	
				Base of Excavation at 2.65m	2.65		43.58	

General Remarks:  
 1) Trial pit completed at 2.65m bgl. 2) Backfilled with lightly compacted arisings.  
 No groundwater encountered.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP208

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Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502032.40, 278506.58	Stability: No collapse	Dimensions: 2.80m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 45.80m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.40	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	45.50	
0.50	D			Friable red slightly gravelly sandy CLAY. Gravel is sub angular to rounded fine to medium of flint and chalk (HEAD DEPOSITS)	0.80	(0.50)	45.00	
0.50	D							
0.50	ES							
0.90	D			Friable dark red slightly gravelly sandy CLAY. Gravel is sub angular to rounded fine to coarse of flint and chalk (HEAD DEPOSITS)	1	(0.40)	44.60	
1.20 - 1.80	B			Light brown clayey sandy angular to sub angular fine to coarse of limestone and flint GRAVEL with frequent shell fossils. (HEAD DEPOSITS)	1.20	(1.45)	44.60	
2.60	D							
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION) Base of Excavation at 2.65m	2.60 2.65	(0.60)	43.20 43.15	
					3			
					4			
					5			

General Remarks:  
 1) Trial pit completed at 2.65m bgl. 2) Backfilled with lightly compacted arisings.  
 No groundwater encountered.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP209

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Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501950.35, 278537.44	Stability: No collapse	Dimensions: 0.60m x 3.00m
Hydrock Project No: C-18443-C	Ground Level: 49.08m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.20	(0.20)	48.88	
0.50	D			Stiff greenish grey mottled light brown slightly gravelly CLAY with occasional rootlets. Gravel is sub angular to rounded fine to coarse of flint (HEAD DEPOSITS)	0.70	(0.50)	48.38	
0.70 - 1.30	B			Stiff orangish brown mottled bluish grey slightly sandy CLAY with occasional rootlets. Sand is fine to medium (BLISWORTH CLAY FORMATION)	1.30	(0.60)	47.78	
1.50	HSV	106kPa		Stiff brown mottled bluish grey CLAY with rare coal fragments (BLISWORTH CLAY FORMATION)	1.90	(0.60)	47.18	
1.70	D							
2.00	D			Stiff light grey and brown slightly sandy gravelly CLAY. Gravel is angular fine to coarse of limestone (BLISWORTH LIMESTONE FORMATION)	2.10	(0.20)	46.98	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	2.15	(0.05)	46.93	
				Base of Excavation at 2.15m				
5								

General Remarks:  
 1) Trial pit completed at 2.15m bgl. 2) Backfilled with lightly compacted arisings.  
 No groundwater encountered.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP210

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Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501921.00, 278506.47	Stability: No collapse	Dimensions: 2.70m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 47.56m OD	Plant: 14T Tracked Excavator	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	47.26	
0.50 - 1.00	B			Stiff light brown slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of flint. (HEAD DEPOSITS)	1.00	(0.70)	46.56	
1.10	D			Stiff brown slightly gravelly CLAY with occasional rootlets. Gravel is sub angular to rounded fine to medium of flint (HEAD DEPOSITS)	1.30	(0.30)	46.26	
1.40	D			Light grey clayey gravelly SAND. Gravel is angular to sub angular fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	1.70	(0.40)	45.86	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	1.75	(0.05)	45.81	
				Base of Excavation at 1.75m				
2								
3								
4								
5								

General Remarks:  
 1) Trial pit completed at 1.75m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501873.72, 278516.89	Stability: Pit collapsing	Dimensions: 2.80m 0.60m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 49.37m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	49.07	
0.50 0.60 - 1.40	D B			Firm light brown slightly gravelly slightly sandy CLAY. Gravel is subangular fine to medium of flint. (HEAD DEPOSITS)	0.60	(0.30)	48.77	
1.00	HSV	140kPa		Stiff brownish grey mottled light grey slightly gravelly CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse of flint (HEAD DEPOSITS)	1	(0.80)	47.97	
1.50 1.50	D HSV	74kPa		Firm orangish brown mottled bluish grey slightly sandy CLAY. Sand is fine to medium. (BLISWORTH CLAY FORMATION)	1.40	(0.50)	47.47	
2.00	D			Firm orangish brown mottled greenish grey slightly sandy CLAY. Sand is fine to medium. (BLISWORTH CLAY FORMATION)	2	(0.20)	47.27	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	2.10 2.15	(0.05)	47.22	
				Base of Excavation at 2.15m				
3								
4								
5								

General Remarks:  
 1) Trial pit completed at 2.15m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501694.23, 278583.01	Stability: No collapse	Dimensions: 2.60m
Hydrock Project No: C-18443-C	Ground Level: 55.45m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	55.15	
0.50	D			Firm to stiff orangish brown mottled light grey sandy CLAY. Sand is fine (KELLAWAYS SAND MEMBER)	0.70	(0.40)	54.75	
0.70 0.70 0.70 - 1.70	D ES B			Firm to stiff orangish brown mottled bluish grey slightly sandy CLAY. Sand is fine (KELLAWAYS CLAY MEMBER)	1.70	(1.00)	53.75	
1.80	D			Firm orange mottled grey slightly sandy CLAY with occasional yellow selenite powder and mudstone lithorelicts. Lithorelicts are subangular fine to medium. (KELLAWAYS CLAY MEMBER)	2.60	(0.90)	52.85	
2.70 2.70 2.70	D D ES			Firm bluish grey CLAY with frequent subangular fine to medium mudstone lithorelicts. (KELLAWAYS CLAY MEMBER)	3.00	(0.40)	52.45	
				Base of Excavation at 3.00m	3.00			
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TP213

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Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501535.18, 278608.33	Stability: No collapse	Dimensions: 0.60m x 2.90m
Hydrock Project No: C-18443-C	Ground Level: 62.07m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	61.77	
0.50	D			Stiff brownish grey slightly gravelly CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse of flint and chalk. (GLACIAL TILL)		(0.80)		
1.00	B			Firm brown mottled grey slightly sandy gravelly CLAY. Gravel is sub angular to rounded fine to coarse of flint and chalk. (GLACIAL TILL)	1.10	(0.60)	60.97	
1.80	D			Firm to stiff brown mottled bluish grey slightly sandy slightly gravelly CLAY with occasional fine to coarse sand sized selenite crystals and shell fossils. Sand is fine. Gravel is sub angular to rounded fine to coarse of flint. (GLACIAL TILL)		(1.30)		
2.00	HSV	109kPa			2			
2.80	D							
3.00	HSV	109kPa			3.00		59.07	
				Base of Excavation at 3.00m				
					4			
					5			

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP214  
Page No. 1 of 1

Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501453.48, 278663.42	Stability: No collapse	Dimensions: 2.60m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 64.43m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
0.40	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	64.13		
0.70	D			Stiff grey mottled light brown slightly gravelly CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse of flint and chalk (GLACIAL TILL)	0.60	(0.30)	63.83		
1.40	D			Firm brown mottled light grey slightly sandy gravelly CLAY. Gravel is sub angular to rounded fine to coarse of flint and chalk (GLACIAL TILL)	1.30	(0.70)	63.13		
1.50 - 2.50	B			Firm to stiff brown mottled grey gravelly CLAY with low cobble and boulder content. Gravel is subangular to rounded fine to coarse of flint and chalk. Cobbles and boulders are subangular to subrounded of flint (GLACIAL TILL)	1.50	(0.20)	62.93		
1.50 - 3.00	B			Firm to stiff orangish brown mottled grey slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of flint and chalk. (GLACIAL TILL)	2.00	(1.30)			
2.90	D			Firm brown and grey mottled slightly gravelly very sandy CLAY with occasional sand sized selenite crystals. Gravel is sub angular to rounded fine to medium of chalk and flint (GLACIAL TILL)	2.80	(0.20)	61.63		
				Base of Excavation at 3.00m					

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TP215

Page No. 1 of 1

Method: Trial Pit	Date(s): 19/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501427.61, 278638.97	Stability: No collapse	Dimensions: 2.80m 0.60m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 64.52m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Firm dark orangish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of flint. (TOPSOIL - MADE GROUND)	0.20	(0.20)	64.32	
0.80 0.80	D ES			Firm light grey slightly gravelly sandy CLAY. Gravel is angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)	1.00	(0.80)	63.52	
1.50 1.50	D ES			Stiff dark grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint. (GLACIAL TILL)	2.20	(1.20)	62.32	
2.50 - 3.00	B			Stiff light grey mottled orangish brown slightly sandy gravelly CLAY. Gravel is rounded to angular fine to coarse of chalk and flint. (GLACIAL TILL)	3.00	(0.80)	61.52	
----- Base of Excavation at 3.00m					3.00			
					4			
					5			

General Remarks:  
1) Trial pit complete at 3.00m bgl. 2) Excavation backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 22/11/2021	Logged By: TB	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501377.59, 278527.20	Stability: No collapse	Dimensions: 3.00m	Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 64.62m OD	Plant: 14T Tracked Excavator	0.60m	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of chalk and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	64.32	
0.50	D			Firm orangish brown slightly sandy gravelly CLAY. Gravel is angular to sub rounded fine to coarse of flint and chalk. (GLACIAL TILL)	0.50	(0.20)	64.12	
1.00	D			Firm light grey and reddish brown mottled gravelly CLAY. Gravel is sub angular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	1.00	(1.00)		
1.50 - 2.50	B			Firm to stiff orangish brown mottled grey gravelly CLAY with medium cobble content and low boulder content . Gravel is subangular to rounded fine to coarse of limestone chalk and flint. Cobbles are sub angular of limestone and flint. Boulder is rounded of flint. (GLACIAL TILL)	1.50		63.12	
2.60	D			Firm to stiff brown mottled bluish grey slightly sandy gravelly CLAY with medium cobble content, occasional selenite powder and rare fine gravel sized selenite crystals. Gravel is subangular to rounded fine to coarse of flint and chalk. Cobbles are subrounded of flint and chalk. (GLACIAL TILL)	2.50		62.12	
3.00	D			Firm to stiff dark grey gravelly CLAY. Gravel is subangular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	2.80	(0.30)	61.82	
3.00	D				3.00	(0.20)	61.62	
				Base of Excavation at 3.00m				
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP217

Page No. 1 of 1

Method: Trial Pit	Date(s): 19/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501436.96, 278566.67	Stability: No collapse	Dimensions: 0.60m x 2.70m
Hydrock Project No: C-18443-C	Ground Level: 63.73m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Firm dark brown slightly sandy slightly gravelly CLAY. Gravel of fine to coarse rounded to angular flint. (TOPSOIL - MADE GROUND)	0.20	(0.20)	63.53	[Cross-hatch pattern]
0.30 0.30	D ES			Orangish brown slightly clayey gravelly SAND. Gravel of fine to coarse subrounded to subangular flint with gravel sized fragments of fine to coarse subrounded to subangular brick and rare asphalt. (LANDFILL - MADE GROUND)	0.40	(0.20)	63.33	[Cross-hatch pattern]
1.00 1.00	B ES			Firm to stiff dark orangish brown slightly gravelly sandy CLAY. Gravel of fine to coarse rounded to subangular chalk and flint with gravel sized fragments of fine to coarse rounded to subangular brick and rare asphalt. (LANDFILL - MADE GROUND)	1.30	(0.90)	62.43	[Cross-hatch pattern]
2.00 2.00	D ES			Stiff dark grey locally mottled black slightly sandy slightly gravelly CLAY with a low cobble content and occasional boulders. Gravel sized fragments of fine to coarse rounded to angular concrete brick and rare wood plastic and fabric. Gravel of fine to coarse rounded to angular chalk and flint. (LANDFILL - MADE GROUND)	2.00	(1.70)		[Cross-hatch pattern]
3.00 3.00	B ES				3.00		60.73	[Cross-hatch pattern]
4.00 4.00	D ES				4.00			[Cross-hatch pattern]
					5.00			[Cross-hatch pattern]

General Remarks:  
1) Trial pit complete at 3.00m bgl. 2) Excavation backfilled with lightly compacted arisings. 3) No odours.

Groundwater: Groundwater encountered at 2.80m bgl.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP218

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Method: Trial Pit	Date(s): 19/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501467.20, 278585.93	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 63.48m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Soft to firm dark orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to angular fine to coarse of flint. (TOPSOIL - MADE GROUND)	0.20	(0.20)	63.28	
0.80 0.80	D ES			Stiff dark grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)	1	(1.60)		
1.50 1.50	B ES				1.80		61.68	
2.50 2.50	D ES			Firm dark grey mottled black slightly sandy very gravelly CLAY with a low cobble content and occasional boulders. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular concrete asphalt and wood. (LANDFILL - MADE GROUND)	2			
3.40 3.40	D ES				3.50		59.98	
4.00 4.00 4.00	B D ES			Soft to firm orangish brown slightly sandy slightly gravelly silty CLAY with a low cobble content and occasional boulders. Gravel sized fragments of rounded to angular fine to coarse of concrete and brick. Gravel is rounded to angular fine to coarse ochalk and flint. (LANDFILL - MADE GROUND)	4	(0.50)	59.48	
<p style="text-align: center;">Base of Excavation at 4.00m</p>								

General Remarks:  
 1) Trial pit complete at 4.00m bgl. 2) Excavation backfilled with lightly compacted arisings. 3) No odours.

Groundwater: Groundwater encountered at 4.00m bgl.



Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501564.01, 278563.64	Stability: No collapse	Dimensions: 2.60m
Hydrock Project No: C-18443-C	Ground Level: 59.97m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	59.67	
0.30	B			Stiff brownish grey slightly gravelly CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse of flint. (GLACIAL TILL)	1.60	(1.30)	58.37	
0.30 - 1.00	LB							
0.30 - 2.80	B							
1.70	D			Orangish brown gravelly SAND. Gravel is subangular to rounded fine to coarse of siltstone. (KELLAWAYS SAND MEMBER)	3.00	(1.40)	56.97	
1.70	D							
2.70	D			Base of Excavation at 3.00m	3.00		56.97	
2.70	D							
2.70	ES							

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP220  
Page No. 1 of 1

Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501601.08, 278532.10	Stability: No collapse	Dimensions: 2.90m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 58.12m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of limestone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	57.82	[Pattern]
0.50	D			Firm reddish brown slightly gravelly sandy CLAY. Gravel is sub angular to rounded fine to coarse of flint (GLACIAL TILL)	0.80	(0.50)	57.32	[Pattern]
0.80 0.80 - 1.80 0.80 - 2.80	B LB B			Light grey and orangish brown mottled clayey SILT. (KELLAWAYS SAND MEMBER)	1	(1.50)		[Pattern]
2.40	D			Light grey and reddish brown mottled clayey SILT with occasional sub angular fine to coarse siltstone lithorelicts (KELLAWAYS SAND MEMBER)	2.30	(0.40)	55.82	[Pattern]
2.80	D			Bluish grey and reddish brown mottled sandy SILT with occasional sub angular fine to coarse sandstone lithorelicts (KELLAWAYS SAND MEMBER)	2.70	(0.20)	55.42	[Pattern]
3.00	D			Firm bluish grey CLAY (KELLAWAYS CLAY MEMBER)	2.90	(0.10)	55.22	[Pattern]
				Base of Excavation at 3.00m	3	(0.10)	55.12	[Pattern]

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

HoleBASE SI - Hydrock Trialhole Template v3



Method: Trial Pit	Date(s): 23/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501645.33, 278499.15	Stability: No collapse	Dimensions: 2.60m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 55.54m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	55.24	
0.40	ES			Firm to stiff orangish brown mottled light grey sandy CLAY. Sand is fine. (KELLAWAYS CLAY MEMBER)	1.00	(1.00)	54.24	
0.50	D							
1.50	D	64kPa		Firm orange mottled grey slightly sandy CLAY with occasional yellow selenite powder and mudstone lithorelicts. Lithorelicts are sub angular fine to medium. (KELLAWAYS CLAY MEMBER)	2.40	(1.10)	53.14	
1.50	HSV			Firm bluish grey CLAY with frequent subangular fine to medium mudstone lithorelicts. (KELLAWAYS CLAY MEMBER)	3.00	(0.60)	52.54	
2.50	D							
				Base of Excavation at 3.00m				
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: Groundwater encountered at 3.00m bgl.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP222

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Method: Trial Pit	Date(s): 24/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501713.94, 278499.46	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 53.08m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	52.78	
0.50	ES			Stiff brownish grey mottled light grey slightly gravelly CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse of flint. (HEAD DEPOSITS)	0.60	(0.30)	52.48	
0.70	D			Firm orangish brown mottled bluish grey slightly sandy CLAY. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)	1.20	(0.60)	51.88	
1.30	D			Orange very clayey sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (CORNBASH LIMESTONE FORMATION)	1.50	(0.30)	51.58	
				LIMESTONE. (CORNBASH LIMESTONE FORMATION)	1.60	(0.10)	51.48	
				Base of Excavation at 1.60m				
					2			
					3			
					4			
					5			

General Remarks:  
 1) Trial pit completed at 1.60m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP223

Page No. 1 of 1

Method: Trial Pit	Date(s): 26/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501813.71, 278451.96	Stability: No collapse	Dimensions: 0.60m <input type="text"/> 3.00m
Hydrock Project No: C-18443-C	Ground Level: 49.95m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	49.65	
0.30 - 0.70 0.30 - 0.70	B B			Firm to stiff light brown grey and brown mottled greenish grey gravelly CLAY. Gravel is angular to sub angular fine to coarse of limestone and flint (MADE GROUND)	0.70	(0.40)	49.25	
0.80 0.80	D ES			Firm greenish grey gravelly CLAY with frequent organic material. (MADE GROUND)	1.80	(1.10)	48.15	
1.80	D			Firm to stiff orangish brown mottled greenish grey slightly sandy CLAY (BLISWORTH CLAY FORMATION)	2.80	(1.20)		
2.80	D				3.00		46.95	
				Base of Excavation at 3.00m				

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP224

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Method: Trial Pit	Date(s): 26/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501887.45, 278472.64	Stability: No collapse	Dimensions: 0.60m x 2.70m
Hydrock Project No: C-18443-C	Ground Level: 48.36m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	48.06	[Pattern]
0.50	D			Firm to stiff light brown grey and brown mottled greenish grey gravelly CLAY. Gravel is angular to subangular fine to coarse of limestone and flint. (MADE GROUND)	0.60	(0.30)	47.76	[Pattern]
0.50	D							
0.50	ES			Firm reddish brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of flint. (HEAD DEPOSITS)	1.20	(0.60)	47.16	[Pattern]
0.70	D							
1.30	D			Firm to stiff light greenish grey slightly sandy gravelly CLAY with medium cobble content. Gravel is subangular fine to coarse of limestone. Cobbles are subangular of limestone. (BLISWORTH LIMESTONE FORMATION)	1.60	(0.40)	46.76	[Pattern]
1.70	D			Light brown clayey sandy angular fine to coarse GRAVEL of limestone. (BLISWORTH LIMESTONE FORMATION)	1.90	(0.30)	46.46	[Pattern]
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	1.95	(0.05)	46.41	[Pattern]
Base of Excavation at 1.95m								

General Remarks:  
 1) Trial pit completed at 1.95m bgl on limestone. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 27/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501946.06, 278482.32	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 47.00m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm to stiff light brown grey and brown mottled greenish grey gravelly CLAY. Gravel is angular to subangular fine to coarse of limestone and flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	46.70	[Pattern]
0.50 0.50	D ES			Firm orangish brown, red and grey mottled light brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of limestone. (MADE GROUND)				[Pattern]
0.90 - 2.40	B				1	(1.20)		[Pattern]
1.50	ES			Light grey gravelly organic CLAY with frequent partially decomposed grass. (MADE GROUND)	1.50		45.50	[Pattern]
1.60 1.60 1.60 - 2.40	D ES B			Light brown (cream) gravelly very clayey SAND with frequent shell fossils. Gravel is sub angular fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	1.60	(0.10)	45.40	[Pattern]
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	2.40 2.45	(0.05)	44.60 44.55	[Pattern]
				Base of Excavation at 2.45m				
					3			
					4			
					5			

General Remarks:  
 1) Trial pit completed at 2.4m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP226

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Method: Trial Pit	Date(s): 27/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501995.96, 278484.28	Stability: No collapse	Dimensions: 0.60m x 2.60m
Hydrock Project No: C-18443-C	Ground Level: 46.29m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.20	(0.20)	46.09	
0.40	ES			Firm orangish brown slightly gravelly sandy CLAY. Gravel is sub angular to rounded fine to coarse of limestone and flint . (HEAD DEPOSITS)		(1.00)		
1.30	D			Orangish brown gravelly SAND with occasional shell fossils. Gravel is sub angular to rounded fine to coarse of chalk and flint (HEAD DEPOSITS)	1.20	(0.70)	45.09	
2.00	D			Light brown (cream) gravelly very clayey SAND with frequent shell fossils. Gravel is sub angular fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	1.90	(0.60)	44.39	
2.50 - 3.00	B			Firm light brown mottled orangish brown slightly gravelly sandy CLAY with frequent shell fossils. Gravel is sub angular of limestone (BLISWORTH LIMESTONE FORMATION)	2.50	(0.50)	43.79	
				LIMESTONE (BLISWORTH LIMESTONE FORMATION)	3.00	(0.05)	43.29	
				Base of Excavation at 3.05m	3.05	(0.05)	43.24	

General Remarks:  
 1) Trial pit completed at 3.05m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.

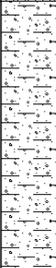
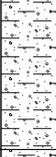
Method: Trial Pit	Date(s): 27/11/2021	Logged By: TB	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502037.04, 278488.94	Stability: No collapse	Dimensions: 0.60m x 2.90m	Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 45.71m OD	Plant: 14T Tracked Excavator		

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.20	(0.20)	45.51	
1.00	D			Firm orangish brown slightly gravelly sandy CLAY. Gravel is sub angular to rounded fine to coarse of limestone and flint . (HEAD DEPOSITS)	1.00	(1.20)		
1.40 - 1.80 1.40 - 1.80	B B			Reddish brown gravelly SAND with occasional shell fossils. Gravel is sub angular to rounded fine to coarse of chalk and flint (HEAD DEPOSITS)	1.40	(0.40)	44.31	
1.90 1.90 1.90	D D ES			Firm light brown mottled orangish brown slightly gravelly sandy CLAY with frequent shell fossils. Gravel is sub angular of limestone (BLISWORTH LIMESTONE FORMATION)	2.00	(1.00)		
2.90 2.90	D D			Soft orange slightly gravelly sandy CLAY. Gravel is sub angular fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	2.80	(0.20)	42.91	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	3.00	(0.05)	42.71	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	3.05	(0.05)	42.66	
				Base of Excavation at 3.05m				

General Remarks:  
 1) Trial pit completed at 3.05m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: Groundwater encountered at 3.05m bgl.

Method: Trial Pit	Date(s): 08/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502110.53, 278518.27	Stability: No collapse	Dimensions: 2.60m
Hydrock Project No: C-18443-C	Ground Level: 45.04m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	44.64	
0.50 - 0.70	B			Soft brown slightly gravelly sandy CLAY. Gravel is angular to rounded fine to coarse of flint, quartzite and limestone. Sand is fine to medium. (HEAD DEPOSITS)	1.30	(0.90)	43.74	
1.40	D			Firm brown slightly sandy silty CLAY. Sand is fine to medium. (HEAD DEPOSITS)	1.80	(0.50)	43.24	
2.00	D			Firm Light brown slightly gravelly sandy CLAY. Gravel is angular to rounded fine to coarse of limestone and flint. Sand is fine to medium. (HEAD DEPOSITS)	2.30	(0.50)	42.74	
2.50	D			Firm cream and light brown slightly sandy slightly gravelly silty CLAY. Gravel is angular fine to medium of limestone. Sand is fine to medium. (HEAD DEPOSITS)	3.00	(0.70)	42.04	
				Base of Excavation at 3.00m	3.00			
4								
5								

General Remarks:  
 1) Trial pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 09/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502139.86, 278500.70	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 46.90m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	46.40	
0.60	D			Light brown slightly clayey very gravelly SAND. Gravel is angular fine to coarse of limestone. Sand is fine to coarse. (HEAD DEPOSITS)	0.85	(0.35)	46.05	
0.90 0.90 - 1.05	B B			Light brown and cream SAND & GRAVEL. Gravel is fine to coarse angular limestone. Sand is fine to coarse. (BLISWORTH LIMESTONE FORMATION)	1.05	(0.20)	45.85	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	1.10	(0.05)	45.80	
				Base of Excavation at 1.10m				
2								
3								
4								
5								

General Remarks:  
 1) Trial pit terminated at 1.10m due to encountering limestone rock. ) Backfilled with arisings.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 09/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502108.01, 278442.07	Stability: No collapse	Dimensions: 3.00m 0.60m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 46.64m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	46.14	
0.60 0.60 0.60	D D ES			Soft light brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse of limestone. Sand is fine to medium. (BLISWORTH LIMESTONE FORMATION)	0.80	(0.30)	45.84	
0.85 - 1.05	B			Brown slightly silty SAND & GRAVEL. Gravel is fine to coarse angular limestone. Sand is fine to coarse. (BLISWORTH LIMESTONE FORMATION)	1	(0.30)	45.54	
				LIMESTONE. (BLISWORTH LIMESTONE FORMATION) Base of Excavation at 1.15m	1.10 1.10	(0.00)	45.54 45.54	

General Remarks:  
 1) Pit terminated at 1.15m due to encountering limestone rock. 2) Backfilled with arisings.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP231

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Method: Trial Pit	Date(s): 27/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502057.17, 278427.61	Stability: No collapse	Dimensions: 2.70m
Hydrock Project No: C-18443-C	Ground Level: 45.82m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint and limestone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	45.52	
0.30 0.30 - 1.00 0.30 - 1.60	B B B			Firm reddish brown slightly gravelly slightly sandy CLAY. Gravel is subangular to rounded fine to coarse of limestone. (HEAD DEPOSITS)	1.00	(0.70)	44.82	
1.50	D			Firm reddish brown slightly sandy CLAY. Sand is fine. (HEAD DEPOSITS)	1.90	(0.90)	43.92	
2.00 2.00 - 2.50	D B			Orangish brown gravelly SAND. Gravel is subangular to rounded fine to coarse of flint. (HEAD DEPOSITS)	2.70	(0.80)	43.12	
2.80	D			Soft to firm orange slightly gravelly sandy CLAY with frequent shell fossils. Gravel is subangular fine to coarse of limestone. (HEAD DEPOSITS)	3.00	(0.30)	42.82	
Base of Excavation at 3.00m								
4								
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP232

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Method: Trial Pit	Date(s): 27/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501963.84, 278425.55	Stability: No collapse	Dimensions: 0.60m x 2.80m
Hydrock Project No: C-18443-C	Ground Level: 48.97m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of limestone and limestone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	48.67	[Pattern]
0.50	D			Firm to stiff light brown grey and brown mottled greenish grey gravelly CLAY. Gravel is angular to subangular fine to coarse of limestone and flint. (HEAD DEPOSITS)	0.70	(0.40)	48.27	[Pattern]
0.70 - 1.70	B			Firm to stiff light brown and orange mottled greenish grey slightly sandy slightly gravelly CLAY with occasional rootlets and calcareous nodules. Gravel is subangular fine of chalk. (HEAD DEPOSITS)	1.80	(1.10)	47.17	[Pattern]
1.00	HSV	139kPa						
1.90	D			Reddish brown and grey sandy angular to subangular fine to coarse limestone GRAVEL. (BLISWORTH LIMESTONE FORMATION)	2.10	(0.30)	46.87	[Pattern]
2.20	D			Firm reddish brown mottled green CLAY with limestone lithorelicts. Lithorelicts are subangular fine to medium. (BLISWORTH LIMESTONE FORMATION)	2.30	(0.20)	46.67	[Pattern]
				Reddish brown and grey sandy angular to subangular fine to coarse limestone GRAVEL. (BLISWORTH LIMESTONE FORMATION)	2.35	(0.05)	46.62	[Pattern]
				Base of Excavation at 2.35m				
5								

General Remarks:  
 1) Trial pit completed at 2.35m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP233  
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Method: Trial Pit	Date(s): 27/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501918.87, 278400.96	Stability: No collapse	Dimensions: 2.60m
Hydrock Project No: C-18443-C	Ground Level: 50.41m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
0.10	ES			Firm to stiff light brown grey and brown mottled greenish grey gravelly CLAY. Gravel is angular to subangular fine to coarse of limestone and flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	50.01		
0.50	D			Firm orangish brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse of limestone. (HEAD DEPOSITS)	0.70	(0.30)	49.71		
0.70 - 1.10	B			Light brown (cream) very clayey sandy subangular fine to coarse of limestone GRAVEL with medium cobble content. Cobbles are angular to subangular of limestone. (CORNBURASH LIMESTONE FORMATION)	1.10	(0.40)	49.31		
1.00	HSV	85kPa		Firm to stiff reddish brown mottled grey CLAY. (BLISWORTH CLAY FORMATION)	1.40	(0.30)	49.01		
1.20	D			Firm to stiff light brown grey and brown mottled greenish grey gravelly CLAY. Gravel is angular to subangular fine to coarse of limestone. (BLISWORTH CLAY FORMATION)	2.20	(0.80)	48.21		
1.50	D			Firm to stiff orangish brown mottled greenish grey CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.80)	47.41		
2.00	HSV	93kPa		Base of Excavation at 3.00m					
2.50	D								

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.





Method: Trial Pit	Date(s): 26/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501894.68, 278445.82	Stability: No collapse	Dimensions: 2.60m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 49.43m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
0.00 - 0.30	B			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	49.13		
0.50	ES			Firm to stiff brown and grey slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of flint and limestone. (MADE GROUND)	0.60	(0.30)	48.83		
0.70	D			Light brown (cream) gravelly SAND. Gravel is sub angular fine to coarse of limestone. (HEAD DEPOSITS)	1.20	(0.60)	48.23		
1.30	D			Firm to stiff bluish grey mottled greenish grey CLAY with occasional coal fragments (BLISWORTH CLAY FORMATION)	1.50	(0.30)	47.93		
1.50	D			Friable orangish brown mottled greenish grey CLAY with rare coal fragments (BLISWORTH CLAY FORMATION)	2.10	(0.60)	47.33		
2.20	D			Firm to stiff yellowish brown mottled grey CLAY. (BLISWORTH CLAY FORMATION)	2.50	(0.40)	46.93		
2.50	HSV	49kPa		Light brown clayey sandy angular fine to coarse GRAVEL of limestone. (BLISWORTH LIMESTONE FORMATION)	2.60	(0.10)	46.83		
2.60	D			LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	2.65	(0.05)	46.78		
				Base of Excavation at 2.65m					
3									
4									
5									

General Remarks:  
 1) Trial pit completed at 2.65m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 26/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501866.94, 278404.74	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 50.95m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	50.65	
0.30 0.30 - 0.90	B B			Firm orange and greenish grey mottled light brown slightly sandy CLAY. Sand is fine. (HEAD DEPOSITS)	0.50	(0.20)	50.45	
0.60 0.70 - 0.90	D B			Light brown (cream) gravelly SAND. Gravel is sub angular fine to coarse of limestone. (HEAD DEPOSITS)	0.70	(0.20)	50.25	
1.00	D			Firm to stiff brown mottled grey CLAY with frequent shell fossils. (CORNBASH LIMESTONE FORMATION)	0.90	(0.20)	50.05	
1.40 1.50	D HSV	63kPa		LIMESTONE. Recovered as angular fine to coarse GRAVEL. (CORNBASH LIMESTONE FORMATION)	1.30	(0.40)	49.65	
1.70	D			Firm brown yellow mottled bluish grey sandy CLAY with occasional selenite powder. (BLISWORTH CLAY FORMATION)	1.60	(0.30)	49.35	
2.30 2.50 - 3.00	D B			Firm to stiff brown mottled grey CLAY with occasional sand sized selenite crystals. (BLISWORTH CLAY FORMATION)	2.20	(0.60)	48.75	
				Firm to stiff yellowish brown mottled greenish grey CLAY with occasional selenite powder. (BLISWORTH CLAY FORMATION)	2.50	(0.30)	48.45	
				Friable orangish brown mottled greenish grey CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.50)	47.95	
				Base of Excavation at 3.00m	3.00			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 25/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501786.56, 278419.61	Stability: No collapse	Dimensions: 0.60m x 3.00m
Hydrock Project No: C-18443-C	Ground Level: 51.26m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	50.96	
0.30 - 0.60	B			Firm to stiff orangish brown and brown mottled slightly sandy gravelly CLAY with medium cobble content. Gravel is angular to subangular fine to coarse of limestone. Cobbles are angular to subangular of limestone. (CORNBASH LIMESTONE FORMATION)	0.60	(0.30)	50.66	
				LIMESTONE recovered as angular fine to coarse limestone GRAVEL (CORNBASH LIMESTONE FORMATION)	0.80	(0.20)	50.46	
0.90	D			Firm to stiff grey reddish brown and brown mottled CLAY with frequent shell fossils. (BLISWORTH CLAY FORMATION)	1.00	(0.50)		
1.10	D				1.30		49.96	
1.20	HSV	64kPa			1.60	(0.30)	49.66	
1.40	D			Firm to stiff orangish brown mottled grey sandy CLAY with frequent selenite powder and occasional sand sized selenite crystals. (BLISWORTH CLAY FORMATION)	2.00	(0.40)	49.26	
2.00	HSV	55kPa			2.70	(0.70)	48.56	
2.10	D			Firm to stiff orangish brown mottled greenish grey and yellow sandy CLAY with frequent selenite powder. Sand is fine to medium. (BLISWORTH CLAY FORMATION)	3.00	(0.30)	48.26	
2.80	D			Friable orangish brown mottled greenish grey CLAY. (BLISWORTH CLAY FORMATION)				
				Base of Excavation at 3.00m				
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.







Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP240  
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Method: Trial Pit	Date(s): 18/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501509.78, 278472.77	Stability: No collapse	Dimensions: 2.60m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 62.31m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Soft to firm dark orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to angular of fine to coarse chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	62.11	
1.00 1.00	D ES			Firm to stiff dark grey slightly sandy gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk flint and fossil fragments with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)	1.70	(1.50)	60.61	
2.00 2.00 2.00 2.00	D D ES ES			Firm orangish brown mottled dark grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular of fine to coarse chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick and rare concrete. Locally with pockets of orangish brown SAND. (LANDFILL - MADE GROUND)	2.50	(0.80)	59.81	
3.00 3.00	B ES			Firm to stiff dark grey mottled black slightly sandy very gravelly CLAY. Gravel is rounded to angular of fine to coarse chalk and flint gravel sized fragments of fine to coarse rounded to angular concrete, brick, wood, plastic, and fabric. (LANDFILL - MADE GROUND)	3.70	(1.20)	58.61	
Base of Excavation at 3.70m								
					4			
					5			

General Remarks:  
1) Trial pit completed at 3.70m bgl. 2) Backfilled with lightly compacted arisings. 3) No odour.

Groundwater: Groundwater encountered at 3.30m bgl.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP241

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Method: Trial Pit	Date(s): 18/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501438.05, 278482.77	Stability: No collapse	Dimensions: 0.60m x 2.90m
Hydrock Project No: C-18443-C	Ground Level: 62.78m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Soft to firm dark orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to angular of fine to coarse chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	62.58	
0.30 0.30	D ES			Orangish brown slightly clayey slightly gravelly SAND. Gravel is subrounded to angular of fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick and rare concrete. (LANDFILL - MADE GROUND)	0.40	(0.20)	62.38	
1.00 1.00	B ES			Firm to stiff dark grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular concrete and brick. (LANDFILL - MADE GROUND)	1.80	(1.40)	60.98	
2.00 2.00 2.00	D ES ES			Firm dark grey mottled black slightly sandy slightly gravelly CLAY with a low cobble content and occasional boulders. Gravel is subrounded to angular fine to coarse chalk and flint with gravel sized fragments of fine to coarse subrounded to angular concrete brick metal wood and plastic. (LANDFILL - MADE GROUND)	2.00			
3.00 - 3.10 3.10	ES ES				3.00	(2.20)		
4.00 4.00 4.00	D D ES				4.00		58.78	
				Base of Excavation at 4.00m				

General Remarks:  
1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours.

Groundwater: Groundwater encountered at 3.90m bgl.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP242  
Page No. 1 of 1

Method: Trial Pit	Date(s): 22/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501394.39, 278484.94	Stability: Pit collapsing	Dimensions: 2.60m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 63.77m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of chalk and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.47	
1.00	D			Firm light grey mottled brown gravelly CLAY. Gravel is sub angular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	1.40	(1.10)	62.37	
1.40 - 1.90 1.50	B ES			Firm to stiff orangish brown mottled grey gravelly CLAY with medium cobble content. Gravel is subangular to rounded fine to coarse of limestone, chalk and flint. Cobbles are sub angular of limestone and flint. (GLACIAL TILL)	1.90	(0.50)	61.87	
2.00 2.00 - 3.00	D B			Firm to stiff brown mottled bluish grey slightly sandy gravelly CLAY with medium cobble content. Gravel is sub angular to rounded fine to coarse of flint and chalk. Cobbles are sub rounded of flint and chalk. (GLACIAL TILL)	3.00	(1.10)	60.77	
Base of Excavation at 3.00m					3.00		60.77	
					4			
					5			

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP243  
Page No. 1 of 1

Method: Trial Pit	Date(s): 22/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501376.84, 278444.65	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 63.66m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to subrounded fine to coarse of chalk and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.36	
0.50	B			Firm orangish brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of flint and chalk. (GLACIAL TILL)	0.50	(0.20)	63.16	
1.00	D			Firm light grey and reddish brown mottled gravelly CLAY. Gravel is sub angular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	1.30	(0.80)	62.36	
1.50	D			Firm to stiff brown mottled bluish grey slightly sandy gravelly CLAY with medium cobble content. Gravel is subangular to rounded fine to coarse of flint and chalk. Cobbles are subrounded of flint and chalk. (GLACIAL TILL)	2.00	(0.70)	61.66	
2.00 2.00 - 3.00	D B			Firm to stiff brown mottled dark grey gravelly CLAY with rare fine to coarse sand sized selenite crystals. Gravel is subangular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	3.00	(1.00)	60.66	
				Base of Excavation at 3.00m	3.00		60.66	
4								
5								

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP244

Page No. 1 of 1

Method: Trial Pit	Date(s): 19/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501530.28, 278421.84	Stability: No collapse	Dimensions: 3.00m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 61.26m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Firm dark greyish brown slightly sandy slightly gravelly CLAY. Gravel is rounded to subangular fine to coarse of flint with gravel sized fragments of fine to coarse rounded to subangular concrete and brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	61.06	
1.00 1.00	D ES			Stiff dark brownish grey slightly sandy slightly gravelly CLAY with a low cobble content and occasional boulders. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular concrete asphalt and brick. (LANDFILL - MADE GROUND)		(2.00)		
2.00 2.00	B ES				2.20		59.06	
3.00 3.00	D ES			Stiff dark grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular concrete asphalt and brick. (LANDFILL - MADE GROUND)		(0.80)		
				Base of Excavation at 3.00m	3.00		58.26	
					4			
					5			

General Remarks:  
 1) Trial pit complete at 3.00m bgl. 2) Excavation backfilled with lightly compacted arisings. 3) No odours.

Groundwater: No groundwater encountered.





Method: Trial Pit	Date(s): 22/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501600.02, 278400.02	Stability: No collapse	Dimensions: 2.80m
Hydrock Project No: C-18443-C	Ground Level: 58.24m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	57.94	
1.00 1.00 - 1.40 1.00 - 1.40	ES B B			Firm to stiff orangish brown mottled grey slightly sandy gravelly CLAY . Gravel is subangular to rounded fine to coarse of limestone chalk and flint. Cobbles are sub angular of limestone and flint. (GLACIAL TILL)	1	(1.10)	56.84	
1.50	D			Stiff brown mottled grey slightly gravelly very sandy CLAY. Gravel is subangular to subrounded fine to coarse of flint and limestone. (GLACIAL TILL)	2	(0.70)	56.14	
2.50 2.50 2.50 2.50 - 3.00	D D ES B			Brown gravelly very clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of flint and limestone. (GLACIOFLUVIAL DEPOSITS)	3	(0.90)	55.24	
Base of Excavation at 3.00m								
					4			
					5			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered,



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP247

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Method: Trial Pit	Date(s): 25/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501703.58, 278360.11	Stability: No collapse	Dimensions: 2.60m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 53.75m OD	Plant: 14T Tracked Excavator	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.20	(0.20)	53.55	
0.40	D			Firm orangish brown sandy CLAY. Sand is fine to medium (KELLAWAYS CLAY MEMBER)	0.40	(0.20)	53.35	
0.80 0.80 - 1.40 0.80 - 2.80 1.00	B LB B HSV	64kPa		Firm to stiff orangish brown mottled brownish grey sandy CLAY. Sand is fine to medium (KELLAWAYS CLAY MEMBER)	0.80	(0.40)	52.95	
1.60	D			Firm to stiff orangish brown mottled light grey sandy CLAY with frequent selenite powder. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)	1.40	(0.60)	52.35	
				Orangish brown clayey sandy subangular to rounded fine to coarse of limestone GRAVEL with high cobble content. Cobbles are angular of limestone. (CORNBRAsh LIMESTONE FORMATION)	1.60	(0.20)	52.15	
				Base of Excavation at 1.60m				
					2			
					3			
					4			
					5			

General Remarks:  
 1) Trial pit completed at 1.60m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP248  
Page No. 1 of 1

Method: Trial Pit	Date(s): 25/11/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501779.50, 278366.31	Stability: No collapse	Dimensions: 0.60m x 2.90m
Hydrock Project No: C-18443-C	Ground Level: 52.20m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	51.90	
0.40	ES			Stiff grey and brownish grey mottled CLAY. (HEAD DEPOSITS)	0.50	(0.20)	51.70	
0.80	D			Firm red slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to coarse of flint limestone and chalk (HEAD DEPOSITS)	0.90	(0.40)	51.30	
0.90 - 1.20	B			Reddish brown clayey GRAVEL with high cobble content. Gravel is angular fine to coarse of limestone. Cobbles are angular of limestone (CORNBRAsh LIMESTONE FORMATION)	1.20	(0.30)	51.00	
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	1.25	(0.05)	50.95	
				Base of Excavation at 1.25m				
2								
3								
4								
5								

General Remarks:  
1) Trial pit completed at 1.25m bgl on limestone. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 26/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501800.85, 278308.22	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 53.48m OD	Plant: 14T Tracked Excavator	0.65m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	53.18	
0.50	D			Firm orange and greenish grey mottled light brown slightly sandy CLAY. Sand is fine. (HEAD DEPOSITS)	0.60	(0.30)	52.88	
0.60 - 1.70	B			Stiff orangish brown mottled light grey CLAY with occasional rootlets (KELLAWAYS CLAY MEMBER)	1.00	(0.40)	52.48	
1.00	D	113kPa		Firm to stiff orangish brown mottled greenish grey and yellow sandy CLAY with frequent selenite powder. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)	1.70	(0.70)	51.78	
1.10 - 1.70	HSV B							
1.50	HSV	69kPa						
1.80	D			Firm to stiff orangish brown mottled dark grey and yellow sandy CLAY with frequent selenite powder. Sand is fine to medium. (KELLAWAYS CLAY MEMBER)	2.00	(0.40)	51.38	
2.00	D							
2.20	D			Light brown sandy angular fine to coarse GRAVEL of limestone. (CORNBRAsh LIMESTONE FORMATION)	2.20	(0.10)	51.28	
2.20	D			LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	2.30	(0.10)	51.18	
				Base of Excavation at 2.10m				
3								
4								
5								

General Remarks:  
1) Trial pit completed at 2.30m bgl. 2) Backfilled with lightly compacted arisings.





Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP251

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Method: Trial Pit	Date(s): 08/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502072.77, 278357.97	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 45.92m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is rounded to angular fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	45.52	
0.50 - 0.70	B			Firm light brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to medium of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	1.00	(0.60)	44.92	
1.20	D			Firm brown slightly gravelly sandy CLAY. Gravel is angular fine to medium of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	2.20	(1.20)	43.72	
2.30 2.30	D HSV	53kPa		Firm grey and grey brown slightly sandy CLAY with rare sub angular fine to medium of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	2.70	(0.50)	43.22	
2.80 - 3.00	B			Cream and light brown slightly clayey SAND & GRAVEL. Gravel is angular to rounded fine to coarse of flint and limestone. (HEAD DEPOSITS)	3.00	(0.30)	42.92	
Base of Excavation at 3.00m								
4								
5								

General Remarks:  
1 Pit completed at 3.00m bgl. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 09/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502335.31, 278331.69	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 49.19m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.35	(0.35)	48.84	
0.40 - 0.60	B			Light brown slightly clayey sandy fine to coarse limestone fine to coarse, angular limestone GRAVEL. (CORNBASH LIMESTONE FORMATION)	0.80	(0.45)	48.39	
0.90 0.90	D D			Firm brown and light brown slightly gravelly sandy CLAY. Gravel is angular fine to medium of limestone. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	1.70	(0.90)	47.49	
1.80 1.80	D HSV	53kPa		Firm blue grey CLAY with occasional decayed roots and organic matter. (BLISWORTH CLAY FORMATION)	2.50	(0.80)	46.69	
2.60	D			Firm grey and orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.50)	46.19	
				Base of Excavation at 3.00m				

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP253  
Page No. 1 of 1

Method: Trial Pit	Date(s): 02/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502166.58, 278255.88	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 49.44m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth (m)	Thickness (m)	Level (m OD)	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	49.04	
0.50 - 0.80	B			Brown and orange brown slightly clayey SAND & GRAVEL. Gravel is fine to coarse angular limestone. (CORNBASH LIMESTONE FORMATION)	0.85	(0.45)	48.59	
1.00	D			Firm brown and orange brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to medium limestone. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	1.25	(0.40)	48.19	
1.40	D			Light brown slightly clayey gravelly SAND. Gravel is angular fine to coarse limestone. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	2.00	(0.75)	47.44	
2.15 2.20	HSV D	58kPa		Firm blue grey CLAY. (BLISWORTH CLAY FORMATION)	2.70	(0.70)	46.74	
2.80	D			Stiff very closely fissured grey silty CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.30)	46.44	
				Base of Excavation at 3.00m	3.00		46.44	
					4			
					5			

General Remarks:  
1) Pit completed at 3.00m. 2) Groundwater not encountered. 3) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP254  
Page No. 1 of 1

Method: Trial Pit	Date(s): 02/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502092.41, 278275.13	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 47.85m OD	Plant: 14T Tracked Excavator	0.65m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to rounded flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	47.55	
0.50 0.60	D HSV	71kPa		Firm grey and grey brown CLAY with occasional gypsum patches. (BLISWORTH CLAY FORMATION)	1.30	(1.00)	46.55	
1.40 - 1.70 1.40 - 1.70	B B			Stiff very closey fissured grey and orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	2.10	(0.80)	45.75	
2.20	D			Very stiff very closely fissured grey, light grey silty CLAY. (BLISWORTH CLAY FORMATION)	2.30	(0.20)	45.55	
Base of Excavation at 2.35m								
3								
4								
5								

General Remarks:  
1) Pit terminated at 2.35m due to encountering limestone rock at. 2) Groundwater not encountered. 3) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP255

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Method: Trial Pit	Date(s): 30/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502041.35, 278237.69	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 46.54m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is medium fine to angular of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	46.14	
0.50	D			Firm brown slightly sandy CLAY. Sand is fine. (HEAD DEPOSITS)	1.00	(0.60)	45.54	
1.10 - 1.60	B			Stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to medium of rounded flint. Sand is fine to medium. (HEAD DEPOSITS)	1.80	(0.80)	44.74	
				Light brown SAND & GRAVEL. Gravel is angular to rounded fine to coarse of flint and quartz. Sand is fine to coarse (HEAD DEPOSITS)	2.70	(0.90)	43.84	
2.80	D			Light brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse of limestone and flint. Sand is fine to medium. (HEAD DEPOSITS)	2.90	(0.20)	43.64	
3.00	D			Light brown clayey SAND & GRAVEL. Gravel is angular to rounded fine to coarse of limestone and flint. Sand is fine to medium. (HEAD DEPOSITS)	3.00	(0.10)	43.54	
				Base of Excavation at 3.00m				
5								

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP256  
Page No. 1 of 1

Method: Trial Pit	Date(s): 27/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501954.78, 278244.92	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 49.18m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	48.88	
0.50 0.50 - 1.00 0.50 - 1.00	ES B B			Stiff light brown grey and brown mottled greenish grey gravelly CLAY. Gravel is angular to sub angular fine to coarse of limestone and flint (HEAD DEPOSITS)		(0.70)		
1.00	HSV	136kPa		Stiff orangish brown mottled greenish grey sandy CLAY. Sand is fine to medium (BLISWORTH CLAY FORMATION)	1.00		48.18	
1.50	D					(1.40)		
2.00	HSV	76kPa			2			
2.40	D			LIMESTONE (BLISWORTH LIMESTONE FORMATION)	2.40		46.78	
					2.45	(0.05)	46.73	
				Base of Excavation at 2.45m				
					3			
					4			
					5			

General Remarks:  
1) Trial pit completed at 2.45m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP257

Page No. 1 of 1

Method: Trial Pit	Date(s): 25/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501655.92, 278253.20	Stability: Stable	Dimensions: 2.50m 0.65m
Hydrock Project No: C-18443-C	Ground Level: 58.03m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	B			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	57.73	
0.30	ES			Orangish brown clayey gravelly SAND. Gravel is subangular to rounded fine to coarse of flint. (GLACIOFLUVIAL DEPOSITS)	0.70	(0.40)	57.33	
0.30 - 0.70	LB							
0.30 - 2.80	B			Firm to stiff orangish brown mottled greenish grey and yellow sandy CLAY with frequent silt sized selenite crystals. Sand is fine to medium. (KELLAWAYS SAND MEMBER)	1.50	(0.80)	56.53	
1.00	D							
1.60	D							
2.50	D			Brown mottled grey clayey SILT. (KELLAWAYS SAND MEMBER)	2.40	(0.30)	55.63	
2.90	D			Bluish grey SILT. (KELLAWAYS SAND MEMBER)	2.70	(0.30)	55.33	
Base of Excavation at 3.00m					3.00		55.03	
					4			
					5			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP258

Page No. 1 of 1

Method: Trial Pit	Date(s): 18/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501526.55, 278339.70	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 61.03m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Firm dark orangish brown slightly gravelly sandy CLAY. Gravel is subrounded to angular fine to coarse chalk and flint with gravel sized fragments of fine to coarse subrounded to angular asphalt. (TOPSOIL - MADE GROUND)	0.20	(0.20)	60.83	[Cross-hatch pattern]
1.00 1.00	B ES			Stiff dark brownish grey slightly sandy gravelly CLAY. Gravel is subrounded to angular fine to coarse chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)	1.20	(1.00)	59.83	[Cross-hatch pattern]
2.00 2.00	D ES				2.00			
3.00 3.00	B ES			Firm to stiff dark grey mottled black slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse concrete brick and rare asphalt wood and plastic. (LANDFILL - MADE GROUND)	3.00	(3.00)		[Cross-hatch pattern]
4.20 4.20	D ES				4.20		56.83	[Cross-hatch pattern]
				Base of Excavation at 4.20m				
					5.00			

General Remarks:  
 1) Trial pit completed at 4.20m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP259

Page No. 1 of 1

Method: Trial Pit	Date(s): 18/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501475.89, 278364.11	Stability: Stable	Dimensions: 0.65m <input type="text"/> 2.50m
Hydrock Project No: C-18443-C	Ground Level: 62.39m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Firm dark greyish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.09	
1.20 1.20	D ES			Stiff dark orangish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)		(1.70)		
2.20 2.20	B ES		▼	Firm to stiff dark grey mottled black slightly sandy slightly gravelly CLAY. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular concrete brick and rare wood and plastic. (LANDFILL - MADE GROUND)	2.20	(1.50)	60.39	
3.30 3.30	D ES			Soft light greyish brown slightly sandy slightly gravelly CLAY. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular concrete brick and wood. (LANDFILL - MADE GROUND)	3.50	(0.60)	58.89	
4.10 4.10	B ES			Base of Excavation at 4.10m	4.10		58.29	

General Remarks:  
 1) Trial pit completed at 4.10m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours.

Groundwater: Groundwater encountered at 2.90m bgl.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP260

Page No. 1 of 1

Method: Trial Pit	Date(s): 18/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501419.35, 278412.77	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 62.54m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Firm dark orangish brown slightly sandy slightly gravelly CLAY. Gravel is rounded to angular fine to coarse of flint with gravel sized fragments of fine to coarse rounded to angular brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.24	
1.00 1.00	D ES			Firm to stiff greyish orangish brown slightly sandy slightly gravelly CLAY. Gravel of is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)	1.90	(1.60)	60.64	
2.00 2.00	B ES			Stiff dark grey mottled black slightly sandy gravelly CLAY with a low cobble content and occasional boulders. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular concrete and rare brick wood plastic and fabric. (LANDFILL - MADE GROUND)	3.00	(2.20)		
4.00 4.00	B ES				4.10		58.44	
				Base of Excavation at 4.10m				

General Remarks:  
 1) Trial pit completed at 4.10m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours.

Groundwater: Groundwater encountered at 3.60m bgl.



Method: Trial Pit	Date(s): 22/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501363.17, 278403.37	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 63.76m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
0.10	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of chalk and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.46		
0.50	D			Firm light grey and reddish brown mottled gravelly CLAY. Gravel is subangular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	0.50	(0.20)	63.26		
0.90	ES			Firm to stiff brown mottled bluish grey slightly sandy gravelly CLAY with medium cobble content. Gravel is subangular to rounded fine to coarse of flint and chalk. Cobbles are subrounded of flint and chalk. (GLACIAL TILL)	1.30	(0.80)	62.46		
1.50 - 2.20	B			Firm to stiff brown mottled dark grey gravelly CLAY with rare fine to coarse sand sized selenite crystals. Gravel is subangular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	2.20	(0.90)	61.56		
2.30	D			Firm to stiff dark grey gravelly CLAY with rare fine to coarse sand sized selenite crystals and low boulder content. Gravel is subangular to rounded fine to coarse of chalk and flint. Boulder is subrounded of flint. (GLACIAL TILL)	3.00	(0.80)	60.76		
3.00	D			Base of Excavation at 3.00m					

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP262  
Page No. 1 of 1

Method: Trial Pit	Date(s): 22/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501292.54, 278333.48	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 65.17m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of chalk and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	64.87	
0.50 - 1.00	B			Firm reddish brown mottled brown gravelly CLAY. Gravel is subangular fine to coarse of flint. (GLACIAL TILL)	0.50	(0.20)	64.67	
				Firm light grey mottled light brown gravelly CLAY. Gravel is subangular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	1.00	(0.50)	64.17	
1.10 1.10	D D			Firm brown mottled light grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of chalk and flint. (GLACIAL TILL)	1.90	(0.90)	63.27	
2.00 2.00 2.00	D D ES			Firm to stiff brown mottled dark grey slightly sandy gravelly CLAY with rare fine to coarse sand sized selenite crystals. Gravel is subangular to rounded fine to coarse of chalk and flint. (GLACIAL TILL)	2.60	(0.70)	62.57	
3.00 3.00	D D			Orangish brown and grey clayey fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)	3.00	(0.40)	62.17	
				----- Base of Excavation at 3.00m -----				
4								
5								

General Remarks:  
1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP263

Page No. 1 of 1

Method: Trial Pit	Date(s): 22/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501356.80, 278321.63	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 64.10m OD	Plant: 14T Tracked Excavator	0.65m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of chalk and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.80	[Cross-hatch pattern]
0.50	D			Firm brown and grey gravelly CLAY. Gravel is angular to subrounded fine to coarse of bricks, flint and chalk. (LANDFILL - MADE GROUND)		(0.80)		[Cross-hatch pattern]
1.00	ES				1			
1.50	D			Firm to stiff reddish brown mottled grey gravelly CLAY. Gravel is sub angular to rounded fine to coarse of flint, chalk and brick. (LANDFILL - MADE GROUND)	1.10	(0.70)	63.00	[Cross-hatch pattern]
1.80	ES				1.80		62.30	
1.90	D			Firm blackish grey gravelly CLAY. Gravel is subangular fine to coarse of bricks and flint. (LANDFILL - MADE GROUND)	2	(0.20)	62.10	[Cross-hatch pattern]
2.10	D			Soft to firm orangish brown sandy CLAY. Sand is fine. (LANDFILL - MADE GROUND)	2	(0.50)		[Cross-hatch pattern]
2.50 - 3.00	B			Firm orangish brown and blackish grey slightly gravelly sandy CLAY. Gravel is sub angular to rounded fine to coarse of chalk and flint. (LANDFILL - MADE GROUND)	2.50	(0.50)	61.60	[Cross-hatch pattern]
				Base of Excavation at 3.00m	3		61.10	
					4			
					5			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours.

Groundwater: No groundwater encountered.





Method: Trial Pit	Date(s): 18/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501506.56, 278282.47	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 62.45m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Firm dark orangish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of flint with gravel sized fragments of fine to coarse subrounded to angular brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	62.25	
0.50 0.50 0.50	D ES ES			Stiff dark greyish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)		(0.70)		
1.50 1.50 1.50 1.50	B B ES ES			Firm to stiff dark grey slightly gravelly CLAY with a low cobble content. Gravel is rounded to angular fine to coarse chalk and flint with gravel sized fragments of fine to coarse rounded to angular brick wood and rare concrete and metal. (LANDFILL - MADE GROUND)		(0.80)	61.55	
2.50 2.50 2.50	D ES ES			Soft to firm dark grey mottled black slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of flint with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)		(1.00)		
3.50	ES			Orangish brown slightly gravelly clayey SAND. Gravel is subrounded to angular fine to coarse flint. (LANDFILL - MADE GROUND)		(0.90)		
4.00 4.00 4.00 4.00	B B ES ES			Soft to firm dark grey mottled black slightly gravelly slightly sandy CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick and wood. (LANDFILL - MADE GROUND)		(0.40)	58.85	
				----- Base of Excavation at 4.00m -----				
5								

General Remarks:  
 1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odour.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 17/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501555.70, 278273.92	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 60.98m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Soft to firm orangish brown slightly gravelly sandy CLAY. Gravel is rounded to subangular fine to coarse flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	60.68	
1.00 1.00	D ES			Stiff dark grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick. (LANDFILL - MADE GROUND)	1.70	(1.40)	59.28	
2.00 2.00 2.00	D ES ES			Stiff dark grey slightly sandy gravelly CLAY with a low cobble content. Gravel sized fragments if rounded to angular fine to coarse concrete brick and wood. Gravel of fine to coarse rounded to angular chalk and flint. (LANDFILL - MADE GROUND)	2.30	(2.30)		
3.00 3.00 3.00 3.00	B B ES ES							
4.00 4.00	D ES				4.00		56.98	

General Remarks:  
 1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours.



Method: Trial Pit	Date(s): 25/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501659.74, 278220.54	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 58.85m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	58.55	
0.50	ES			Dark brown clayey gravelly SAND. Gravel is subangular to rounded fine to coarse of flint. (GLACIOFLUVIAL DEPOSITS)	0.70	(0.40)	58.15	
0.70 0.70 - 1.40 0.70 - 2.80	B LB B			Orangish brown clayey gravelly SAND. Gravel is subangular to rounded fine to coarse of flint. (GLACIOFLUVIAL DEPOSITS)	1.40	(0.70)	57.45	
1.50	D			Firm to stiff orangish brown mottled greenish grey and yellow sandy CLAY with occasional silt sized selenite powder. Sand is fine to medium. (KELLAWAYS SAND MEMBER)	2.00	(0.60)	56.85	
2.00 2.10	HSV D	84kPa		Firm orangish brown mottled grey slightly sandy CLAY. Sand is fine to medium. (KELLAWAYS SAND MEMBER)	2.40	(0.40)	56.45	
2.50	D			Firm orangish brown mottled grey slightly sandy CLAY. Sand is fine to medium. (KELLAWAYS SAND MEMBER)	2.70	(0.30)	56.15	
3.00	D			Orangish brown mottled light grey SILT. (KELLAWAYS SAND MEMBER)	3.00	(0.30)	55.85	
				----- Base of Excavation at 3.00m				

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 25/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501698.59, 278172.97	Stability: Stable	Dimensions: 0.65m <input type="text" value="2.50m"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 58.70m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	58.40	
0.50 0.50 0.50	D D ES			Orangish brown clayey gravelly SAND. Gravel is subangular to rounded fine to coarse of flint. (GLACIOFLUVIAL DEPOSITS)	0.80	(0.50)	57.90	
0.80 0.80 - 1.80 0.80 - 2.80	B LB B			Firm to stiff orangish brown mottled greenish grey and yellow sandy CLAY with occasional selenite powder. Sand is fine to medium. (KELLAWAYS SAND MEMBER)	1.80	(1.00)	56.90	
1.90	D			Brown clayey gravelly SAND. Gravel is angular fine to coarse of siltstone. (KELLAWAYS SAND MEMBER)	2.20	(0.40)	56.50	
				SILTSTONE. (KELLAWAYS SAND MEMBER)	2.25	(0.05)	56.45	
				Base of Excavation at 2.25m				
5								

General Remarks:  
 1) Trial pit completed at 2.25m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 30/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501862.22, 278144.86	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 53.51m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	53.01	
0.60 - 0.90 0.70	B HSV	84kPa		Stiff grey and orange brown CLAY. (KELLAWAYS CLAY MEMBER)	1.30	(0.80)	52.21	
1.40 1.40 1.40	D D HSV	85kPa		Stiff very closely fissured grey and orange brown slightly sandy CLAY with occasional gravel sized pockets of sand sized gypsum. (KELLAWAYS CLAY MEMBER)	2.00	(0.70)	51.51	
2.10	D			Stiff friable grey, dark grey and orange brown CLAY with occasional gypsum patches. (KELLAWAYS CLAY MEMBER)	2.90	(0.90)	50.61	
3.00	D		▼	Stiff friable dark grey CLAY with occasional shell fragments. (KELLAWAYS CLAY MEMBER) Base of Excavation at 3.00m	3.00	(0.10)	50.51	

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: Groundwater encountered at 3.00m bgl.

Method: Trial Pit	Date(s): 30/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502011.78, 278195.39	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 47.22m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	46.82	
0.50	ES			Firm orange brown and brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to angular fine to medium of flint. Sand is fine to medium. (HEAD DEPOSITS)	1.00	(0.60)	46.22	
1.05 - 1.50	B			Brown slightly clayey gravelly SAND. Gravel is fine to coarse angular to rounded flint and limestone. Sand is fine to coarse. (HEAD DEPOSITS)	1.80	(0.80)	45.42	
1.90	D			Brown slightly gravelly clayey SAND. Gravel is fine to coarse angular limestone and flint. Sand is fine to coarse. (HEAD DEPOSITS)	2.25	(0.45)	44.97	
				Light brown sandy fine to coarse angular limestone GRAVEL. Sand is fine to medium. (BLISWORTH LIMESTONE FORMATION)	2.30	(0.05)	44.92	
				Base of Excavation at 2.30m				

General Remarks:  
 1) Pit terminated at 2.30m due to encountering limestone rock at 2.25m. 2) Backfilled with arisings.



Method: Trial Pit	Date(s): 01/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502079.70, 278184.52	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 46.84m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	46.44	
0.60	D			Soft brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of limestone and flint. Sand is fine to medium. (HEAD DEPOSITS)	0.75	(0.35)	46.09	
0.80 - 1.20	B			Stiff grey and dark grey CLAY with occasional silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	1			
1.10	HSV	103kPa			1.70	(0.95)	45.14	
1.80 1.80	D HSV	85kPa		Stiff brown and light grey slightly sandy CLAY with abundant gypsum patches. (BLISWORTH CLAY FORMATION)	2	(0.70)		
2.50 - 2.90	B			Soft light brown slightly gravelly sandy CLAY. Gravel is fine to coarse angular limestone. Sand is fine to medium. (BLISWORTH CLAY FORMATION)	2.40	(0.60)	44.44	
Base of Excavation at 3.00m					3.00		43.84	
					4			
					5			

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 02/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502117.51, 278193.92	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 48.23m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to rounded flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	47.83	
0.50 0.50	D D			Firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to rounded flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	0.70	(0.30)	47.53	
1.00 1.00	D HSV	101kPa		Stiff grey CLAY with occasional gypsum patches. (BLISWORTH CLAY FORMATION)	1.50	(0.80)	46.73	
1.60 - 1.90	B			Very stiff very closely fissured grey silty CLAY with occasional silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	2.95	(1.45)	45.28	
2.90	D			LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	3.00	(0.05)	45.23	
				Base of Excavation at 2.95m				

General Remarks:  
 1) Pit terminated at 3.00m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP273

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Method: Trial Pit	Date(s): 09/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502254.44, 278138.80	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 48.39m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to rounded of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	47.99	
0.50	D			Soft brown and light brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to rounded of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	0.65	(0.25)	47.74	
0.70 - 0.90	B			Firm brown and light brown slightly sandy slightly gravelly silty CLAY. Gravel is angular fine to medium limestone. Sand is fine to medium. (CORNBASH LIMESTONE FORMATION)	0.95	(0.30)	47.44	
1.20	D	47kPa		Firm blue grey CLAY with rare rootlets less than 1mm. (BLISWORTH CLAY FORMATION)	1	(1.05)	46.39	
1.20	ES							
1.20	HSV							
1.30	D							
2.20	D	109kPa		Stiff grey and orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	2	(1.00)	46.39	
2.20	D							
2.20	HSV							
3.00	D			Base of Excavation at 3.00m	3.00		45.39	
3.30	D							

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 09/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502223.47, 278073.39	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 47.75m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded, fine to coarse of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	47.35	
0.50	ES			Soft brown slightly sandy CLAY. Sand is fine. (HEAD DEPOSITS)	0.60	(0.20)	47.15	
0.80 0.80 0.80 1.00	D D ES HSV	55kPa		Firm grey CLAY. (HEAD DEPOSITS)	1	(0.70)		
1.40 - 1.70 1.40 - 1.70	B B		▼	Brown slightly clayey angular to rounded, fine to coarse of flint and quartz SAND & GRAVEL. Sand is fine to coarse. (HEAD DEPOSITS)	1.30		46.45	
2.40	HSV	109kPa		Stiff grey orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	2.30	(0.70)	45.45	
Base of Excavation at 3.00m					3.00		44.75	
					4			
					5			

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP275  
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Method: Trial Pit	Date(s): 09/12/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502125.22, 278081.06	Stability: Stable	Dimensions: 2.50m 0.65m
Hydrock Project No: C-18443-C	Ground Level: 47.94m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	47.64	
0.50	D			Soft brown slightly gravelly CLAY with occasional roots less than 1mm. Gravel is angular to rounded fine to medium of flint. (HEAD DEPOSITS)	0.60	(0.30)	47.34	
0.70 - 0.90	B			Firm grey brown slightly gravelly CLAY. Gravel is angular fine to medium flint. (BLISWORTH CLAY FORMATION)	1.00	(0.80)		
1.50	D	44kPa		Firm grey and orange brown silty CLAY with occasional roots less than 1mm. (BLISWORTH CLAY FORMATION)	1.40		46.54	
1.50	HSV					2.00	(1.30)	
2.50	D			LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	2.70	(0.05)	45.24	
				Base of Excavation at 2.75m	2.75		45.19	
					3.00			
					4.00			
					5.00			

General Remarks:  
1) Pit terminated at 2.75m due to encountering limestone rock. 2) Groundwater not encountered. 3) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP276

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Method: Trial Pit	Date(s): 30/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501991.12, 278134.95	Stability: Stable	Dimensions: 2.50m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 49.26m OD	Plant: 14T Tracked Excavator	0.65m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.35	(0.35)	48.91		
0.40 0.40	D D			Orange brown and brown slightly clayey gravelly SAND. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	1.15	(0.80)	48.11		
1.20 - 1.60 1.20	B HSV	74kPa		Stiff grey and orange brown CLAY. (BLISWORTH CLAY FORMATION)	3.00	(1.85)	46.26		
3.00	HSV	95kPa		Base of Excavation at 3.00m					

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP277

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Method: Trial Pit	Date(s): 19/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501544.96, 278233.61	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 62.01m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Soft to firm dark orangish brown slightly sandy slightly gravelly CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to subangular brick and plastic. (TOPSOIL - MADE GROUND)	0.20	(0.20)	61.81	[Cross-hatch pattern]
1.00 1.00	D ES			Firm dark grey mottled black slightly sandy slightly gravelly CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint gravel sized fragments of fine to coarse rounded to subangular asphalt and brick. (LANDFILL - MADE GROUND)	1	(1.80)		[Cross-hatch pattern]
2.00 2.00	B ES			Firm dark grey slightly sandy slightly gravelly CLAY. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular brick. (LANDFILL - MADE GROUND)	2	(1.00)	60.01	[Cross-hatch pattern]
3.00 3.00	D ES			Base of Excavation at 3.00m	3		59.01	
					4			
					5			

General Remarks:  
 1) Trial pit complete at 3.00m bgl. 2) Excavation backfilled with lightly compacted arisings. 3) No odour.

Groundwater: No groundwater encountere

Method: Trial Pit	Date(s): 23/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501361.69, 278285.27	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 64.88m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.30	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of chalk, brick and flint. (TOPSOIL - MADE GROUND)	0.40	(0.40)	64.48	
0.40 0.40 - 1.40 0.40 - 2.80	B LB B			Stiff brown and grey mottled slightly sandy gravelly CLAY with occasional rootlets. Gravel is subangular to rounded fine to coarse of chalk and flint. (LANDFILL - MADE GROUND)				
1.00	D				1	(1.20)		
1.70	D			Red sandy angular fine to coarse brick GRAVEL. Sand is fine to coarse. (LANDFILL - MADE GROUND)	1.60	(0.30)	63.28	
1.90 - 2.30	B			Brown sandy sub rounded to rounded fine to coarse of limestone (type 1 gravel) GRAVEL. Sand is fine to coarse. (Possible access route track). (LANDFILL - MADE GROUND)	1.90	(0.40)	62.98	
					2			
					2.30		62.58	
				▼ Base of Excavation at 2.30m				
					3			
					4			
					5			

General Remarks:  
 1) Trial pit completed at 2.30m bgl. 2) Backfilled with lightly compacted arisings. 3) No odour.

Groundwater: Groundwater encountered at 2.30m bgl.



Method: Trial Pit	Date(s): 17/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501347.39, 278196.72	Stability: Stable	Dimensions: 2.50m 0.65m
Hydrock Project No: C-18443-C	Ground Level: 65.97m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Firm dark grey slightly sandy slightly gravelly CLAY. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	65.77	
0.50 0.50	B ES			Stiff dark grey slightly sandy slightly gravelly CLAY. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular concrete asphalt brick and wood. (LANDFILL - MADE GROUND)		(1.40)		
1.50 1.50	D ES			Dark orangish brown slightly clayey gravelly SAND. Gravel is rounded to subangular fine to coarse of flint. (LANDFILL - MADE GROUND)	1.60		64.37	
				Firm to stiff dark grey mottled black slightly sandy slightly gravelly CLAY. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular asphalt and brick. (LANDFILL - MADE GROUND)	1.70	(0.10)	64.27	
2.50 - 3.00	B							
2.70	ES					(2.30)		
4.00 4.00	D ES				4.00		61.97	
				Base of Excavation at 4.00m				

General Remarks:  
 1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odour.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP280

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Method: Trial Pit	Date(s): 17/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501398.94, 278235.42	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 64.89m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Soft dark grey slightly sandy slightly gravelly CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to subangular brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	64.69	[Cross-hatch pattern]
0.30	ES			Orangish brown slightly clayey slightly gravelly SAND. Gravel is rounded to subangular fine to coarse of flint with gravel sized fragments of fine to coarse rounded to subangular brick. (LANDFILL - MADE GROUND)	0.40	(0.20)	64.49	[Diagonal hatch pattern]
1.00 1.00 1.00 1.00	B B ES ES			Firm to stiff dark grey slightly sandy slightly gravelly CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular concrete brick and rare wood and plastic. (LANDFILL - MADE GROUND)	1	(1.60)		[Cross-hatch pattern]
2.00 2.00 2.00	D ES ES			Firm friable dark grey slightly gravelly sandy CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to subangular concrete asphalt brick and rare wood. (LANDFILL - MADE GROUND)	2	(1.50)	62.89	[Cross-hatch pattern]
3.00 3.00 3.00 3.00	B B ES ES			Soft to firm cream mottled light grey slightly gravelly silty CLAY. Gravel is rounded to subangular fine to coarse of chalk and rare flint with gravel sized fragments of fine to coarse subrounded to subangular brick. (LANDFILL - MADE GROUND)	3	(0.50)	61.39	[Cross-hatch pattern]
4.00 4.00 4.00 4.00	D D ES ES			Base of Excavation at 4.00m	4		60.89	

General Remarks:  
 1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odour.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 16/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501445.10, 278222.00	Stability: Stable	Dimensions: 2.50m 0.65m <input type="text"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 64.63m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Firm dark orangish brown slightly gravelly sandy CLAY. Gravel is rounded to angular fine to coarse of flint with gravel sized fragments of fine to coarse rounded to angular brick and concrete. (TOPSOIL - MADE GROUND)	0.40	(0.40)	64.23	
0.50 0.50	D ES			Stiff orangish brown mottled light grey gravelly CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to subangular brick and concrete. (LANDFILL - MADE GROUND)	1.40	(1.00)	63.23	
1.50 1.50	B ES			Firm orangish brown slightly sandy very gravelly CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to subangular brick. (LANDFILL - MADE GROUND)	2.00	(0.60)	62.63	
2.50 2.50 2.50	D ES ES			Stiff dark grey gravelly CLAY. Gravel is subrounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse subrounded to angular brick concrete plastic and wood. (LANDFILL - MADE GROUND)	4.00	(2.00)	60.63	
3.50 3.50 - 4.00	ES B							
				 Base of Excavation at 4.00m				

General Remarks:  
 1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours

Groundwater: Groundwater encountered at 4.00m bgl.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP282

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Method: Trial Pit	Date(s): 17/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501390.92, 278172.22	Stability: Stable	Dimensions: 2.50m
Hydrock Project No: C-18443-C	Ground Level: 65.74m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Soft to firm dark grey slightly sandy slightly gravelly CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to subangular brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	65.54	[Cross-hatch pattern]
				Dark orangish brown slightly gravelly clayey SAND. Gravel is rounded to angular fine to coarse of flint with gravel sized fragments of fine to coarse rounded to angular concrete and brick. (LANDFILL - MADE GROUND)	0.40	(0.20)	65.34	[Diagonal hatch pattern]
1.00 1.00	B ES			Firm dark orangish brown slightly sandy slightly gravelly CLAY with a low cobble content and occasional boulders. Gravel is rounded to angular fine to coarse of flint with gravel sized fragments of fine to medium rounded to angular concrete brick and rare asphalt (LANDFILL - MADE GROUND)	1	(3.60)		[Vertical line pattern]
2.00 2.00	D ES				2			
3.00 3.00	B ES				3			
4.00 4.00	D ES				4		61.74	
				Base of Excavation at 4.00m				

General Remarks:  
1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odour.

Groundwater: Groundwater not encountered.





Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP284

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Method: Trial Pit	Date(s): 16/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501476.20, 278180.77	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 64.41m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm dark brown slightly gravelly sandy CLAY. Gravel is rounded to angular fine to coarse flint with gravel sized fragments of fine to coarse rounded to angular brick. (TOPSOIL - MADE GROUND)	0.20	(0.20)	64.21	[Cross-hatch pattern]
0.50 0.50	D ES			Orangish brown gravelly SAND. Gravel is rounded to subangular fine to coarse of chalk flint limestone and sandstone with gravel sized fragments of fine to coarse subrounded to angular brick asphalt and rare plastic. (LANDFILL - MADE GROUND)		(1.60)		[Diagonal hatch pattern]
1.50 1.50	B ES							
2.50 2.50	D ES			Firm to stiff dark grey gravelly CLAY. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular brick and occasional plastic wood and pottery. (LANDFILL - MADE GROUND)		(2.20)		[Diagonal hatch pattern]
3.50 3.50	B ES							
4.00	D				4.00		60.41	
				Base of Excavation at 4.00m				

General Remarks:  
 1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 17/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501524.55, 278171.10	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 63.51m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Soft dark grey slightly sandy slightly gravelly CLAY. Gravel sized fragments of rounded to subangular, fine to coarse brick. Gravel is rounded to subangular fine to coarse chalk and flint. (TOPSOIL - MADE GROUND)	0.20	(0.20)	63.31	
1.00 1.00	B ES			Firm to stiff dark orangish brown mottled grey slightly gravelly sandy CLAY with a low cobble content. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of rounded to angular fine to coarse of concrete brick plastic and slate. (LANDFILL - MADE GROUND)				
2.00 2.00	D ES					(3.30)		
3.00 3.00	B ES							
4.00	ES			Stiff dark orangish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel sized fragments of rounded to angular fine to coarse of brick. Gravel of rounded to angular fine to coarse of chalk and flint. (LANDFILL - MADE GROUND)	4.00	(0.50)	59.51	
				Base of Excavation at 4.00m				

General Remarks:  
 1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours

Groundwater: Groundwater encountered at 2.80m bgl.





Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP287

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Method: Trial Pit	Date(s): 17/11/2021	Logged By: MH	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501493.01, 278115.05	Stability: Stable	Dimensions: 0.65m x 2.50m
Hydrock Project No: C-18443-C	Ground Level: 64.49m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10 0.10	D ES			Firm light greyish brown slightly gravelly sandy CLAY. Gravel sized fragments of fine to coarse rounded to angular brick. Gravel is rounded to angular fine to coarse of chalk and flint. (TOPSOIL - MADE GROUND)	0.20	(0.20)	64.29	[Cross-hatch pattern]
1.00 1.00	B ES			Firm to stiff orangish brown slightly sandy gravelly CLAY. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular concrete and brick. (LANDFILL - MADE GROUND)	1.10	(0.90)	63.39	[Cross-hatch pattern]
2.00 2.00	D ES			Firm to stiff dark grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is rounded to angular fine to coarse of chalk and flint with gravel sized fragments of fine to coarse rounded to angular concrete brick metal wood and fabric. (LANDFILL - MADE GROUND)	2.50	(1.40)	61.99	[Cross-hatch pattern]
3.00 3.00	B ES			Soft orangish brown slightly sandy gravelly CLAY with a low cobble content and occasional boulders. Gravel is rounded to subangular fine to coarse of chalk and flint with gravel sized fragments of rounded to angular fine to coarse of concrete and brick. (LANDFILL - MADE GROUND)	4.00	(1.50)	60.49	[Cross-hatch pattern]
4.00 4.00	D ES			Base of Excavation at 4.00m	4.00		60.49	[Cross-hatch pattern]

General Remarks:  
 1) Trial pit completed at 4.00m bgl. 2) Backfilled with lightly compacted arisings. 3) No odours.

Groundwater: No groundwater encountered.





Method: Trial Pit	Date(s): 22/11/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501563.49, 278114.21	Stability: Unstable.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 62.94m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.40	ES			Firm brown gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of chalk and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.64	[Pattern]
0.60 - 1.00	B			Firm reddish brown mottled brown gravelly CLAY. Gravel is subangular fine to coarse of flint. (LANDFILL - MADE GROUND)	0.60	(0.30)	62.34	[Pattern]
1.10	D			Orangish brown very clayey sandy angular to subangular, fine to coarse flint GRAVEL. (LANDFILL - MADE GROUND)	1.00	(0.40)	61.94	[Pattern]
1.50	ES			Firm to stiff blackish grey gravelly CLAY. Gravel is angular to subangular fine to coarse of bricks, concrete, glass, flint and chalk. (LANDFILL - MADE GROUND)				[Pattern]
2.00	D				2	(2.00)		[Pattern]
2.50	ES							[Pattern]
Base of Excavation at 3.00m					3.00		59.94	
					4			
					5			

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 25/11/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501637.29, 278118.04	Stability: Stable.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 61.17m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	60.87	
0.50	D			Firm orangish brown slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of flint. (GLACIAL TILL)	0.60	(0.30)	60.57	
0.60 - 1.30	ES B B			Stiff grey and brownish grey mottled gravelly CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of chalk mudstone and sandstone. (GLACIAL TILL)	1.00	(1.40)		
1.00	HSV	100kPa			1.50			
1.50	D				2.00			
2.00	HSV	99kPa		Stiff grey and brownish grey mottled gravelly CLAY with rare rootlets, selenite powder and low cobble content . Gravel is subangular to subrounded fine to coarse of chalk, flint, mudstone and sandstone. Cobbles are subangular of flint. (GLACIAL TILL)	2.50	(0.50)	59.17	
2.60	D			Red gravelly SAND. Gravel is subangular to rounded fine to coarse of flint. (GLACIOFLUVIAL DEPOSITS)	3.00	(1.30)		
2.60	D				3.60			
2.60	ES				3.80		57.37	
3.60	D							
3.60	D							
				Base of Excavation at 3.80m				
4								
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
**TP291**  
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Method: Trial Pit	Date(s): 25/11/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501696.86, 278051.54	Stability: Stable.	Dimensions: 1.40m <input type="text" value="6.00m"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 59.65m OD	Plant: 14T Tracked Excavator	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	59.35	
0.50 0.50	D D			Stiff grey and brownish grey mottled gravelly CLAY with occasional rootlets. Gravel is sub angular to subrounded fine to coarse of chalk mudstone and sandstone. (GLACIAL TILL)	1.00	(0.70)	58.65	
1.00 1.00 - 2.00 1.00 - 2.80	B LB B			Reddish brown slightly clayey gravelly SAND. Gravel is subangular to rounded fine to coarse of flint (GLACIOFLUVIAL DEPOSITS)	2.00	(1.00)	57.65	
2.10	D			Firm orangish brown mottled light grey sandy CLAY (KELLAWAYS SAND MEMBER)	2.40	(0.40)	57.25	
3.00 3.00	D D			Friable orangish brown mottled grey CLAY with sandstone lithorelicts. Lithorelicts are sub angular fine to coarse. (KELLAWAYS SAND MEMBER)	3.00	(0.60)	56.65	
				Base of Excavation at 3.00m				
5								

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TP292

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Method: Trial Pit	Date(s): 25/11/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501780.19, 278122.09	Stability: Stable.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 57.31m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse limestone. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	57.01	
0.50	D			Friable orangish brown mottled greenish grey CLAY (KELLAWAYS SAND MEMBER)	1.00	(0.70)	56.31	
1.00 1.00 - 1.60 1.00 - 2.80 1.10	B LB B D			Stiff grey and brownish grey mottled CLAY with occasional rootlets and occasional silt sized selenite powder (KELLAWAYS SAND MEMBER)	1.50	(0.50)	55.81	
1.70	D			Brown gravelly SAND. Gravel is angular to subangular fine to coarse of siltstone. (KELLAWAYS SAND MEMBER) SILTSTONE (KELLAWAYS SAND MEMBER)	1.60	(0.10)	55.71	
				Base of Excavation at 1.90m	1.90		55.41	
					2			
					3			
					4			
					5			

General Remarks:  
1) Trial pit completed at 1.90m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.





Method: Trial Pit	Date(s): 25/11/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501823.76, 278033.58	Stability: Stable.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 55.44m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	55.14	
0.40	ES			Firm to stiff orangish brown and brown mottled slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of flint. (HEAD DEPOSITS)	0.60	(0.30)	54.84	
0.70	D			Orangish brown mottled light grey clayey SILT (KELLAWAYS SAND MEMBER)	1.60	(1.00)	53.84	
1.70 1.70 1.70	D D ES			Soft to firm reddish brown mottled light grey silty CLAY (KELLAWAYS SAND MEMBER)	2.10	(0.50)	53.34	
2.10 2.10 - 2.80 2.10	B B LB HSV	73kPa		Firm orangish brown and yellow mottled slightly sandy CLAY with occasional silt sized selenite crystals.. (KELLAWAYS CLAY MEMBER)	2.80	(0.70)	52.64	
2.90 3.00	D HSV	83kPa		Firm dark grey CLAY (KELLAWAYS CLAY MEMBER)	3.00	(0.20)	52.44	
				Base of Excavation at 3.00m				

General Remarks:  
 1) Trial pit completed at 3.00m bgl. 2) Backfilled with lightly compacted arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 30/11/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501902.90, 278077.48	Stability: Stable.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 52.54m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	52.14	[Pattern]
0.40 0.40 - 0.80 0.40 - 0.80	ES B B			Firm orange brown slightly sandy CLAY. Sand is fine to medium. (HEAD DEPOSITS)	0.80	(0.40)	51.74	[Pattern]
1.00 1.10	D HSV	89kPa		Stiff grey and dark grey CLAY. (KELLAWAYS CLAY MEMBER)	1.90	(1.10)	50.64	[Pattern]
2.00 2.00	D HSV	90kPa		Stiff grey and orange brown CLAY with occasional and sized selenite crys (KELLAWAYS CLAY MEMBER)	2.10	(0.20)	50.44	[Pattern]
2.20 2.20	D D			Orange brown slightly gravelly clayey SAND. Gravel is angular to rounded fine to medium limestone. Sand is fine to coarse. (CORNBRAsh LIMESTONE FORMATION)	2.30	(0.20)	50.24	[Pattern]
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	2.35	(0.05)	50.19	[Pattern]
				Base of Excavation at 2.35m				

General Remarks:  
1) Pit terminated at 2.35m due to encountering limestone rock. 2) Backfilled with arisings.



Method: Trial Pit	Date(s): 13/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501849.68, 277924.46	Stability: Stable.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 53.81m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	53.51	
0.50	D			Brown silty CLAY. (KELLAWAYS CLAY MEMBER)	0.85	(0.55)	52.96	
0.95 0.95	D HSV	57kPa		Firm grey, brown and orange brown CLAY. (KELLAWAYS CLAY MEMBER)	1	(1.75)		
1.95 1.95 1.95 1.95	D D ES HSV	63kPa			2.60		51.21	
2.70 - 2.90 2.70	D HSV	63kPa		Firm grey, orange brown and grey brown slightly gravelly CLAY. Gravel is angular fine to medium limestone and ironstone. (CORNBRAsh LIMESTONE FORMATION)	2.90	(0.30)	50.91	
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	2.95	(0.05)	50.86	
				Base of Excavation at 2.95m				

General Remarks:  
 1) Pit terminated at 2.95m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP297

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Method: Trial Pit	Date(s): 30/11/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501904.57, 278015.77	Stability: Stable.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 52.70m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	52.40	
0.50	D			Firm orange brown slightly sandy CLAY. Sand is fine to medium. (HEAD DEPOSITS)	0.55	(0.25)	52.15	
0.70 0.70	D HSV	80kPa		Stiff grey CLAY. (KELLAWAYS CLAY MEMBER)	0.80	(0.25)	51.90	
1.00 - 1.50	B			Firm to stiff grey orange brown slightly sandy CLAY with occasional silt sized selenite crystals. Sand is fine. (KELLAWAYS CLAY MEMBER)	1			
1.50	HSV	73kPa				(1.40)		
2.20 2.20 - 2.40 2.20 - 2.40	ES B B			Brown and orange brown clayey SAND & GRAVEL. Gravel is fine to coarse angular limestone. Sand is fine to coarse. (CORNBRAsh LIMESTONE FORMATION)	2.20		50.50	
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	2.40 2.45	(0.20) (0.05)	50.30 50.25	
				Base of Excavation at 2.40m				
5								

General Remarks:  
 1) Pit terminated at 2.45m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 30/11/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501973.78, 278017.37	Stability: Stable.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 50.94m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.35	(0.35)	50.59	
0.50	ES			Firm orange brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of flint and limestone. Sand is fine. (HEAD DEPOSITS)	0.65	(0.30)	50.29	
0.70 - 1.30	B			Brown slightly clayey slightly sandy GRAVEL. Gravel is angular fine to medium of limestone. Sand is fine to coarse. (CORNBRAsh LIMESTONE FORMATION)	1.30	(0.65)	49.64	
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) Base of Excavation at 1.30m	1.35	(0.05)	49.59	

General Remarks:  
1) Pit terminated at 1.35m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TP299

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Method: Trial Pit	Date(s): 13/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501951.86, 277959.84	Stability: Partial collapse at 3.5m.	Dimensions: 1.40m x 6.00m
Hydrock Project No: C-18443-C	Ground Level: 51.47m OD	Plant: 141 Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	50.97	
0.60	D			Firm brown and light brown slightly gravelly sandy CLAY. Gravel is angular fine to medium limestone and flint. Sand is fine to coarse. (HEAD DEPOSITS)	1.00	(0.50)	50.47	
1.05 - 1.20	B			Orange brown slightly clayey sandy fine to coarse angular GRAVEL. Sand is fine to coarse. (CORNBRAsh LIMESTONE FORMATION)	1.20	(0.20)	50.27	
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	1.25	(0.05)	50.22	
				Base of Excavation at 1.20m				
2								
3								
4								
5								

General Remarks:  
1) Pit terminated at 1.25m due to encountering limestone rock. 2) Groundwater not encountered. 3) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP300  
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Method: Trial Pit Date(s): 13/12/2021 Logged By: PP Checked By: CV  
 Client: Equites Newlands (Thrapston East) Ltd Co-ords: 502017.00, 277983.69 Stability: Partial collapse at 3.7m. Dimensions: 1.40m x 5.00m Scale: 1:25  
 Hydrock Project No: C-18443-C Ground Level: 50.25m OD Plant: 141 Tracked Excavator

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	D			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	49.85	
0.50	ES			Soft brown and light brown sandy CLAY. Gravel is angular fine to medium of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	1.00	(0.60)	49.25	
1.10 - 1.30 1.10 - 1.30	B B			Brown slightly gravelly clayey SAND. Gravel is angular fine to coarse of limestone. Sand is fine to coarse. (CORNBASH LIMESTONE FORMATION)	1.40	(0.40)	48.85	
1.60 1.60 1.60 1.60	D D ES HSV	77kPa		Stiff grey and orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	2.00	(1.40)		
2.60 2.60	D HSV	72kPa		Grey and orange brown clayey SILT. (BLISWORTH CLAY FORMATION)	2.80	(0.20)	47.45	
2.90 2.90 2.90	D D ES			Base of Excavation at 3.00m	3.00		47.25	

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.



Method: Trial Pit	Date(s): 10/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502075.60, 277984.18	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 49.71m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	49.31	
0.50 0.50 - 0.70 0.50 - 0.80	B B B			Brown and orange brown slightly gravelly clayey SAND. Gravel is angular to rounded fine to medium of flint, limestone and coke. Sand is fine to coarse. (MADE GROUND)	1.40	(1.00)	48.31	
1.50	ES			Soft dark brown, dark grey, grey and orange brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse of coke, flint and limestone. Sand is fine to medium. (MADE GROUND)	2.30	(0.90)	47.41	
1.90	HSV	72kPa						
2.40 2.40 - 2.70 2.40 - 2.70	ES B B			Brown and dark brown slightly clayey gravelly SAND. Gravel is angular fine to coarse of flint, coke, metal and limestone. Sand is fine to medium. (MADE GROUND)	3.00	(0.70)	46.71	
Base of Excavation at 3.00m								

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: Groundwater not encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TP302

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Method: Trial Pit	Date(s): 10/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502161.16, 278023.48	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 49.03m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	48.73	
0.40	D			Soft brown slightly sandy slightly gravelly CLAY. Gravel is rounded fine to medium of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	0.80	(0.50)	48.23	
0.90 - 1.10	B			Brown clayey SAND & GRAVEL. Gravel is angular to rounded fine to medium of limestone and flint. (HEAD DEPOSITS)	1.20	(0.40)	47.83	
1.40 1.40	D HSV	70kPa		Firm grey, dark grey and light grey CLAY with occasional silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	2.20	(1.00)	46.83	
2.40	D			Firm grey and orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.80)	46.03	
				Base of Excavation at 3.00m	3.00		46.03	
					4			
					5			

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: Groundwater not encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP303

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Method: Trial Pit	Date(s): 10/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502168.98, 277964.72	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 49.83m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.55	(0.55)	49.28	
0.60	ES			Brown slightly clayey gravelly SAND. Gravel is angular fine to coarse of flint, brick, ceramic pipe, coke and plastic. Sand is fine to coarse. (MADE GROUND)	1.05	(0.50)	48.78	
1.10 - 1.20	B			Brown and orange brown slightly silty sandy GRAVEL. Gravel is angular fine to coarse of limestone. Sand is fine to medium. (CORNBRAsh LIMESTONE FORMATION)	1.20	(0.15)	48.63	
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	1.25	(0.05)	48.58	
				Base of Excavation at 1.25m				
					2			
					3			
					4			
					5			

General Remarks:  
 1) Pit terminated at 1.25m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: Groundwater encountered at 1.20m

Method: Trial Pit	Date(s): 13/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502102.91, 277913.59	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 50.92m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	50.42	
0.60 - 0.80	B			Soft brown slightly sandy gravelly CLAY. Gravel is angular to rounded fine to coarse flint, limestone and asphalt. (MADE GROUND)	1.40	(0.90)	49.52	
1.50	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse flint, limestone and asphalt. (MADE GROUND)	1.70	(0.30)	49.22	
1.70 - 1.80	B			Light brown slightly clayey slightly sandy GRAVEL. Gravel is angular fine to coarse limestone. Sand is fine to coarse. (CORNBRAsh LIMESTONE FORMATION)	1.80	(0.10)	49.12	
				LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	1.85	(0.05)	49.07	
				Base of Excavation at 1.85m				
					3			
					4			
					5			

General Remarks:  
 1) Pit terminated at 1.1m due to encountering limestone rock. 2) Backfilled with arisings.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP305  
Page No. 1 of 1

Method: Trial Pit	Date(s): 13/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502032.41, 277910.03	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 51.30m OD	Plant: 14T Tracked Excavator	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.45	(0.45)	50.85	[Diagonal Hatching]
0.50 - 0.80	B			Firm brown slightly gravelly sandy CLAY. Gravel is angular to rounded fine to medium of flint, limestone and asphalt. Sand is fine to medium. (MADE GROUND)	0.90	(0.45)	50.40	[Cross-hatching]
0.95 0.95	D HSV	140kPa		Very stiff grey brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to medium of limestone. (MADE GROUND)	1.90	(1.00)	49.40	[Cross-hatching]
1.95 1.95 1.95	D D HSV	103kPa		Stiff brown, grey brown and orange brown slightly gravelly CLAY. Gravel is angular to sub rounded fine to medium of limestone and flint. (MADE GROUND)	2.65	(0.75)	48.65	[Cross-hatching]
2.70 2.70	D HSV	49kPa		Firm grey and dark grey CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.35)	48.30	[Horizontal Dashed Lines]
				Base of Excavation at 3.00m	3.00		48.30	
5								

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: Groundwater not encountered.



Method: Trial Pit	Date(s): 13/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502004.37, 277894.71	Stability: Stable.	Dimensions: 1.40m <input type="text" value="5.00m"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 51.52m OD	Plant: 14T Tracked	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	51.02	
0.60	ES			Light brown slightly gravelly sandy CLAY. Gravel is angular fine to medium of limestone, asphalt and flint. Sand is fine to medium. (MADE GROUND)	1.50	(1.00)	50.02	
1.60 1.60	D D			Brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to medium of limestone, asphalt and flint. Sand is fine to medium. (MADE GROUND)	2.50	(1.00)	50.02	
2.60 2.60	D HSV	50kPa		Firm grey silty CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.50)	49.02	
				Base of Excavation at 3.00m	3.00		48.52	
5								

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP307

Page No. 1 of 1

Method: Trial Pit	Date(s): 13/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501893.42, 277895.76	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 52.50m OD	Plant: 14T Tracked	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth (m)	Thickness (m)	Level (m OD)	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	52.00	[Hatched Pattern]
0.60 0.60 - 0.80 0.60 - 0.80	ES B B			Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint, concrete, asphalt and limestone. Sand is fine to medium. (MADE GROUND)	1.30	(0.80)	51.20	[Cross-hatched Pattern]
1.40 1.40	D HSV	87kPa		Stiff dark brown dark grey silty organic CLAY. (MADE GROUND)	1.90	(0.60)	50.60	[Cross-hatched Pattern]
2.00 2.00 2.00 2.00	D D ES HSV	72kPa		Firm to stiff brown and orange brown slightly sandy slightly gravelly silty CLAY. Gravel is angular fine to medium of flint. Sand is fine to medium. (MADE GROUND)	3.00	(1.10)	49.50	[Cross-hatched Pattern]
3.00 3.00 3.00 3.00	D D ES HSV	28kPa		Base of Excavation at 3.00m				

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountere

Method: Trial Pit	Date(s): 13/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501982.95, 277845.93	Stability: Stable.	Dimensions: 1.40m <input type="text" value="5.00m"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 52.55m OD	Plant: 14T Tracked	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	52.05	
0.60	ES			Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to sub rounded fine to medium of limestone, asphalt and flint. Sand is fine. (MADE GROUND)	1.30	(0.80)	51.25	
1.40 1.40 1.40	D D HSV	43kPa		Firm brown and grey brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of limestone and flint. (MADE GROUND)	2.30	(1.00)	50.25	
2.40 2.40 2.40 2.40	D D ES HSV	63kPa		Firm to stiff grey brown, orange brown and grey slightly gravelly CLAY with occasional sand patches. Gravel is angular fine to medium limestone. Sand is fine to medium. (CORNBURASH LIMESTONE FORMATION)	2.95	(0.65)	49.60	
3.00 3.00	D HSV	78kPa		Stiff dark grey CLAY with abundant shell fragments. (BLISWORTH CLAY FORMATION)	3.10	(0.15)	49.45	
				Base of Excavation at 3.10m				
4								
5								

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 13/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502090.26, 277824.30	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 52.62m OD	Plant: 14T Tracked	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to rounded flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	52.12	[Hatched Pattern]
0.70	ES			Brown slightly sandy gravelly CLAY. Gravel is rounded fine to coarse of flint, limestone and concrete. Sand is fine to o medium. (MADE GROUND)	1.25	(0.75)	51.37	[Cross-hatched Pattern]
1.30 1.30 1.30 1.30	D D ES HSV	50kPa		Firm grey slightly gravelly CLAY with occasional decaying roots and organic matter. Gravel is angular to rounded fine to medium limestone. (MADE GROUND)	2.40	(1.15)	50.22	[Cross-hatched Pattern]
2.50 2.50 - 2.70 2.50 - 2.70 2.50	ES B B HSV	62kPa		Firm to stiff dark grey slightly gravelly CLAY with occasional decaying organic matter. Gravel is angular to sub rounded fine to medium limestone. (MADE GROUND)	2.90	(0.50)	49.72	[Cross-hatched Pattern]
2.95	ES			Soft dark brown slightly gravelly CLAY. Gravel is angular to sub rounded limestone, glass, ceramic tile and wood. (MADE GROUND)	3.00	(0.10)	49.62	[Cross-hatched Pattern]
Base of Excavation at 3.00m								

General Remarks:  
 1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP310  
Page No. 1 of 1

Method: Trial Pit	Date(s): 10/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502130.25, 277881.17	Stability: Stable.	Dimensions: 5.00m 1.40m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 51.50m OD	Plant: 14T Tracked	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.50	(0.50)	51.00	
0.60	ES			Brown slightly clayey gravelly SAND. Gravel is angular fine to coarse of flint, brick, coke, metal and wood. Sand is fine to medium. (MADE GROUND)	1.00	(1.30)		
1.50	ES				1.80		49.70	
1.90 - 2.20	B			Stiff brown slightly gravelly CLAY. Gravel is angular fine to medium of flint. (HEAD DEPOSITS)	2.00	(0.70)		
2.00	HSV	133kPa			2.50		49.00	
2.60	D			Firm orange brown and brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse limestone. Sand is fine to coarse. (CORNBRAsh LIMESTONE FORMATION)	2.60	(0.30)		
2.60	D				2.80		48.70	
2.60	HSV	60kPa			2.80		48.70	
3.00	D			Firm blue grey and orange brown CLAY. (BLISWORTH CLAY FORMATION)	3.00	(0.20)		
3.00	HSV	49kPa			3.00		48.50	
				Base of Excavation at 3.00m				

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 09/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502211.97, 278557.78	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 45.29m OD	Plant: 14T Tracked	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.10	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	44.89	
0.50 - 0.70	B			Light brown slightly sandy gravelly CLAY. Gravel is angular fine to coarse limestone. Sand is fine to coarse. (HEAD DEPOSITS)	0.75	(0.35)	44.54	
0.80 - 1.00	B			Light brown slightly silty SAND & GRAVEL. Gravel is angular fine to medium of limestone. Sand is fine to medium. (BLISWORTH LIMESTONE FORMATION)	1	(1.35)	43.19	
1.80 - 2.00	B			LIMESTONE. (BLISWORTH LIMESTONE FORMATION)	2.10	(0.05)	43.14	
				Base of Excavation at 2.15m	2.15			

General Remarks:  
 1) Pit terminated at 2.15m due to encountering limestone rock. 2) Groundwater not encountered. 3) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No TP312  
Page No. 1 of 1

Method: Trial Pit	Date(s): 09/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502290.25, 278493.22	Stability: Stable.	Dimensions: 1.40m <input type="text" value="5.00m"/> Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 49.21m OD	Plant: 14T Tracked	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.00 - 0.30	B			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.35	(0.35)	48.86	
0.50	ES			Soft light brown and orange brown slightly sandy slightly gravelly CLAY with occasional roots less than 1mm. Gravel is angular fine to medium of flint and limestone. Sand is fine to medium. (HEAD DEPOSITS)	0.70	(0.35)	48.81	
0.80 0.90	HSV D	103kPa		Stiff grey and grey brown CLAY. (BLISWORTH CLAY FORMATION)	1.40	(0.70)	47.81	
1.50	D			Stiff grey silty CLAY. (BLISWORTH CLAY FORMATION)	2.40	(1.00)	46.81	
2.50	D			Stiff very closely fissured grey and light brown silty CLAY with occasional silt sized selenite crystals. (BLISWORTH CLAY FORMATION)	3.00	(0.60)	46.21	
				Base of Excavation at 3.00m	3.00			
5								

General Remarks:  
1) Pit completed at 3.00m. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TP313

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Method: Trial Pit	Date(s): 09/12/2021	Logged By: PP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502312.94, 278585.81	Stability: Stable.	Dimensions: 1.40m x 5.00m
Hydrock Project No: C-18443-C	Ground Level: 45.39m OD	Plant: 14T Tracked	Scale: 1:25

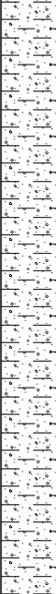
Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
0.20	ES			Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to medium of flint and limestone. Sand is fine to medium. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	44.99	
0.50 - 0.70	B			Light brown slightly clayey SAND & GRAVEL. Gravel is angular fine to medium of limestone. Sand is fine. (BLISWORTH LIMESTONE FORMATION)	0.80	(0.40)	44.59	
0.90 - 1.10	B			Cream and light brown slightly silty SAND & GRAVEL. Gravel is angular fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	1.40	(0.60)	43.99	
				LIMESTONE (BLISWORTH LIMESTONE FORMATION)	1.45	(0.05)	43.94	
				Base of Excavation at 1.45m				
					2			
					3			
					4			
					5			

General Remarks:  
1) Pit terminated at 1.45m due to encountering limestone rock. 2) Backfilled with arisings.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 13/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501582.28, 278364.21	Stability: No collapse	Dimensions: 4.00m 0.60m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 59.09m OD	Plant: 14T 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (TOPSOIL - MADE GROUND)	0.30	(0.30)	58.79	
				Stiff brown and grey slightly sandy gravelly CLAY. Gravel is sub angular to rounded fine to coarse of flint and chalk (GLACIAL TILL)	1	(2.00)		
				Orangish brown gravelly SAND. Gravel is sub angular to rounded fine to coarse of flint (GLACIOFLUVIAL DEPOSITS)	2.30	(0.10)	56.79	
				Base of Excavation at 2.40m	2.40		56.69	
					3			
					4			
					5			

General Remarks:  
 1) Undertaken to locate edge of landfill orientated northeast to southwest. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501597.73, 278271.03	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 59.45m OD	Plant: 14T 360	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft brown slightly organic slightly sandy SILT / CLAY. (TOPSOIL - MADE GROUND)	0.35	(0.35)	59.10	[Cross-hatched pattern]
				Mixed. Firm brown and grey slightly sandy slightly gravelly CLAY. Orangish-brown fine to coarse SAND and sub-angular to sub-rounded fine to coarse quartz GRAVEL, and reddish brown fine to medium SAND, with rare fragments of brick and pipe. (LANDFILL - MADE GROUND)	1.80	(1.80)	57.30	[Cross-hatched pattern]
				Firm dark brown slightly organic slightly sandy SILT. (LANDFILL - MADE GROUND)	2.15	(0.05)	57.25	[Cross-hatched pattern]
Base of Excavation at 2.20m					2.20			

General Remarks:  
1) Undertaken to locate edge of landfill orientated northeast to southwest. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TT202B

Page No. 1 of 1

Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501611.23, 278199.31	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 59.92m OD	Plant: 14T 360	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft brown slightly organic slightly sandy SILT / CLAY. (TOPSOIL - MADE GROUND)	0.90	(0.90)	59.02	
				Firm light brown and light grey slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse quartz and flint. (GLACIAL TILL)	1.20	(0.30)	58.72	
				▼ Base of Excavation at 1.20m				
					2			
					3			
					4			
					5			

General Remarks:  
1) Undertaken to locate edge of landfill orientated northeast to southwest. 2) Backfilled with arisings on completion.

Groundwater: Groundwater encountered at 1.20m



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TT203A

Page No. 1 of 1

Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501593.40, 278195.74	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 60.79m OD	Plant: 14T 360	0.60m <input type="text"/>

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft brown slightly organic slightly sandy SILT / CLAY. (TOPSOIL - MADE GROUND)	0.30	(0.30)	60.49	
				Firm brown and grey slightly gravelly CLAY with some fragments of brick and tile with rare cris wrappers. Gravel is sub-angular to sub-rounded fine to coarse quartz and flint. (LANDFILL - MADE GROUND)	1.10	(1.10)	59.39	
Base of Excavation at 1.40m					1.40			
					2			
					3			
					4			
					5			

General Remarks:  
1) Undertaken to locate edge of landfill orientated northeast to southwest. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501611.23, 278199.31	Stability: No collapse	Dimensions: 4.00m 0.60m
Hydrock Project No: C-18443-C	Ground Level: 59.92m OD	Plant: 14T 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft brown slightly organic slightly sandy SILT / CLAY. (TOPSOIL - MADE GROUND)	0.45	(0.45)	59.47	
				Firm dark greenish-grey slightly sandy CLAY with rare subangular to subrounded medium quartz gravels. (GLACIAL TILL)	0.65	(0.20)	59.27	
				Stiff brown slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. (GLACIAL TILL)	1.30	(0.65)	58.62	
				----- Base of Excavation at 1.30m				
					2			
					3			
					4			
					5			

General Remarks:  
1) Undertaken to locate edge of landfill orientated northeast to southwest. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TT204A  
Page No. 1 of 1

Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501609.67, 278142.83	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 61.50m OD	Plant: 14T 360	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
				Soft brown slightly organic slightly sandy SILT / CLAY. (TOPSOIL - MADE GROUND)	0.35	(0.35)	61.15	[Cross-hatched pattern]	
				Firm brown, light and dark grey slightly sandy slightly gravelly CLAY with some fragments of brick and steel. Gravel is sub-angular to sub-rounded fine to coarse chalk, quartz and flint. (LANDFILL - MADE GROUND)	1.30	(0.95)	60.20	[Cross-hatched pattern]	
				Stiff dark grey and brown slightly gravelly CLAY with some fragments of brick, concrete and blocks and rare fragments of macadam. Gravel is sub-angular to sub-rounded fine to coarse quartz and flint. (LANDFILL - MADE GROUND)	1.50	(0.20)	60.00	[Cross-hatched pattern]	
				Base of Excavation at 1.50m					
					2				
					3				
					4				
					5				

General Remarks:  
1) Undertaken to locate edge of landfill orientated northeast to southwest. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TT204B

Page No. 1 of 1

Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501628.96, 278145.97	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 60.63m OD	Plant: 14T 360	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
				Soft brown slightly organic slightly sandy SILT / CLAY. (TOPSOIL - MADE GROUND)	0.60	(0.60)	60.03		
				Orangish-brown fine to coarse SAND and sub-angular to sub-rounded fine to coarse quartz GRAVEL. (GLACIOFLUVIAL DEPOSITS)	1	(0.70)			
				Stiff locally very stiff dar bluish-grey and brown CLAY with rare sub-rounded median sandstone gravel and rare sand sized selenite crystals. (KELLAWAYS SAND MEMBER)	1.30	(0.20)	59.33		
				Base of Excavation at 1.50m					
					2				
					3				
					4				
					5				

General Remarks:  
1) Undertaken to locate edge of landfill orientated northeast to southwest. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TT205A

Page No. 1 of 1

Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501566.22, 278088.05	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 62.87m OD	Plant: 14T 360	0.60m <input type="text"/>

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
				Soft brown slightly organic slightly gravelly CLAY with occasional fragments of brick. Gravel is sub-angular to sub-rounded fine to coarse quartz and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.57		
				Firm orangish-brown slightly sandy slightly gravelly CLAY with some fragments of brick. Gravel is sub-angular to sub-rounded fine to coarse quartz and flint. (LANDFILL - MADE GROUND)	0.90	(0.60)	61.97		
				Turf / Firm brown slightly organic slightly sandy SILT with many rootlets. (LANDFILL - MADE GROUND)	0.92	(0.02)	61.95		
				Stiff dark grey slightly gravelly CLAY with many fragments of brick, some fragments of pottery and a slight humic odour. Gravel is sub-angular to sub-rounded fine to coarse quartz and flint. (LANDFILL - MADE GROUND)	1.20	(0.28)	61.67		
				Base of Excavation at 1.20m					
					2				
					3				
					4				
					5				

General Remarks:  
1) Undertaken to locate edge of landfill orientated east to west. 2) Backfilled with arisings on completion.

Groundwater: Groundwater encountered at 1.20m bgl.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
**TT205B**  
 Page No. 1 of 1

Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501574.00, 278083.00	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 62.60m OD	Plant: 14T 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft brown slightly organic slightly gravelly CLAY with occasional fragments of brick. Gravel is sub-angular to sub-rounded fine to coarse quartz and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.30	[Cross-hatched pattern]
				Orangish-brown clayey fine to coarse SAND and sub-angular to sub-rounded fine to coarse quartz GRAVEL with many bands of firm orangish-brown slightly sandy slightly gravelly CLAY. (LANDFILL - MADE GROUND)	1.30	(1.00)	61.30	[Cross-hatched pattern]
				Turf / Firm brown slightly organic slightly sandy SILT with many rootlets. (LANDFILL - MADE GROUND)	1.40	(0.02)	61.28	[Cross-hatched pattern]
				Stiff dark grey slightly gravelly CLAY with many fragments of brick, some fragments of pottery and a slight humic odour. Gravel is sub-angular to sub-rounded fine to coarse quartz and flint. (LANDFILL - MADE GROUND)	1.40	(0.08)	61.20	[Cross-hatched pattern]
				Base of Excavation at 1.40m				

General Remarks:  
 1) Undertaken to locate edge of landfill orientated east to west. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
**TT205C**  
 Page No. 1 of 1

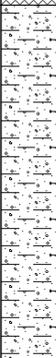
Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501580.00, 278080.00	Stability: No collapse	Dimensions: 4.00m 0.60m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 62.50m OD	Plant: 14T 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft brown slightly organic slightly sandy SILT / CLAY. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.20	
				Firm brown slightly gravelly CLAY with many fragments of brick, steel and wood. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. (LANDFILL - MADE GROUND)	1.60	(1.60)	60.60	
				----- Base of Excavation at 1.90m	1.90		60.60	
					2			
					3			
					4			
					5			

General Remarks:  
 1) Undertaken to locate edge of landfill orientated east to west. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.

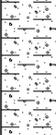
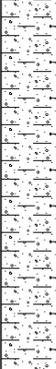
Method: Trial Pit	Date(s): 14/12/2021	Logged By: JP	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501582.86, 278077.88	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 62.42m OD	Plant: 14T 360	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Soft brown slightly organic slightly sandy SILT / CLAY. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.12	
				Stiff brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint. (GLACIAL TILL)	1.50	(1.20)	60.92	
				----- Base of Excavation at 1.50m				
					2			
					3			
					4			
					5			

General Remarks:  
1) Undertaken to locate edge of landfill orientated east to west. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.

Method: Trial Pit	Date(s): 12/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502116.61, 278561.80	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 44.90m OD	Plant: 14T 360	0.60m <input type="text"/>

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	
Depth (m)	Type	Results							
				Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	44.60		
				Firm orangish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub angular fine to medium of chalk and flint. (HEAD DEPOSITS)	0.80	(0.50)	44.10		
				Firm reddish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub angular fine to medium of chalk and flint. (HEAD DEPOSITS)	1	(1.30)			
				Light brown slightly gravelly SAND. Gravel is sub angular to rounded fine to coarse of flint. (HEAD DEPOSITS)	2.10	(0.20)	42.80		
				Base of Excavation at 2.30m					
					2.30		42.60		
					3				
					4				
					5				

General Remarks:  
1) Undertaken to locate edge of superficial deposits in valley feature orientated north to south. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TT206S  
Page No. 1 of 1

Method: Trial Pit	Date(s): 12/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502128.60, 278548.93	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 44.82m OD	Plant: 14T 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	44.52	
				Firm orangish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub angular fine to medium of chalk and flint. (HEAD DEPOSITS)	0.80	(0.50)	44.02	
				Firm reddish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub angular fine to medium of chalk and flint. (HEAD DEPOSITS)	1.00	(1.30)		
				Firm light brown mottled light grey gravelly CLAY. Gravel is sub angular fine to coarse of limestone (BLISWORTH LIMESTONE FORMATION)	2.10	(0.10)	42.72	
				Light grey clayey angular to sub angular fine to coarse GRAVEL of limestone (Limestone bedrock) (BLISWORTH LIMESTONE FORMATION)	2.20	(0.20)	42.62	
				Base of Excavation at 2.40m	2.40		42.42	

General Remarks:  
1) Undertaken to locate edge of superficial deposits in valley feature orientated north to south. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TT207E

Page No. 1 of 1

Method: Trial Pit	Date(s): 12/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502054.88, 278360.66	Stability: No collapse	Dimensions: 4.00m Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 45.83m OD	Plant: 14T 360	0.60m

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	45.53	
				Firm orangish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub angular fine to medium of chalk and flint. (HEAD DEPOSITS)	1.40	(1.10)	44.43	
				Orangish brown gravelly SAND. Gravel is sub angular to rounded fine to coarse of flint and chalk. (HEAD DEPOSITS)	1.90	(0.50)	43.93	
				Light brown slightly gravelly SAND. Gravel is sub angular to rounded fine to coarse of flint. (HEAD DEPOSITS)	2.10	(0.20)	43.73	
				Light orangish brown gravelly SAND with occasional shell fossils. Gravel is angular to sub angular fine to coarse of limestone. (BLISWORTH LIMESTONE FORMATION)	2.20	(0.10)	43.63	
				Base of Excavation at 2.20m				
					3			
					4			
					5			

General Remarks:  
1) Undertaken to locate edge of superficial deposits in valley feature orientated east to west. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
**TT207W**  
 Page No. 1 of 1

Method: Trial Pit	Date(s): 12/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502035.50, 278363.09	Stability: No collapse	Dimensions: 4.00m 0.60m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 45.80m OD	Plant: 14T 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	45.50	
				Firm orangish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub angular fine to medium of chalk and flint. (HEAD DEPOSITS)	1.40	(1.10)	44.40	
				Orangish brown gravelly SAND. Gravel is sub angular to rounded fine to coarse of flint and chalk. (HEAD DEPOSITS)	1.90	(0.50)	43.90	
				Light brown slightly gravelly SAND. Gravel is sub angular to rounded fine to coarse of flint. (HEAD DEPOSITS)	2.10	(0.20)	43.70	
				Orangish brown gravelly SAND. Gravel is sub angular to rounded fine to coarse of flint and chalk. (HEAD DEPOSITS)	2.20	(0.10)	43.60	
Base of Excavation at 2.20m								

General Remarks:  
 1) Undertaken to locate edge of superficial deposits in valley feature orientated east to west. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
TT208E

Page No. 1 of 1

Method: Trial Pit	Date(s): 13/12/2021	Logged By: TB	Checked By: CV	
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502061.66, 278181.51	Stability: No collapse	Dimensions: 4.00m	Scale: 1:25
Hydrock Project No: C-18443-C	Ground Level: 46.58m OD	Plant: 14T 360	0.60m	

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	46.28	
				Firm orangish brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is sub angular fine to medium of chalk and flint. (HEAD DEPOSITS)	0.60	(0.30)	45.98	
				Firm brown slightly gravelly sandy CLAY with rare shell fossils . Sand is fine to medium. Gravel is sub angular fine to medium of chalk and flint. (HEAD DEPOSITS)	1.00	(0.90)		
				----- Base of Excavation at 1.50m	1.50		45.08	
					2.00			
					3.00			
					4.00			
					5.00			

General Remarks:  
1) Undertaken to locate edge of superficial deposits in valley feature orientated east to west. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.



Project: Land Adjacent Haldens Parkway Thrapston

Trialpit No  
**TT208W**  
 Page No. 1 of 1

Method: Trial Pit	Date(s): 12/12/2021	Logged By: TB	Checked By: CV
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 502042.27, 278179.88	Stability: No collapse	Dimensions: 4.00m 0.60m <input type="text"/>
Hydrock Project No: C-18443-C	Ground Level: 46.63m OD	Plant: 14T 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Firm brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is sub angular to sub rounded fine to coarse of flint and limestone (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	46.33	
				Firm orangish brown sandy CLAY. Sand is fine to medium (HEAD DEPOSITS)	0.60	(0.30)	46.03	
				Orangish brown gravelly SAND. Gravel is sub angular to rounded fine to coarse of flint and chalk. (HEAD DEPOSITS)	1.50	(0.90)	45.13	
				----- Base of Excavation at 1.50m				
					2			
					3			
					4			
					5			

General Remarks:  
 1) Undertaken to locate edge of superficial deposits in valley feature orientated east to west. 2) Backfilled with arisings on completion.

Groundwater: No groundwater encountered.





Project: Thrapston Landfill Permit Surrender

Borehole No RBH-301

Page No. 1 of 1

Method: Rotary Open	Date(s): 17/11/2022	Logged By: MA	Drilled By: Marshall Drilling
Client: Mick George Ltd.	Co-ords: 501616.21, 278520.84	Checked By: JC	Flush:
Hydrock Project No: 23880	Ground Level: 57.46m OD		Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
								Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to rounded fine and medium flint and quartz. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	57.16		
								Firm yellowish brown mottled grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint. (GLACIAL TILL)	1.20	(0.90)	56.26		
								Firm yellowish brown mottled grey sandy CLAY. (KELLAWAYS SAND)		(2.80)			
								Stiff dark grey CLAY. (KELLAWAYS CLAY)	4.00	(1.00)	53.46		
								Grey carbonaceous LIMESTONE. (CORNBRAsh FORMATION)	5.00	(1.00)	52.46		
								End of Borehole at 6.00m	6.00		51.46		
									7				
									8				
									9				
									10				
									11				
									12				
									13				
									14				
									15				
									16				
									17				
									18				
									19				
									20				

Progress and Observations									General Remarks: 1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 6.00m bgl. 3) Groundwater encountered at 5.50m bgl. 3) Borehole installed with gas and groundwater monitoring well to 6.00m, with response zone between 5.00 and 6.00m.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
	17/11	1100	6.00			5.50			



Method: Rotary Cored	Date(s): 01/12/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501617.49, 278519.91	Checked By: JC	Flush:
Hydrock Project No: 23880	Ground Level: 57.36m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min Mean Max							
4.20 - 5.70	2.50	EW							Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to rounded fine and medium of flint and quartz. (AGRICULTURALLY DISTURBED TOPSOIL)	0.30	(0.30)	57.06		
	3.00	EW							Firm yellowish brown mottled grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint. (GLACIAL TILL)	1.20	(0.90)	56.16		
	4.00	EW							Firm yellowish brown mottled grey sandy CLAY. (KELLAWAYS SAND MEMBER)	4.00	(2.80)	53.36		
	4.20 - 5.70	C					13 15 34		Very stiff dark grey silty CLAY. (KELLAWAYS CLAY MEMBER)	5.00	(1.00)	52.36		
5.70 - 7.20 5.70 - 7.50	5.70 - 7.20	C					6 35 70		Medium strong grey carbonaceous shelly LIMESTONE. Fractures are subhorizontal undulating with some orange brown surface staining. (CORNBURASH FORMATION)	6.70	(1.70)	50.66		
7.20 - 7.50	7.20 - 7.50	C							Very stiff dark grey silty CLAY. some fine sand sized pyrite and shell fragments. (BLISWORTH CLAY FORMATION)	7.50	(0.80)	49.86		
End of Borehole at 7.50m														

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
	01/12 01/12	1130 1630										1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 4.20m, rotary cored to 7.50m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 5.00 and 7.20m.



Method: Rotary Open	Date(s): 17/11/2022	Logged By: MA	Drilled By: Marshall Drilling
Client: Mick George Ltd.	Co-ords: 501616.09, 278289.71	Checked By: JC	Flush:
Hydrock Project No: 23880	Ground Level: 58.30m OD		Scale: 1:100

Run (m)	Samples / Tests			Drilling Record			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	Weight (Kg)	Mins	Secs							
3.50	EW							Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to rounded fine and medium flint and quartz. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	57.90		
								Firm yellowish brown mottled grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint. (GLACIAL TILL)	1.20	(0.80)	57.10		
6.00	EW							Grey mottled yellowish brown sandy CLAY. (KELLAWAYS SAND)	3				
								Stiff dark grey CLAY. (KELLAWAYS CLAY)	6.20	(5.00)	52.10		
								Strong grey carbonaceous LIMESTONE. (CORNBASH FORMATION)	6.50	(0.30)	51.80		
								End of Borehole at 7.50m	7.50	(1.00)	50.80		
									8				
									9				
									10				
									11				
									12				
									13				
									14				
									15				
									16				
									17				
									18				
									19				
									20				

Progress and Observations

General Remarks:

1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 6.00m bgl. 3) Groundwater not encountered. 3) Borehole installed with gas and groundwater monitoring well to 7.50m, with response zone between 6.50 and 7.50m.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
	17/11	1500	7.50					



Method: Rotary Cored	Date(s): 30/11/2022 - 01/12/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501618.60, 278209.15	Checked By: JC	Flush:
Hydrock Project No: 23880	Ground Level: 59.38m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
7.30 - 8.80	7.30 - 8.80	C					6 20 35		Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to rounded fine and medium flint and quartz. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	58.98		
									Firm yellowish brown mottled grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse of flint. (GLACIAL TILL)	1.30	(0.90)	58.08		
8.80 - 10.30	8.80 - 10.30	C				5 15 30			Firm yellowish brown sandy silty CLAY. (KELLAWAYS SAND MEMBER)	1.30		58.08		
									Stiff dark grey mottled orange brown silty CLAY. (KELLAWAYS CLAY MEMBER)	3.30	(2.00)	56.08		
									Stiff dark grey silty CLAY with shell fragments. (KELLAWAYS CLAY MEMBER)	3.80	(0.50)	55.58		
									Medium strong grey carbonaceous shelly LIMESTONE. Fractures are subhorizontal undulating. (CORNBURASH FORMATION)	8.10	(4.30)	51.28		
									Very stiff dark grey silty CLAY. some fine sand sized pyrite and shell fragments. (BLISWORTH CLAY FORMATION)	9.50	(0.80)	49.88		

Continued on Next Sheet

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
	30/11	1200										1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 7.30m, rotary cored to 10.30m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 7.30 and 9.80m.
	30/11	1615	0.00	0.00								
	01/12	0800	10.30									
	01/12	1130										



Project: Thrapston Landfill Permit Surrender

Borehole No RBH-302A

Page No. 2 of 2

Method: Rotary Cored	Date(s): 30/11/2022 - 01/12/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501618.60, 278209.15	Checked By: JC	Flush:
Hydrock Project No: 23880	Ground Level: 59.38m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min. Mean Max							
									Very stiff dark grey silty CLAY. some fine sand sized pyrite and shell fragments. (BLISWORTH CLAY FORMATION) End of Borehole at 10.30m	10.30		49.08		
										11				
										12				
										13				
										14				
										15				
										16				
										17				
										18				
										19				
										20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 7.30m, rotary cored to 10.30m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 7.30 and 9.80m.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	





Project: Thrapston Landfill Permit Surrender

Borehole No RBH-303

Page No. 1 of 2

Method: Rotary Cored	Date(s): 15/11/2022 - 16/11/2022	Logged By: MA	Drilled By: Marshall Drilling
Client: Mick George Ltd.	Co-ords: 501383.77, 278141.38	Checked By: JC	Flush:
Hydrock Project No: 23880	Ground Level: 65.64m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min Mean Max							
									Firm yellowish brown slightly sandy slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of flint. (TOPSOIL)	0.40	(0.40)	65.24		
									Stiff brownish grey slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of flint and chalk. (GLACIAL TILL)	1.20	(0.80)	64.44		
									Grey slightly gravelly CLAY. Gravel is sub-rounded fine to coarse of chalk and flint. (GLACIAL TILL)	6.00	(4.80)	59.64		
									Light grey CLAY. (PROBABLE GLACIAL TILL)	8.00	(2.00)	57.64		
									Yellowish brown SAND. (KELLAWAYS SAND)	12.00	(3.50)			

Continued on Next Sheet

Progress and Observations										Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)		
	15/11	1300	13.50									1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 12.00m bgl, then rotary cored with water flush from 12.00 to 13.50m. 3) Groundwater not encountered. 3) Borehole installed with gas and groundwater monitoring well to 13.00m, with response zone between 12.00 and 13.00m.	



Project: Thrapston Landfill Permit Surrender

Borehole No RBH-303

Page No. 2 of 2

Method: Rotary Cored	Date(s): 15/11/2022 - 16/11/2022	Logged By: MA	Drilled By: Marshall Drilling
Client: Mick George Ltd.	Co-ords: 501383.77, 278141.38	Checked By: JC	Flush:
Hydrock Project No: 23880	Ground Level: 65.64m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If: Mean Max							
12.00 - 13.50	12.00	EW		86	28	22	NI		Yellowish brown SAND. (KELLAWAYS SAND)	11.50		54.14		
									Stiff dark grey CLAY. (KELLAWAYS CLAY)	12.00	(0.50)	53.64		
									Non intact: Medium Strong yellowish brown carbonaceous LIMESTONE. (CORNBRAASH FORMATION)	12.30	(0.30)	53.34		
									Firm grey mottled yellowish brown very thinly laminated sandy CLAY with lithorelics. (CORNBRAASH FORMATION)	12.50	(0.20)	53.14		
								Medium strong grey medium bedded carbonaceous oolitic LIMESTONE. Fractures are sub-horizontal to vertical, open and smooth with clay infill. (CORNBRAASH FORMATION)	13.50		52.14			
End of Borehole at 13.50m														

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
												1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 12.00m bgl, then rotary cored with water flush from 12.00 to 13.50m. 3) Groundwater not encountered. 3) Borehole installed with gas and groundwater monitoring well to 13.00m, with response zone between 12.00 and 13.00m.



Project: Thrapston Landfill Permit Surrender

Borehole No RBH-303A

Page No. 1 of 2

Method: Rotary Cored	Date(s): 28/11/2022 - 30/11/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501381.51, 278142.33	Checked By: JC	Flush: Water
Hydrock Project No: 23880	Ground Level: 65.63m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min Mean Max							
									Firm yellowish brown slightly sandy slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse of flint. (AGRICULTURALLY DISTURBED TOPSOIL)	0.40	(0.40)	65.23		
									Firm yellowish brown mottled grey slightly gravelly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse of flint. (GLACIAL TILL)	1.20	(0.80)	64.43		
									Grey slightly gravelly CLAY. Gravel is sub-rounded fine to coarse of chalk and flint. (GLACIAL TILL)	6.00	(4.80)	59.63		
									Light grey CLAY. (PROBABLE GLACIAL TILL)	8.00	(2.00)	57.63		
									Yellowish brown SAND. (KELLAWAYS SAND MEMBER)	11.70	(3.50)			

Continued on Next Sheet

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
Comaccio 305	28/11	0800										1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 11.70m, rotary cored to 14.70m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 12.00 and 14.00m.
	28/11	1620	7.50	1.50								
	29/11	0800	7.50	1.50								
	29/11	1600	14.70	1.50		4.00	Water	Grey				
	30/11	0800	14.50	1.50	152		Water					
Comaccio 305	30/11	1200					Water					



Method: Rotary Cored	Date(s): 28/11/2022 - 30/11/2022	Logged By: SM	Drilled By: ADS Drilling
Client: Mick George Ltd.	Co-ords: 501381.51, 278142.33	Checked By: JC	Flush: Water
Hydrock Project No: 23880	Ground Level: 65.63m OD		Scale: 1:50

Sample/Core Run (m)	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
11.70 - 13.20	11.00	EW							Yellowish brown SAND. (KELLAWAYS SAND MEMBER)	11				
	11.00	EW												
	11.50	EW							Stiff dark grey CLAY. (KELLAWAYS CLAY MEMBER)	11.50	(0.20)	54.13		
13.20 - 14.70	11.70 - 13.20	EW C					4 10 13		NO RECOVERY: Presumed to be stiff dark grey CLAY. (KELLAWAYS CLAY MEMBER)	11.70	(0.50)	53.93		
	13.20 - 14.70	C					5 10 10		Firm yellow brown sandy CLAY. (KELLAWAYS CLAY MEMBER)	12.20	(0.09)	53.43		
	13.20 - 14.70	C					100 100 9		Medium Strong yellowish brown carbonaceous oolitic LIMESTONE. Recovered as non-intact. (CORNBURASH FORMATION)	12.29	(0.48)	53.34		
	13.20 - 14.70	C					5 10 10		Medium strong grey medium bedded carbonaceous shelly LIMESTONE. Fractures are sub-horizontal to vertical, open undulating. (CORNBURASH FORMATION)	12.77	(1.34)	52.86		
									Very stiff dark grey shelly CLAY. (BLISWORTH CLAY FORMATION)	14.11	(0.30)	51.52		
									Very stiff blue grey mottled orange brown silty CLAY. (BLISWORTH CLAY FORMATION)	14.41	(0.09)	51.22		
									End of Borehole at 14.50m	14.50		51.13		

Progress and Observations									Chiselling			General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
												1) Inspection pit hand dug to 1.20m bgl. 2) Rotary open hole drilled to 11.70m, rotary cored to 14.70m bgl. 3) Borehole installed with gas and groundwater monitoring well with response zone between 12.00 and 14.00m.

# Appendix I Cell Engineering

## Landfill Engineering – Phase 1, Cell 1: Lining System

The construction of Cell 1 is detailed in the following report:

Robert Long Consultancy Limited (2004) *Construction Quality Assurance Report for the Development of Cell 1, Phase 1 – Thrapston Landfill Site*, Report for Mick George (Haulage) Limited, August 2004. Ref. MGH/TRP/100R.

The report identifies that the development of the liner system to Cell 1 comprised the following works:-

- Preparatory earthworks to establish the subgrade to the cell:
  - removal of a soft sand material from the western part of the Cell; and
  - pumping of basal groundwater control channels, widening and infill with clay materials (on-site Boulder Clay).
- Construction of a 0.5m minimum thickness engineered clay liner using site derived Boulder Clay to the base and peripheral northern, southern and eastern side slope.
  - Additional layers of clay were placed as a factor of safety against deterioration of the completed liner and against damage from groundwater.
  - The perimeter seal was over constructed and then trimmed back to provide the 1 in 2 batter.
- Construction of 2m high engineered clay intercellular bund using site derived Boulder Clay with a minimum 1m wide crest, along the western boundary of the cell.
- Five core samples were collected for laboratory testing; the results are summarised in the table below:

Core No	Moisture Content (%)	Dry Density (Mg/m <sup>3</sup> )	Air Voids* (%)	Coefficient of Permeability (m/s)
P1	24	1.60	1.2	1.34 x 10 <sup>-10</sup>
P2	27	1.52	1.7	7.72 x 10 <sup>-11</sup>
P3	26	1.54	1.9	4.91 x 10 <sup>-11</sup>
P4	27	1.53	1.0	7.97 x 10 <sup>-11</sup>
P5	27	1.53	1.0	7.56 x 10 <sup>-11</sup>

Notes. \* estimated using an assumed particle density for Boulder Clay of 2.65.

The works were undertaken between 6 July 2004 and 20 July 2004.

## Landfill Engineering – Phase 1, Cell 2: Lining System

The construction of Cell 2 is detailed in the following report:

White Young Green Environmental (2006) *Construction Quality Assurance Report for the Development of Cell 2, Phase 1 – Thrapston Landfill Site*, Report for Mick George (Haulage) Limited, March 2006. Ref. LMG2002/PMA/March 2006.

The report identifies that the development of the liner system to Cell 2 comprised the following works:-

- Preparatory earthworks to establish the subgrade to the cell:

- removal of a soft sand material [possibly Kellaways Sand Member] from the eastern part of the Cell; and
- pumping of basal groundwater control channels, widening and infill with clay materials (on-site Boulder Clay).
- Construction of a 0.5m minimum thickness engineered clay liner to the base and peripheral northern, southern and western side slope using site derived Boulder Clay.
  - Additional layers of clay were placed as a factor of safety against deterioration of the completed liner and against damage from groundwater.
  - The perimeter seal was over constructed and then trimmed back to provide the 1 in 2 batter.
- Construction of 2m high engineered clay intercellular bund using site derived Boulder Clay with a minimum 1m wide crest, along the eastern boundary of the cell.
- Five core samples were collected for laboratory testing; the results are summarised in the table below:

Core No	Moisture Content (%)	Dry Density (Mg/m <sup>3</sup> )	Air Voids* (%)	Coefficient of Permeability (m/s)
C1	19	1.72	2.4	1.19 x 10 <sup>-10</sup>
C2	18	1.76	1.9	7.42 x 10 <sup>-11</sup>
C3	17	1.81	0.9	9.60 x 10 <sup>-11</sup>
C5	21	1.63	4.3	1.40 x 10 <sup>-10</sup>
C6	21	1.63	4.3	1.10 x 10 <sup>-10</sup>

Notes. \* estimated using an assumed particle density for Boulder Clay of 2.65.

The works were undertaken between 28 February 2005 and 13 April 2005.

### Landfill Engineering – Phase 1, Cells 1 and 2: Capping System

The provision of a low permeability cap for Cells 1 and 2 is detailed in the following report:

White Young Green Environmental (2007) *Construction Quality Assurance Report for the Development of Phase 1 Capping System – Thrapston Landfill Site*, Report for Mick George (Haulage) Limited, May 2007. Ref. E009148/MH/May 2007.

The report identifies that the development of the capping system to Cells 1 and 2 comprised the following works:-

- Construction of a 0.5m minimum thickness engineered clay cap tied into the existing engineered clay side wall. The report identifies this was done in two stages:
  - Stage 1 comprised 6000 m<sup>3</sup> of site derived Boulder Clay covering Cell 1 and part of Cell 2.
  - Stage 2 comprised 3000 m<sup>3</sup> of site derived Boulder Clay covering Cell 1 – it is assumed that this is a typo in the report and it actually covered the remainder of Cell 2.
- Collection of six core samples during Stage 1 and three core samples during Stage 2 for laboratory testing; the results for Stage 2 are summarised in the table below:

Core No	Moisture Content (%)	Dry Density (Mg/m <sup>3</sup> )	Air Voids (%)	Coefficient of Permeability (m/s)
P1	23.1	1.678	-	2.6 x 10 <sup>-11</sup>
P2	22.5	1.682	-	2.0 x 10 <sup>-11</sup>
P3	20.6	1.730	-	5.3 x 10 <sup>-11</sup>

- Laboratory error meant that the Stage 1 samples were not tested for permeability.
- Placement of a minimum 1m of restoration soils upon the engineered clay cap.

The works were undertaken between 6 April 2006 and 10 April 2006 (Stage 1) and 11 August 2006 and 26 August 2006 (Stage 2).

### Landfill Engineering – Phase 1, Cell 3A: Lining System

The construction of Cell 3A is detailed in the following report:

White Young Green Environmental (2006) *Construction Quality Assurance Report for the Development of Cell 3, Phase 1 – Thrapston Landfill Site*, Report for Mick George (Haulage) Limited, March 2006. Ref. LMG2002/PMA/March 2006.

The report identifies that the development of the liner system to Cell 3A comprised the following works:-

- Preparatory earthworks to establish the subgrade to the cell:
  - pumping of basal groundwater control channels, widening and infill with clay materials (on-site Boulder Clay).
- Construction of a 0.5m minimum thickness engineered clay liner to the base and peripheral northern, southern and western side slope using site derived Boulder Clay.
  - Additional layers of clay were placed as a factor of safety against deterioration of the completed liner and against damage from groundwater.
  - The perimeter seal was over constructed and then trimmed back to provide the 1 in 2 batter.
- Construction of 1m high engineered clay intercellular bund with a minimum 1m wide crest, along the eastern boundary of the cell.
- Six core samples were collected for laboratory testing; the results are summarised in the table below:

Core No	Moisture Content (%)	Dry Density (Mg/m <sup>3</sup> )	Air Voids*	Coefficient of Permeability (m/s)
P1	19.8	1.779	-4.7	3.0 x 10 <sup>-11</sup>
P2	19.2	1.772	-0.9	2.4 x 10 <sup>-11</sup>
P3	19.3	1.791	-2.2	1.9 x 10 <sup>-11</sup>
P4	20.2	1.736	-0.6	9.8 x 10 <sup>-11</sup>
P5	20.0	1.743	-0.7	5.3 x 10 <sup>-11</sup>
P6	19.6	1.747	-0.1	2.1 x 10 <sup>-11</sup>

Notes. \* estimated using an assumed particle density for Boulder Clay of 2.65.

The works were undertaken between 13 February 2006 and 10 March 2006.

### **Landfill Engineering – Phase 1, Cell 3B: Lining System**

The construction of Cell 3B is detailed in the following report:

White Young Green Environmental (2006) *Construction Quality Assurance Report for the Development of Cell 3 – Thrapston Landfill Site*, Report for Mick George (Haulage) Limited, December 2006. Ref. LMG2002QR01/PMA/Dec 2006.

The report identifies that the development of the liner system to Cell 3B comprised the following works:-

- Preparatory earthworks to establish the subgrade to the cell:
  - pumping of basal groundwater control channels, widening and infill with clay materials (on-site Boulder Clay).
- Construction of a 0.5m minimum thickness engineered clay liner to the base and peripheral northern, southern and western side slope using site derived Boulder Clay.
  - The perimeter seal was over constructed and then trimmed back to provide the 1 in 2 batter.
- Construction of 1m high engineered clay intercellular bund with a minimum 1m wide crest, along the eastern boundary of the cell.
- Five core samples were collected for laboratory testing; the results are summarised in the table below:

Core No	Moisture Content (%)	Dry Density (Mg/m <sup>3</sup> )	Air Voids* (%)	Coefficient of Permeability (m/s)
P1	20.5	1.726	-0.5	2.8 x 10 <sup>-11</sup>
P2	21.6	1.708	-1.3	1.3 x 10 <sup>-11</sup>
P3	21.1	1.694	0.3	1.3 x 10 <sup>-11</sup>
P4	19.9	1.727	0.5	3.3 x 10 <sup>-11</sup>
P5	19.2	1.759	-0.2	2.7 x 10 <sup>-11</sup>

Notes. \* estimated using an assumed particle density for Boulder Clay of 2.65.

The works were undertaken between 14 September 2006 and 21 September 2006.

### **Landfill Engineering – Phase 1, Cell 4: Lining System**

The construction of Cell 4 is detailed in the following report:

White Young Green Environmental (2006) *Construction Quality Assurance Report for the Development of Cell 4, Phase 1 – Thrapston Landfill Site*, Report for Mick George (Haulage) Limited, October 2007. Ref. E013023/RT/October 2007.

The report identifies that the development of the liner system to Cell 4 comprised the following works:-

- Preparatory earthworks to establish the subgrade to the cell:
  - pumping of basal groundwater control channels, widening and infill with clay materials (on-site Boulder Clay).
- Construction of a 0.5m minimum thickness engineered clay liner to the base and peripheral eastern side slope using site derived Boulder Clay.

- The perimeter seal was over constructed and then trimmed back to provide the 1 in 2 batter.
- Construction of 1m high engineered clay intercellular bund with a minimum 1m wide crest, along the southern boundary of the cell.
- Five core samples were collected for laboratory testing; the results are summarised in the table below:

Core No	Moisture Content (%)	Dry Density (Mg/m <sup>3</sup> )	Air Voids* (%)	Coefficient of Permeability (m/s)
P1	20.08	1.720	0.6	4.2 x 10 <sup>-11</sup>
P2	21.76	1.696	-0.9	2.0 x 10 <sup>-11</sup>
P3	20.97	1.704	0.0	5.9 x 10 <sup>-11</sup>
P4	18.77	1.736	1.9	2.0 x 10 <sup>-11</sup>

Notes. \* estimated using an assumed particle density for Boulder Clay of 2.65.

The works were undertaken between 23 July 2007 and 10 August 2007.

# Appendix J Boreholes Decommissioning

Project name	Rectory Farm (Thrapston) Landfill (EPR/BT9879IY)		
Design note title	Decommissioning of Monitoring Wells: CQA Validation Report		
Document reference	18443-HYD-XX-XX-TN-GE-3006-S2-P01		
Author	Megan Adams MGeol FGS		
Checked by	Julian Charlesworth BEng FGS MIMMM		
Approved by	Leon Warrington BSc MSc CGeol FGS		
Date	28 October 2022	Revision	P01

## 1. INTRODUCTION

In October 2022, Hydrock issued report reference 18443-HYD-XX-XX-RP-GE-3005-S2-P01 titled:

*Rectory Farm (Thrapston) Landfill (ERP/BT9879IY). Decommissioning of Monitoring Wells: Construction Quality Assurance Plan.*

The works were completed in accordance with the CQA Plan between 18<sup>th</sup> and 20<sup>th</sup> October 2022.

## 2. CQA VALIDATION REPORT SPECIFICATION

The CQA Plan defines a CQA Validation Report as follows:

*Report completed at the end of the contract that demonstrated that the requirements of the CQA Plan have been complied with (note: the CQA Report will focus on demonstration of compliance with the CQA Plan and will be separate form the standard Factual and Interpretive Report on findings).*

This Hydrock report reference 18443-HYD-XX-XX-TN-GE-3006 fulfils the above commitment and has been prepared in compliance with Section 6 of the CQA Plan to provide a CQA Validation Report in accordance with the following content:

*Upon completion of the decommissioning works the CQA Engineer will prepare a CQA Validation Report describing the works undertaken and including all CQA documentation prepared. As a minimum this shall include:*

- *Description of works.*
- *Daily records.*
- *Contractor's Documentation.*
- *Photographic records.*
- *Materials conformance (e.g. Bentonite, Grout mix etc.).*
- *As-built schematic drawings showing grouting undertaken at each monitoring well.*

The remainder of this report presents the information required.

### 3. DESCRIPTION OF THE WORKS

The scope of the works undertaken was in accordance with Section 4 of the Hydrock CQA Plan (18443-HYD-XX-XX-RP-GE-3005-S2-P01) with pressure grouting used to infill the borehole and fill the void space within the granular backfill around the monitoring well pipework, so as to remove any potential pathway between landfill material and the underlying Secondary Aquifer. Grout was mixed in accordance with the manufacturer’s instructions during the works. During the works a pressure of 5 bar (equivalent to 72.5 psi or 500 kpa) was maintained to ensure that the grout infilled all the accessible void space within the granular surround of the monitoring well.

A secondary element of the works was the removal of the headworks (as per Section 4 of the CQA Plan), cut the monitoring well flush with the existing bentonite seal and the installation of a hydrated bentonite seal at least 300mm thick.

The boreholes decommissioned are:-

Monitoring Well Reference	Depth of Installation (m)	Decommission
CBH-101	10.5	Yes – 24 litres of Bentogrout
CBH-103	9.0	Yes – 20 litres of Bentogrout
CBH-104	8.5	Yes – 19 litres of Bentogrout
CBH-105	2.0	Yes – 5 litres of Bentogrout
CBH-106	9.6	Yes – 22 litres of Bentogrout
CBH-107	9.5	Yes – 20 litres of Bentogrout
CBH-108	15.0	Yes – 28 litres of Bentogrout
CBH-110	8.0	Yes – 19 litres of Bentogrout
CP206	10.0	Yes – 25 litres of Bentogrout
CP208	9.0	Yes – 22 litres of Bentogrout
CP209	4.0	Yes – 6 litres of Bentogrout
CP210	8.0	Yes – 18 litres of Bentogrout
RBH-102	13.0	Yes – 22 litres of Bentogrout
RBH-105	9.5	Yes – 21 litres of Bentogrout
RBH-108	12.0	Yes – 28 litres of Bentogrout

Drawing 18443-HYD-XX-XX-DR-GE-1037 in Appendix A shows the location of the decommissioned boreholes and the boreholes that remain in use for the ongoing monitoring.

### 4. DAILY RECORDS

Daily records prepared by the Hydrock Site Supervisor are included in Appendix B.

### 5. CONTRACTORS DOCUMENTATION

Contractors’ documentation in the form of the Geotron Method Specification and Grouting Logs are included at Appendix C. Cetco’s BENTOGROUT was used for the grout mix with manufacturer supplied Technical data demonstrating a permeability value of  $5.2 \times 10^{-8}$  cm/sec when it has set which is considered to be suitable as a low permeability backfill material. Technical Data relating to Bentogrout is presented in Appendix C.

## 6. PHOTOGRAPHIC RECORDS

Photographic records are included in Appendix D, showing a selected number of reinstated boreholes.

## 7. MATERIAL CONFORMANCE

Records of backfill materials are included in the Daily Records in Appendix B. Due to the nature of the grout mix and weather conditions, to keep the mix in a fit state to pump, small quantities of water and grout mix were continually added throughout the day.

## 8. AS-BUILT SCHEMATIC DRAWINGS

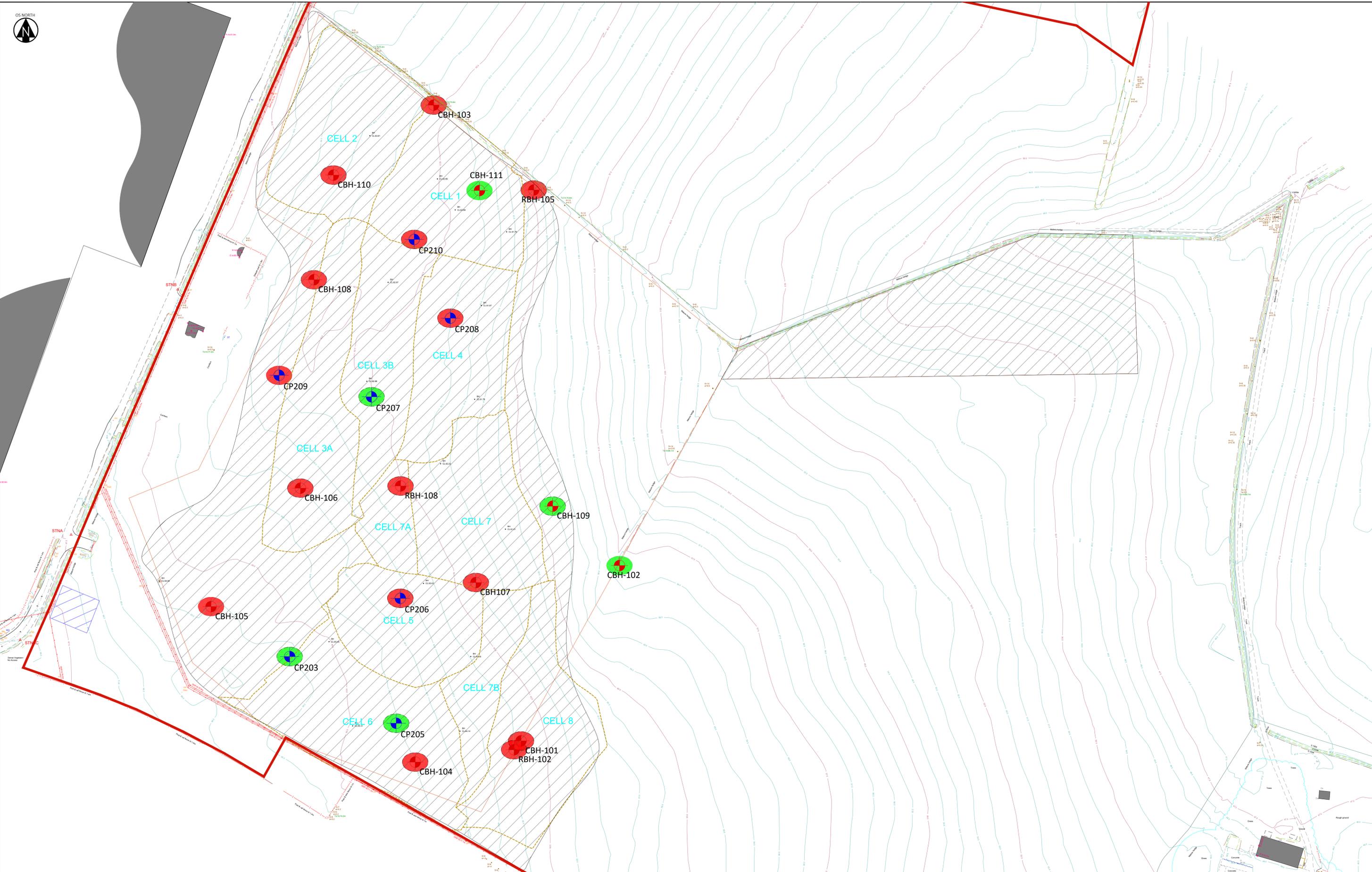
As-built schematic drawings showing grouting undertaken at each monitoring well are shown in Daily Records in Appendix B.

## 9. CONCLUSION

Fifteen monitoring wells have been decommissioned by the injection of grout into the monitoring wells with a pressure of 5 bar maintained to ensure that all of the accessible void space within the granular surround ('well pack') to the monitoring well was infilled with grout. The integrity of the basal liner has been restored. The grout was mixed according to the manufacturers specification which should achieve a permeability value of  $5.2 \times 10^{-8}$  cm/sec when it has set which is considered to be suitable as a low permeability backfill material.

The works have been undertaken in accordance with the Construction Quality Assurance Plan prepared by Hydrock. The monitoring wells have been sealed in accordance with the Construction Quality Assurance Plan. The activities of the Hydrock CQA Engineer ensured that the monitoring wells were decommissioned in accordance with the Construction Quality Assurance Plan.

## Appendix A – Drawings



- KEY**
- Site Investigation Boreholes (June/July 2021)
  - CBHX Cable Percussion Borehole
  - RBHXX Rotary Percussion / Core Borehole
  - Detailed Site Investigation**
  - CPBXX Cable Percussion Borehole
  - RBHXX Rotary Borehole
  - Water sample location

- Site Boundary (approximate)
- Mick George Landfill Cell Boundaries
- Approximate Landfill Extents
- GPR: Area of disturbed ground/assumed stone pits

- Monitoring Well Decommissioning Plan**
- Monitoring Well Decommissioned
  - Monitoring Well Retained

**NOTES**

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figure dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. This drawing has been based on the following drawings and information:
3. This drawing has been based on the Stafsury Drawing 'Huntingdon Road, Thrapston. Topographic Survey', Ref: 11521a-Q, dated 10/03/21.
4. No known archaeological, ecological or arbicultural restrictions.
5. Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MG10/51 dated: 29/11/2014.

REV	NO	DATE	BY	CHKD	DATE	APP'D	DATE

**Hydrock**

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CLIENT  
EQUITES NEWLANDS (THRAPSTON EAST) LTD

PROJECT  
LAND ADJACENT HALDENS PARKWAY THRAPSTON

TITLE Decommissioned Monitoring Well Plan 18th - 20th October 2022	
HYDROCK PROJECT NO. C-18443	SCALE @ AD Not to Scale
PURPOSE OF ISSUE SUITABLE FOR INFORMATION	STATUS S2
DRAWING NO. (PROJECT CODE ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER) 18443-HYD-XX-ZZ-DR-GE-1037	REVISION P01

## Appendix B – Daily Site Records

### Daily Site Diary

<b>Project Number</b>	18443	<b>Site Manager</b>	Megan Adams
<b>Project Name</b>	Thapston		
<b>Date</b>	18/1/22	<b>Weather</b>	Warm & Sunny
<b>Time In</b>	7:45		
<b>Time Out</b>	16:30		
<b>Hydrock Staff on site</b>	Megan Adams		
<b>Client attendance</b>	N/A		
<b>Contractors on site</b>	Andy Greenhaulgh - Geotron Jamie Taylor – Geotron Both on site at 9:15		
<b>Plant on site</b>	2 x 4x4 trucks 1 x Van 1 x Manual Grout Pump 1 x Jet wash bowser		

#### General Activities

8am: Standpipe delivered and anti-trespass barrier moved.  
 9:15: Geotron on site  
 9:20 – 10:30: site inductions, filling bowser etc.  
 10:30 – 16:00: Grouting boreholes  
 13:00 - 14:20: Grout pump not working, cleaned out ball bearings.  
 16: - 16:30: Checking all boreholes grouted today  
 16:30: JCB moving anti-trespass barrier back in place, leave site.

#### Works Completed

CBH-105:

- Depth of slotted pipe 2.10m.
- 2 mins of pumping till full.
- No pressure reading

RBH-102:

- Depth of slotted pipe 9.50m.
- Added 10L of water to grout mix as it started to set.
- 7 mins of pumping till full.
- 5 bar pressure recorded.

CBH-101:

- Depth of slotted pipe 10.50m.
- Same grout mix as RBH-102
- 20 mins of pumping till full.

CBH-104:

<ul style="list-style-type: none"> <li>• Depth of slotted pipe 8.50m.</li> <li>• New grout mix made up. 40L of water to 1/3 bag of bentogROUT.</li> <li>• Pumping for 10 mins till half full and pump stopped working.</li> <li>• Further 6 mins of pumping once working again.</li> </ul> <p>CBH-106:</p> <ul style="list-style-type: none"> <li>• Depth of slotted pipe 9.60m.</li> <li>• New grout mix made up 40L of water and 1/3 bag of bentogROUT.</li> <li>• Pumping for 10 mins till full.</li> </ul> <p>RBH-108:</p> <ul style="list-style-type: none"> <li>• Depth of slotted pipe 12.00m.</li> <li>• Approx. 20L of water added to grout mix as it was starting to set.</li> <li>• Pumping for 3 mins till full.</li> </ul> <p>CBH-107:</p> <ul style="list-style-type: none"> <li>• Depth of slotted pipe 9.50m</li> <li>• 10 L of water and ¼ of a bag of grout bentogROUT added to mix.</li> <li>• Sample of grout taken from this location</li> <li>• Pumping for 5 mins till full.</li> </ul>
<p><b>Findings</b></p> <ul style="list-style-type: none"> <li>• Initial Grout mix made using 40L of water and 1/3 bag of bentogROUT to get thick creamy consistency.</li> <li>• Struggle to get pressure reading from all boreholes, average around 5 bar of pressure till the gauge broke.</li> <li>• At the end of the day all the boreholes were still full.</li> </ul>
<p><b>Planned Works for Next Day</b></p> <p>Check boreholes grouted today in morning and grout up any that have settled overnight.          Continue with grouting the rest of the field.</p>

<b>Inductions</b>	<b>Incidents</b>
Andy and Jamie inducted at 9am	None
<b>Briefings/Toolbox Talks</b>	<b>Health and Safety Comments</b>
None	None

### Daily Site Diary

<b>Project Number</b>	18443	<b>Site Manager</b>	Megan Adams
<b>Project Name</b>	Thapston		
<b>Date</b>	19/10/22	<b>Weather</b>	Cold & Sunny
<b>Time In</b>	7:45		
<b>Time Out</b>	17:00		
<b>Hydrock Staff on site</b>	Megan Adams – All day Julian Charlesworth – 1 hour site visit		
<b>Client attendance</b>	N/A		
<b>Contractors on site</b>	Andy Greenhaulgh - Geotron Jamie Taylor – Geotron Both on site at 8:05		
<b>Plant on site</b>	2 x 4x4 trucks 1 x Van 1 x Manual Grout Pump 1 x Jet wash bowser		

#### General Activities

7:75: Anti-trespass barrier moved.  
 8:05: Geotron on site  
 8:15: Daily Site Briefing  
 8:25 – 8:40: Checking yesterdays boreholes, RBH-108 @ 4.30m. CBH-107 @ 0.40m, all others full.  
 08:50 – 9:00: Mixing up new group (40L water to 1/3 bag of bentogROUT)  
 9:00 - 16:00: Grouting boreholes  
 11:2 - 12:00: Cleaning out grout mixer valves.  
 12:00 – 13:00: Lunch  
 16:00 – 16:30: Checking all boreholes, all full.  
 17:00: JCB moving anti-trespass barrier back in place, leave site.

#### Works Completed

CP206:

- Depth of slotted pipe 10.00m.
- 8 mins of pumping till full.

RBH-108:

- Depth of grout from yesterday standing at 4.30m
- Added 10L of water to grout mix as it started to set.
- 5 mins of pumping till full.

CP209:

- Depth of slotted pipe 4.00m.
- Same grout mix as RBH-108.
- 10 mins of pumping till full.

CBH-108:

- Depth of slotted pipe 3.80m.
- Added 5L of water to grout mix.
- Pumping for 10 mins till full.

CBH-110:

- Depth of slotted pipe 8.00m.
- Added 5L of water to grout mix to loosen it up a bit.
- Pumping for 15 mins till full.

CP208:

- Depth of slotted pipe 9.00m.
- New grout mix made up – added 30L of water and ¼ bag of bentogROUT.
- Pumping for 20 mins till full.
- Had to clean valves half way through.

CP210:

- Depth of slotted pipe 8.00m.
- Made fresh grout mix 2/3 bag of bentogROUT with 90L of water.
- Sample of grout taken from this location.
- Pumping for 10 mins till full.

CBH-103:

- Depth of slotted pipe to 9.00m.
- Added 30L of water and 3 sample tubs of grout mix
- Pumping for 15 mins till full.

RBH-105:

- Depth of slotted pipe to 9.50m.
- Pumping for 14 mins till full.

**Findings**

- Initial Grout mix made using 40L of water and 1/3 bag of bentogROUT to get thick creamy consistency.
- No pressure readings today as pressure gauge broke yesterday.
- At the end of the day all the boreholes were still full.

**Planned Works for Next Day**

- Check boreholes grouted today in morning and grout up any that have settled overnight.
- Dig out the top 0.50m around the installation.
- Remove top 1m of pipe if possible or cut pipe down.
- Reinstate with 100mm layer of bentonite pellets and topsoil from surrounding area.

Inductions	Incidents
Julian Charlesworth Inducted for site visit.	None
Briefings/Toolbox Talks	Health and Safety Comments
None	None

### Daily Site Diary

<b>Project Number</b>	18443	<b>Site Manager</b>	Megan Adams
<b>Project Name</b>	Thapston		
<b>Date</b>	20/10/22	<b>Weather</b>	Heavy Rain, thunder & lightning.
<b>Time In</b>	8:00		
<b>Time Out</b>	12:30		
<b>Hydrock Staff on site</b>	Megan Adams – All day		
<b>Client attendance</b>	N/A		
<b>Contractors on site</b>	Andy Greenhaulgh - Geotron Jamie Taylor – Geotron Both on site at 8:00		
<b>Plant on site</b>	2 x 4x4 trucks 1 x Van 1 x Manual Grout Pump 1 x Jet wash bowser		

#### General Activities

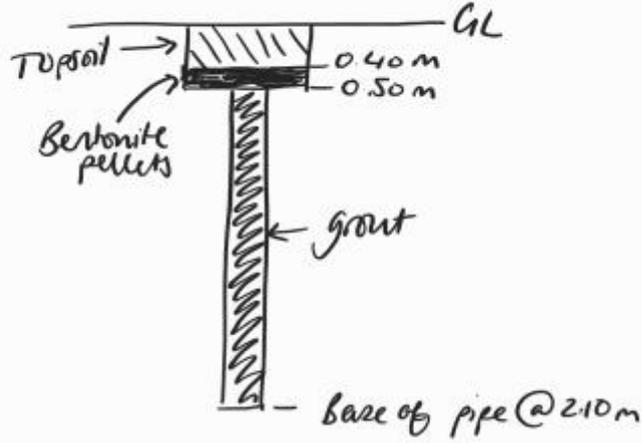
8:00: Anti-trespass barrier moved.  
 8:00: Geotron on site  
 8:15: Daily Site Briefing  
 8:15 – 9:30: Waiting for thunder, lightning and downpour to pass.  
 9:30 – 10:00: Loading vans with today's equipment.  
 10:00 - 12:00: All boreholes still full, removing top pipe and reinstating.  
 12:00 - 12:30: Packing away.  
 12:30: Leave site.

#### Works Completed

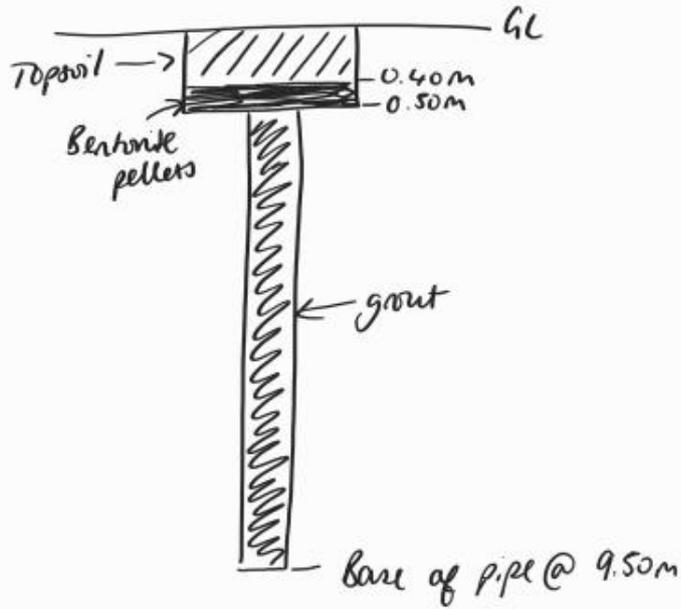
- Check grout depth of all boreholes.
- Dig down to 0.50m around the pipe.
- Remove top 1m of pipe if possible, if not then cut the top pipe down as low as possible.
- Pour a thin later (approx. 100mm) of bentonite pellets.
- Reinstating with topsoil from the surrounding area.

Sketches

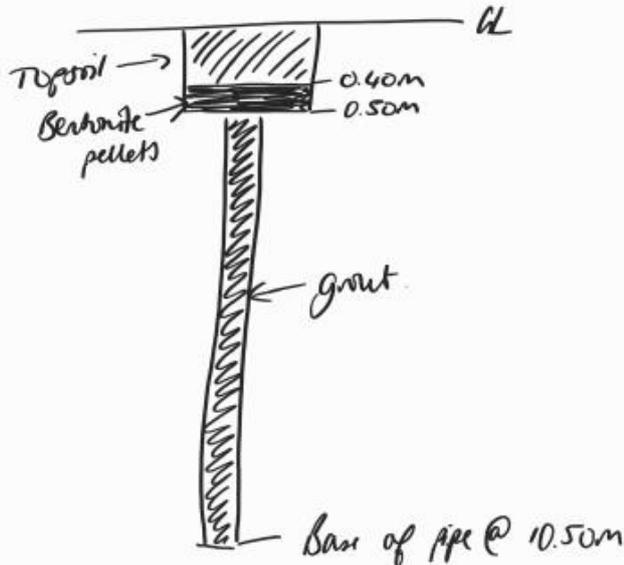
CBH-105



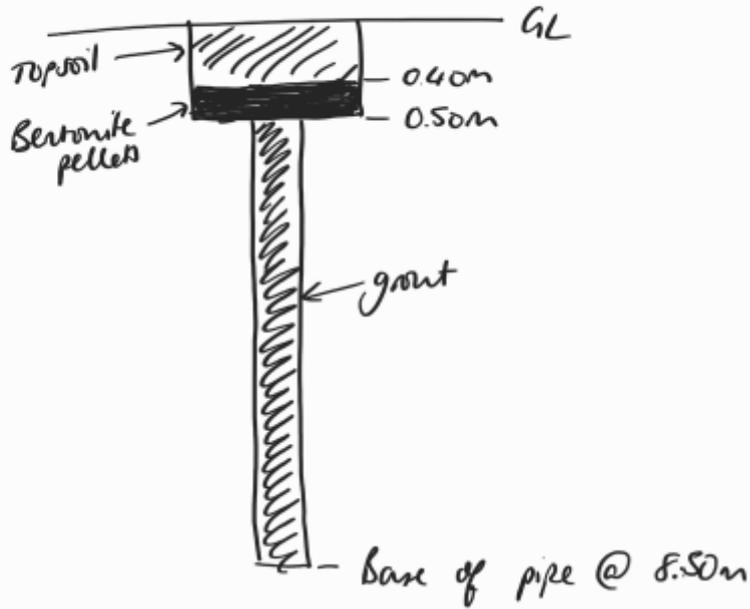
RBH-102



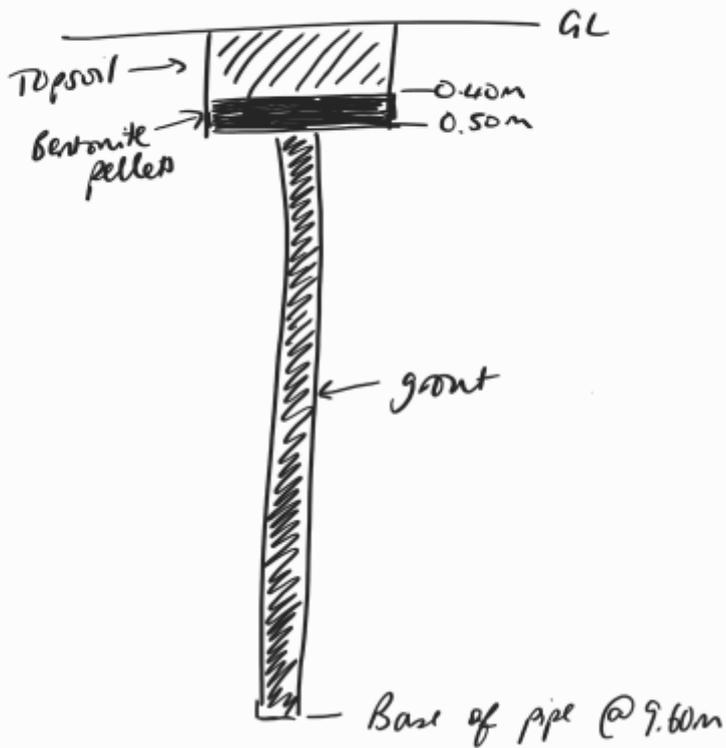
CBH-101



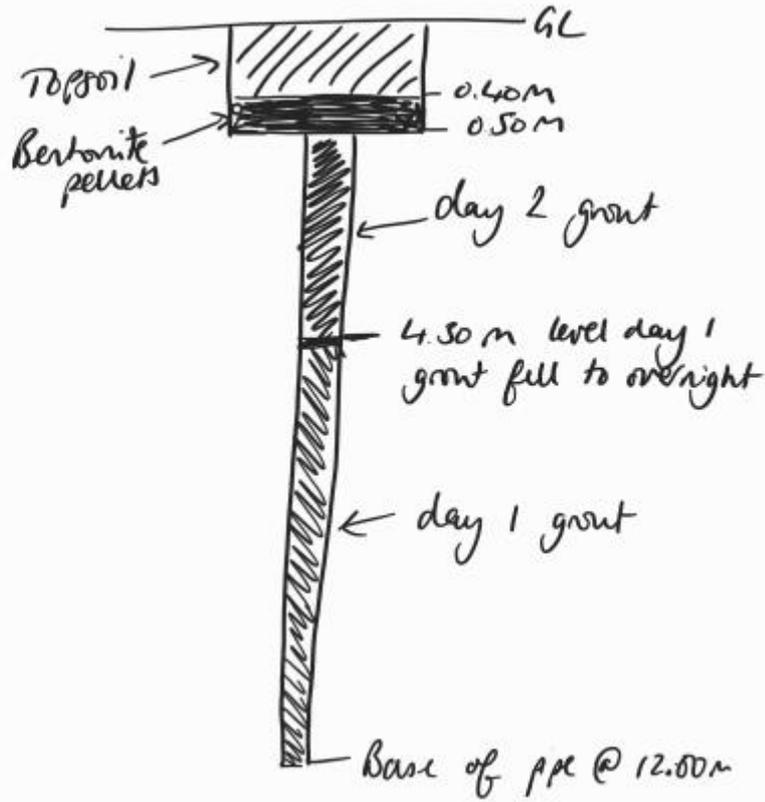
CBM-104



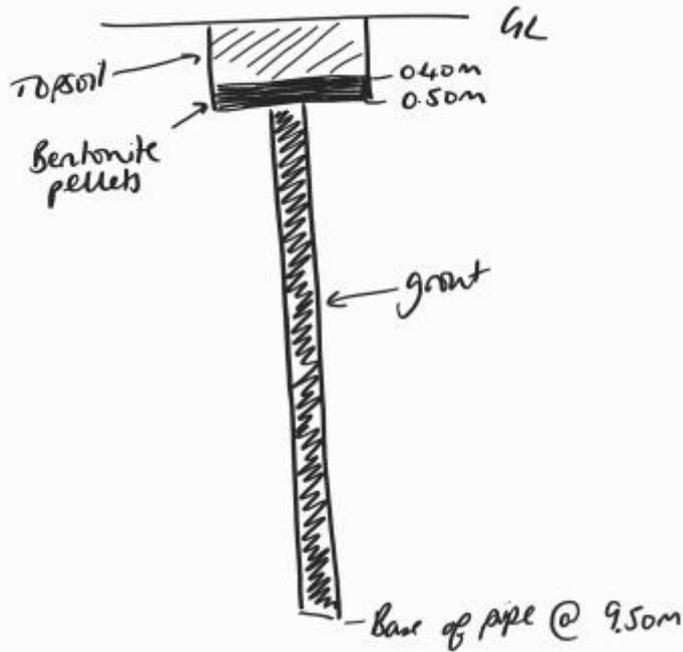
CBM-106



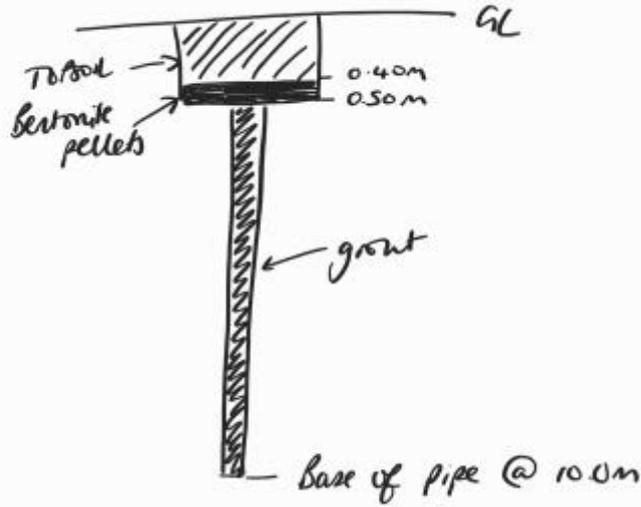
RBH-108



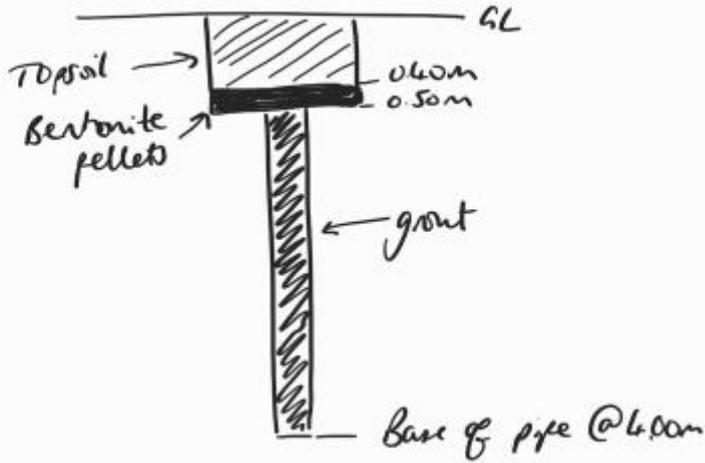
CBH-107



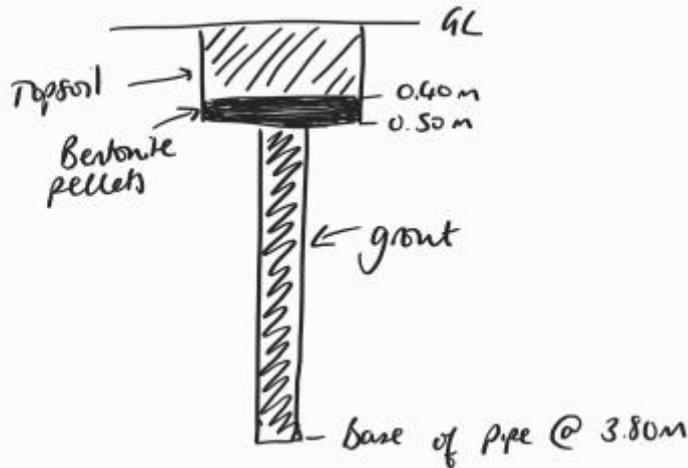
CP206



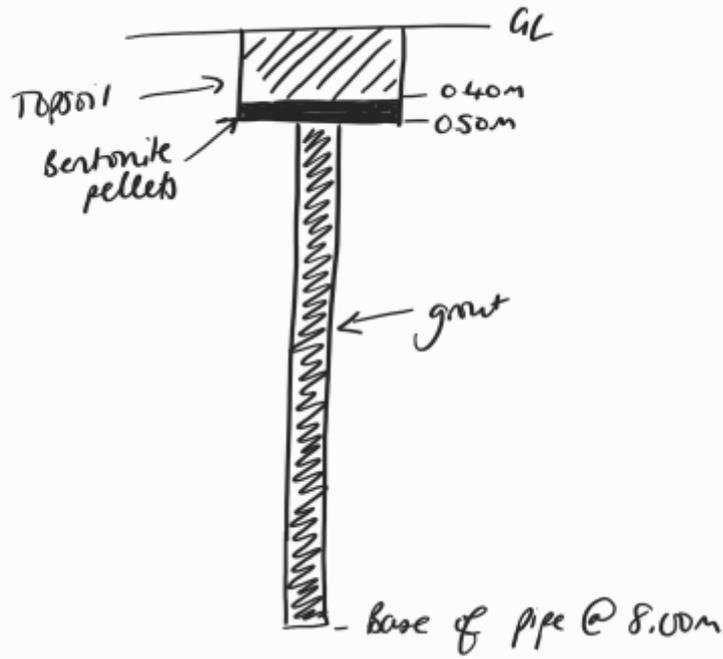
CP209



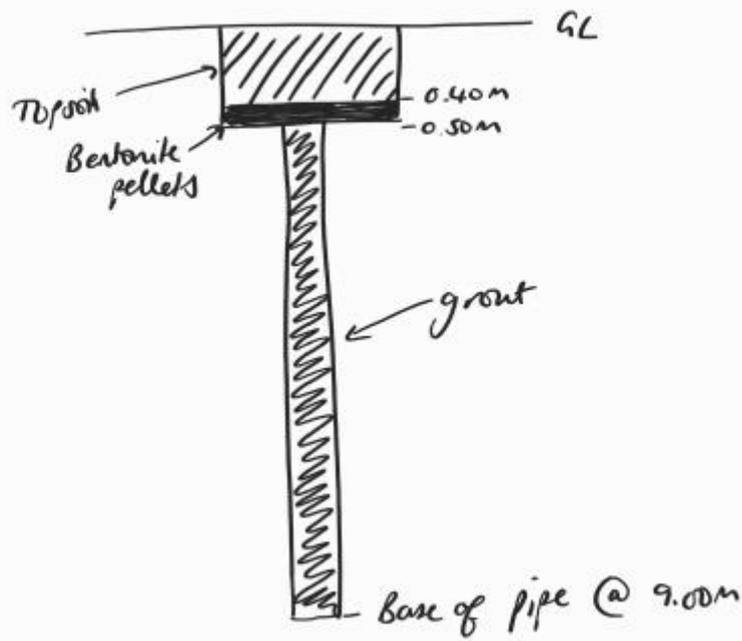
CBH-108



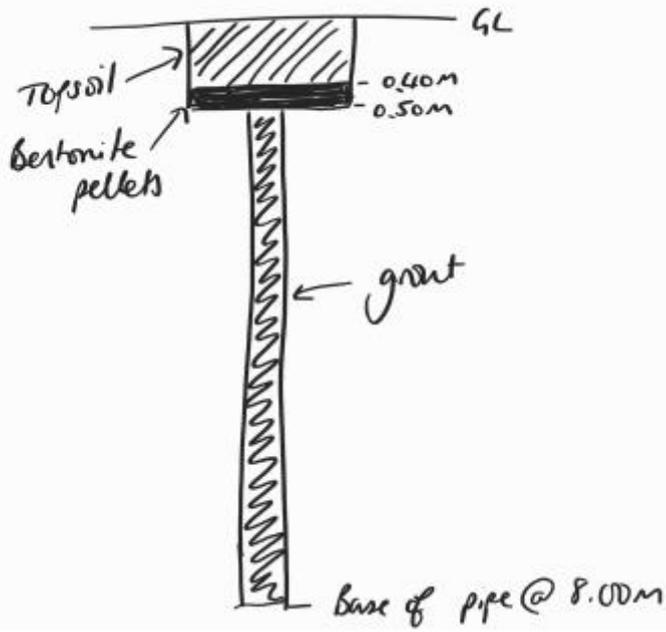
CBH-110



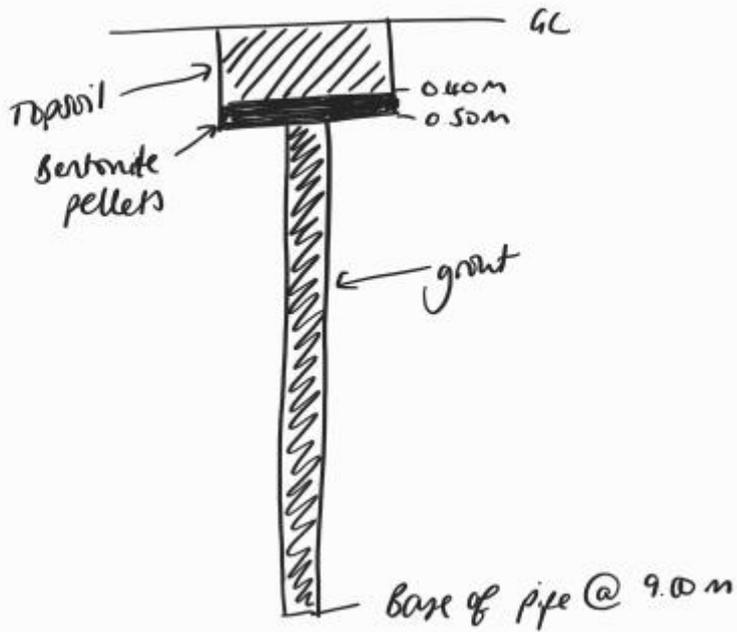
CP208

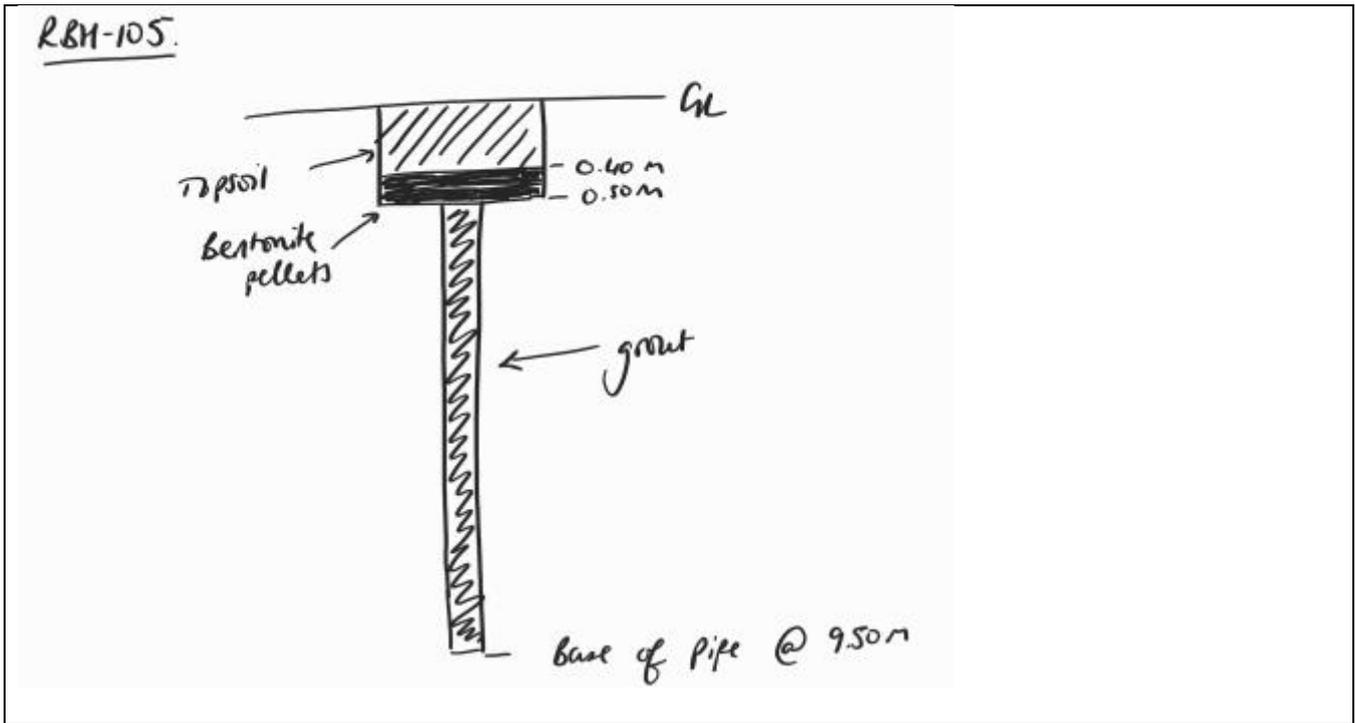


CP210



CBH-103





**Findings**

- All boreholes remained filled from previous days grouting.

**Planned Works for Next Day**

N/a

Inductions	Incidents
None	None
Briefings/Toolbox Talks	Health and Safety Comments
None	None

## Appendix C – Contractor Supplied Information

## J2686 Northamptonshire – Grouting Records



<b>Borehole Reference</b>	<b>Total Well Depth (m)</b>	<b>Well Diameter ID (mm)</b>	<b>Approx bentogrout pumped into well (litres)</b>
CBH 105	2.1	50	5
RBH 102	9.5	50	22
CBH 101	10.5	50	24
CBH 104	8.5	50	19
CBH 106	9.6	50	22
RBH 108	12.0	50	28
CBH 107	9.5	50	20
CP 206	10.0	50	25
CP 209	4.0	50	6
CBH 108	3.8	50	9
CBH 110	8.0	50	19
CP 208	9.0	50	22
CP 210	8.0	50	18
CBH 103	9.0	50	20
RBH 105	9.5	50	21

## Method Statement

<b>Project Reference</b>	<b>Q6223</b>	<b>Site Location</b>	<b>Northamptonshire</b>		
<b>Preparation Date</b>	<b>9-9-22</b>	<b>Status</b>	<b>New</b>		<b>Revised</b> <input checked="" type="checkbox"/>
<b>Developed by</b>	<b>Position</b>	<b>Reviewed by</b>	<b>Position</b>		
Sarah van Enk	Managing Director	John Lawrence	Operations Director		

MS Ref.	Work Activity	Key Equipment	Standard Materials
DEC-MS001	<b>Well Decommissioning By Pressure Grouting</b>	B1 Manual grout pump or diesel driven mechanical grout mixer/pump; tremmie pipe and hoses; expandable bungs (various sizes)	BentogROUT Cement Sand/ballast

<b>Aim</b>	To decommission obsolete groundwater monitoring, abstraction or remediation wells.
<b>Result</b>	Removal of potential contamination pathway via existing well by sealing up and reinstating the ground surface.

### Methodology

Depending on the specific requirements of the site and specified scope of works a number of different activities can be combined to enable decommissioning of a well and reinstatement to the appropriate standard.

#### Mixing of Grout

The proposed bentonite grout (supplied pre-mixed) is mixed with an appropriate volume of water to produce the desired consistency. Different suppliers have different grout formulations and therefore the quantity of water required to achieve a grout slurry varies. This grout is mixed within a large mixing vessel using a manual paddle mixing device within the body of the B1 grout pump or diesel driven grout pump (e.g. Putzmeister P11) until a 'porridge-like' consistency is reached.

#### Grouting of Well

The grout is pumped into the wells using a manual or mechanical pump. The grout is pumped into the well from the base upwards, delivered by a rigid narrow diameter (~32mm or similar, depending on well diameter) tremmie-pipe. This HDPE tubing is joined together by flush threads. The HDPE pipe is extended down the well until a depth just above the base is reached. The top length of pipe is then attached securely to the hose of the grout pump and the grout mixture slowly pumped into the well until the grout comes out of the top. The thinner, watery component of the grout mix is forced through the well screen into the smaller spaces/pores while the thicker component fills large gaps in the gravel pack/formation. At this stage the pressure delivered at the base of the well is equivalent to the hydraulic head of grout above.

The tremmie pipe is then extracted from the well and the well topped up with grout directly from the end of the pipe. The hose is then disconnected from the tremmie pipe and connected to an expandable bung or tight fitting cap. Pumping then continues with increasing pressure to force the grout into any remaining open spaces until the well accepts no further volume of grout. The well is left to rest and is monitored, and topped up further if required.

#### Cover Removal & Reinstatement

If required the existing well cover can be left in situ or can be removed either by:

- concrete coring (over-coring of the existing cover)
- concrete breaking (use of breaker hammer to remove cover)
- concrete/tarmac sawing at appropriate dimensions

Depending on the location of the decommissioned well, the surface can be reinstated using:

- basic concrete plug (if concrete is outside areas of traffic movements or if decommissioning is occurring prior to site redevelopment etc.)
- reinforced concrete reinstatement with compacted sub-base
- Cold Lay tarmac reinstatement edge and joint sealant if required

Cover removal and surface reinstatement methodologies are described in separate method statements.

# BENTOGROUT®

## REMEDIAL WATERPROOFING INJECTION GROUT

### DESCRIPTION

BENTOGROUT is a high-solids grout consisting of a proprietary blend of bentonite and polymers formulated for sealing water leaks in existing below-ground structures. BENTOGROUT is pumped in a fluid state adjacent to the exterior of the structure where it sets into a gelatinous state forming a waterproofing barrier. BENTOGROUT can be used to seal leaks in concrete, masonry block, brick, and stone foundations.

Installation is fast and easy. Simply mix BENTOGROUT with water and pump it adjacent to the exterior of the building. There it solidifies and expands slightly to form a waterproofing barrier. It can be pumped from above-ground outside the structure without excavating or from the interior of the structure through drilled holes in the walls or slabs. Limited jobsite space is required for injection.

Unlike many remedial waterproofing products that are applied as a surface treatment to the interior of the foundation, BENTOGROUT is applied to the exterior of the building where it stops the water before it can penetrate the structure and further corrode the reinforcing steel. The thick BENTOGROUT barrier covers the exterior surface of the structure filling voids in the adjacent soil and bridging over small cracks in the concrete. Also, BENTOGROUT has the ability to self-seal if the structure settles and therefore its performance is not limited by future hair-line cracking in the concrete. BENTOGROUT does not shrink or dry out in sub-surface soil formations and is not affected by freeze/thaw cycling. It remains flexible, maintains a putty-like consistency over time and retains a swell potential to seal itself off. And since BENTOGROUT primarily consists of natural minerals it is friendly to the environment and will last the life of the structure.

### APPLICATIONS

- Foundation walls
- Foundation slabs
- Tunnels
- Sheet piling interlock
- Concrete and masonry foundation walls
- Manholes
- Utility vaults

### PACKAGING

BENTOGROUT is packaged in 25 kg, multi-wall bags; 40 bags per pallet. Store in a dry, moderate temperature location.

### PREPARATION

Locate and mark all below-ground electrical, sewer and mechanical service lines prior to injection operations. A successful operation requires the installation to occur without mechanical failure of the BENTOGROUT mixing/pumping equipment. Ensure that all required materials are available and in working condition prior to beginning the application. If pumping from the interior of the building, drilling operations should be completed prior to mixing BENTOGROUT.

**Exterior Injection Head:** The applicator will need to fabricate an "Injection Head" to connect the pump hose to the injection pipe. An example of this "Injection Head" assembly is pictured below. Figure 1 illustrates an Injection Head assembly with a quick disconnect fitting, shut off valve, three way tee and end cap. On the bottom of the three way tee is the injection pipe (length to be determined by project depth requirements; typically 2,4 m–3,0 m). The Injection Head will also serve as a leverage device to hold onto when the applicator is inserting the injection pipe into the soil substrate.

**Mix Water:** Use only clean water; approximately 53 litres. BENTOGROUT mixes best in cool water with a pH between 8 and 10. High temperature water can accelerate the set up time of the grout.

**Equipment:** CETCO recommends the use of the CETCO BENTOGROUT Pump and Mixer as the equipment is designed specifically for BENTOGROUT. Use mixing equipment capable of producing continuous shear and agitation movement. CETCO BENTOGROUT Equipment is comprised of progressive cavity pumps with vertical paddle and horizontal ribbon blender type mixers. It is not recommended to use a piston style pump due to the high spikes in back-pressure generated.

**Caution:** Pumping any material under pressure can cause lifting or movement of adjacent structures.



CETCO BENTOGROUT Pump, Mixer and Accessories

## BEN TOGROUT® REMEDIAL WATERPROOFING INJECTION GROUT

The CETCO BEN TOGROUT Pump and Mixer are separate wheel mounted units that weigh 77 kg and 95 kg respectively; each are ran by 1 HP electric motors (Figure 2). The CETCO BEN TOGROUT Pump consists of a rotor-stator ribbon pump that is capable of pumping a consistent 11 litres per minute and has a 68 litres hopper. The CETCO BEN TOGROUT Mixer is able to mix a 25 kg bag of BEN TOGROUT in approx. 8 minutes with its three mixing paddles and has a mixing capacity of 83 litres. Both units are completely electric and only require a 120 V, 15 AMP current (standard GFI outlet). For information or to purchase the CETCO BEN TOGROUT Pump, Mixer and accessories, contact your local CETCO sales representative.

**Pumping Pressures:** BEN TOGROUT is typically pumped at pressures of 0,7 to 5,5 bar. Since there are many jobsite variables, actual pumping pressure will vary. Variables may include, amount of water added to BEN TOGROUT, pump hose diameter and length, resistance at hose-head, substrate material and compaction, etc. For example, in large void areas the pumping pressure may only be 0,7 bar, but as soon as back pressures form the pressure may spike to 7,0 to 14 bar. Watch the pumping pressure closely while installing the BEN TOGROUT. Backoff as the pressure increases. Additionally, a crew member may be stationed inside the structure to monitor the injection. This is especially important with masonry block foundations.

**Pump Hose:** A 25 mm diameter pump hose with a minimum 14 bar pressure rating is recommended. The pump hose should be as short as possible without adversely limiting operations. The longer the hose and the more turns it makes, the greater the pumping pressure decrease at the place of injection.

### INSTALLATION

**Mixing Instructions:** Add 53 litres of fresh water to a motorized mixer and then add a single 25 kg bag of dry BEN TOGROUT to the water. Thoroughly mix for approximately 5–8 minutes until even “oatmeal” consistency. BEN TOGROUT remains pumpable and placeable for 45 minutes after being mixed. After mixing, if pumping is stopped or suspended, use a CETCO ByPass Assembly to redirect the material back into the pump hopper to recycle BEN TOGROUT during a suspended period. Do not allow mixed BEN TOGROUT to stand in hose. It will set up and clog the hose; flush water through equipment if there is a stop in use for 20 minutes or longer.

**Coverage Rate:** Typical installation thickness of BEN TOGROUT is 12 mm or greater. Coverage rates will be affected by injection depth, void areas, soil compaction, material spread, etc. A 25 kg bag of BEN TOGROUT yields 0.06 cubic metres of grout. Estimating a 12 mm thick coverage rate without any void spaces, a 25 kg bag should cover approximately 4,6 sq m. Actual results will vary with each project.

#### Surface Injection From Exterior of Building:

Use 10–19 mm diameter heavy wall steel pipe as injection pipe for BEN TOGROUT placement. Cut the pipe tip at a 45° angle to aid in sinking of the injection pipe.

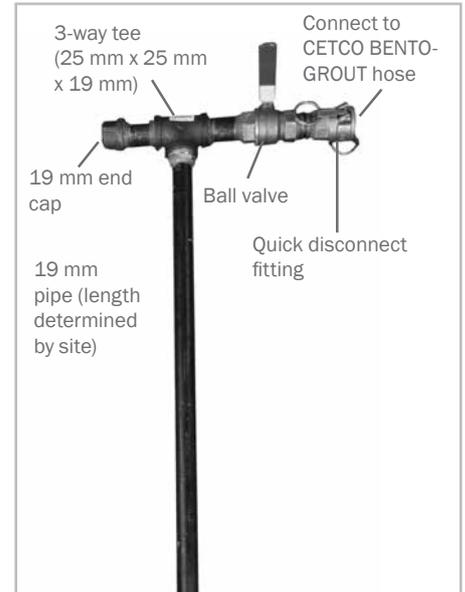


Figure 1: Single Connection Injection Head Assembly

A single pipe can be repeatedly inserted and removed, or numerous pipes can be inserted and than all injected through in sequence.

Insert injection pipe as close as possible to the foundation wall at 0,6 m–1,2 m on centre and push pipe down to the top of the footing or the desired depth. Use a “Tile Rod” or long drill bit to start the first few feet of the injection hole.



Figure 2: CETCO pump and mixer with electric 1HP motor

## BEN TOGROUT® REMEDIAL WATERPROOFING INJECTION GROUT

With a Single Connection Injection Head, use the grout as a drilling medium to assist with sinking the pipe (see Figure 1). For deep depths, it may be necessary to use scaffolding to operate from when first inserting a long pipe.

After sinking the injection pipe to the desired depth, pump BENTOGROUT until it extrudes out at ground or substantial back pressure is achieved. (Caution: Be careful not to inject BENTOGROUT into sub-surface drainage tile.) Continue to pump BENTOGROUT while slowly removing injection pipe. Then move to adjacent injection point and continue process; Injection points are typically 0,6 m to 1,2 m on centre. Cohesive soil conditions will require closer placed injection points while non-cohesive soils may only need injection points placed 1,2 m apart. After the outside of the wall is injected with BENTOGROUT, a second round of injections can take place between previously injected holes to ensure outside is completely coated.

### **Interior Injection Through Slab or Wall:**

Use a 38 mm diameter bit to drill a 150 mm deep starter hole in the concrete (to set CETCO Injection Packer). From 150 mm depth continue drilling through the remaining thickness of the concrete with a 19–25 mm diameter drill bit. Once hole is drilled, insert CETCO Injection Packer with the red rubber gasket completely placed into the 38 mm hole section, then tighten and firmly set Injection Packer with the handle. Install Injection Packer with ball valve in the closed position. Then hook up the CETCO Pressure Gauge and the CETCO Injection Hose to the Injection Packer. Drill the bottom row of wall injection holes as close to the wall/slab joint as possible 1,2 m on centre. Drill the second row 1,2 m up and offset 0,6 m from the bottom row. Drill subsequent rows (as required) in the same pattern to the previous row: 1,2 m up and offset 0,6 m (creating a diamond pattern).

For interior wall injections, begin grout injection at the lowest injection point on the wall and then work upwards. A minimum of two holes should be drilled – one for grout injection and the other for pressure release. Prior to pumping BENTOGROUT, open the ball valve of the Injection Packer and adjacent Injection Packer(s). Then pump BENTOGROUT through Injection Packer until BENTOGROUT begins to flow out of adjacent Injection Packers (with ball valve in open position) or substantial backpressure is achieved. When BENTOGROUT is observed to be flowing out of adjacent CETCO Injection Packers, successful BENTOGROUT flow between Packers has been achieved (void is being filled). Close ball valve of adjacent Injection Packer that BENTOGROUT is flowing out and continue to pump in same Injection Packer until pressure spikes or BENTOGROUT flow stops. Then move to adjacent injection packers and continue same process. Inject BENTOGROUT through each Injection Packer; including adjacent packers with previous BENTOGROUT return flow. Caution: pumping material under pressure can cause lifting or movement of the structure.

After BENTOGROUT injection, leave the CETCO Injection Packers set in the drilled holes for a minimum 24 hours to allow BENTOGROUT to setup. If required, BENTOGROUT can be typically be injected through the same injection points again the next day. Remove the Injection Packer and plug hole with a non-shrink hydraulic cement patch product. Finish interior wall surface per project requirements.

An alternative interior injection method is to use a Single Connection Injection Head (Photo 1) with a short 200 mm heavy wall steel injection pipe for BENTOGROUT placement. Injection pipe tip may require a rubber gasket to provide a tight seal for pump operations.

**Clean Up:** Clean application tools and mixing equipment with water immediately after use. Remove any access BENTOGROUT from ground surface. Caution mixed BENTOGROUT is slippery.

**Precautions:** It is mandatory that the user take the following precautionary measures to protect workers and the public. Avoid inhalation of powder dust. Ensure adequate ventilation. Avoid contact with eyes. Wear protective eye wear at all times. Flush eyes with water if contact occurs. Additional precautions, safety information and first aid treatments are contained on the Material Safety Data Sheet.

**Limitations:** BENTOGROUT is not designed to bridge cracks or gaps larger than 3 mm. Interior surface cracks greater than 3 mm should be surface sealed with cement based patching material to prevent grout extrusion into the structure. BENTOGROUT is not designed as a structural patch. BENTOGROUT is not recommended for above ground or applications that do not provide proper confinement. BENTOGROUT is not suitable for sealing expansion joints.



Mixing BENTOGROUT in CETCO mixer

## BEN TOGROUT® REMEDIAL WATERPROOFING INJECTION GROUT



INTERIOR SURFACE GROUT INJECTION: BEN TOGROUT is applied to the inside of the building without excavating the site



INTERIOR THROUGH WALL APPLICATION: BEN TOGROUT injected to the exterior of a manhole through pre-drilled holes using a short injection wand



EXTERIOR MASONRY WALL APPLICATION: Inject BEN TOGROUT along the exterior of a foundation wall at 600 mm on centre intervals



STRUCTURAL SLAB APPLICATION: Inject BEN TOGROUT under an existing slab to provide waterproofing and fill void areas

### TECHNICAL DATA DRY MATERIAL PROPERTIES

PROPERTY	TYPICAL VALUE
Bulk Density	881 kg/m <sup>3</sup>
Specific Gravity	2,5 gm/cm <sup>3</sup>
Bonded Moisture Content	12%

### TECHNICAL DATA FINAL SET MATERIAL PROPERTIES

PROPERTY	TYPICAL VALUE
Permeability (ASTM D5084)	5,2 x 10 <sup>-8</sup> cm/sec
Mud Weight	1,22 kg/litre
Cone Penetrometer (24 hours)	44 mm
Yield per Bag	0,06 m <sup>3</sup>

## Appendix D – Photos

<p><b>Site Investigation Photograph 1</b></p>	
<p><b>Date:</b> 20/10/22</p>	
<p><b>Direction Photograph Taken:</b> n/a.</p>	
<p><b>Description:</b> RBH-108 backfilled and reinstated with surrounding topsoil.</p>	

<p><b>Site Investigation Photograph 2</b></p>	
<p><b>Date:</b> 20/10/22</p>	
<p><b>Direction Photograph Taken:</b> n/a.</p>	
<p><b>Description:</b> CBH-110 backfilled and reinstated with surrounding topsoil.</p>	

<p><b>Site Investigation Photograph 3</b></p>	
<p><b>Date:</b> 20/10/22</p>	
<p><b>Direction Photograph Taken:</b> n/a.</p>	
<p><b>Description:</b> CBH-101 backfilled and reinstated with surrounding topsoil.</p>	

<p><b>Site Investigation Photograph 4</b></p>	
<p><b>Date:</b> 20/10/22</p>	
<p><b>Direction Photograph Taken:</b> n/a.</p>	
<p><b>Description:</b> CP206 digging out top 1m of pipe after grouting.</p>	

<p><b>Site Investigation Photograph 5</b></p>	
<p><b>Date:</b> 20/10/22</p>	
<p><b>Direction Photograph Taken:</b> n/a.</p>	
<p><b>Description:</b> Down pipe showing grout backfilled in the hole.</p>	

## Leon Warrington

---

**From:** Branson, Jim <jim.branson@environment-agency.gov.uk>  
**Sent:** 07 October 2022 13:44  
**To:** Eric Cooper  
**Cc:** Mynard, Kim; Paul Ayres  
**Subject:** RE: [Hydrock: 23880-GNST] Rectory Farm Landfill - Site Investigation Boreholes Decommissioning

**Categories:** Scanned by Gekko

**CAUTION:** This email originated from outside of Hydrock. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Eric,

I have reviewed the above mentioned CQA Plan on behalf of the Environment Agency and consider it to be satisfactory.

Therefore, please consider this email as our formal acceptance of the document and that we are happy for the works to proceed accordingly.

Regards

### Jim Branson

Technical Specialist - Groundwater & Contaminated Land

### Lincolnshire and Northamptonshire Area

#### Environment Agency

✉ Ceres House, Searby Road, Lincoln, LN2 4DW.

☎ 02030254983

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🌐 [www.gov.uk/environment-agency](http://www.gov.uk/environment-agency)

---

**From:** Eric Cooper <EricCooper@hydrock.com>

**Sent:** 04 October 2022 10:42

**To:** Mynard, Kim <Kim.Mynard@environment-agency.gov.uk>; Branson, Jim <jim.branson@environment-agency.gov.uk>

**Cc:** Culshaw, Helen <Helen.Culshaw1@environment-agency.gov.uk>; Leon Warrington <LeonWarrington@hydrock.com>; Julian Charlesworth <JulianCharlesworth@hydrock.com>; Allan Bell <allanbell@hydrock.com>; Paul Ayres <Paul.Ayres@mickgeorge.co.uk>

**Subject:** [Hydrock: 23880-GNST] Rectory Farm Landfill - Site Investigation Boreholes Decommissioning

Kim & Jim

Further to the last pre-app consultation meeting about the Thrapston development and Helen's comments about boreholes that penetrated the landfill, please find attached a CQA Plan for the works.

The works will be progressed as soon as we receive your approval for the CQA Plan.

## Leon Warrington

---

**From:** Branson, Jim <jim.branson@environment-agency.gov.uk>  
**Sent:** 02 November 2022 14:31  
**To:** Leon Warrington  
**Cc:** Allan Bell; Julian Charlesworth; Eric Cooper; Paul.Ayres@mickgeorge.co.uk; Mynard, Kim  
**Subject:** RE: [Hydrock: 23880-GNST] Rectory Farm Landfill - Site Investigation Boreholes Decommissioning  
**Categories:** Scanned by Gekko

**CAUTION:** This email originated from outside of Hydrock. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Leon,

Following my satisfactory review of the CQA Report this morning, I can confirm that it demonstrates the works have been carried out in accordance with the agreed CQA Plan.

Therefore, please accept this Email as the Environment Agency's formal acceptance of the document and that the works have been completed.

Regards

### Jim Branson

Technical Specialist - Groundwater & Contaminated Land

### Lincolnshire and Northamptonshire Area

#### Environment Agency

✉ Ceres House, Searby Road, Lincoln, LN2 4DW.

☎ 02030254983

☎ 54983 (internal)

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🌐 [www.gov.uk/environment-agency](http://www.gov.uk/environment-agency)

---

**From:** Leon Warrington <LeonWarrington@hydrock.com>

**Sent:** 02 November 2022 12:39

**To:** Branson, Jim <jim.branson@environment-agency.gov.uk>; Mynard, Kim <Kim.Mynard@environment-agency.gov.uk>

**Cc:** Allan Bell <allanbell@hydrock.com>; Julian Charlesworth <JulianCharlesworth@hydrock.com>; Eric Cooper <EricCooper@hydrock.com>; Paul.Ayres@mickgeorge.co.uk

**Subject:** RE: [Hydrock: 23880-GNST] Rectory Farm Landfill - Site Investigation Boreholes Decommissioning

Hi Jim,

Hope to find you well.

Is there any chance you have been able to review the decommissioning CQA report yet?



# Rectory Farm (Thrapston) Landfill (EPR/BT9879IY)

## Decommissioning of Monitoring Wells : Construction Quality Assurance Plan

*For Equites Newlands Limited*

---

Date: 3 October 2022

Doc ref: 18443-HYD-XX-XX-RP-GE-3005-S2-P01

# DOCUMENT CONTROL SHEET

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Client	Equites Newlands Limited	
Project name	Rectory Farm (Thrapston) Landfill (EPR/BT9879IY)	
Title	Decommissioning of Monitoring Wells : Construction Quality Assurance Plan	
Doc ref	18443-HYD-XX-XX-RP-GE-3005-S2-P01	
Project no.	18443	
Status	S2	
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Document Production Record		
Issue Number	P01	Name
Prepared by	Chris Carrier MSc BSc (Hons)	
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Approved by	Eric Cooper MSc CGeol SiLC	

Document Revision Record			
Issue Number	Status	Date	Revision Details
P01	S2	03/10/2022	First Issue (to Mick George Limited)

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

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Appendix D	Bentogrout Technical Data Sheet
Appendix E	Agency Guidance note ‘Good Practise for Decommissioning Redundant Boreholes and Wells Ref: LIT 6478 / 657_12
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## 1. INTRODUCTION

### 1.1 Terms of Reference

This document presents a Construction Quality Assurance Plan (CQA Plan) for decommissioning of monitoring wells at the Rectory Farm Landfill, Thrapston, Northamptonshire, which holds Environmental Permit Reference EP3837LU. The permit holder is Mick George Limited.

Between 2020 to 2021, Hydrock was appointed by Equites Newland to undertake ground investigations at a parcel of land adjacent to Halden's Parkway, Thrapston. The wider site is approximately 74.83 ha (184.90 acres) in area and currently comprises open agricultural land with hedge and tree lined fields, with Castle Manor Farm and associated buildings and hardstanding, in the central east of the site.

The Former Rectory Farm Quarry and Landfill is located in the south western corner of the wider site (See Figure 1.1), and covers an area of approximately 11Ha. The Landfill was permitted in 2004 (under permit reference PP3233XK (EPR/BT9879IY) and operated by Mick George Limited from 2000 – 2015, initially for extracting sand and gravel and then filled with 'inert' waste. The landfill comprised a total of 8 cells, with settlement lagoons present in the central north of the site. Records of Waste Returns indicate that the site first accepted wastes in 2004 and last accepted waste in July 2015. Since then, the site has been fully decommissioned and restored to agricultural fields that are actively cropped.

Hydrock's investigation works comprised a number of cable percussive and rotary Boreholes across the site, with a focus around the Landfill in the south west. All boreholes were installed with standpipes to allow for ground gas and groundwater monitoring. During the investigation works, a number of boreholes were advanced below the base of the Landfill. In some cases, standpipes were installed in close proximity to the base, or into the natural strata below. All boreholes were drilled using 'clean' drilling techniques with a hydrated bentonite seal installed below the level of the landfill to prevent vertical migration of possible contaminants from the landfill into the natural strata below.

Investigations determined the base of the landfill to a maximum depth of 11.70m below ground level. The Landfill material predominantly comprised of soft to firm sandy gravelly clays, with gravel noted to contain flint, sandstone, ironstone, chalk, limestone and brick. Generally, the landfill material was absent of organic wastes, metals or excessive construction waste. The Landfill is underlain at depth by the Cornbrash Formation, classified as a Secondary A Aquifer.

The Environment Agency should be aware it is the Permit Holder's intention that, following closure of the site and eventual surrender of the permit, the landfill site will form part of a logistical warehousing development that will involve recovery and re-use of the waste under a Waste Recovery Plan and a Deposit for Recovery Permit.

### 1.2 The Site

The permit boundary is taken to be that shown on the drawing at Schedule 2, Page 18, of Permit Reference PP3233XK, attached herein at Appendix A. This boundary defines the area that is required to proceed to definitive closure. The site is located 0.5km east of Thrapston at NGR TL 01470 78354. The site location is shown in Figure 1 below.



Figure 1: Site Location

### 1.3 Background Information

Hydrock has previously prepared the following reports:

- Hydrock. 31<sup>st</sup> January 2022. 'Land Adjacent Halden Parkway, Thrapston. Desk Study Report'. Ref: 18443-HYD-XX-XX-RP-GE-1002-S2-P5.
- Hydrock. 29<sup>th</sup> April 2022. 'Land Adjacent Halden Parkway, Thrapston. Ground Investigation Report – Factual Data and Ground Model'. Ref: 18443-HYD-XX-XX-RP-GE-1003-S2-P6.
- Hydrock. 23<sup>rd</sup> August 2022. 'Rectory Farm (Thrapston) Landfill (EPR/BT98791Y) – Closure Report'. 23880-HYD-XX-XX-RP-GE-0001-S2-P03. For Mick George Limited.

### 1.4 Context and Objective

At a pre-application consultation meeting on the 23<sup>rd</sup> August 2022 the Environment Agency (EA) requested that those boreholes that penetrated the base of the Rectory Farm Landfill be decommissioned. The basis of this request is to ensure that the integrity of the geological liner is reinstated. The remaining boreholes (i.e., those that did not penetrate the geological barrier) will be left intact as a source of monitoring data to facilitate eventual surrender of the permit by the permit holder Mick George (Haulage) Ltd, who will be required as Permit Holder to approve the decommissioning works.

AS noted, this document presents a Construction Quality Assurance Plan (CQA Plan) for decommissioning of monitoring wells at the Rectory Farm Landfill, Thrapston, Northamptonshire, which holds Environmental Permit Reference EP3837LU. The permit holder is Mick George Limited.

The content of this report has been prepared for review by both Mick George Limited and the Environment Agency. Commencement of the works is contingent on approval of this CQA Plan.

## 1.5 Definitions

The following definitions and descriptions apply:

- **Construction Quality Assurance (CQA):** the implementation of a series of procedures designed to ensure that the works undertaken are technically appropriate and compliant with regulatory requirements. The CQA service is provided by Hydrock Consultants Limited.
- **CQA Plan** (this document): the plan that sets out the means by which the CQA objectives are met.
- **Construction Quality Control (CQC):** the actions taken by the Contractor (see below) to comply with the CQA Plan, including the Specification.
- **CQA Validation Report:** report completed at the end of the contract that demonstrates that the requirements of the CQA Plan have been complied with (note: the CQA Report will focus on demonstration of compliance with the CQA plan and will be separate from the standard Factual and Interpretative Reports on findings).

## 1.6 Organisational Structure

An organogram is shown in Figure 2 below.

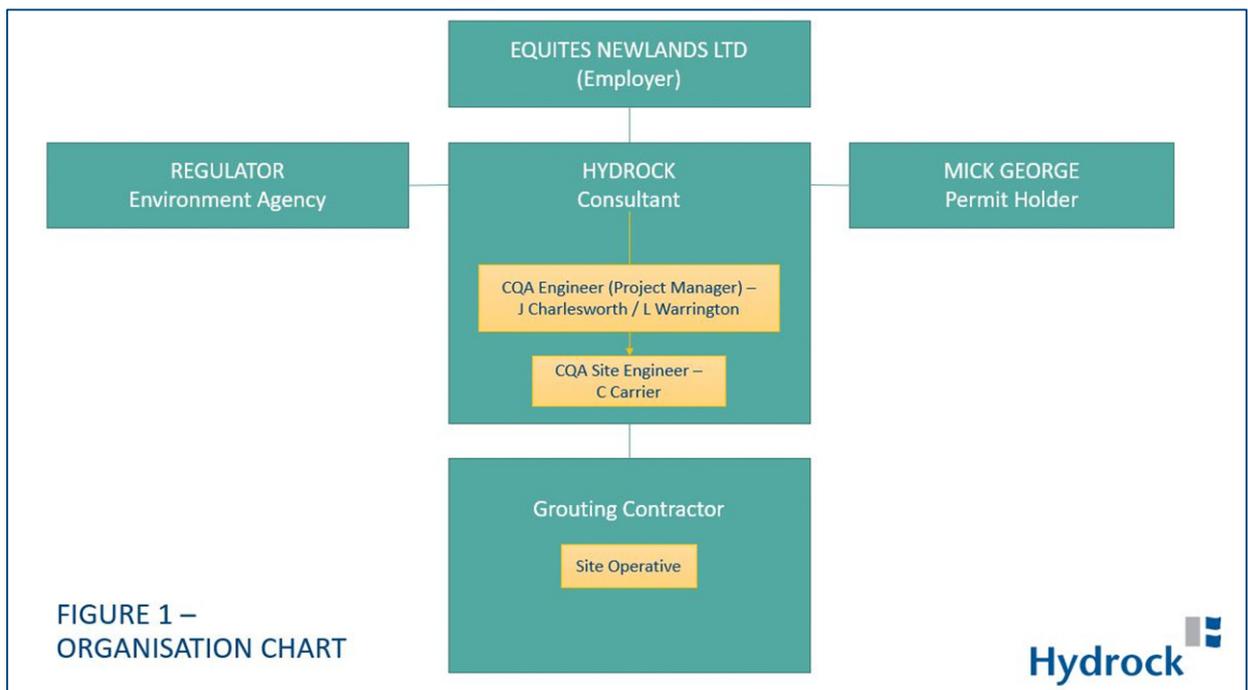


Figure 2: Organisation Chart

The Employer is **Equites Newlands Ltd**. Equites Newlands appointed **Hydrock** to act as its engineering consultant for the geo-environmental and geotechnical aspects of the development.

Hydrock will appoint a specialist grouting contractor (the **Grouting Contractor – Geotron**) to undertake the decommissioning works. The Contractor will be employed under contract to Hydrock, who will supervise the works on site in accordance with this CQA Plan.

**Mick George**, is the Permit Holder.

The regulator is the **Environment Agency**. The Permit Holder (via Hydrock) shall inform the Environment Agency of the start date of the decommissioning works. The EA shall also be notified of any changes to the specification or CQA Plan, prior to, or during the works.

In terms of this CQA plan, the following commitments apply:

- **Hydrock CQA Engineer (Project Manager):** Route A / Route B qualified geoscientist with minimum 12 years relevant professional experience including at least 2 years' experience in the design, supervision or construction of landfill infrastructure.
- **Hydrock CQA Site Engineer:** degree-qualified geoscientist with minimum 5 years relevant professional experience, including working on landfill sites.
- **Grouting Contractor:** experienced contractor from the Hydrock Approved Suppliers register; with experience of decommissioning by pressure grouting monitoring wells installed within landfill sites.

## 1.7 Responsibilities

### CQA Engineer (Project Manager)

- Reports to the Employer for delivery of the services;
- Acts as first point of contact for the Regulator and the Permit Holder;
- Takes overall responsibility for:
  - » Appointment of a suitably qualified and experienced grouting contractor;
  - » Health & Safety, including approval of RAMS;
  - » Preparation of the contract specification and adherence to it;
  - » Adherence to the CQA Plan.
- Undertakes site inspections during the works.
- Takes responsibility for preparation of the CQA Validation Report.

### CQA Site Engineer

- Full-time attendance on site during the works.
- Reports to the CQA Project Manager regarding the execution of the works in compliance with the CQA Plan and the Specification;
- Supervises the works on site and keeps records of findings;
- Assists in preparation of the CQA Validation Report.

### Contractor

- Execution of the works in accordance with the CQA Plan and the Specification.

## 1.8 Contractual Arrangements

For CDM purposes, the following contractual arrangements apply in respect of the proposed works:

- **Hydrock Consultants:**
  - » Overall management and co-ordination;
  - » Principal Designer for monitoring well decommissioning works;
  - » Principal Contractor for the duration for monitoring well decommissioning works;

- » Full time supervision of grouting works.
- » Provision of welfare facilities;
- » Site security;
- **Grouting Contractor:**
  - » Mobilisation to site, set up at locations, move between boreholes, demobilisation on completion;
  - » Decommissioning of borehole installations my method of Pressurised Grouting;
  - » Provision of grouting materials (powdered bentonite and water supply);

## 2. DECOMMISSIONING PROPOSALS

From an assessment of the borehole logs within the area of the Landfill, Hydrock has identified a total of 15 no. monitoring wells that will require decommissioning. The boreholes are presented below, along with rationale for them to be retained or decommissioned: -

Table 2.1: Summary of Borehole Assessment.

Monitoring Well Reference	Depth of Installation	Does Monitoring Well Extend Below the Landfill?	Decommission	Rationale
CBH-101	10.5	Yes, Well installed 0.7m into Natural Strata)	Yes	Monitoring well has been installed below the base of the Landfill.
CBH-102	5.0	N/A	No	Borehole was not drilled through landfill material.
CBH-103	9.0	Yes, Well installed 7.7m into Natural Strata	Yes	Monitoring well to be decommissioned as a precaution.
CBH-104	8.5	No, base of Well installed 0.4m above base of Landfill.	Yes	Thickness of Bentonite seal (0.4m) between base of landfill and natural strata is not deemed suitable.
CBH-105	2.0	No, base of Well installed 0.1m above the base of the Landfill.	Yes	Monitoring Well to be decommissioned as a precaution.
CBH-106	9.6	No, Well installed 0.6m above the base of the landfill.	Yes	Thickness of seal (0.6m) between base of landfill and natural strata is not deemed suitable.
CBH-107	9.5	Yes, Well installed 0.1m into Natural Strata.	Yes	Monitoring well has been installed below the base of the Landfill.
CBH-108	15.0	Yes, well installed 2m into Natural Strata.	Yes	Monitoring well has been installed below the base of the Landfill.
CBH-109	4.0	No, Well installed 0.4m above the base of the Landfill.	No	Thickness of seal between base of Landfill and Aquifer (Combination of Bentonite and Landfill Liner =2.1m) is deemed suitable.
CBH-110	8.0	No, Well installed 0.3m above the base of the Landfill.	Yes	Thickness of seal (0.3m thick) between base of landfill and natural strata is not deemed suitable.
CBH-111	8.0	No, Well installed 0.5m above the base of the Landfill.	No	Thickness of seal between base of Landfill and Aquifer (Combination of Bentonite and Landfill Liner =1.45m) is deemed suitable. To be kept for continuous gas monitoring.
CP203	10.0	No, Well installed 1.9m above the base of the Landfill.	No	Thickness of Bentonite seal between base of Landfill and Aquifer (1.9m) is deemed suitable. To be kept for continuous gas monitoring.

CP205	9.0	No, Well installed 2.0m above the base of the Landfill.	No	Thickness of Bentonite seal between base of Landfill and Aquifer (2.0m) is deemed suitable.
CP206	10.0	Yes, Well installed at the base of the Landfill.	Yes	Thickness of seal (0.5m thick) between base of landfill and natural strata is not deemed suitable.
CP207	8.0	No, Well installed 1.0m above the base of the Landfill.	No	Thickness of Bentonite seal between base of Landfill and Aquifer (1.0m) is deemed suitable.
CP208	9.0	Yes, Well installed 2.2m into Natural Strata.	Yes	Monitoring well has been installed below the base of the Landfill.
CP209	4.0	Yes, Well installed 3.0m into Natural Strata.	Yes	Monitoring Well to be decommissioned as a precaution.
CP210	8.0	Yes, Well installed at the base of the Landfill.	Yes	Monitoring well has been installed at the base of the Landfill.
RBH-102	13.0	Yes, Well installed 1.8m into Natural Strata.	Yes	Monitoring well has been installed below the base of the Landfill.
RBH-105	9.5	Yes, Well installed 8.3m into Natural Strata.	Yes	Monitoring well has been installed below the base of the Landfill.
RBH-108	12.0	Yes, Well installed 3.15m into Natural Strata.	Yes	Monitoring well has been installed below the base of the Landfill.

A layout showing the location of boreholes to be decommissioned, along with the borehole logs, are presented in Appendix A and B respectively.

### 3. SCOPE

The scope of the works specifically designated as the responsibility of the CQA engineer(s) and the Contractor shall consist of the following tasks and responsibilities:

- To decommission 15 no. monitoring wells (Table 2.1) via pressure grouting techniques in the area of the inert Landfill in the south western corner of the site.
- To supervise the pressure grouting in line with design proposals (this document).
- To liaise with the Contractor and the Client in order to ensure that appropriate health and safety procedures are being adhered to.
- To provide a factual CQA report containing site records to verify that the works were undertaken in accordance with this CQA plan.

## 4. DECOMMISSIONING OF MONITORING WELLS

### 4.1 Methodology

Monitoring wells are to be decommissioned in line with Environment Agency Guidance 'Good Practise for Decommissioning Redundant Boreholes and Wells: 2015'. The full document is presented in Appendix D.

It is considered that installing the wells with low permeability backfill (Scenario C in the aforementioned Agency Guidance) is the most appropriate method given the site conditions and monitoring well construction. The injection of a low permeability bentonite grout into the borehole under pressure will fill the void space within the granular backfill that surrounds the monitoring well while also filling the interior of the monitoring well itself. This will remove any pathway between the landfill material and the underlying Secondary Aquifer (Cornbrash Formation).

A product such as Cetco's BENTOGROUT (or similar) is to be used for the grout mix. This material demonstrates a permeability value of  $5.2 \times 10^{-8}$  cm/sec when it has set which is considered to be suitable as a low permeability backfill material. Technical Data relating to BentogROUT is presented in Appendix D.

Following the completion of the grouting works any remaining element of the headworks will be removed. The monitoring well pipework will be cut down flush with the upper surface of the bentonite seal (typically at 0.40m to 0.50m depth) following which a further bentonite seal of at least 300mm thickness will be constructed above the existing bentonite seal and hydrated. Topsoil will be placed to bring the levels up to meet existing ground levels in the vicinity of the monitoring well.

### 4.2 Pressure Grouting Method Statement

The monitoring wells will be backfilled with bentonite grout from the base upwards using a grout pump and tremie pipe placed at the bottom of the borehole. A concrete seal will subsequently be placed at the top of the monitoring well.

The following methodology will be adopted:-

- Monitoring wells will be dipped prior to decommissioning to record base depth and ground water levels.
- The grout is mixed in the grout pump to the correct specification stated in product data sheet.
- A tremie pipe is inserted at the base of the monitoring well and attached to the grout pump.
- Grout is pumped under pressure in stages whilst simultaneously withdrawing the tremie pipe to ensure complete filling of the well void. Pumping will continue until the grout extrudes the top of the monitoring well.
- Grout will be left for a period of time to settle within the monitoring well, to be topped up until the volume of grout installed is equal to the calculated well volume for that specific monitoring well.
- The top of the monitoring well will be covered with concrete to create a sealing cap. The monitoring well pipework will be cut down flush with the upper surface of the bentonite seal (typically at 0.40m depth) following which a further bentonite seal of at least 300mm thickness will be constructed above the existing bentonite seal and hydrated. Topsoil will be placed to bring the levels up to meet existing ground levels in the vicinity of the monitoring well.

A more detailed Specification prepared by the Contractor (Geotron) is presented in Appendix C.

## 5. VERIFICATION SPECIFICATION

Hydrock has designed the following methodology to verify the decommissioning works :-

- Calculate expected volumes of grout uptake for each monitoring well, and use this value as a target volume of grout to be pumped in each monitoring well.
- Measure the level of grout in the monitoring well once target volume of grout has been reached, if grout level is at the top of the standpipe the well will be left for 12 hours to account for any settling of grout. If grout level is not at the top of the standpipe, pumping will continue until the grout is level with the top of the well.
- After the 12 hour 'resting' period, the grout level within the standpipe will be measured, and topped up with grout as required.
- Records will be taken for each individual monitoring well, including volumes of grout pumped at each depth increment, pumping pressure and measurements of grout level in the standpipe.

Calculations of expected grout uptake have been derived from calculating the total volume of each monitoring well. An example calculation for monitoring well CP206 is presented below:-

Table 5.1: Method for Calculating Expected Grout Uptake of Monitoring Wells

<b>Input Parameters for Calculation [CP206]</b>
Borehole Radius: 0.075m (150mm diameter cable percussive borehole)
Total Install Depth: 10m
Internal Standpipe Radius: 0.025m (50mm internal diameter HDPE Pipe)
External Standpipe Radius: 0.0315
Response Zone with Gravel Surround: 9m
Porosity of Gravel Surround: 30%
Formula for Volume of Cylinder: $\pi * r^2 * h$
<b>Step 1 : Total Internal Volume of Standpipe = 0.0196m<sup>3</sup></b>
r = 0.025m
h = 10m
$\pi * 0.025m^2 * 10m$
<b>= 0.0196m<sup>3</sup></b>
<b>Step 2: Volume of Response Zone = 0.131m<sup>3</sup></b>
[Total Volume of Response Zone] – [Total Volume of Standpipe in Response Zone(External)]
<b>Total Volume of Response Zone = 0.159m<sup>3</sup></b>
r = 0.075m
h = 9m
$\pi * 0.075m^2 * 9m$
<b>= 0.159m<sup>3</sup></b>
<b>Total Volume of Standpipe in Response Zone (External Dimension) = 0.0280m<sup>3</sup></b>
r = 0.0315m

h = 9m

$$\pi * 0.0315\text{m}^2 * 9\text{m}$$

$$= 0.0280\text{m}^3$$

**Volume of Response Zone**

[Total Volume of Response Zone – Total Volume of Standpipe in Response Zone]

$$0.159\text{m}^3 - 0.0280\text{m}^3$$

$$= 0.131\text{m}^3$$

**Step 3: Corrected Volume of Response Zone = 0.0393m<sup>3</sup>**  
**(Taking Into Account Porosity of Gravel Surround)**

Gravel Porosity: 30%

[Volume of Response Zone \* Gravel Porosity]

$$0.131\text{m}^3 * 30\%$$

$$= 0.0393\text{m}^3$$

**Step 4: Total Volume of Monitoring Well (Expected Grout Uptake) = 0.0589m<sup>3</sup>**

[Total Volume of Standpipe + Corrected Volume of Response Zone]

$$0.0196\text{m}^2 + 0.0393\text{m}^3$$

$$= 0.0589\text{m}^3$$

**Expected Grout Uptake for CP206 Monitoring Well = 0.0589m<sup>3</sup>**

Expected grout uptake for the monitoring wells requiring decommissioning calculated using the above methodology are presented below in Table 5.2:-

Table 5.2: Expected Grout Uptake for Monitoring Wells Requiring Decommissioning

Monitoring Well	Expected Grout Uptake Volume (m <sup>3</sup> )
CBH-101	0.0228
CBH-103	0.0373
CBH-104	0.0494
CBH-105	0.0083
CBH-106	0.0439
CBH-107	0.0536
CBH-108	0.0210
CBH110	0.0419
CP206	0.0589
CP208	0.0526
CP209	0.0210
CP210	0.0463
RBH-102	0.0337
RBH-105	0.0309
RGH-108	0.0388

## 6. CONSTRUCTION QAULTY ASSURANCE

### 6.1 Daily Record Keeping

- As a minimum the following will be recorded by the CQA Project Engineer:-
- Observations on weather conditions;
- Equipment and personnel on site;
- Photographic evidence of completion of borehole decommissioning;
- Any design or specification changes that may be necessary during the works;
- Summary of activities on site; and
- Any other events which take place on site and are not recorded elsewhere.

### 6.2 Construction Quality Assurance Validation Report

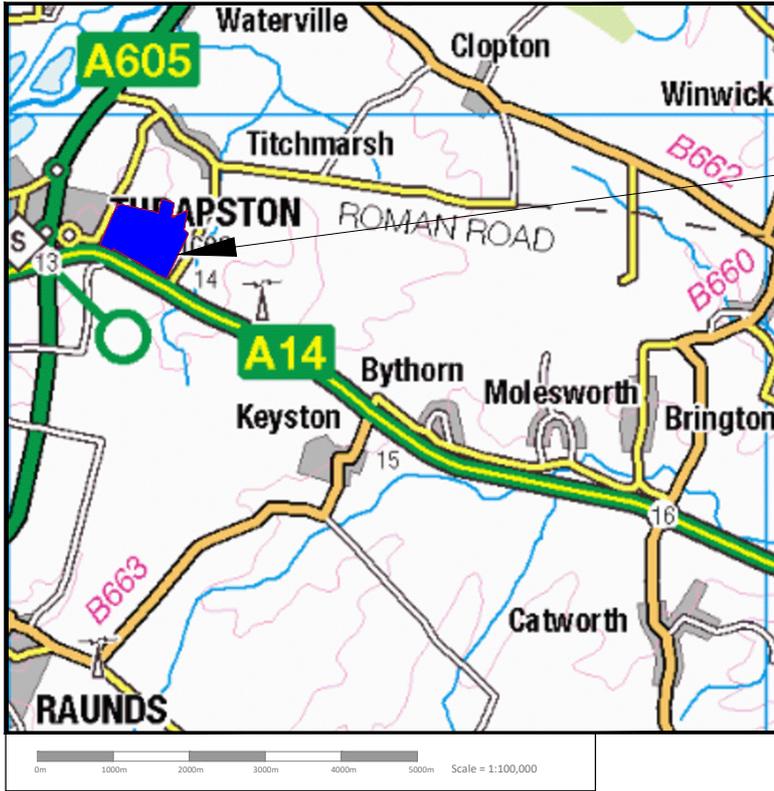
Upon completion of the decommissioning works the CQA Engineer will prepare a CQA Validation Report describing the works undertaken and including all CQA documentation prepared. As a minimum this shall include:

- Description of works.
- Daily records.
- Contractor's Documentation.
- Photographic records.
- Materials conformance (e.g. Bentonite, Grout mix etc.).
- As-built schematic drawings showing grouting undertaken at each monitoring well.

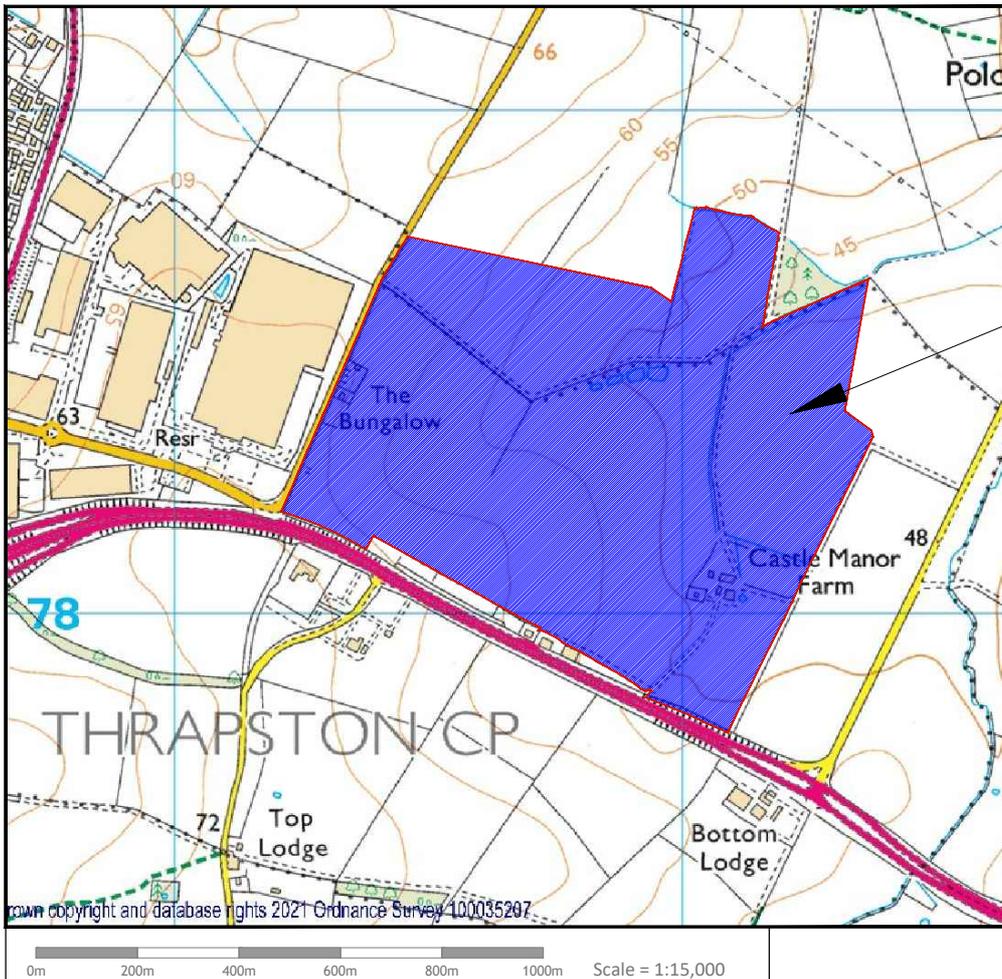
# Appendix A Monitoring Well Decommission Plan

## Ref: 18443-HYD-XX-ZZ-DR-GE1036

## Appendix B Borehole logs



THE SITE



THE SITE

P03	Client Name Updated					
	NT	15.12.21	NT	15.12.21	AB	15.12.21
P02	FIRST ISSUE					
	SD	08.11.21	NT	08.11.21	AB	08.11.21
P01	REVISION NOTES/COMMENTS					
	SD	16.08.21	NT	16.08.21	AB	16.08.21
REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

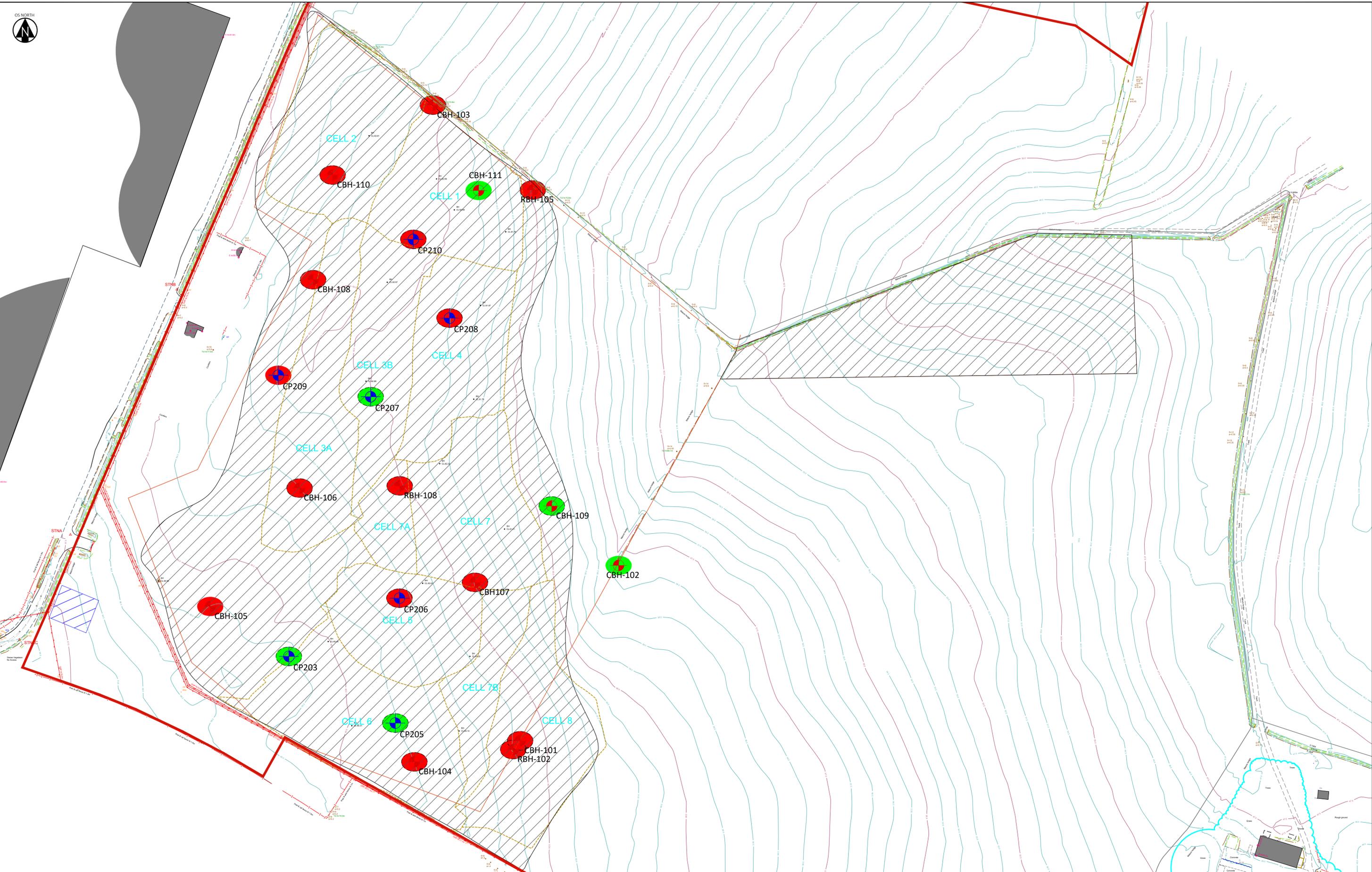
**Hydrock**  
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 Spratton  
 Northampton NN6 8LD  
 TEL: 01604 842 888  
 E-Mail: northampton@hydrock.com  
 or visit www.hydrock.com

CLIENT  
 Equites Newlands (Thrapston East) Limited

PROJECT  
 LAND ADJACENT HALDENS PARKWAY  
 THRAPSTON

TITLE  
 SITE LOCATION PLAN

HYDROCK PROJECT NO. C-18443-C	SCALE @ A4 See Drawing	PURPOSE OF ISSUE SUITABLE FOR INFORMATION	STATUS S2
DRAWING NO. (PROJECT - ORIGINATOR VOLUME LEVEL TYPE ROLE NUMBER) 18443-HYD-XX-ZZ-DR-GE-1001		REVISION P03	



- KEY**
- Site Investigation Boreholes (June/July 2021)
  - CBHX Cable Percussion Borehole
  - RBHX Rotary Percussion / Core Borehole
  - Detailed Site Investigation
  - CPHX Cable Percussion Borehole
  - RBHX Rotary Borehole
  - SB Water sample location

- Site Boundary (approximate)
- Mick George Landfill Cell Boundaries
- Approximate Landfill Extents
- GPR: Area of disturbed ground/assumed stone pits

- Monitoring Well Decommissioning Plan**
- Monitoring Well to be Decommissioned
  - Monitoring Well to be Retained

**NOTES**

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. This drawing has been based on the following drawings and information:
3. This drawing has been based on the Statutory Drawing 'Huntington Road, Thrapston, Topographic Survey', Ref: 11521a-Q, dated 10/03/21.
4. Locations subject to change following walkover and subject to discussions and agreement.
5. Locations shown at the farm building and yard areas. Subject to discussions and agreement.
6. No known archaeological, ecological or arbicultural restrictions.
7. Cell boundaries taken from image derived from Mick George Cell location plan. Drawing number: MG110/51 dated: 25/12/2014.

PROJ ISSUE					
REV	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT  
EQUITES NEWLANDS (THRAPSTON EAST) LTD

PROJECT  
LAND ADJACENT HALDENS PARKWAY THRAPSTON

TITLE Monitoring Well Decommission Plan	
HYDROCK PROJECT NO. C-18443	SCALE @ AD Not to Scale
PURPOSE OF ISSUE SUITABLE FOR INFORMATION	STATUS S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-DOM-LEVEL-TYPE-ROLE-NUMBER) 18443-HYD-XX-ZZ-DR-GE-1036	REVISION P01



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-101**

Page No. 1 of 2

Method: Cable Percussion	Date(s): 22/06/2021	Logged By: NT	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501554.83, 278145.92	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 62.98m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30 - 1.10	B			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded brick, quartz, sandstone and limestone. One piece of yellow plastic. (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.68		
1.20	SPT	N=6 (1,1,1,1,2,2)		Soft light greyish and orangish brown slightly sandy slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse, angular to sub-angular brick, concrete, flint, limestone, igneous rock and asphalt and occasional (LANDFILL - MADE GROUND)	1	(1.40)			
1.20 - 1.65 1.20 - 10.50	D AMAL								
2.00	SPT	N=8 (1,1,1,2,2,3)		Soft greenish grey and yellowish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to angular, chalk, limestone and rare fine brick and ash. (LANDFILL - MADE GROUND)	1.70		61.28		
2.00 2.00 - 2.45	ES D								
3.00	SPT	N=6 (1,1,1,1,2,2)							
3.00 - 3.45	D								
4.00	SPT	N=6 (0,1,1,1,2,2)							
4.00 4.00 - 4.45	ES D								
5.00	SPT	N=8 (2,2,2,2,2,2)							
5.00 - 5.45	D								
6.00	D						(8.10)		
6.50	SPT	N=11 (2,2,2,3,3,3)							
6.50 - 6.95	D								
7.00	ES								
7.50	D								
8.00	SPT	N=11 (2,2,2,3,3,3)							
8.00 - 8.45	D								
9.00	D								
9.50	SPT	N=40 (3,3,6,8,12,14)	▼						
9.50 - 9.95 9.80 - 10.50	D B			Very dense brown coarse SAND.	9.80		53.18		
					10				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 10.70m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 10.50m bgl. Response zone between 10.0m bgl and 10.50m bgl. 4) ER = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-101**

Page No. 2 of 2

Method: Cable Percussion	Date(s): 22/06/2021	Logged By: NT	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501554.83, 278145.92	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 62.98m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
10.60	SPT	50/40mm (25,50)		Very dense brown coarse SAND. (KELLAWAYS SAND MEMBER)	10.50	(0.70)	52.48		
10.60 - 10.70	D			Firm grey thinly laminated CLAY. (KELLAWAYS CLAY MEMBER)	10.60	(0.10)	52.38		
				Grey LIMESTONE. (CORNBASH LIMESTONE FORMATION)	10.70	(0.10)	52.28		
				End of Borehole at 10.70m					
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 10.70m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 10.50m bgl. Response zone between 10.0m bgl and 10.50m bgl. 4) ER = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Method: Cable Percussion	Date(s): 06/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501499.71, 278589.48	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 62.75m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.20 - 1.00	B			Firm to stiff brown slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded flint, quartz, limestone and chalk. (TOPSOIL - MADE GROUND)	0.20	(0.20)	62.55		
1.20	SPT	N=7 (1,1,1,2,2,2)		Soft to firm dark grey brown, slightly sandy gravelly CLAY with occasional rootlets. Gravel is fine to coarse, sub-angular to sub-rounded limestone, flint, brick, sandstone and chalk. (LANDFILL - MADE GROUND)	1.30	(1.10)	61.45		
1.20 - 1.65 1.30 1.30 - 2.00	D ES B			Firm dark brown and grey slightly silty gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded, chalk, flint and sandstone. Occasional gravel sized shell fragments. (GLACIAL TILL)	2.00	(0.70)	60.75		
2.00	SPT	N=8 (1,1,1,2,2,3)		Firm becoming stiff bluish grey slightly silty CLAY with occasional relict rootlets and coarse sand sized selenite crystals. (GLACIAL TILL)	3.60	(1.60)	59.15		
2.00 - 2.45 2.00 - 3.00	D B				4.00	(0.40)	58.75		
3.00 - 3.45	U	(79,100%)			5.00	(2.00)			
3.60	ES			Stiff bluish grey slightly gravelly CLAY. Gravel is fine to medium, sub-angular to rounded flint and quartz. (GLACIAL TILL)	6.00	(3.50)	56.75		
4.00	SPT	N=35 (1,2,6,9,9,11)		Dense to very dense orange brown gravelly SAND. Gravel is fine to coarse, sub-angular to sub-rounded limestone, flint, sandstone and ironstone. Sand is medium. (GLACIOFLUVIAL DEPOSITS)	6.50				
4.00 - 4.45 4.30 - 5.00 4.30 - 6.00	D B AMAL				6.50				
5.00	SPT	50/135mm (9,12,25,25)			6.50				
5.00 - 5.50	B				6.50				
5.50	ES				6.50				
5.50 - 6.00	B				6.50				
6.00 - 6.50	B			Very dense to medium dense orange brown SAND and GRAVEL. Gravel is fine to coarse, sub-angular to sub-rounded flint, ironstone, siltstone and shell fragments. (GLACIOFLUVIAL DEPOSITS)	6.50				
6.50	SPT	50/170mm (5,10,16,24,10)			6.50				
6.50 - 7.00	B				6.50				
7.00	ES				6.50				
7.50 - 8.00	B				6.50				
8.00	SPT	N=22 (5,6,5,5,5,7)			6.50				
9.00	D				6.50				
9.50	SPT	50/10mm (24,50)		Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION)	9.50	(0.05)	53.25		
9.50	D			End of Borehole at 9.50m	9.55		53.20		

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.55m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 9.50m bgl. 2) Response zone between 4.50m bgl and 9.50m bgl. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Method: Cable Percussion	Date(s): 23/06/2021	Logged By: SP	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501485.56, 278134.83	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 64.43m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Soft brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to sub-rounded chalk and rare flint. (TOPSOIL - MADE GROUND)	0.20	(0.20)	64.23		
0.50 - 1.00	B			Soft orange brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-rounded to rounded flint and chalk. (LANDFILL - MADE GROUND)	0.50	(0.30)	63.93		
0.70	ES			Firm grey locally black mottled sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded chalk, rare limestone and rare fine brick. (LANDFILL - MADE GROUND)	1.00	(0.50)	63.43		
1.00	D			Orange brown sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-rounded to rounded flint and sandstone. (LANDFILL - MADE GROUND)	1.30	(0.30)	63.13		
1.20	SPT	N=10 (3,3,2,3,2,3)		Firm brown mottled dark brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium, angular to sub-angular flint, brick, sandstone and bituminous material. (LANDFILL - MADE GROUND)					
1.20	ES								
1.20 - 1.65	D								
1.30 - 2.00	B								
2.00	SPT	N=7 (1,1,1,2,2,2)			2				
2.00 - 2.45	D								
3.00	SPT	N=7 (0,1,1,2,2,2)			3				
3.00 - 3.45	D								
3.45	D								
4.00	SPT	N=9 (1,1,2,2,2,3)			4				
4.00 - 4.45	D								
5.00	SPT	N=11 (2,2,2,3,3,3)			5				
5.00 - 5.45	D					(7.60)			
6.00	D				6				
6.50	SPT	N=14 (2,2,3,3,4,4)			7				
6.50 - 6.95	D								
7.00	ES				7				
7.00 - 8.00	B								
8.00	SPT	N=20 (3,3,4,5,5,6)			8				
8.00 - 8.45	D								
9.00 - 9.50	B			Firm orange brown and bluish grey sandy CLAY. (KELLAWAYS SAND MEMBER)	8.90		55.53		
9.50	SPT	N=16 (3,3,4,4,4,4)		Medium dense orange clayey SAND. (KELLAWAYS SAND MEMBER)	9.50		54.93		
9.50 - 9.95	D				10		(1.00)		

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 11.10m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 8.50m bgl. Response zone between 1.00m bgl and 8.50m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-104**

Page No. 2 of 2

Method: Cable Percussion	Date(s): 23/06/2021	Logged By: SP	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501485.56, 278134.83	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 64.43m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
10.50 - 11.00	B			Medium dense orange clayey SAND. (KELLAWAYS SAND MEMBER)	10.50		53.93		
11.00	SPT	50/30mm (25,50)		Very stiff dark grey CLAY. (KELLAWAYS CLAY MEMBER)		(0.50)	53.43		
11.00 - 11.10	D			Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) <small>End of Borehole at 11.10m</small>	11.10	(0.10)	53.33		
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 11.10m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 8.50m bgl. Response zone between 1.00m bgl and 8.50m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CBH-105

Page No. 1 of 2

Method: Cable Percussion	Date(s): 21/06/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501343.72, 278243.36	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 65.47m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30 - 0.80	B			Soft dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, sub-angular to rounded quartz, flint, brick and sandstone. (TOPSOIL - MADE GROUND)	0.30	(0.30)	65.17		
1.20	SPT	N=10 (0,0,0,1,1,8)		Stiff mottled light brown slightly sandy slightly gravelly CLAY with some roots. Gravel is fine to coarse, sub-angular to rounded chalk, brick, sandstone and limestone. Low cobble content of brick. (LANDFILL - MADE GROUND)	1.20	(0.90)	64.27		
1.20 - 1.65	D			Soft yellow and grey brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium. sub-angular to sub-rounded chalk, brick and ash. (LANDFILL - MADE GROUND)		(0.90)			
2.00	SPT	N=17 (2,2,3,4,5,5)			2.10		63.37		
2.00 - 2.45	D			Firm light greyish and orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded flint, chalk and sandstone. (GLACIAL TILL)					
3.00	SPT	N=9 (1,2,2,2,2,3)			3				
3.00 - 3.45	D								
4.00	SPT	N=14 (2,2,2,3,4,5)			4				
4.00 - 4.45	D			Firm grey slightly gravelly CLAY with occasional sand sized selenite crystals, shell fragments and purple relict rootlets. Gravel is fine to medium, angular to rounded flint, quartz, chalk, sandstone and mudstone. (GLACIAL TILL)	4.10		61.37		
4.10 - 5.00	B								
5.00	SPT	N=24 (3,4,5,6,6,7)			5				
5.00 - 5.45	D					(2.40)			
6.00	D				6				
6.50	SPT	50/220mm (6,13,13,17,20)			6.50		58.97		
6.50 - 6.87	D			Dense to very dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)					
7.00 - 8.00	B				7				
8.00	SPT	N=44 (4,6,8,10,12,14)			8				
9.00	D				9				
9.50	SPT	50/210mm (7,11,13,20,17)			9.50				
					10				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 11.26m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 2.00m bgl. Response zone between 1.00m bgl and 2.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-105**

Page No. 2 of 2

Method: Cable Percussion	Date(s): 21/06/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501343.72, 278243.36	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 65.47m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
10.50	D			Dense to very dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER)	10.60		54.87		
11.00 - 11.20	U	(100,0%)		Brown becoming grey thinly laminated slightly sandy CLAY. (KELLAWAYS CLAY MEMBER)	11	(0.60)			
11.20	SPT	50/10mm (25,50)			11.20		54.27		
11.20	D			Grey LIMESTONE. (CORNBRAH LIMESTONE FORMATION) End of Borehole at 11.26m	11.26	(0.06)	54.21		
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 11.26m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 2.00m bgl. Response zone between 1.00m bgl and 2.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-106**

Page No. 1 of 2

Method: Cable Percussion	Date(s): 05/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501408.26, 278325.57	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 63.96m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Soft brown sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to angular flint, quartz, sandstone and rare fine brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.66		
0.30 - 1.00	B			Firm brown sandy slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint, sandstone, ironstone and rare brick. (LANDFILL - MADE GROUND)		(0.90)			
0.70	ES				1				
1.20	SPT	N=26 (1,4,5,7,7,7)		Medium dense red brown slightly clayey gravelly SAND. Gravel is fine to coarse, sub-angular to sub-rounded sandstone and siltstone. (LANDFILL - MADE GROUND)	1.20		62.76		
1.20 - 1.65	D					(1.30)			
1.20 - 2.00	B								
2.00	SPT	N=26 (3,5,7,7,6,6)			2				
2.20	D								
2.20	ES								
2.50 - 3.00	B				2.50		61.46		
3.00	SPT	N=12 (1,2,3,3,3,3)		Soft dark greenish grey and dark brown slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse, angular to rounded quartz, brick, ash and limestone. (LANDFILL - MADE GROUND)	3				
3.00 - 3.45	D								
4.00	SPT	N=19 (8,4,5,5,4,5)			4				
4.00 - 4.45	D								
5.00	SPT	N=8 (1,2,2,2,2,2)			5				
5.00	ES								
5.00 - 5.45	D								
6.00	D				6				
6.50	SPT	N=16 (1,3,5,5,3,3)							
6.50 - 6.95	D				7				
7.50	D								
7.50	ES			... At 7.50m bgl: Gravel of furnace slag with sulphurous odour encountered.					
8.00	SPT	N=9 (1,2,3,1,2,3)			8				
8.00 - 8.45	D								
9.00	D				9				
9.00	ES								
9.50	SPT	N=15 (3,3,3,4,4,4)			9.60		54.36		
9.50 - 9.95	D			Firm dark brown and grey CLAY. (KELLAWAYS CLAY MEMBER)					
9.60 - 10.50	B				10				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 10.56m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. Response zone between 3.00m bgl and 9.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-106**  
Page No. 2 of 2

Method: Cable Percussion	Date(s): 05/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501408.26, 278325.57	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 63.96m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
10.50	SPT	50/10mm (25,50)		Firm dark brown and grey CLAY. (KELLAWAYS CLAY MEMBER)	10.50	(0.90)	53.46		
10.50 - 10.56	D			Grey LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) End of Borehole at 10.56m	10.56	(0.06)	53.40		
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 10.56m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 9.00m bgl. Response zone between 3.00m bgl and 9.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-107**

Page No. 1 of 1

Method: Cable Percussion	Date(s): 24/06/2021	Logged By: SP	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501531.33, 278258.74	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 61.90m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30	ES			Soft light greyish brown slightly gravelly CLAY with many rootlets. Gravel is fine to coarse, sub-angular to angular flint, chalk sandstone and brick. (TOPSOIL - MADE GROUND)	0.30	(0.30)	61.60		
0.40	D								
0.50 - 1.00	B			Soft orange brown sandy slightly gravelly CLAY. Gravel is fine to medium, angular to sub-angular flint, chalk, sandstone and brick. (LANDFILL - MADE GROUND)	0.70	(0.40)	61.20		
1.00	ES			Soft grey and brown mottled light grey and dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium, rounded to sub-angular flint and chalk. (LANDFILL - MADE GROUND)					
1.20	SPT	N=9 (2,2,2,2,2,3)							
1.20 - 1.65	D								
2.00	SPT	N=4 (0,0,0,1,1,2)							
2.00 - 2.45	D								
3.00	SPT	N=7 (2,1,1,1,2,3)		... At 3.0m bgl: Timber.					
3.00 - 3.45	D								
5.00	SPT	N=11 (3,2,1,2,3,5)		Firm light brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular chalk and brick. (LANDFILL - MADE GROUND)	5.00	(4.30)	56.90		
5.00 - 5.45	D								
6.00	D								
6.50	SPT	N=12 (3,3,3,3,3,3)		... At 6.50m bgl: Brown and blue grey.					
6.50 - 6.95	D								
7.50	D			... At 7.50m bgl: Soft.					
8.00	SPT	N=9 (1,1,1,2,3,3)							
8.00 - 8.45	D								
8.50 - 9.40	B								
9.40	D				9.40		52.50		
9.50	SPT	50/10mm (25,50)		Very stiff dark grey slightly sandy CLAY with frequent shells. (KELLAWAYS CLAY MEMBER)	9.50	(0.10)	52.40		
9.50 - 9.53	D			Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)	9.54	(0.04)	52.36		
				End of Borehole at 9.53m	10				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.53m bgl on limestone. 3) Gas and groundwater monitoring pipe installed to 9.50m bgl. Response zone between 1.50m bgl and 9.50m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	





Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CBH-110**

Page No. 1 of 1

Method: Cable Percussion	Date(s): 07/07/2021	Logged By: JM	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501430.73, 278540.62	Checked By: CV	Flush:
Hydrock Project No: C-18443-C	Ground Level: 63.53m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.00	ES			Soft dark brown slightly gravelly CLAY with frequent rootlets. Gravel is fine to coarse, angular to sub-rounded flint, brick, ironstone and limestone. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.23		
0.27	ES								
0.30	D			Soft to firm dark brown and orange brown sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded limestone and chalk with occasional shell fragments. (LANDFILL - MADE GROUND)		(0.90)			
0.70 - 1.20	B								
1.20	SPT	N=9 (1,1,2,2,2,3)		Firm brown and grey slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-rounded flint, brick, ironstone and chalk. (LANDFILL - MADE GROUND)	1.20		62.33		
1.20 - 1.65	D								
1.20 - 2.00	B								
2.00	SPT	N=8 (0,1,2,2,2,2)			2				
2.00 - 2.45	D						(2.80)		
3.00	SPT	N=12 (1,2,3,2,4,3)			3				
3.00	ES								
3.00 - 3.45	D								
4.00	SPT	N=4 (0,0,1,1,1,1)		Soft bluish grey and orange brown slightly silty slightly gravelly CLAY. Gravel is fine to coarse, angular to sub-angular limestone, brick and glass. (LANDFILL - MADE GROUND)	4		59.53		
4.00 - 4.45	D								
5.00	SPT	N=5 (1,1,1,1,1,2)			5				
5.00	ES								
5.00 - 5.45	D					(2.50)			
6.00	D				6				
6.50	SPT	N=4 (1,3,1,1,1,1)		Soft grey and brown slightly silty slightly gravelly CLAY with mild hydrocarbon odour and occasional specks of selenite. Gravel is fine to coarse, angular brick and chalk. (LANDFILL - MADE GROUND)	6.50		57.03		
6.50	ES								
6.50 - 6.95	D								
7.50	D					(1.80)			
8.00	SPT	N=20 (3,3,5,5,5,5)			8				
8.00 - 8.45	D								
8.50 - 9.50	B			Medium dense to dense orangish brown gravelly SAND. Gravel is fine to coarse, angular to sub-rounded sandstone and siltstone. (KELLAWAYS SAND MEMBER) Stiff mottled greyish brown and blueish grey slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded sandstone, chalk, ironstone and limestone. (KELLAWAYS CLAY MEMBER)	8.30	(0.20)	55.23		
					8.50		55.03		
					9	(1.00)			
9.50	SPT	50/20mm (25,50)		Grey LIMESTONE. (CORNBURASH LIMESTONE FORMATION)	9.50		54.03		
9.50 - 9.59	D					9.59	(0.09)	53.94	
					10				

Progress and Observations									Chiselling			General Remarks: 1) Inspection pit dug to 1.20m bgl. 2) Borehole terminated on SPT refusal at 9.59m bgl. 3) Gas and groundwater monitoring pipe installed to 8.00m bgl. Response zone between 2.00m bgl and 8.00m bgl. 4) ER = 62%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP206

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Method: Cable Percussion	Date(s): 23/11/2021	Logged By: TB	Drilled By:
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501477.07, 278247.79	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 63.67m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Firm dark brown slightly gravelly sandy CLAY with occasional roots up to 2mm diameter. Gravel is angular to rounded fine to coarse of flint and chalk. Sand is fine to medium. (TOPSOIL - MADE GROUND)	0.30	(0.30)	63.37		
0.30	ES								
0.30 - 1.00	B			Stiff grey brown slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of chalk and flint. (LANDFILL - MADE GROUND)		(0.90)			
0.30 - 1.00	B								
0.60	ES				1				
1.20	SPT	N=12 (2,2,3,3,3,3)		Stiff dark brown and dark grey slightly gravelly sandy CLAY. Gravel is angular to rounded fine to coarse of chalk, flint and brick. (LANDFILL - MADE GROUND)	1.20		62.47		
1.20 - 1.65	D								
1.20 - 2.00	B								
1.60	ES								
2.00	SPT	N=8 (1,2,2,2,2)			2				
2.00	ES								
2.00 - 2.45	D								
2.00 - 3.00	B								
2.00 - 3.00	B					(2.80)			
2.60	ES								
3.00	SPT	N=12 (1,2,3,3,3,3)			3				
3.00	ES								
3.00 - 3.45	D								
3.00 - 4.00	B								
3.00 - 4.00	B								
3.60	ES								
4.00	SPT	N=17 (1,2,3,3,4,7)		Stiff grey brown and dark grey slightly gravelly sandy CLAY. Gravel is angular to rounded fine to coarse of chalk, flint and brick. Sand is fine to medium. (LANDFILL - MADE GROUND)	4		59.67		
4.00	ES								
4.00 - 4.45	D								
4.00 - 5.00	B								
4.00 - 5.00	B								
4.60	ES								
5.00	SPT	N=9 (1,2,2,2,2,3)			5				
5.00 - 5.45	D								
5.50	ES								
5.50 - 6.50	B								
5.50 - 6.50	B								
5.60	ES								
6.50	SPT	N=8 (1,2,2,2,2,2)			7		56.67		
6.50 - 6.95	D								
6.60	ES								
6.60	ES								
7.00 - 8.00	B			Firm grey brown and dark grey slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse of chalk, flint and brick. Sand is fine. (LANDFILL - MADE GROUND)					
7.00 - 8.00	B								
7.60	ES								
8.00	SPT	N=8 (1,1,2,2,2,2)			8				
8.00 - 8.45	D								
8.50 - 9.50	B								
8.60	ES								
9.50	SPT	N=13 (1,1,2,3,4,4)			10				
9.50	ES								
9.50 - 10.50	B								
9.50 - 10.50	B								

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 10.60m, borehole terminated. 3. Gas and groundwater monitoring well installed, 4. Response zone from 1.00m to 10.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	23/11	0000	10.60	9.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
**CP206**  
Page No. 2 of 2

Method: Cable Percussion	Date(s): 23/11/2021	Logged By: TB	Drilled By:
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501477.07, 278247.79	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 63.67m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
9.50 - 9.95 9.60	D ES			Very stiff grey CLAY. (KELLAWAYS CLAY MEMBER)		(0.50)			
10.60	SPT	50/5mm (25,50)		LIMESTONE. (CORNBRAsh LIMESTONE FORMATION) <small>End of Borehole at 10.60m</small>	10.50 10.60	(0.10)	53.17 53.07		
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Progress and Observations									Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 10.60m, borehole terminated. 3. Gas and groundwater monitoring well installed, 4. Response zone from 1.00m to 10.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	Duration (HH:MM)	
												Groundwater: No Groundwater seepages observed <small>Logged in general accordance with BS5930:2015</small>



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP208

Page No. 1 of 1

Method: Cable Percussion	Date(s): 18/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501511.81, 278441.64	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 62.00m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30 0.30 - 1.00	ES B			Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to sub angular fine to coarse of limestone and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	61.70		
1.00 1.20 1.20 - 1.65 1.20 - 2.00	ES SPT D B	N=6 (1,1,1,1,2,2)		Firm brown gravelly CLAY. Gravel is angular to sub rounded fine to coarse of flint and limestone. (LANDFILL - MADE GROUND)	1.00	(0.70)	61.00		
2.00 2.00 2.00 - 2.45 2.00 - 3.00	SPT ES D B	N=8 (1,1,1,2,2,3)		Firm to stiff grey and brown mottled gravelly CLAY. Gravel is angular to rounded fine to coarse of flint and chalk (LANDFILL - MADE GROUND)	2.00	(2.00)			
3.00 3.00 3.00 - 3.45 3.00 - 4.00	SPT ES D B	N=11 (3,5,5,2,2,2)		Soft to firm blackish grey, grey and brown mottled slightly sandy gravelly CLAY with occasional rootlets and partially decomposed organic material. Gravel is angular to sub angular fine to coarse of sandstone, chalk, limestone (LANDFILL - MADE GROUND)	3.00		59.00		
4.00 4.00 4.00 - 4.45 4.00 - 5.00	SPT ES D B	N=9 (1,1,2,2,2,3)		Firm blackish grey mottled grey slightly sandy gravelly CLAY with low cobble content. Gravel is sub angular to sub rounded fine to coarse of chalk, flint bricks and limestone. Cobbles are angular of limestone. (LANDFILL - MADE GROUND)	4.00	(2.00)			
5.00 5.00 5.00 - 5.45 5.00 - 6.00	SPT ES D B	N=9 (1,2,2,3,2,2)		Firm orange brown slightly sandy clay. (KELLAWAYS SAND MEMBER)	5.00		57.00		
6.50 6.50 - 6.95 7.00 - 8.00	SPT D B	N=25 (14,7,9,7,7,2)		Firm grey CLAY. (KELLAWAYS CLAY MEMBER)	6.80	(1.80)	55.20		
8.00 8.00 - 8.45 8.00 - 9.00	SPT D B	N=19 (5,5,4,5,5,5)		LIMESTONE (CORNBRASH LIMESTONE FORMATION)	8.00	(0.85)	54.00		
9.00	SPT	50/50mm (13,12,50)		End of Borehole at 9.00m	9.00	(0.15)	53.00		

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 9.00m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 9.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	18/11	0800	9.00	6.00	150		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015



Project: Land Adjacent Haldens Parkway Thrapston

Borehole No  
CP209

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Method: Cable Percussion	Date(s): 17/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501393.06, 278402.11	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 62.96m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.30	ES			Firm brown gravelly CLAY with occasional rootlets (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.66		
0.30 - 1.00	B			Firm brown slightly sandy gravelly CLAY. Gravel is angular to sub rounded fine to coarse of chalk, brick, limestone and flint. (LANDFILL - MADE GROUND)		(0.70)			
1.00	ES			Firm grey gravelly CLAY. Gravel is sub angular fine to medium of chalk. (GLACIAL TILL)	1.00		61.96		
1.20	SPT	N=13 (2,2,3,3,3,4)							
1.20 - 1.65	D								
1.20 - 2.00	B								
1.20 - 4.00	B								
2.00	SPT	N=10 (1,1,2,2,3,3)			2	(2.00)			
2.00	ES								
2.00 - 2.45	D								
2.00 - 3.00	B								
3.00	SPT	N=19 (2,2,3,4,6,6)		Firm to stiff grey gravelly CLAY with rare medium sized selenite crystals and occasional shell fossils. Gravel is angular to sub rounded fine to coarse of flint (GLACIAL TILL)	3		59.96		
3.00	ES								
3.00 - 3.45	D								
3.00 - 4.00	B								
4.00	SPT	N=48 (6,8,9,11,12,16)		Dense orangish brown gravelly fine to coarse SAND. Gravel is sub angular to rounded fine to coarse of flint. (GLACIOFLUVIAL DEPOSITS)	4		58.96		
4.00	ES								
4.00 - 4.45	D								
4.00 - 4.45	D								
4.00 - 5.00	B								
4.00 - 8.00	B								
5.00	SPT	N=42 (7,8,9,11,10,12)			5	(2.00)			
5.00	ES								
5.00 - 6.00	B								
6.00	SPT	N=32 (1,3,5,7,9,11)		Dense brown very gravelly medium to coarse SAND. Gravel is angular to sub angular fine to coarse of limestone and flint (GLACIOFLUVIAL DEPOSITS)	6		56.96		
6.50	SPT								
7.00 - 8.00	B				7	(2.00)			
8.00	SPT	54/275mm (5,9,11,12,14,17)		LIMESTONE (CORNBRAsh LIMESTONE FORMATION)	8	(0.28)	54.96		
8.00	D				8.28		54.68		
8.00	D								
8.00	ES								
					9				
					10				

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 8.275m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 4.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	17/11	0800	9.10	4.00	150		N/A				

Groundwater: No Groundwater seepages observed



Method: Cable Percussion	Date(s): 18/11/2021	Logged By: TB	Drilled By: RP Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501486.70, 278496.13	Checked By: CV	Flush: N/A
Hydrock Project No: C-18443-C	Ground Level: 62.59m OD		Scale: 1:50

Samples / Tests			Water-Strikes	Stratum Description	Depth m	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
Depth (m)	Type	Results							
0.10	ES			Soft to firm brown slightly sandy gravelly CLAY with occasional rootlets. Gravel is angular to sub angular fine to coarse of limestone and flint (TOPSOIL - MADE GROUND)	0.30	(0.30)	62.29		
0.30 - 1.00	B				Firm brown gravelly CLAY. Gravel is angular to sub rounded fine to coarse of flint and limestone. (LANDFILL - MADE GROUND)				
1.20	SPT	N=7 (1,1,1,1,2,3)				(1.70)			
1.20	ES								
1.20 - 1.65	D								
1.20 - 2.00	B								
2.00	SPT	N=22 (2,4,5,6,7,4)		Firm to stiff grey mottled brown gravelly CLAY. Gravel is angular to rounded fine to coarse of flint and chalk. (LANDFILL - MADE GROUND)	2.00		60.59		
2.00	ES								
2.00 - 2.45	D								
2.00 - 3.00	B								
3.00	SPT	N=7 (1,1,1,2,2,2)				(2.00)			
3.00	ES								
3.00 - 3.45	D								
3.00 - 4.00	B								
4.00	SPT	N=12 (1,2,3,3,3,3)		Firm grey mottled light brown gravelly CLAY with occasional rootlets and rare bands of blackish grey organic clay. Gravel is sub angular to rounded fine to coarse of chalk and flint. (LANDFILL - MADE GROUND)	4.00		58.59		
4.00	ES								
4.00 - 4.45	D								
4.00 - 5.00	B								
5.00	SPT	N=10 (1,1,2,2,3,3)				(2.00)			
5.00 - 5.45	D								
5.50	ES								
5.50 - 6.50	B								
6.50	SPT	N=13 (2,2,3,3,3,4)		Firm to stiff brown mottled grey gravelly CLAY with rare rootlets. Gravel is sub angular to rounded fine to coarse of chalk, flint and limestone. (LANDFILL - MADE GROUND)	6.00		56.59		
6.50 - 6.95	D								
7.00	ES								
7.00 - 8.00	B								
8.00	SPT	N=18 (4,4,4,5,5,4)		Medium dense brown sandy GRAVEL. Sand is coarse. Gravel is sub angular to sub rounded fine to coarse of limestone and flint. (GLACIOFLUVIAL DEPOSITS)	8.00		54.59		
8.00	ES								
8.00 - 8.45	D								
8.00 - 9.00	B								
9.00	SPT	50/95mm (8,11,28,22)		LIMESTONE (CORNBRAsh LIMESTONE FORMATION) End of Borehole at 9.10m	9.00		53.59		
9.00	ES				9.10	(0.10)	53.50		

Progress and Observations								Chiselling			General Remarks: 1. Hand dug pit to 1.20m. 2. Reached refusal (SPT n=50) at 9.10m, borehole terminated. 3. No groundwater entries noted during drilling. 4. Gas and groundwater monitoring well installed, response zone from 1.00m to 8.00m. 5. Er = 62%.
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	From (m)	To (m)	
Dando 2000	18/11	0800	9.10	9.10	7		N/A				

Groundwater: No Groundwater seepages observed  
Logged in general accordance with BS5930:2015

Method: Dynamic Sampled & Rotary Cored	Date(s): 24/06/2021 - 25/06/2021	Logged By: SP	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501549.66, 278135.91	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 63.21m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
1.20 - 3.00	1.50	SPT	N=13 (2,2,2,3,3,5)	100					Stiff light brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse bricks. (LANDFILL - MADE GROUND)	1.20	62.01			
									Soft dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse angular flint, brick, sandstone and concrete. (LANDFILL - MADE GROUND)	1.40	(0.20)	61.81		
3.00 - 5.00	4.50	SPT	N=0 (0,0,0,0,0,0)	88					Stiff light brown mottled brown and grey slightly gravelly slightly sandy CLAY. Gravel is fine to coarse angular to sub-rounded flint, chalk and brick. (LANDFILL - MADE GROUND)	2.40	60.81			
									Very soft brown sandy slightly gravelly CLAY with decomposing plant odour. Gravel is fine to medium angular flint. (LANDFILL - MADE GROUND) ... From 3.0m to 3.7m bgl: No recovery.	3.70	(1.30)	59.51		
5.00 - 7.00	6.00	SPT	N=0 (0,0,0,0,0,0)	86					Stiff light brown mottled dark brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse angular to sub-rounded flint, chalk and bricks. (LANDFILL - MADE GROUND)					
									... Becoming slightly sandy and firm from 5.0m bgl. ... From 5.00m to 7.00m: Becoming soft to firm.					
7.00 - 9.00	7.50	SPT	N=7 (1,2,1,2,2,2)	86					... At 6.00m bgl: becoming soft and sandy with angular to subrounded fine to coarse flint and brick.					
									... From 9.00m - 10.00m bgl: Becoming soft to firm.					
9.00 - 11.00	9.00	SPT	N=14 (3,6,4,3,4,3)						Very stiff dark grey CLAY with abundant sand sized shells. (LANDFILL - MADE GROUND)	9.60	53.61			

Continued on Next Sheet

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 3.00m bgl then rotary cored to 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 13.00m bgl. Response zone between 11.00m bgl and 13.00m bgl. 4) ER = 59%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
							Water	



Method: Dynamic Sampled & Rotary Cored	Date(s): 24/06/2021 - 25/06/2021	Logged By: SP	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501549.66, 278135.91	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 63.21m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
11.00 - 12.00	10.50	SPT	50/50mm (2,7,50)	73					Very stiff dark grey CLAY with abundant sand sized shells. (LANDFILL - MADE GROUND)	11.00	(1.60)		[Cross-hatched pattern]	[Black bar]
										11.20		52.01		
12.00 - 13.50				95	36	13			Strong grey LIMESTONE. Fractures are horizontal, planar with no infill. (CORNBRAsh LIMESTONE FORMATION) Very to extremely stiff grey CLAY with abundant shells. (CORNBRAsh LIMESTONE FORMATION) Strong grey LIMESTONE. Fractures are horizontal, planar with no infill. (CORNBRAsh LIMESTONE FORMATION) Very to extremely stiff grey CLAY with abundant shells. (BLISWORTH CLAY FORMATION)	11.50	(0.30)	51.71	[Brick pattern]	[Black bar]
										11.60	(0.10)	51.61		
										11.92	(0.32)	51.29		
13.50 - 14.50	14.50	SPT	50/200mm (7,10,14,20,16)	94	87	37			Very stiff dark green CLAY with medium gravel sized pyritic sandstone with shells. (BLISWORTH CLAY FORMATION)	12.35	(0.43)	50.86	[Horizontal line pattern]	[Black bar]
										12.35		50.86		
				100					... From 13.50m bgl: Dark grey and dark green.		(2.15)			
									End of Borehole at 14.50m	14.50		48.71		

Progress and Observations

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 3.00m bgl then rotary cored to 9.00m bgl. 3) Gas and groundwater monitoring pipe installed to 13.00m bgl. Response zone between 11.00m bgl and 13.00m bgl. 4) ER = 59%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)



Method: Dynamic Sampled & Rotary Cored	Date(s): 29/06/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501569.83, 278529.10	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 59.85m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth (m)	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
0.20 - 0.30	ES B								Firm slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is sub-angular to sub-rounded fine and medium sandstone and flint. (TOPSOIL - MADE GROUND)	0.30	(0.30)	59.55		
0.30 - 0.80	ES								Orangish brown slightly clayey gravelly SAND. Gravel is angular to sub-rounded limestone flint sandstone and brick. (LANDFILL - MADE GROUND)	0.70	(0.40)	59.15		
0.80 - 1.20	D SPT	N=10 (1,1,2,2,3,3)							Firm dark grey mottled orangish brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse chalk limestone sandstone and brick. (LANDFILL - MADE GROUND)	1.20	(0.50)	58.65		
1.20 - 1.30	D								Firm orangish brown sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse flint chalk and limestone. (GLACIOFLUVIAL DEPOSITS)	1.50	(0.30)	58.35		
1.30 - 1.60	D								Orangish brown slightly clayey gravelly SAND. Gravel is sub-rounded fine and medium sandstone. (KELLAWAYS SAND MEMBER)	2.00	(1.00)	57.35		
1.60 - 2.00	SPT	N=19 (1,1,2,4,6,7)							Orangish brown SAND with rare gravels. Gravel is sub-rounded fine sandstone. (KELLAWAYS SAND MEMBER)	2.20				
2.00 - 2.20	D									2.50				
2.20 - 2.50	SPT	N=33 (3,7,7,7,10,9)								3.00				
2.50 - 3.00	B									4.00				
3.00 - 4.00										4.10				
4.00 - 4.20	SPT	N=11 (1,2,2,3,3,3)							Firm orangish brown sandy CLAY. (KELLAWAYS CLAY MEMBER)	4.10				
4.20 - 4.40	D								Firm grey slightly sandy CLAY. (KELLAWAYS CLAY MEMBER)	4.35	(0.25)	55.50		
4.40 - 5.00	D								... At 4.50m bgl: HSV 71/22 Firm light grey very sandy CLAY. (KELLAWAYS CLAY MEMBER)	4.60	(0.25)	55.25		
5.00 - 5.50										5.00				
5.50 - 7.00	SPT	N=26 (1,3,3,6,6,11)							Stiff fissured dark grey CLAY with occasional shell fragments. Fissure are extremely closely spaced randomly oriented smooth. (KELLAWAYS CLAY MEMBER)	5.70				
5.50 - 6.40	C									6.40				
6.40 - 6.50	D									6.50				
6.50 - 7.00	B									6.90				
7.00 - 8.50	SPT	50/0mm (25)							Weak grey Shelly LIMESTONE. Fractures are extremely closely spaced horizontal open planar rough. (CORNBRASH LIMESTONE FORMATION)	7.00				
8.50 - 10.00									... At 7.45m bgl: Orange weathering present.	8.00				
										9.20				
									Stiff dark grey CLAY with frequent shell fragments. (BLISWORTH CLAY FORMATION)	9.20				
										9.70				
									Firm greenish grey CLAY. (BLISWORTH CLAY FORMATION)	9.70	(0.50)	50.15		
										10.00	(0.30)	49.85		
									End of Borehole at 10.00m	10.00				

Progress and Observations									General Remarks:
Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)	
	29/06	0905	10.00	2.50	152	3.00	Water		1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 4.0m bgl. Rotary core to 10.0m bgl. 3) Gas and groundwater monitoring pipe installed to 9.50m bgl. Response zone between 6.50m bgl to 9.50m bgl. 4) ER = 73%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.

Method: Dynamic Sampled & Rotary Cored	Date(s): 29/06/2021 - 30/06/2021	Logged By: MA	Drilled By: Marshall Drilling
Client: Equites Newlands (Thrapston East) Ltd	Co-ords: 501476.72, 278321.77	Checked By: CV	Flush: Water
Hydrock Project No: C-18443-C	Ground Level: 62.64m OD		Scale: 1:50

Sample/Core Run (m) Smpl. Ø (mm) Smpl. rec. %	Samples / Tests			Mechanical Log				Water-Strikes	Stratum Description	Depth m bgl	Thickness (m)	Level m OD	Legend	Instrumentation / Backfill
	Depth (m)	Type	Results	TCR	SCR	RQD	Min If. Mean Max							
1.20 - 1.50 100mm 100% rec	0.20	ES							Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine and medium brick flint and sandstone. (TOPSOIL - MADE GROUND)	0.40	(0.40)	62.24		
	0.50	ES							Firm orangish brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse flint limestone and brick. (LANDFILL - MADE GROUND)	0.80	(0.40)	61.84		
	1.20 - 1.50	L							Stiff brownish grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse limestone flint chalk and brick. (LANDFILL - MADE GROUND)					
	1.50	SPT	N=14 (1,1,2,2,7,3)						... From 1.50m bgl: Becoming firm		(2.20)			
	1.50 - 2.50	B												
	3.00	SPT	N=25 (1,1,2,2,7,14)											
	3.20	D							Stiff orangish brown mottled dark grey slightly sandy gravelly CLAY. Gravel is angular fine to coarse sandstone and flint. (LANDFILL - MADE GROUND)	3.45	(0.45)	59.19		
	3.60	ES							Soft grey and black mottled slightly gravelly slightly sandy CLAY. Gravel is angular to sub-rounded fine and medium flint and chalk. (LANDFILL - MADE GROUND)	3.70	(0.25)	58.94		
	3.80	D							Stiff brownish grey slightly gravelly CLAY. Gravel is angular to sub-rounded fine to coarse flint chalk sandstone and brick. (LANDFILL - MADE GROUND)	4.00	(0.30)	58.64		
	4.20	D							Stiff brownish grey gravelly CLAY. Gravel is angular to sub-rounded fine to coarse limestone flint chalk and brick. (LANDFILL - MADE GROUND)	4.50	(0.50)	58.14		
5.50 - 5.70 100mm 100% rec	4.50	SPT	N=17 (2,1,3,3,6,5)						Stiff greyish brown with occasional patches of black slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse brick flint limestone sandstone and chalk. (LANDFILL - MADE GROUND)		(1.50)			
	5.50 - 5.70	C												
	5.50 - 5.70	L												
	5.90	D												
	6.00	SPT	N=7 (2,1,1,1,2,3)						Soft greyish brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse flint sandstone limestone chalk and brick with rare Plastic and timber. (LANDFILL - MADE GROUND)	6.00		56.64		
9.50 - 10.50	6.50	D												
	7.50	SPT	N=15 (2,4,3,2,5,5)						... At 7.40m bgl: HSV 42/10		(2.85)			
	8.00	D							... From 7.80m bgl: Becoming firm					
	8.90	D							... At 8.50m bgl: HSV 51/18	8.85		53.79		
	9.00	SPT	N=26 (5,8,6,4,7,9)						Soft orangish brown very sandy CLAY with rare gravel. Gravel is sub-angular medium limestone. (GLACIOFLUVIAL DEPOSITS)	9.20	(0.35)	53.44		
	9.40	D							Orangish brown mottled dark brown laminated clayey SAND. (KELLAWAYS SAND MEMBER)		(0.80)			
	9.50 - 10.50	C					NI							

Continued on Next Sheet

Progress and Observations

Rig	Date	Time	Borehole Depth (m)	Casing Depth (m)	Casing Diam.(mm)	Water Depth (m)	Flush Type	Returns (colour)
	29/06	0845	13.00	9.00	168	4.00	Water	
	29/06	1245						

General Remarks:

1) Inspection pit dug to 1.20m bgl. 2) Dynamic sampled to 9.0m bgl. Rotary core to 13.5m bgl. 3) Gas and groundwater monitoring pipe installed to 12.50m bgl. Response zone between 9.50m bgl to 12.00m bgl. 4) ER = 59%. 5) Clean drilling undertaken with bentonite seal at base of landfill prior to extending into natural soils.



# Appendix C Method Statement for Pressure Grouting

## Method Statement

<b>Project Reference</b>	<b>Q6223</b>	<b>Site Location</b>	<b>Northamptonshire</b>		
<b>Preparation Date</b>	<b>9-9-22</b>	<b>Status</b>	<b>New</b>		<b>Revised</b> <input checked="" type="checkbox"/>
<b>Developed by</b>	<b>Position</b>	<b>Reviewed by</b>	<b>Position</b>		
Sarah van Enk	Managing Director	John Lawrence	Operations Director		

MS Ref.	Work Activity	Key Equipment	Standard Materials
DEC-MS001	<b>Well Decommissioning By Pressure Grouting</b>	B1 Manual grout pump or diesel driven mechanical grout mixer/pump; tremmie pipe and hoses; expandable bungs (various sizes)	BentogROUT Cement Sand/ballast

<b>Aim</b>	To decommission obsolete groundwater monitoring, abstraction or remediation wells.
<b>Result</b>	Removal of potential contamination pathway via existing well by sealing up and reinstating the ground surface.

### Methodology

Depending on the specific requirements of the site and specified scope of works a number of different activities can be combined to enable decommissioning of a well and reinstatement to the appropriate standard.

#### Mixing of Grout

The proposed bentonite grout (supplied pre-mixed) is mixed with an appropriate volume of water to produce the desired consistency. Different suppliers have different grout formulations and therefore the quantity of water required to achieve a grout slurry varies. This grout is mixed within a large mixing vessel using a manual paddle mixing device within the body of the B1 grout pump or diesel driven grout pump (e.g. Putzmeister P11) until a 'porridge-like' consistency is reached.

#### Grouting of Well

The grout is pumped into the wells using a manual or mechanical pump. The grout is pumped into the well from the base upwards, delivered by a rigid narrow diameter (~32mm or similar, depending on well diameter) tremmie-pipe. This HDPE tubing is joined together by flush threads. The HDPE pipe is extended down the well until a depth just above the base is reached. The top length of pipe is then attached securely to the hose of the grout pump and the grout mixture slowly pumped into the well until the grout comes out of the top. The thinner, watery component of the grout mix is forced through the well screen into the smaller spaces/pores while the thicker component fills large gaps in the gravel pack/formation. At this stage the pressure delivered at the base of the well is equivalent to the hydraulic head of grout above.

The tremmie pipe is then extracted from the well and the well topped up with grout directly from the end of the pipe. The hose is then disconnected from the tremmie pipe and connected to an expandable bung or tight fitting cap. Pumping then continues with increasing pressure to force the grout into any remaining open spaces until the well accepts no further volume of grout. The well is left to rest and is monitored, and topped up further if required.

#### Cover Removal & Reinstatement

If required the existing well cover can be left in situ or can be removed either by:

- concrete coring (over-coring of the existing cover)
- concrete breaking (use of breaker hammer to remove cover)
- concrete/tarmac sawing at appropriate dimensions

Depending on the location of the decommissioned well, the surface can be reinstated using:

- basic concrete plug (if concrete is outside areas of traffic movements or if decommissioning is occurring prior to site redevelopment etc.)
- reinforced concrete reinstatement with compacted sub-base
- Cold Lay tarmac reinstatement edge and joint sealant if required

Cover removal and surface reinstatement methodologies are described in separate method statements.

## Appendix D BentogROUT Technical Data Sheet

# BENTOGROUT®

## REMEDIAL WATERPROOFING INJECTION GROUT

### DESCRIPTION

BENTOGROUT is a high-solids grout consisting of a proprietary blend of bentonite and polymers formulated for sealing water leaks in existing below-ground structures. BENTOGROUT is pumped in a fluid state adjacent to the exterior of the structure where it sets into a gelatinous state forming a waterproofing barrier. BENTOGROUT can be used to seal leaks in concrete, masonry block, brick, and stone foundations.

Installation is fast and easy. Simply mix BENTOGROUT with water and pump it adjacent to the exterior of the building. There it solidifies and expands slightly to form a waterproofing barrier. It can be pumped from above-ground outside the structure without excavating or from the interior of the structure through drilled holes in the walls or slabs. Limited jobsite space is required for injection.

Unlike many remedial waterproofing products that are applied as a surface treatment to the interior of the foundation, BENTOGROUT is applied to the exterior of the building where it stops the water before it can penetrate the structure and further corrode the reinforcing steel. The thick BENTOGROUT barrier covers the exterior surface of the structure filling voids in the adjacent soil and bridging over small cracks in the concrete. Also, BENTOGROUT has the ability to self-seal if the structure settles and therefore its performance is not limited by future hair-line cracking in the concrete. BENTOGROUT does not shrink or dry out in sub-surface soil formations and is not affected by freeze/thaw cycling. It remains flexible, maintains a putty-like consistency over time and retains a swell potential to seal itself off. And since BENTOGROUT primarily consists of natural minerals it is friendly to the environment and will last the life of the structure.

### APPLICATIONS

- Foundation walls
- Foundation slabs
- Tunnels
- Sheet piling interlock
- Concrete and masonry foundation walls
- Manholes
- Utility vaults

### PACKAGING

BENTOGROUT is packaged in 25 kg, multi-wall bags; 40 bags per pallet. Store in a dry, moderate temperature location.

### PREPARATION

Locate and mark all below-ground electrical, sewer and mechanical service lines prior to injection operations. A successful operation requires the installation to occur without mechanical failure of the BENTOGROUT mixing/pumping equipment. Ensure that all required materials are available and in working condition prior to beginning the application. If pumping from the interior of the building, drilling operations should be completed prior to mixing BENTOGROUT.

**Exterior Injection Head:** The applicator will need to fabricate an "Injection Head" to connect the pump hose to the injection pipe. An example of this "Injection Head" assembly is pictured below. Figure 1 illustrates an Injection Head assembly with a quick disconnect fitting, shut off valve, three way tee and end cap. On the bottom of the three way tee is the injection pipe (length to be determined by project depth requirements; typically 2,4 m–3,0 m). The Injection Head will also serve as a leverage device to hold onto when the applicator is inserting the injection pipe into the soil substrate.

**Mix Water:** Use only clean water; approximately 53 litres. BENTOGROUT mixes best in cool water with a pH between 8 and 10. High temperature water can accelerate the set up time of the grout.

**Equipment:** CETCO recommends the use of the CETCO BENTOGROUT Pump and Mixer as the equipment is designed specifically for BENTOGROUT. Use mixing equipment capable of producing continuous shear and agitation movement. CETCO BENTOGROUT Equipment is comprised of progressive cavity pumps with vertical paddle and horizontal ribbon blender type mixers. It is not recommended to use a piston style pump due to the high spikes in back-pressure generated.

**Caution:** Pumping any material under pressure can cause lifting or movement of adjacent structures.



CETCO BENTOGROUT Pump, Mixer and Accessories

## BEN TOGROUT® REMEDIAL WATERPROOFING INJECTION GROUT

The CETCO BEN TOGROUT Pump and Mixer are separate wheel mounted units that weigh 77 kg and 95 kg respectively; each are ran by 1 HP electric motors (Figure 2). The CETCO BEN TOGROUT Pump consists of a rotor-stator ribbon pump that is capable of pumping a consistent 11 litres per minute and has a 68 litres hopper. The CETCO BEN TOGROUT Mixer is able to mix a 25 kg bag of BEN TOGROUT in approx. 8 minutes with its three mixing paddles and has a mixing capacity of 83 litres. Both units are completely electric and only require a 120 V, 15 AMP current (standard GFI outlet). For information or to purchase the CETCO BEN TOGROUT Pump, Mixer and accessories, contact your local CETCO sales representative.

**Pumping Pressures:** BEN TOGROUT is typically pumped at pressures of 0,7 to 5,5 bar. Since there are many jobsite variables, actual pumping pressure will vary. Variables may include, amount of water added to BEN TOGROUT, pump hose diameter and length, resistance at hose-head, substrate material and compaction, etc. For example, in large void areas the pumping pressure may only be 0,7 bar, but as soon as back pressures form the pressure may spike to 7,0 to 14 bar. Watch the pumping pressure closely while installing the BEN TOGROUT. Backoff as the pressure increases. Additionally, a crew member may be stationed inside the structure to monitor the injection. This is especially important with masonry block foundations.

**Pump Hose:** A 25 mm diameter pump hose with a minimum 14 bar pressure rating is recommended. The pump hose should be as short as possible without adversely limiting operations. The longer the hose and the more turns it makes, the greater the pumping pressure decrease at the place of injection.

### INSTALLATION

**Mixing Instructions:** Add 53 litres of fresh water to a motorized mixer and then add a single 25 kg bag of dry BEN TOGROUT to the water. Thoroughly mix for approximately 5–8 minutes until even “oatmeal” consistency. BEN TOGROUT remains pumpable and placeable for 45 minutes after being mixed. After mixing, if pumping is stopped or suspended, use a CETCO ByPass Assembly to redirect the material back into the pump hopper to recycle BEN TOGROUT during a suspended period. Do not allow mixed BEN TOGROUT to stand in hose. It will set up and clog the hose; flush water through equipment if there is a stop in use for 20 minutes or longer.

**Coverage Rate:** Typical installation thickness of BEN TOGROUT is 12 mm or greater. Coverage rates will be affected by injection depth, void areas, soil compaction, material spread, etc. A 25 kg bag of BEN TOGROUT yields 0.06 cubic metres of grout. Estimating a 12 mm thick coverage rate without any void spaces, a 25 kg bag should cover approximately 4,6 sq m. Actual results will vary with each project.

#### Surface Injection From Exterior of Building:

Use 10–19 mm diameter heavy wall steel pipe as injection pipe for BEN TOGROUT placement. Cut the pipe tip at a 45° angle to aid in sinking of the injection pipe.

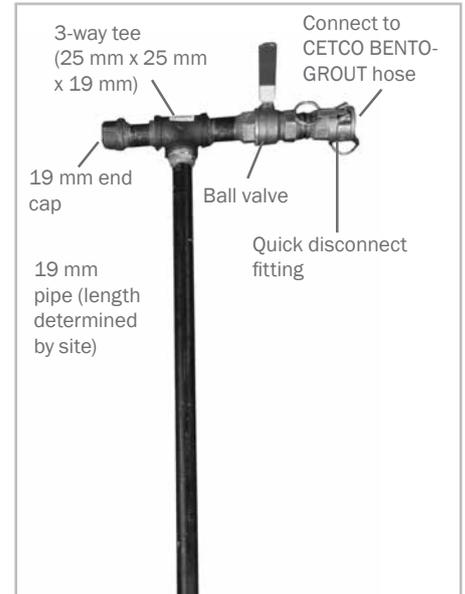


Figure 1: Single Connection Injection Head Assembly

A single pipe can be repeatedly inserted and removed, or numerous pipes can be inserted and than all injected through in sequence.

Insert injection pipe as close as possible to the foundation wall at 0,6 m–1,2 m on centre and push pipe down to the top of the footing or the desired depth. Use a “Tile Rod” or long drill bit to start the first few feet of the injection hole.



Figure 2: CETCO pump and mixer with electric 1HP motor

## BEN TOGROUT® REMEDIAL WATERPROOFING INJECTION GROUT

With a Single Connection Injection Head, use the grout as a drilling medium to assist with sinking the pipe (see Figure 1). For deep depths, it may be necessary to use scaffolding to operate from when first inserting a long pipe.

After sinking the injection pipe to the desired depth, pump BENTOGROUT until it extrudes out at ground or substantial back pressure is achieved. (Caution: Be careful not to inject BENTOGROUT into sub-surface drainage tile.) Continue to pump BENTOGROUT while slowly removing injection pipe. Then move to adjacent injection point and continue process; Injection points are typically 0,6 m to 1,2 m on centre. Cohesive soil conditions will require closer placed injection points while non-cohesive soils may only need injection points placed 1,2 m apart. After the outside of the wall is injected with BENTOGROUT, a second round of injections can take place between previously injected holes to ensure outside is completely coated.

### **Interior Injection Through Slab or Wall:**

Use a 38 mm diameter bit to drill a 150 mm deep starter hole in the concrete (to set CETCO Injection Packer). From 150 mm depth continue drilling through the remaining thickness of the concrete with a 19–25 mm diameter drill bit. Once hole is drilled, insert CETCO Injection Packer with the red rubber gasket completely placed into the 38 mm hole section, then tighten and firmly set Injection Packer with the handle. Install Injection Packer with ball valve in the closed position. Then hook up the CETCO Pressure Gauge and the CETCO Injection Hose to the Injection Packer. Drill the bottom row of wall injection holes as close to the wall/slab joint as possible 1,2 m on centre. Drill the second row 1,2 m up and offset 0,6 m from the bottom row. Drill subsequent rows (as required) in the same pattern to the previous row: 1,2 m up and offset 0,6 m (creating a diamond pattern).

For interior wall injections, begin grout injection at the lowest injection point on the wall and then work upwards. A minimum of two holes should be drilled – one for grout injection and the other for pressure release. Prior to pumping BENTOGROUT, open the ball valve of the Injection Packer and adjacent Injection Packer(s). Then pump BENTOGROUT through Injection Packer until BENTOGROUT begins to flow out of adjacent Injection Packers (with ball valve in open position) or substantial backpressure is achieved. When BENTOGROUT is observed to be flowing out of adjacent CETCO Injection Packers, successful BENTOGROUT flow between Packers has been achieved (void is being filled). Close ball valve of adjacent Injection Packer that BENTOGROUT is flowing out and continue to pump in same Injection Packer until pressure spikes or BENTOGROUT flow stops. Then move to adjacent injection packers and continue same process. Inject BENTOGROUT through each Injection Packer; including adjacent packers with previous BENTOGROUT return flow. Caution: pumping material under pressure can cause lifting or movement of the structure.

After BENTOGROUT injection, leave the CETCO Injection Packers set in the drilled holes for a minimum 24 hours to allow BENTOGROUT to setup. If required, BENTOGROUT can be typically be injected through the same injection points again the next day. Remove the Injection Packer and plug hole with a non-shrink hydraulic cement patch product. Finish interior wall surface per project requirements.

An alternative interior injection method is to use a Single Connection Injection Head (Photo 1) with a short 200 mm heavy wall steel injection pipe for BENTOGROUT placement. Injection pipe tip may require a rubber gasket to provide a tight seal for pump operations.

**Clean Up:** Clean application tools and mixing equipment with water immediately after use. Remove any access BENTOGROUT from ground surface. Caution mixed BENTOGROUT is slippery.

**Precautions:** It is mandatory that the user take the following precautionary measures to protect workers and the public. Avoid inhalation of powder dust. Ensure adequate ventilation. Avoid contact with eyes. Wear protective eye wear at all times. Flush eyes with water if contact occurs. Additional precautions, safety information and first aid treatments are contained on the Material Safety Data Sheet.

**Limitations:** BENTOGROUT is not designed to bridge cracks or gaps larger than 3 mm. Interior surface cracks greater than 3 mm should be surface sealed with cement based patching material to prevent grout extrusion into the structure. BENTOGROUT is not designed as a structural patch. BENTOGROUT is not recommended for above ground or applications that do not provide proper confinement. BENTOGROUT is not suitable for sealing expansion joints.



Mixing BENTOGROUT in CETCO mixer

## BEN TOGROUT® REMEDIAL WATERPROOFING INJECTION GROUT



INTERIOR SURFACE GROUT INJECTION: BENTOGROUT is applied to the inside of the building without excavating the site



INTERIOR THROUGH WALL APPLICATION: BENTOGROUT injected to the exterior of a manhole through pre-drilled holes using a short injection wand



EXTERIOR MASONRY WALL APPLICATION: Inject BENTOGROUT along the exterior of a foundation wall at 600 mm on centre intervals



STRUCTURAL SLAB APPLICATION: Inject BENTOGROUT under an existing slab to provide waterproofing and fill void areas

### TECHNICAL DATA DRY MATERIAL PROPERTIES

PROPERTY	TYPICAL VALUE
Bulk Density	881 kg/m <sup>3</sup>
Specific Gravity	2,5 gm/cm <sup>3</sup>
Bonded Moisture Content	12%

### TECHNICAL DATA FINAL SET MATERIAL PROPERTIES

PROPERTY	TYPICAL VALUE
Permeability (ASTM D5084)	5,2 x 10 <sup>-8</sup> cm/sec
Mud Weight	1,22 kg/litre
Cone Penetrometer (24 hours)	44 mm
Yield per Bag	0,06 m <sup>3</sup>

Appendix E Agency Guidance note 'Good Practise  
for Decommissioning Redundant  
Boreholes and Wells  
Ref: LIT 6478 / 657\_12

# Good practice for decommissioning redundant boreholes and wells

October 2012

## What's the purpose of this guidance?

Redundant boreholes and wells must be dealt with appropriately to make them safe and secure, and also to ensure they don't cause groundwater pollution or loss of water supplies. This guidance focuses on groundwater protection aspects but there are many other important factors owners and developers need to consider when designing and carrying out decommissioning works. These will be site specific, depending on the situation and intended afteruse. For example, boreholes near landfills or other sources of soil gas may require an opening to the air to prevent the build-up of noxious, explosive or flammable gas. Therefore, you should seek expert site-specific advice.

## Legal framework

The Environment Agency (EA) has a duty to promote the sustainable use of water and to ensure it is protected from pollution. The Environmental Permitting (England and Wales) Regulations 2010 require the EA to take all necessary measures to prevent input of so called hazardous substances (for example pesticides) and limit the input of other non-hazardous pollutants (such as nitrate) into groundwater\*, including for example contaminated run-off directly entering groundwater via an uncapped borehole.

*\*Groundwater is defined as water that is below the surface of the ground in the saturated zone and is in direct contact with the ground or subsoil.*

## Why is it important to decommission properly?

Boreholes and wells are constructed for a variety of purposes including water supply, de-watering excavations, collecting geological information, investigating or sampling soils and groundwater and, increasingly, for ground source heating and cooling and geothermal (non-carbon) energy production. Many old water wells and boreholes are redundant as most properties are now connected to a mains water supply.

Improperly abandoned boreholes and wells can provide preferential pathways for groundwater or contaminant movement. This may result in the contamination of groundwater, the mixing of groundwaters of variable quality from different aquifers, or contribute to the loss of aquifer yield and water pressure (referred to as the potentiometric or piezometric head) as groundwater flows out of the system. This can threaten the availability and quality of groundwater resources for other users and potentially have an impacts on wetlands. Abandoned boreholes and wells can also present a physical hazard to people and property.

Artesian boreholes (where groundwater at depth in a 'confined aquifer' is at sufficient pressure to cause water to discharge either at the ground surface or into another overlying aquifer without any pumping) can be particularly problematic. They require special attention to prevent uncontrolled discharge of groundwater or cross-contamination of different aquifer units.

Therefore, site owners need to ensure that redundant boreholes and wells are made both safe and structurally stable, and also backfilled or sealed to prevent groundwater pollution and flow of water

between different aquifer units. This is particularly important where other potable groundwater supplies are at risk.

However, in certain circumstances they may be adapted for use as a groundwater monitoring facility.

**You must not use wells or boreholes as soakaways for foul or surface water drainage** because they provide a direct discharge route into groundwater and, as such, pose a risk of groundwater pollution.

**This is prohibited by the Environmental Permitting (England & Wales) Regulations 2010.**

### **Firstly, what are the construction details?**

When considering how best to backfill and seal a borehole or well, or whether it could be adapted for monitoring purposes – you should first obtain information on the geological strata encountered by the borehole and how it was constructed (including depth, diameter and casing details). These can usually be obtained from site records or the original driller’s log; the British Geological Survey holds the national water well archive and other borehole databases.

### **Is the site suitable for groundwater monitoring?**

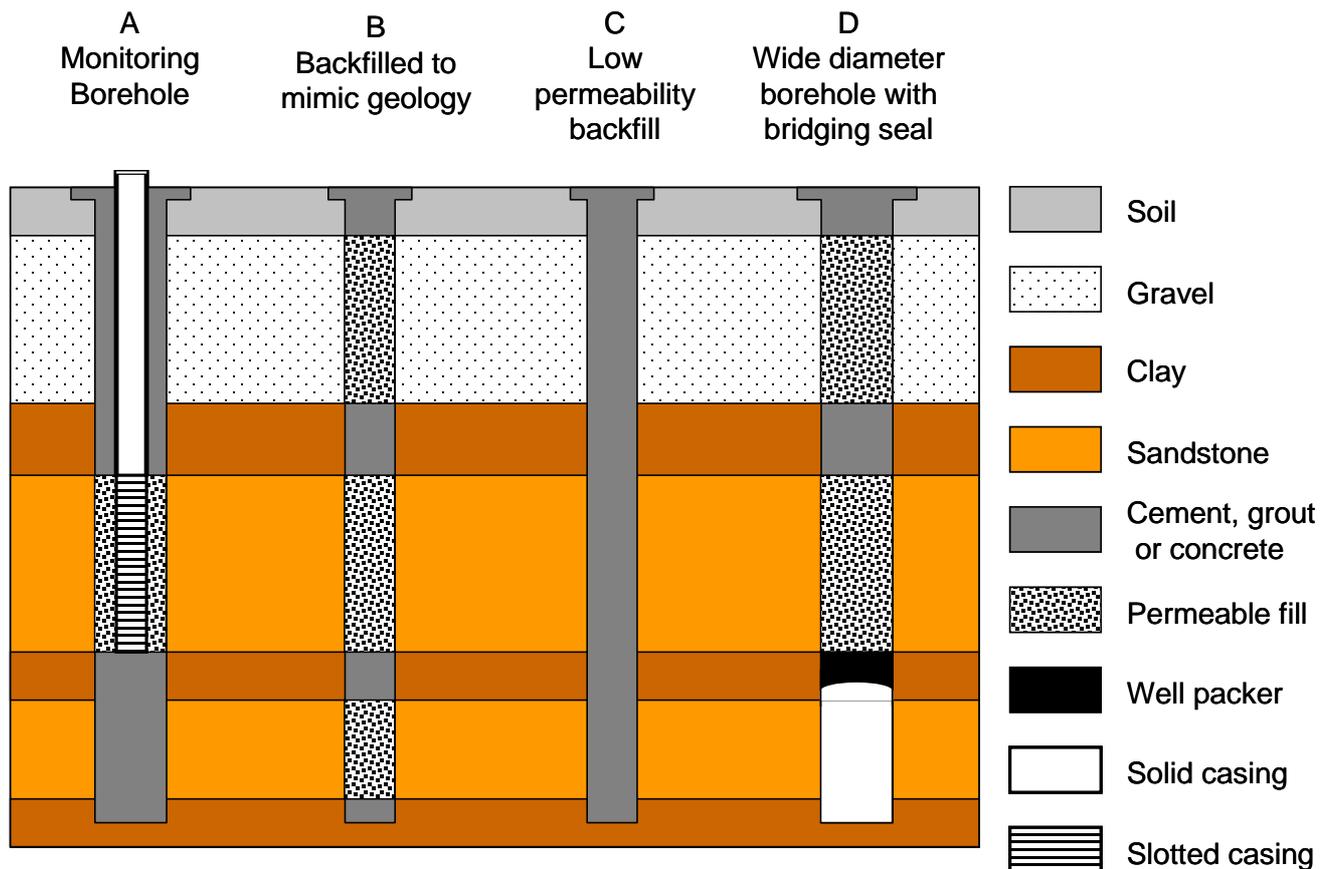
There are many good reasons for collecting groundwater samples or measuring groundwater levels; the information can, for example, help to validate the success of any remedial works being undertaken on a contaminated land site. Therefore, before decommissioning a borehole you should consider whether you wish to retain it as a monitoring facility. If it is to fulfil part of a planning condition or other legal monitoring requirement you may wish to discuss the details of how you do this with the Environment Agency.

If not, it is still worth contacting us via our National Customer Contact Centre (NCCC) to check whether we would be interested in incorporating it into our strategic groundwater level or quality monitoring networks.

If the borehole is not going to be converted then it should be abandoned using the guidelines below and the British Geological Survey should be informed.

## Decommissioning

Each situation is different in terms of its location, geological setting, borehole construction, dimensions, hazards and, very importantly, intended site afteruse. Therefore the most appropriate abandonment procedure will vary from site to site. It is strongly recommended that you engage the services of a proficient well contractor with a good knowledge of the local geology and well abandonment procedures. For large boreholes and wells you may need to seek engineering advice. **(Note that structural aspects are outside the scope of this guidance.)**



**Figure 1: Schematic options (B–D) for decommissioning wells and boreholes**

## Step 1 - Defining the objectives

When planning the decommissioning works, in addition to any site specific afteruse considerations, the method should address the following objectives:

- Remove the hazard of an open hole (safety issues).
- Prevent the borehole acting as a conduit for contamination of groundwater.
- Prevent the mixing of contaminated and uncontaminated groundwater from different aquifers.
- Prevent the flow of groundwater from one geological horizon to another.
- Prevent the wastage of groundwater from the overflow of artesian boreholes.

## Step 2 - Removing headworks and casing

It is crucial to ensure that the borehole or well is free from all obstructions that may interfere with the sealing of the hole. In particular, the pump and pipework should be removed, together with any other infrastructure (dip tubes etc).

The condition of any borehole casing and grout must be examined to ascertain whether its retention in the hole would prejudice any of the objectives of the abandonment. For many holes, examination of the casing from the ground surface will be adequate. However, deep boreholes may require the use of closed-circuit television (CCTV) to examine the casing at depth.

Where the casing has corroded or broken, or the grouting has failed, depending on the setting it may be necessary to remove those materials to prevent any flow of groundwater around the outside of the borehole. However, this is not without its own risks since removal of the well casing can result in collapse of the borehole walls (particularly in unconsolidated materials) and possible subsidence at ground level. If the well casing needs to be removed, a specialist well contractor can advise on appropriate techniques and associated risks.

## Step 3 - Backfilling

### General considerations

For most purposes the ground should be restored as closely as possible to its pre-drilled condition. The borehole or well should be backfilled with clean (washed), uncontaminated materials so that the permeability of the selected materials are similar to the properties of the geological strata against which they are placed. The backfilled borehole will then mimic the surrounding natural strata and groundwater flow and quality will be protected.

Restoration will require a variety of materials to be used so that permeable aggregates (for example pea gravel and sand) are positioned adjacent to aquifer horizons, whilst low permeability materials (usually clay, bentonite cement grout, or concrete) are positioned adjacent to low permeability horizons (see Fig. 1(B)). Alternatively, the entire borehole or well can be backfilled with low permeability

materials that will prevent significant vertical or horizontal movement of groundwater through or along the borehole (see Fig. 1(C)).

The backfill materials must be clean, inert and non-polluting. Suitable materials include pea gravel, sand, shingle, concrete, bentonite, cement grout and uncontaminated rock. There are also a range of recycled products, like crushed glass, on the market that are designed for use in boreholes

**IMPORTANT - Never use backfill materials that can cause pollution.**

You should also consider the geochemical environment into which these materials will be placed, as the behaviour of materials may change under different environmental conditions (for example, iron-rich sands may contaminate the aquifer; phenol contamination may prevent bentonite grouts curing).

Aggregates (pea gravel, shingle, sand etc) should be selected such that they have a grain size that allows easy delivery into the borehole and should be introduced in a controlled manner to ensure that accidental 'bridging' does not occur within the borehole. Concrete and grouts that are introduced in a liquid form should be introduced through an appropriate delivery pipe (e.g. tremie pipe), to ensure that voids do not form. **Note:** It is good practice to monitor the volume of backfill material that is being emplaced, compared to that calculated at the design stage, to check if bridging within the borehole, or loss to the formation is occurring.

Boreholes that penetrate highly fissured aquifers, such as some limestones and gypsum bearing units, present additional problems. Liquid grouts (particularly those injected under pressure), or fine-grained aggregates (e.g. sand) may be transported out of the borehole into the body of the aquifer through fissures. Careful monitoring of the process is required if these techniques are used, and in these cases it may be more appropriate to use coarser aggregates such as gravel as a backfill.

**Deep and large diameter boreholes/wells**

When dealing with very deep or large diameter boreholes and wells (note, this does not apply to mine shafts), the volume of the hole may be considerable. In such circumstances it may be appropriate to adopt an alternative approach to completely backfilling the void, as long as this will not prejudice any of the design objectives.

Provided that the long-term structural stability of the borehole can be demonstrated, it may be possible to place a permanent bridging seal within the borehole and then to infill above this level using the approach summarised above (see Fig. 1(D)). The bridging seal should ideally be positioned below the lowest aquifer horizon. However, where this is not possible, it is important that the open borehole beneath the bridging seal penetrates no more than a single aquifer unit, thereby preventing the flow of groundwater between different aquifers.

The material commonly used as a bridging seal is cement, although a combination of a mechanical plug (packer) and cement can be used. Cement seals must be allowed to set (cure) in place before backfilling is continued and completed.

Again, this is a specialist area of work that requires high standards of design and workmanship to ensure an effective permanent seal is achieved.

### Artesian boreholes

For artesian boreholes, the decommissioning process should aim to confine the groundwater to the aquifer from which it came – in order to prevent loss of confining pressure and the loss of water resources to the surface or other formations.

The first step is to control the artesian flow. There are a number of ways to accomplish this depending, in part, on the water pressure in the confined aquifer and the depth to which the water level must be lowered. These include:

- Pumping the borehole to produce the necessary drawdown.
- Pumping nearby boreholes.
- Extending the casing above ground level beyond the elevation to which water will rise in the borehole. (the potentiometric or piezometric surface).
- Introducing dense, non-polluting fluids into the borehole.
- Introducing a pre-cast plug at an appropriate level within the hole.
- Using an inflatable packer and pressure grouting the void space below it.

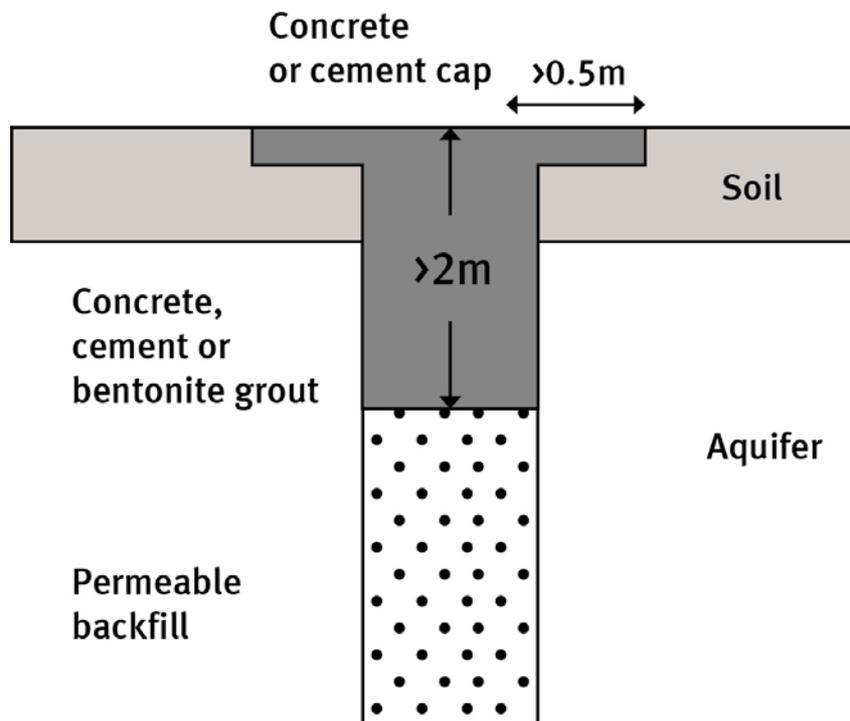
In aquifers that have large seasonal fluctuations in water level, decommissioning artesian boreholes is likely to be easiest in late summer, when groundwater levels and artesian flows are at their lowest.

The importance of the potential pathways in and around the casing should also be considered.

Decommissioning artesian boreholes is a specialist job and requires expert advice.

### Step 4 - Sealing the top of the borehole

The backfilled borehole/well should be completed with an impermeable plug and cap to prevent entry of potentially contaminated surface run-off or other liquids. The top two metres should be filled with cement, concrete or bentonite grout. A concrete cap of suitable strength, with a diameter at least one metre greater than the width of the backfilled borehole (see Fig. 2), should then be installed. The exact finished depth of this cap will depend on the setting and planned afteruse of the site. It should be at least 2 metres below plough depth in agricultural areas and at least 1 metre below formation level for sites proposed for redevelopment. Never build structures directly onto well caps or linings.



**Figure 2: Schematic diagram for borehole seal and cap**

### Step 5 - Recording details and informing others

You should keep an accurate record of the abandonment details for future reference, including:

- The reasons for abandonment (for example water quality problems).
- Measurement of groundwater level prior to backfilling.
- The depth and position of each layer of backfilling and sealing materials.
- The type and quantity of backfilling and sealing materials used.
- Any changes made to the borehole/well during the abandonment (for example casing removal).
- Any problems encountered during the abandonment procedure.

The location of abandoned borehole and wells should be clearly marked on site records This is essential where any part of the well has not been filled.

It is also very good practice to mark or deeply inscribe well caps with the word "WELL". Even if done crudely it can avoid considerable risk, delay or uncertainty in the event of the structure being discovered during excavation by others in the future, who may not otherwise know what the feature is.

Always notify the Environment Agency and British Geological Survey of the abandoned well location and structure.

## Conversion to soakaways

**Wells and boreholes should not be converted to soakaways**, as these allow the direct discharge of pollutants into groundwater without any potential for attenuation, and will often result in groundwater pollution. The direct discharge of hazardous substances to groundwater, via a borehole, is effectively prohibited by the Environmental Permitting (England & Wales) Regulations 2010, and the pollution risk from any direct discharge of non-hazardous pollutants, such as sewage effluent, is so great as to make it highly unlikely to be acceptable.

## Further advice and guidance

It is recommended that the advice of a specialist well contractor should always be sought, Details can be obtained from:

- **The British Drilling Association.** Wayside, London End, Upper Boddington, Daventry, Northamptonshire, NN11 6DP. Tel: 01327 264 622, email: [office@britishdrillingassociation.co.uk](mailto:office@britishdrillingassociation.co.uk)

The Environment Agency cannot provide an advisory service on decommissioning individual boreholes and wells but your local Groundwater & Contaminated Land team may have some generic advice to help you; and would appreciate a copy of your abandonment details. They can be contacted via our National Customer Contact Centre (NCCC)

- **Environment Agency NCCC** Tel: 03708 506 506

The British Geological Survey are the national custodian of water well records in addition to other borehole records and geological information. They may have a record of the borehole or well you are dealing with, and will be interested in the abandonment details

- **British Geological Survey. National Geosciences Data Centre (NGDC)**, Keyworth, Nottingham, NG12 5GG. Tel: 0115 936 3143.

## Useful references

- Environment Agency GP3 (Groundwater Protection Principles and Practice) <http://www.environment-agency.gov.uk/research/library/publications/40741.aspx>
- American Society for Test and Materials (ASTM) D5299 - 99(2005) Standard Guide for Decommissioning of Ground Water Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities
- Driscoll, F.G., 1986. Groundwater and Wells. Second Edition, Johnson Division.

*Note: This guidance supersedes the document ' Good practice for decommissioning redundant boreholes and wells' produced by our former National Groundwater and Contaminated Land Centre*

Product Code: LIT 6478 / 657\_12

Updated October 2012

customer service line  
03708 506 506

incident hotline  
0800 80 70 60

floodline  
0845 988 1188

[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

## Appendix F CVs



Leon has over 12 years' experience as a Geo-environmental Consultant specialising in hydrogeology with complementary experience in geotechnical engineering. He is experienced at designing and supervising intrusive site investigations, including logging; water sampling, ground gas monitoring, environmental risk assessment, technical report writing, settlement estimation calculations, drill and grout supervision, groundwater risk assessment, hydrogeological assessments and groundwater flow and transport modelling.

#### Qualifications

MSc. Hydrogeology

MSc Engineering Geology

BSc Natural Science (Geology with Maths and Philosophy)

Fellowship of the Geological Society (FGS)

Chartered Geologist

#### Relevant Training

- Logging for BS5930:2015
- Contaminated Land Analysis Seminar
- Land Quality Seminar
- Construction Site Operative (CSCS)
- CAT & Genny Training Course
- Groundwater Vistas Course

## PROJECT EXPERIENCE

### Island Road, Reading

Site supervision of geophysical consultants performing large-scale geophysical investigations of the Island Road landfill site, and production of a desk study and conceptual site model report. Responsible for design of proposed leachate levels investigation

**Helpston Groundwater Remediation** – Project Hydrogeologist assigned to ongoing large groundwater remediation project at Helpston in Cambridgeshire being carried out for the Environment Agency. The project is leaky landfill, and actions to date have included an intrusive site investigation, hydrogeological assessment, hydraulic barrier modelling, management and quality control of large volumes of data and groundwater flow and transport modelling of the entire source-pathway-receptor system.

### Coventry Gateway, Coventry

Project hydrogeologist involved in an on-going large-scale redevelopment of a closed permitted landfill and sludge lagoons. Duties include development of an Environmental Management System for the permitted landfill, along with input into a detailed quantitative risk assessment and liaison with various environment agency regulatory teams.

**Hykeham Quarry Landfill Permit Surrender** – Cemex. Design and implementation of a long-term gas monitoring scheme of a historical landfill in a former sand and gas quarry in Lincoln in order to achieve licence surrender. Assessment included novel techniques such as continuous gas and flow monitoring data in order to build a body of evidence to prove that the site was a low gas risk. Outcome was the surrender of the Environment Permit and the release of the site for development.

**Gosport Fuel Storage** - Investigation, conceptual model design and groundwater risk assessment of a large oil storage facility for the Royal Navy in Plymouth. Duties included the design and supervision of a suitable, multi-pronged investigation programme, followed by analysis and collection of monitoring data to create a refined conceptual model clearly illustrating the relevant pathways for NAPL present beneath the site to reach the adjacent shoreline (a SSSI and RAMSAR protected tidal estuary). The conceptual model is being used to design a suitable, cost-effective remediation scheme that had previously been considered by others as commercially unviable.

**Former Itron Works, Stretford.** Miller Homes. Production of a detailed quantitative risk assessment and remediation strategy for a former gasmeter works situated off Talbot Road, Stretford.

Duties involved the production of a conceptual model using additional lines of evidence to define significant pollutant linkages; a risk assessment for controlled waters including the production of practical remedial targets and the writing of a viable remedial strategy, together with regulator liaison with the Environment Agency and sign-off.

**ESC Capenhurst, Capenhurst, Wirral** - Nuclear Technologies / Capenhurst Nuclear Services. Site characterisation and detailed quantitative risk assessment for a chlorinated solvent impacted site at the Capenhurst nuclear licensed site on the Wirral.

Additional constraints included working next to live services, nuclear regulations and low-level radiological contamination. Outcomes was agreement by the Environment Agency that the source removal works were sufficient to protect the aquifer and construction of a concrete raft could begin within the required timescale.

**Legacy Cylinder Facility, Capenhurst, Wirral** - Nuclear Technologies / Capenhurst Nuclear Services. Project Manager for the delivery of a remediation strategy for the site of a proposed nuclear fuel storage facility at the Capenhurst nuclear licensed site on the Wirral.

**St Helens Depot, St Helens.** Suttons / St Helens Council. Production of a DQRA and RMS for a depot site in St Helens, impacted with a large historical diesel spillage in an infilled clay pit. Duties include the detailed quantitative risk assessment with respect to controlled waters, as well as hydrocarbon vapours and ground gases with respect to human health. The outcomes were to produce a practical and viable remedial strategy focusing on the removal of free product and localised gas protection measures.

**Horse Hill Exploration Well, Angus Energy.** Hydrogeological risk assessment for a hydrocarbon exploration well in the Weald Basin near Gatwick airport.

**Tanyard Lane** - Groundwater risk assessment using Remedial Targets Methodology to derive Remedial Target Values for a former laundry and sawmill where chlorinated solvents and DNAPL associated TPH was impacting on a nearby surface water course.

**Station Garage Yard** - Groundwater risk assessment using the Infiltration worksheet v1.1 in line with Environment Agency Horizontal Guidance H1 to derive effluent targets for waste discharged from a sewage package treatment plant to a chalk aquifer that would be protective of the surface and groundwater environment.



Julian has over 18 years' experience project managing ground investigation projects for a broad range of public and private sector clients throughout the UK.

#### Qualifications

BEng (Hons) Industrial Geology  
FGS  
MIMMM  
GMICE

#### Relevant Training

- CSCS
- Soil and Rock Description (SARD)
- Cat and Genny
- Slope Stability (ICE)
- Foundation Design (ICE)

#### KEY SKILLS

Julian has an excellent understanding of contaminated land issues, from the design of ground investigations through to remediation works and flood risk assessment. He is highly experienced in designing ground investigations of sites affected by historic mining blight from underground coal mining, underground limestone mining and surface quarrying. He is also knowledgeable in the design and execution of mineshaft and mineworkings stabilisation works and remediation schemes.

#### PROJECT EXPERIENCE

**Cotesbach Landfill Site (Lafarge Aggregates Ltd)** – CQA Inspector for earthworks associated with the construction of basal, side and caps for new landfill cell construction using mineral from the adjacent quarry. Included supervision of on-site contractors, QA of placed mineral layers and project management for the project including client liaison and preparation of CQA Validation Report. Design and build of hazardous waste (asbestos) mono cells.

**Edwin Richards Landfill Site (WRG Ltd)** – CQA Inspector for earthworks associated with the construction of side seals for vertical extensions to the landfill. Included supervision of on-site contractors, QA of placed mineral layers and project management for the project including client liaison and preparation of CQA Validation Report.

**Rush Lane, Dosthill** – Designer and resident engineer for an earthworks and remediation project for a proposed commercial development. Works included supervision of the earthworks contractor undertaking the cut and fill works on a full time basis. On site duties included control of earthworks, control testing, on-site laboratory testing (SRDs, NDG, Core, PSD, Compaction), liaison with surveyors and with the client.

**Portfolio of quarry sites, UK wide** - Geotechnical assessments in accordance with the Quarries Regulations. Slope stability assessments of excavations in clay, mudstone and sandstone using variety of computer packages. Julian's role included the preparation of a quarry extraction programme to determine remaining mineral volume and optimum working profiles to extract maximum mineral volume.

**Greenham Mineral Resource Estimation** – Mineral assessment to assist with the development of a site for residential housing. Assessment included preliminary volumetrics to assess the feasibility and economics of extraction of a sand and gravel

deposit beneath the site, including a discussion of the potential for reuse of aggregate from the site within future infrastructure (road sub-base, service trenches and structural foundation).

**Minworth Mineral Resource Estimation** – Mineral assessment to assist with the development of a site for a possible commercial / industrial end use. Assessment included preliminary volumetrics to assess the feasibility and economics for the potential extraction of sand and gravel (aggregate for construction usage) and clay mineral (potential use in brick making).

**The Gorge Limestone Mine Complex, Wolverhampton** – Julian designed and project managed the investigation of an underground water-filled limestone mine in the West Midlands. The investigation required the use of cored drillholes to depths of up to 60m below current ground level and the subsequent investigation of the water filled caverns using sonar surveying techniques. Upon completion of the investigation, Julian was responsible for the preparation of a comprehensive risk assessment for the continued use of a council owned facility and major highway directly atop the mine complex. He prepared cost estimates for the infilling of part of the mine complex below a major highway that was showing some signs of degradation since the last monitoring undertaken in 1999.

**Northampton Gateway** – Project manager for the ground investigation works for the development of a strategic rail freight terminal with value in excess of £600k. Works included in excess of 500 exploratory hole positions for the rail freight interchange, landscaping bunds to screen the site from nearby villages, skew tunnel, infrastructure and highways improvement to M1 Junction 15.

**Phoenix Mine, Walsall area** – Julian designed and project managed the investigation and Geotechnical Risk Assessment of an underground water-filled limestone mine beneath a football club's ground. The mine was last investigated in the mid-1990s when the mine had been classified as 'High Risk' as a result of the presence of a possible crownhole. New phases of investigation were designed to update the mine plan using the latest available sonar techniques to allow a 3D map of the mine to be created to assist with an updated Geotechnical Risk Assessment to allow continued use of the site.

**Walsall Waterfront, Walsall** - Geotechnical assessment for the suitability of piling above open and collapsed limestone workings for five and seven storey structures for combined residential and commercial end usage.

**Highfield Farm, Chasewater** - Highfield Farm comprises an area of lands that has most recently been utilised for farming, a mix of arable and pastoral farming. In the late 19<sup>th</sup> Century, the site was part of two local collieries with four recorded mineshafts within the area of the proposed residential development. Julian designed and managed the project from initial Coal Mining Risk Assessment through the Phase II Ground Investigation undertaken using a mix of techniques to investigate the shallow strata, variable thicknesses of Made ground overlying deepening (8m to 20m) Glacial Till and Glaciofluvial deposits, and the deeper Coal Measures Formation with rotary drilling undertaken in strict accordance with Coal Authority guidance to assess the potential for shallow coal workings identified by the Coal Mining Risk Assessment. He also prepared an Abnormal Costings Appraisal for the site.

**Birchills, Walsall** - Project manager for the investigation of both shallow superficial deposits and deep former limestone mines beneath a major metropolitan centre in the West Midlands, for a proposed residential redevelopment. The project involved designing a suitable physical ground investigation for the proposed infilling of the limestone mine to remove the Consideration Zone, together with sonar surveys of the deep mine cavity. Sonar surveys were used to assess total volume of the mines and degree of collapse. Following the ground investigation, an assessment of data allowed the full design and pricing of the required infilling works. A hydrogeological assessment for the risk of bulk infilling the mine was also completed as part of the project.

**Dudley Council, Ground Investigation Framework** – Julian was responsible for the tendering and delivery of ground investigation services in support of Dudley Council through a four-year partnering framework contract.

**Six Manchester sites** – Julian project managed the simultaneous investigation of six local authority sites

for proposed mixed-use redevelopment to a tight timescale to assist with the regeneration of Stalybridge and surrounding areas. Sites were a mixture of previous industrial, commercial and residential sites that had fallen out of use. Works involved a mix of exploratory techniques through Made Ground and into the underlying Glacial Till to assess the contamination status of shallow soils and to assist with future foundation design. Following the site works, Julian prepared Coal Mining Risk Assessments and Abnormal Costings for all sites.

**Wolverhampton City Council, Ground Investigation Framework** – Julian was responsible for the tendering and delivery of ground investigation services in support of Wolverhampton City Council's redevelopment programme through a three-year partnering framework contract. Projects included:

- Wolverhampton Road;
- Lanesfield Primary School Extension; and,
- Villiers Primary School Extension.

# Appendix K Leachate Compliance Assessment

This appendix enclosed under separate cover.

# Appendix L Landfill Gas Compliance Assessment

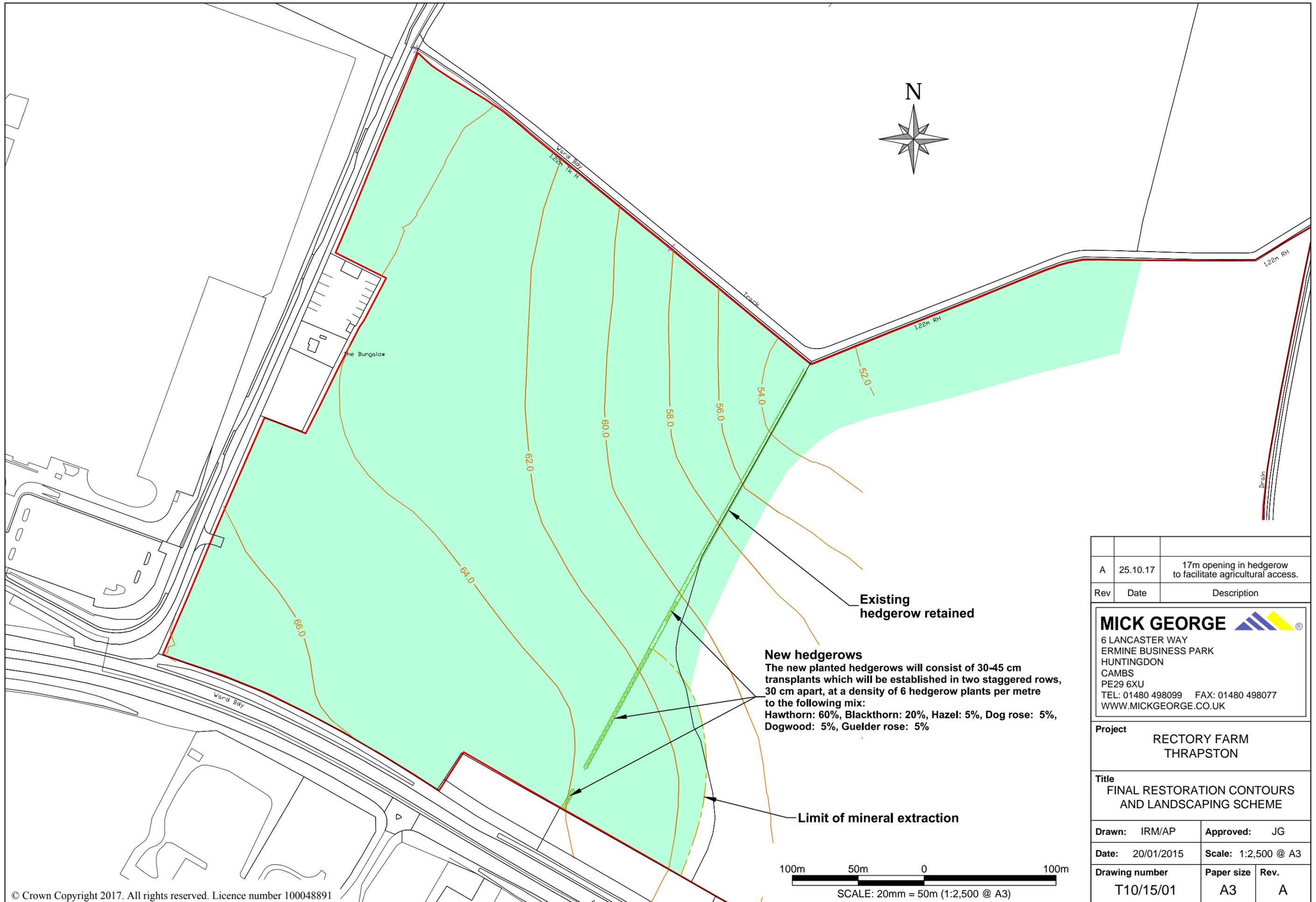
This appendix enclosed under separate cover

# Appendix M Restoration Issues



Notes

Rev	Date	Description
<p><b>MICK GEORGE</b> </p> <p>6 LANCASTER WAY            ERMINE BUISNESS PARK            HUNTINGDON            CAMBRIDGESHIRE            PE296XU            Tel : 01480 498099 Fax : 01480 498077            www.mickgeorge.co.uk</p>		
Client		
Mick George Ltd		
Project		
Thrapston		
Title		
End of Year 2022 Topographical survey		
Drawn :IMS/AM		Approved : MEG
Date :03/01/2023		Scale :1/2500
Drawing No.	Paper size	Revision
TPN_eoy_0123	A3	



Rev	Date	Description
A	25.10.17	17m opening in hedgerow to facilitate agricultural access.

**MICK GEORGE**   
 6 LANCASTER WAY  
 ERMINE BUSINESS PARK  
 HUNTINGDON  
 CAMBS  
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**Project**  
 RECTORY FARM  
 THRAPSTON

**Title**  
 FINAL RESTORATION CONTOURS  
 AND LANDSCAPING SCHEME

<b>Drawn:</b> IRM/AP	<b>Approved:</b> JG
<b>Date:</b> 20/01/2015	<b>Scale:</b> 1:2,500 @ A3
<b>Drawing number</b> T10/15/01	<b>Paper size</b> A3
	<b>Rev.</b> A



# Appendix N Site Condition Report for Non-Tipped Areas

This appendix enclosed under separate cover

# Appendix O Schedule 5 Response Tracker

# Technical design note

Project name	Thrapston Permit Surrender		
Design note title	Schedule 5 Response		
Document reference	23880-Schedule 5 Response		
Author	Leon Warrington		
Revision	P02		
Date	21 November 2023	Approved	<input type="checkbox"/>

EA Comment	Hydrock Response	Reference to report amendment
	General	New Section 1.2.2 explains how responses to Schedule 5 Notice are dealt with in Version P02 of the Surrender Report
<p><b>1.0 Gas Surrender Criteria</b></p> <p>Provide further evidence that the gas generated by the site does not pose a risk to the environment. Reason: Routine landfill gas monitoring has detected methane above 5% v/v in the in-waste gas monitoring wells.</p> <p>The landfill gas risk has therefore been assessed by the Agency as a Standard Surrender Scenario 3 in accordance with Chapter 5 of the Agency Surrender Guidance – The Surrender Permits for the Permanent Deposits of Waste.</p>	Noted	
<p><b>There is insufficient evidence to determine whether the waste mass represents a risk to the wider environment and additional lines of evidence should be considered to support this application.</b></p> <p><b>These may include but are not limited to:</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>	<p>Appendix L to version P01 of the Surrender Report presented a gas risk assessment that is compliant with Completion Criteria 2 (Qhgs) for the in-waste boreholes (reference: EA (.gov.uk) website guidance).</p> <p>Version P01 also presented an additional assessment using data from boreholes located outside the landfill boundary, though we noted that most such boreholes were installed for the purposes of monitoring groundwater so are typically fully saturated and have been excluded from the assessment.</p> <p>Whilst we believe that the initial assessment provides enough information to assess the risk to the wider environment, (and has not been amended for Version P02), we acknowledge the EA's requirement for additional lines of evidence and agreed an additional work programme as follows:</p> <ul style="list-style-type: none"> <li>» Define/justify representative area around CBH 111/BH5 for additional investigation;</li> <li>» Surface emissions survey and flux box testing in defined area in accordance with EA guidance;</li> <li>» Water sampling in 8 landfill monitoring wells and selected external boreholes;</li> <li>» Field testing for temperature and conductivity;</li> <li>» Lab testing for dissolved methane;</li> <li>» Updated gas risk assessment based on findings.</li> </ul>	Results of additional gas investigation as agreed are presented in Appendix P to Version P02 of the report.
<p><b>Surface emissions survey / flux box monitoring</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>	Undertaken as part of investigations described above	As above

EA Comment	Hydrock Response	Reference to report amendment
<p><b>Assessment of electrical conductivity tests and temperature measurements from leachate wells; •</b></p>	<p>Undertaken as part of investigations described above</p>	<p>As above</p>
<p><b>Dissolved methane tests on leachate within the standpipe installations</b></p>	<p>Undertaken as part of investigations described above</p>	<p>As above</p>
<p><b>Further review of the monitoring data should be undertaken with respect to the potential for hydrostatic pumping effects on the results presented.</b></p>	<p>Hydrock has considered in more detail the potential hydrostatic pumping effects (i.e., a compression of the airspace within a monitoring borehole due to rises in groundwater pressure). We have already discounted, as per the surrender guidance, data from monitoring boreholes which are fully saturated (see section 3.1.3 of Appendix L). Furthermore, we have also undertaken an assessment of the continuous monitoring data to understand how changes in barometric pressure impacts on the observed gas behaviour. (section 3.2.3 of Appendix L).</p>	<p>Dealt with in Appendix P</p>
<p><b>2.0 Groundwater Quality Provide assessment of the risks to groundwater receptors from elevated concentrations within the site</b></p>		
<p><b>. Reason: The data presented indicates that there are localised concentrations of contaminants (sulphate) in the leachate and down gradient groundwater. Whilst it is recognised that the upgradient boreholes are likely impacted by the development of the industrial units releasing sulphate to ground, the cross-gradient boreholes indicate that true baseline conditions are significantly better. This should be reflected in the review.</b> <b>Further information should be presented with respect to the risk to wider groundwater /any groundwater dependent receptors beyond the site boundary from the contaminant concentrations (including sulphate) observed within the site or at the site boundary</b></p>	<p>Since the issue of version P01 of the report we have more data with regards to sulphate data which is included in an updated assessment. In summary we have:</p> <ul style="list-style-type: none"> <li>» Updated the risk assessment with data from monitoring that has taken place since submission of the Surrender Report (circa 5 months of additional data, including data for surface water at Point X)</li> <li>» Updated risk assessment, supported by evidence from conceptual model, of no significantly adverse effect.</li> </ul>	<p>Results of additional groundwater, surface water, and leachate investigations as agreed are presented in Appendix P to Version P02 of the report.</p>
<p><b>3.0 Provision of all environmental monitoring data in excel compatible files. Reason: We require all data to be presented in excel compatible files to enable the review of this data during our assessment</b></p>	<p>This is provided as requested</p>	<p>Link will be sent to EA with Schedule 5 response</p>

# Appendix P Schedule 5 Response - Additional Assessments

This appendix enclosed under separate cover