Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

THE PEACOCK CENTRE MANCHESTER

FLOOD RISK ASSESSMENT
& DRAINAGE STATEMENT

Shepherd Gilmour Infrastructure Ltd.

3rd Floor Phoenix House,

45 Cross Street,

Manchester,

M2 4JF

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

Report Title: *The Peacock Centre Manchester*
Flood Risk Assessment & Drainage Statement

Client: *Clarion Housing Association Limited and*
Clarion Housing Property Development Services Limited

Report Status: *Version: Rev D*

Date of First Issue: *March 2026*

Date of Last Issue: *07.07.2026*

Prepared by: [redacted] *BSc (Hons)*

Checked & Approved: [redacted] *MEng (Hons)*

Version	Date	Initials	Comments
-	10.03.2026	[redacted]	First Issue for Comment
A	16.03.2026	[redacted]	Updated Architect Layouts Included
B	02.04.2026	[redacted]	Updated Drainage Layout Included
C	12.06.2026	[redacted]	Update Drainage Layout and Drainage Calcs Included
D	07.07.2026	[redacted]	Pipewell Ave Parcel Layout Updated

Limitations

All findings, recommendations and conclusions contained in this report are based on information provided to us during investigations. Shepherd Gilmour Infrastructure Ltd. has created the report based on the assumption that all the information is accurate and accepts no liability should additional information exist or become available.

Unless otherwise requested by the client, Shepherd Gilmour Infrastructure Ltd. is not obliged to and disclaims any obligation to update the report for events taking place after the date noted on the report.

Shepherd Gilmour Infrastructure Ltd. makes no representation whatsoever concerning the legal significance of its findings or the legal matters referred to in the report. The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against the flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates, and associated probabilities.

This report has been prepared for the sole use of the client. No other third parties may rely upon or reproduce the contents of this report without the written permission of Shepherd Gilmour Infrastructure Ltd.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

CONTENTS

Contents....4
List of Tables....5
List of Figures....5
List of Appendicies....6

SECTION 1 SITE INVESTIGATION....7

INTRODUCTION....7
EXISTING SITE DESCRIPTION....7
PROPOSED SITE LAYOUT....8

SECTION 2 POTENTIAL SOURCES OF FLOODING....10

FLUVIAL FLOOD RISK....10
CANAL FLOOD RISK....13
GROUNDWATER FLOOD RISK....13
ARTIFICIAL WATERBODIES....14
PLUVIAL RUNOFF....14
CRITICAL DRAINAGE AREA....16
FLOOD RISK OVERVIEW....17

SECTION 3 FLOOD RISK ANALYSIS....18

ARTIFICAL WATERBODIES....18
PLUVIAL FLOODING....18
CRITICAL DRAINAGE AREAS....19

SECTION 4 FLOOD ZONE REQUIREMENTS....20

SECTION 5 EXISTING DRAINAGE INFORMATION....21

PUBLIC SEWERS....21
PRIVATE DRAINAGE....22

SECTION 6 SUSTAINABLE DRAINAGE STRATEGY....23

NORTH SITE....23
SOUTH SITE....24
PROPOSED RUNOFF DESTINATION....25
SUSTAINABLE DRAINAGE TECHNIQUES....26
CLIMATE CHANGE ALLOWANCE....27

SECTION 7 PRELIMINARY DRAINAGE STRATEGY....28

SURFACE WATER STRATEGY....28
FOUL WATER STRATEGY....29

SECTION 8 FUTURE DRAINAGE MAINTENANCE....31

SECTION 9 CONCLUSION....33

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

LIST OF TABLES

TABLE 2.1 POTENTIAL SOURCES OF FLOODING OVERVIEW 17
TABLE 4.1 FLOOD RISK CLASSIFICATION (NPPF) 20
TABLE 6.1 EXISTING PEAK RUNOFF RATE VARIABLES 23
TABLE 6.2 NORTH SITE PEAK GREENFIELD RUNOFF RATES 24
TABLE 6.3 SOUTH SITE PEAK GREENFIELD RUNOFF RATES 24
TABLE 6.4 SOIL CLASSIFICATION 25
TABLE 6.5 SUDS TECHNIQUES 27
TABLE 8.1 ESTIMATED ATTENUATION VOLUME – NORTH SITE 28
TABLE 8.2 ESTIMATED ATTENUATION VOLUME – SOUTH SITE 29
TABLE 9.1 SUDS MAINTENANCE MANAGEMENT 32

LIST OF FIGURES

FIGURE 1.1 SITE LOCATION (© OPENSTREETMAP CONTRIBUTORS) 7
FIGURE 1.2 ARCHITECTS LAYOUT PEACOCK CENTRE (NORTH SITE) 8
FIGURE 1.3 ARCHITECTS LAYOUT PIPEWELL AVENUE (SOUTH SITE) 9
FIGURE 2.1 MODELLED FLUVIAL EXTENT WITH CLIMATE CHANGE (EA) 10
FIGURE 2.2 FLOOD MAP - SOUTH SITE (GOV.UK) 11
FIGURE 2.3 SFRA FLOOD MAP (SFRA) 12
FIGURE 2.4 GROUNDWATER FLOOD MAP (SFRA) 13
FIGURE 2.5 RESERVOIR FLOOD RISK MAP (GOV.UK) 14
FIGURE 2.6 1IN1000 PLUVIAL FLOOD RISK MAP (GOV UK) 15
FIGURE 2.7 1IN100 PLUVIAL FLOOD RISK MAP (GOV UK) 15
FIGURE 2.8 CRITICAL DRAINAGE AREAS (SWMP) 16
FIGURE 3.1 PLUVIAL FLOOD RISK MAP – 200MM (GOV.UK) 18
FIGURE 3.3 CDA RUNOFF RESTRICTIONS (LOCAL FLOOD RISK MANAGEMENT STRATEGY) . 19
FIGURE 5.1 SEWER RECORDS (UNITED UTILITIES) 21
FIGURE 6.1 NORTH SITE QBAR RESULTS 23
FIGURE 6.2 SOUTH SITE QBAR RESULTS 24

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

LIST OF APPENDICIES

APPENDIX A	TOPOGRAPHICAL SURVEY
APPENDIX B	ARCHITECT PROPOSALS
APPENDIX C	UNITED UTILITIES RECORDS
APPENDIX D	GREENFIELD RUNOFF CALCUALTIONS
APPENDIX E	PHASE 2 GEO-ENVIRONMENTAL REPORT
APPENDIX F	UNITED UTILITIES PRE-DEVELOPMENT ENQUIRY RESPONSE
APPENDIX G	PRELIMINARY DRAINAGE LAYOUT

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 1 SITE INVESTIGATION

INTRODUCTION

1.1. Shepherd Gilmour Infrastructure Ltd (SGi) has been engaged by Clarion Housing Association Limited and Clarion Housing Property Development Services Limited to prepare a Flood Risk Assessment and Drainage Statement in support of a full planning application submission for The Peacock Centre, Manchester.

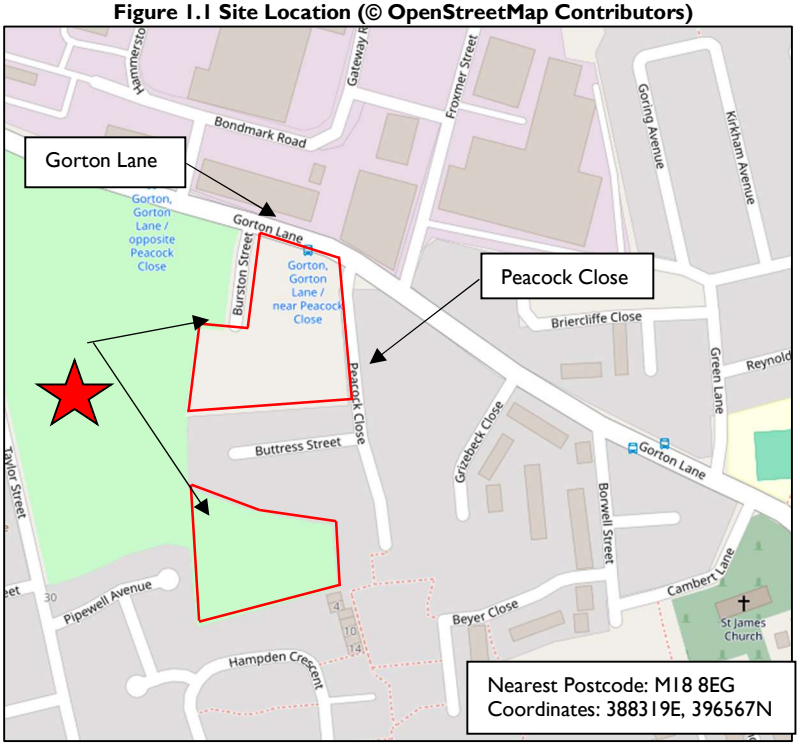
1.2. The Flood Risk Assessment has been prepared in accordance with the Flood Risk and Coastal Change Planning Practice Guidance (PPG) and the National Planning Policy Framework (NPPF). It contains information from sources such as the Environment Agency (EA), Local Sewerage Undertaker, District Council and Site Owner.

1.3. The Drainage Statement has been prepared in line with the Non-Statutory Technical Standards for Sustainable Drainage (NSTSSD) and CIRIA Report C753. It also defines the outline proposal for the disposal of surface runoff and foul effluent from the site.

EXISTING SITE DESCRIPTION

1.4. The Proposed Development Site (PDS) is located south of Gorton Lane, Manchester. The site is classed as a greenfield site and spans an area of circa 1.34 hectares in total. The site is split in two sites separated by residential buildings on Buttress Street. The northern site covers approximately 0.78 hectares, while the southern site located off Pipewell Avenue spans circa 0.56 hectares.

Figure 1.1 Site Location (© OpenStreetMap Contributors)



Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

1.5. The topography of the north site falls from the south to the north, with an approximate difference of 900mm. There are three bunds present on site with various materials from previous demolitions of the former Peacock Centre buildings.

1.6. The south site, currently used as playing fields, is mainly flat with a gentle fall from the east of the site towards the west, circa 500mm of difference.

1.7. A copy of the latest topographical survey has been included within **Appendix A**.

PROPOSED SITE LAYOUT

1.8. The client's proposals are for a residential development of up to 75 dwellings, all of which will be affordable, with associated infrastructure and soft landscaping. **Figures 1.2 & 1.3** show an abstract of the proposed site plan.



Figure 1.2 Architects Layout Peacock Centre (North Site)

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500



Figure 1.3 Architects Layout Pipewell Avenue (South Site)

1.9. A full-size copy of the architect's plans has been included within **Appendix B**.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 2 POTENTIAL SOURCES OF FLOODING

2.1. There are several sources of flooding that could potentially impact a development.

- *Fluvial/Tidal,*
- *Ground Water,*
- *Artificial Waterbodies (canals, reservoirs etc) and,*
- *Pluvial.*

2.2. The risk of flooding from the above sources has been reviewed at high level in this Section and a more detailed any sources which could impact the PDS are discussed in further detail in **Section 3 & 4**.

FLUVIAL FLOOD RISK

EA Data

2.3. Environment Agency (EA) Product 4 data was provided by the EA to illustrate that there is no fluvial flooding on the northern site. As seen in **Figure 2.1**, the site is in Flood Zone 1. For the southern site, the Gov.UK flood map for planning was used to assess the site for fluvial flooding (**Figure 2.2**).

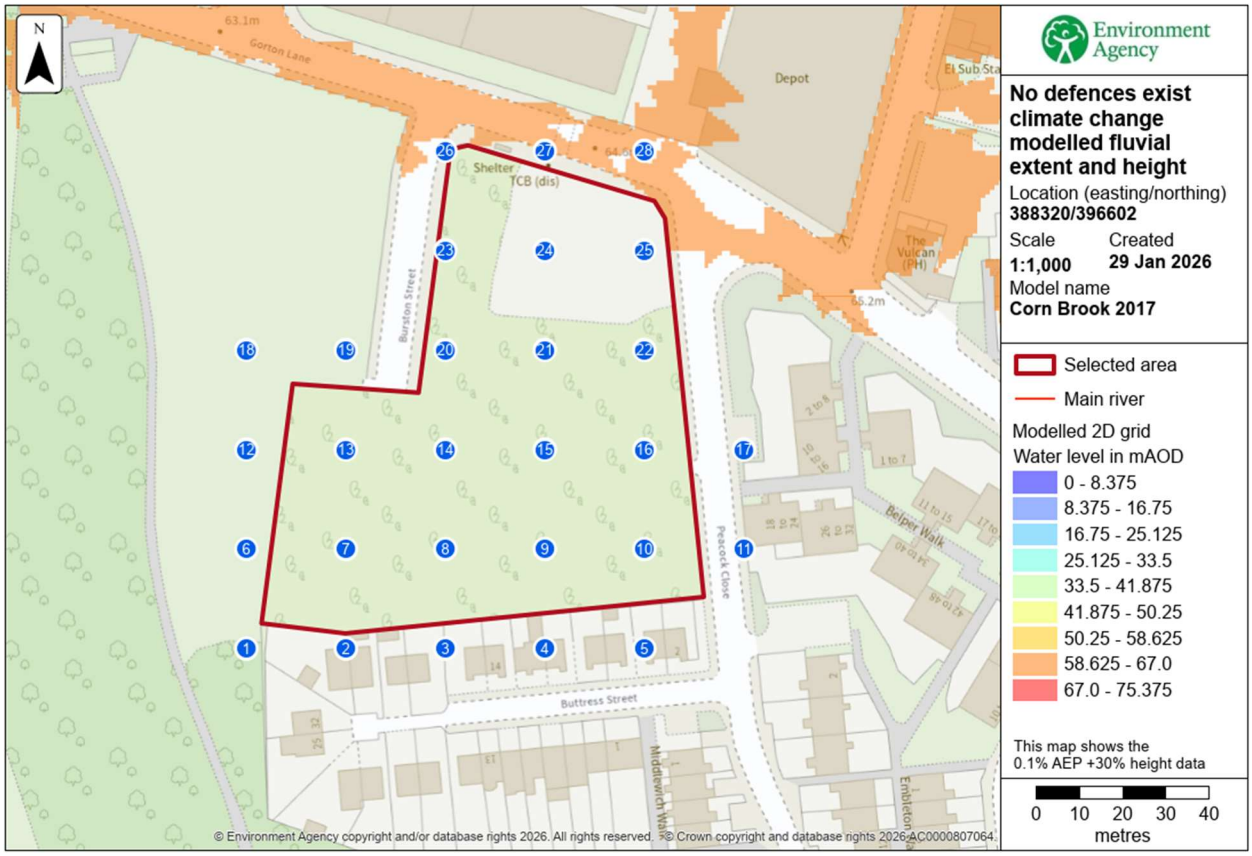


Figure 2.1 Modelled Fluvial Extent with Climate Change (EA)

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

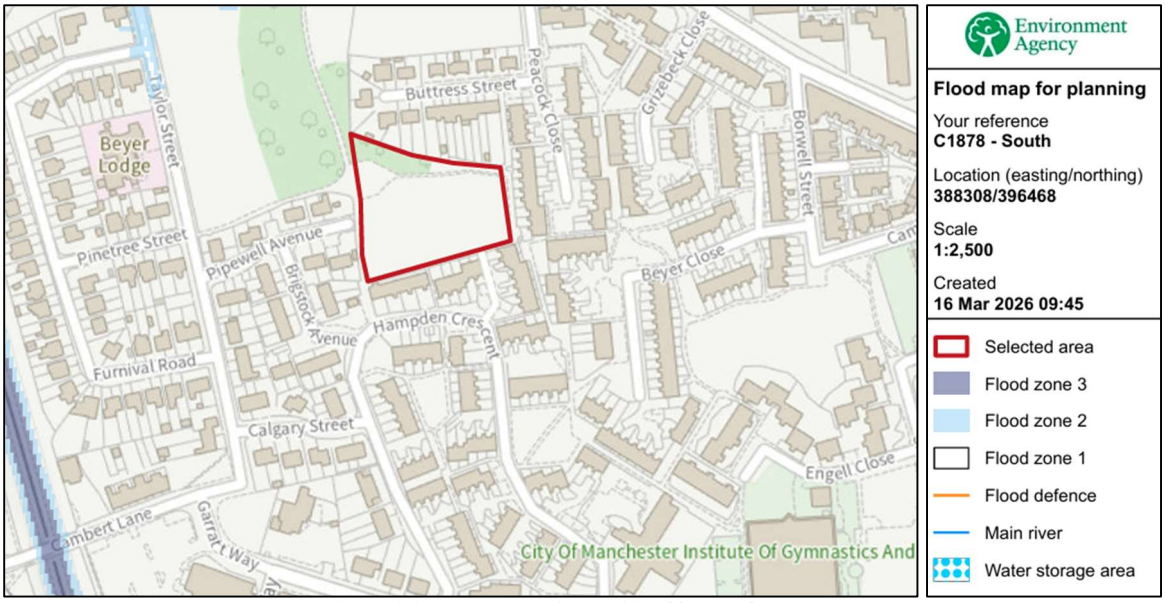


Figure 2.2 Flood Map - South Site (Gov.UK)

2.4. The EA and Gov.UK flood maps indicate that the risk of fluvial/tidal flooding on both parcels is very low and that the site is located within Flood Zone 1.

2.5. After a telephone conversation with the EA on the 11th February 2026, it was confirmed that there is no flood risk from rivers and sea, however there is surface water flooding risk in the 1 in 100 and 1 in 100-year events. This risk is discussed further in this section as well as **Section 3**.

Strategic Flood Risk Assessment

2.6. The NPPF requires Local Planning Authorities to produce Strategic Flood Risk Assessments (SFRA) in support of their Local Plan. These form the basis for preparing appropriate policies for flood risk management within the area and provide the framework for assessing areas of developable land.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

2.7. The PDS is within the SFRA for Manchester City, Salford City and Trafford. The initial SFRA (Level 1) was published in March 2010 and the more detailed (Level 2) was released in 2011. The SFRA flood data confirms that the PDS is located within Flood Zone 1.

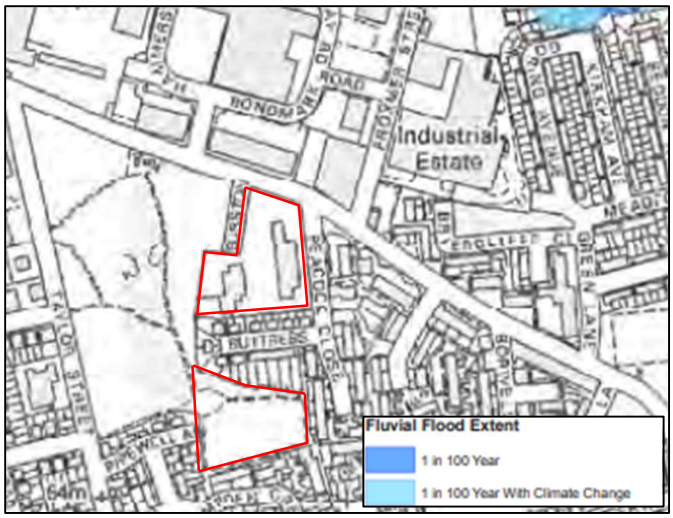


Figure 2.3 SFRA Flood Map (SFRA)

- *Flood Zone 1 – Low Probability*
- *Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)*
- *Flood Zone 2 – Medium Probability*
- *Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)*
- *Flood Zone 3 – High Probability*
- *Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)*

Ordinary Watercourse

2.8. Ordinary watercourses do not form part of a 'main river' and can consist of rivers, ditches, swales, drains etc. These watercourses are the responsibility of the riparian owner who must ensure that:

- *Flows can pass freely without obstruction, pollution, or diversion (affecting the rights of others).*
- *The banks and bed of the watercourse are maintained (including vegetation).*

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

- *Any approved onsite watercourse structures are maintained.*

2.9. The closest watercourse is Cornbrook, approximately 160 meters to the north of the site. The watercourse is culverted on the entire stretch of the vicinity of the site therefore there is no direct flood risk impact to the sites.

CANAL FLOOD RISK

2.10. Water levels within canals are maintained/regulated by sluice gates along the waterway and whilst a breach or overtopping is unlikely, the possible risk should be assessed.

Canal & River Trust

2.11. Many of canals in England and Wales are owned, maintained, and operated by the Canal & River Trust (CRT). The closest CRT canal to site is the Ashton Canal, approximately 1.5km north of the PDS.

2.12. Maps within the SFRA indicate that the PDS is located outside of any CRT Flood Risk.

GROUNDWATER FLOOD RISK

2.13. Unlike flooding from rivers and the sea, groundwater does not pose a significant risk to life. It is more associated with damage to the building, due to the flooding persisting over several weeks.

2.14. The SFRA indicates that the PDS is located inside an area that is not considered to be prone to groundwater flooding (**Figure 2.4**). Any groundwater issues, however, will be determined during the Phase II site investigation and any potential issues will be mitigated at the detailed design.

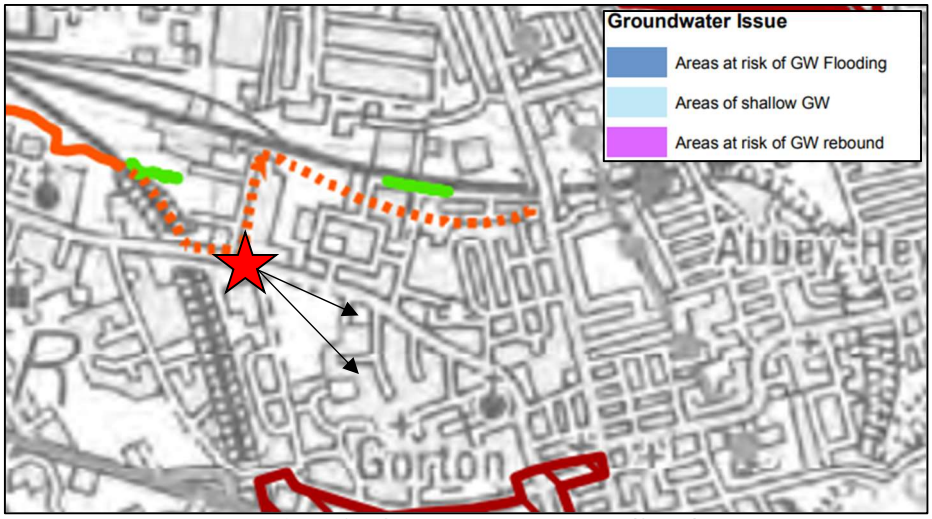


Figure 2.4 Groundwater Flood Map (SFRA)

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

ARTIFICIAL WATERBODIES

2.15. The reservoirs in the area are owned and operated by United Utilities and are covered by the Reservoirs Act 1975. Whilst the probability of a catastrophic dam failure occurring is relatively low the consequences of such an event are severe.

2.16. Reservoir flood plans are still required and are prepared by their owners. These documents are considered sensitive due to national security and only indicative plans are made available by the Environment Agency/Gov.UK.

2.17. The reservoir flood plan (**Figure 2.5**) indicates that the PDS is at risk in the event of a breach.

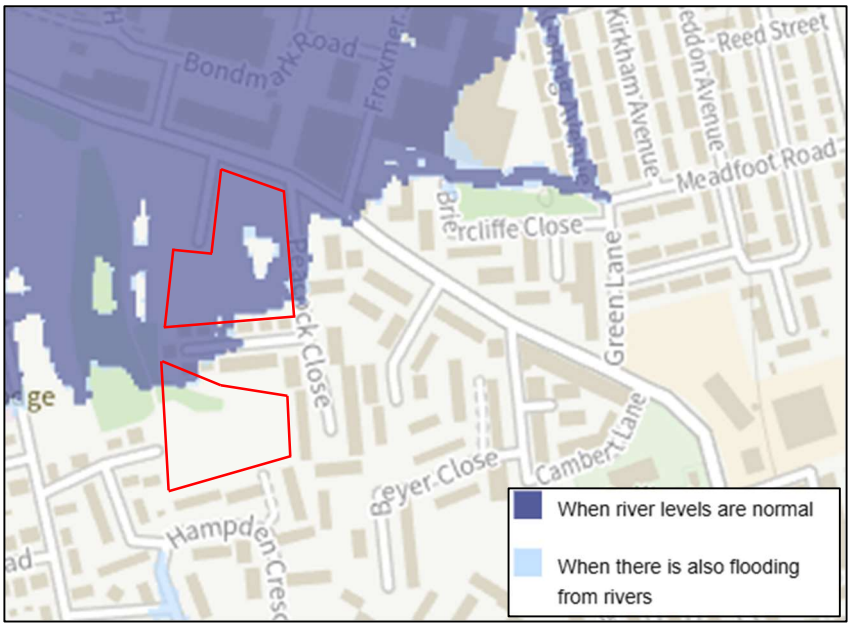


Figure 2.5 Reservoir Flood Risk Map (Gov.UK)

PLUVIAL RUNOFF

2.18. Pluvial flooding is defined as 'flooding from rainfall generated overland flow before the runoff enters any watercourse or sewer.' It is usually associated with high-intensity rainfall events but can also occur during low-intensity events when the ground is saturated/frozen or has low permeability.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

2.19. Gov.UK surface water flooding map (**Figure 2.6**) indicates that there may be surface water flooding for both sites in the 1 in 1000-year event. For the 1 in 100-year event, there is an area of flooding in the northern site (**Figure 2.7**).

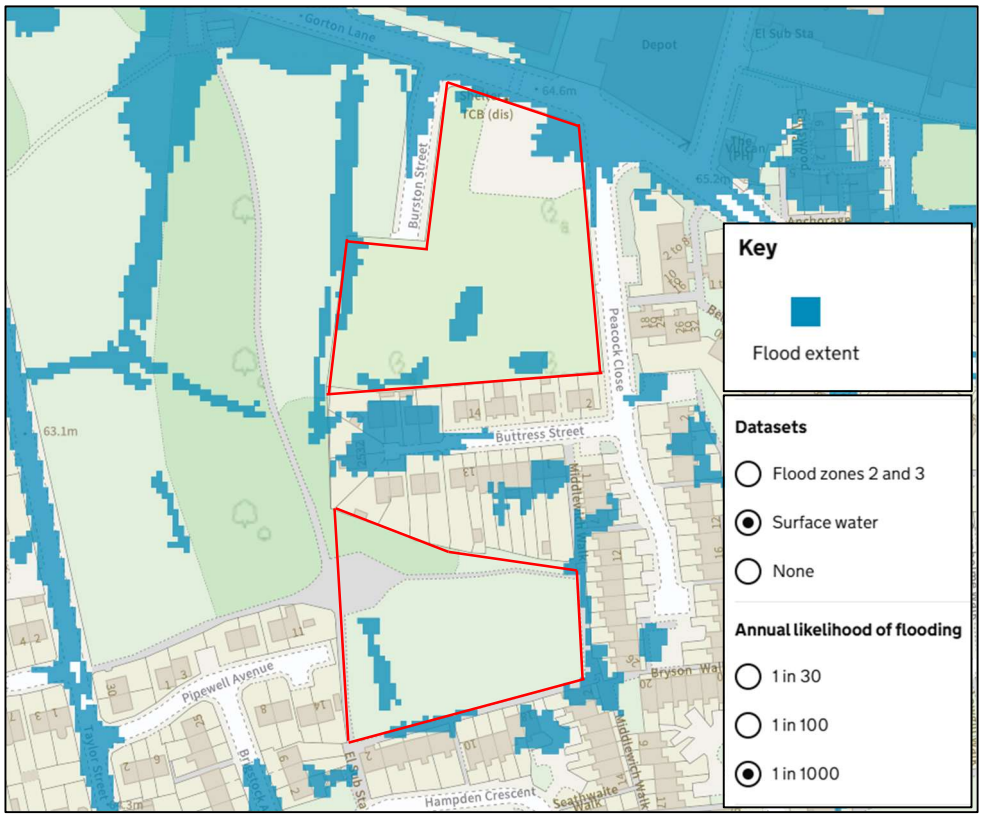


Figure 2.6 1in1000 Pluvial Flood Risk Map (Gov UK)

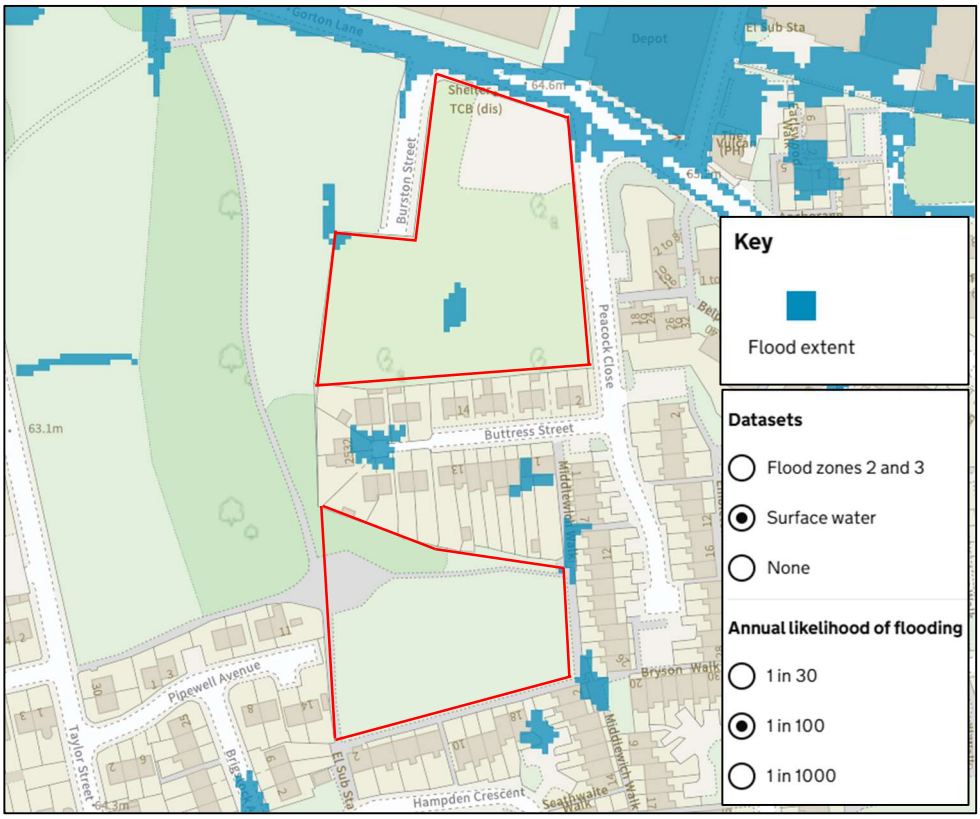


Figure 2.7 1in100 Pluvial Flood Risk Map (Gov UK)

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

CRITICAL DRAINAGE AREA

2.20. Critical Drainage Areas (CDA) are areas that are particularly sensitive to an increase in surface water runoff, either as direct overland flow or from the existing sewer network.

2.21. The maps within the SFRA indicate that the PDS is located within a CDA known as the Conurbation Core (**Figure 2.8**).

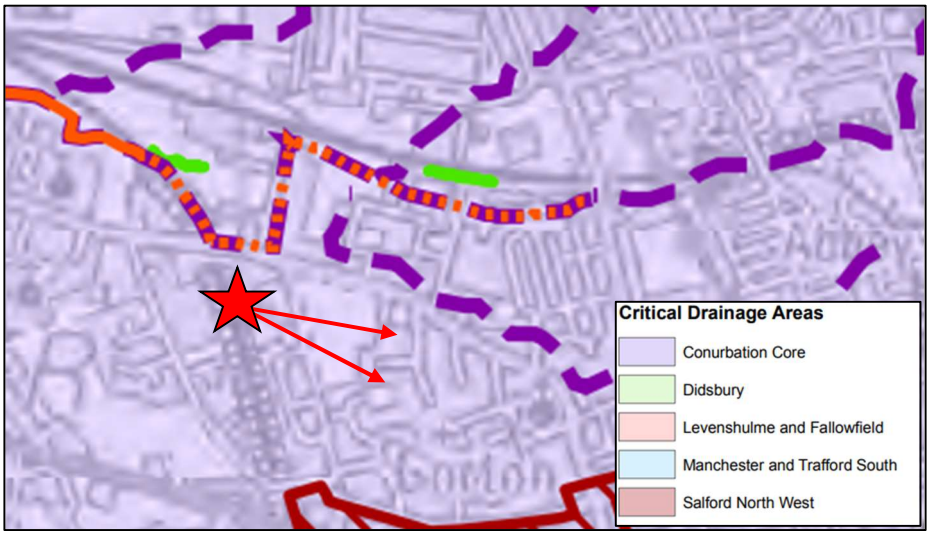


Figure 2.8 Critical Drainage Areas (SWMP)

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

FLOOD RISK OVERVIEW

2.22. The potential sources of flooding which could be experienced have been summarised in **Table 2.1**. Those posing the greatest flood risk to the site have been investigated further in **Section 3** to determine the potential mitigation measures.

Source of Flooding	Potential Flood Risk	Site Description
Fluvial/Tidal	Low/Negligible	The PDS is in Flood Zone 1
Ordinary Watercourse	No Ordinary Watercourses Identified	No information is available.
Canal	Unlikely	The PDS is outside of any breach analysis that has been undertaken within the SFRA.
Ground Water	Unlikely	Maps within the SFRA and GOV.UK maps confirm that groundwater flooding is unlikely to be an issue.
Artificial Waterbodies (Reservoir)	Risk Identified	In the event of a breach. The PDS is shown to be at risk
Pluvial Runoff	Risk Identified	The Gov.UK Maps confirm the PDS is at a risk of pluvial flooding.
Critical/Sensitive Drainage Areas	Yes	The SFRA has confirmed the PDS is in CDA

Table 2.1 Potential Sources of Flooding Overview

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 3 FLOOD RISK ANALYSIS

ARTIFICAL WATERBODIES

3.1. The reservoirs in the UK have an extremely good safety record and are carefully maintained. However, the Gov.UK maps indicate that the PDS could be at risk during a breach (**Figure 2.6**).

Mitigation Measures

3.2. The maps are prepared for emergency planning purposes and reflect a credible worst-case scenario. This means that if a reservoir failure did occur, it would most likely be far less severe than the scenario shown on the map

3.3. Proposing any mitigation measure to defend against such an event would be impractical and cost prohibitive. So, a residual risk from this source would remain.

Reservoir flood risk = Residual risk remains

PLUVIAL FLOODING

3.4. The Gov.UK Maps indicates that there is some risk of pluvial flooding. These maps are based on LIDAR data and purely highlight low spots/depressions on the ground that may be at risk of pluvial flooding.

3.5. When assessing the "depth" of the pluvial flooding on the Gov.UK maps, there is an area approximately in the middle of the northern site that has a very low chance of flooding up to 200mm (**Figure 3.1**).

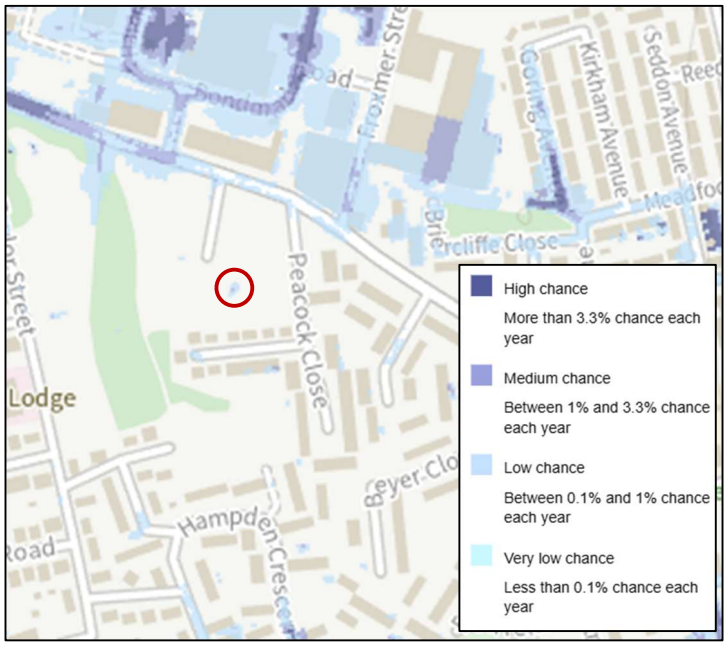


Figure 3.1 Pluvial Flood Risk Map – 200mm (Gov.UK)

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

Mitigation Measures

3.6. Regardless of the risk on site, all new hardstanding areas will aim to slope/shed runoff away from sensitive areas when possible. The proposed Finished Floor Levels (FFL) of the PDS should also aim to be a minimum of 150mm above the surrounding ground levels and all surface water runoff will be directed into the new drainage system.

Pluvial Flood Risk = Very Low risk after redevelopment.

CRITICAL DRAINAGE AREAS

3.7. The SFRA maps indicate that the PDS is located with the Conurbation Core CDA (**Figure 2.8**).

Mitigation Measures

3.8. Both the SFRA and Local Flood Risk Management Strategy confirm that greenfield sites should restrict runoff up to the 1 in 100-year storm event to help mitigate the flood risk in the area.

> Within Critical Drainage Areas, and consistent with Core Strategy policy EN14 Flood Risk, developers should aim to *minimise* surface water runoff from developments, and achieve *at least* the following runoff rates:
>
> - Greenfield runoff on Greenfield sites up to a 1 in 100 year storm event, including consideration of climate change
> - A 50% runoff rate reduction for Brownfield sites, with an aim of reducing runoff to Greenfield rates up to a 1 in 100 year storm event, including consideration of climate change

Figure 3.3 CDA Runoff Restrictions (Local Flood Risk Management Strategy)

CDA Flooding = Risk addressed as required by EN14.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 4 FLOOD ZONE REQUIREMENTS

4.1. Based on the current information the PDS is located within Flood Zone 1.

- *Flood Zone 1 Low Probability - Land having a less than 1 in 1,000 annual probability of river or sea flooding.*

Proposed Development Type

4.2. In accordance with the National Planning Policy Framework Practice Guidance on flooding, the development proposals would be classed as more vulnerable and are permitted within Flood Zones 1.

Flood Zone	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	✓	✓	✓	✓	✓
2	✓	Exception Test Required	✓	✓	✓
3a	Exception Test Required	x	Exception Test Required	✓	✓
3b	Exception Test Required	x	x	x	✓

Key: ✓ Development is appropriate x Development should not be permitted

Table 4.1 Flood Risk Classification (NPPF)

Policy Aims

4.3. Despite being in Flood Zone 1, developers and Local Authorities should still seek opportunities to reduce the overall level of flood risk in the area through the layout and form of development and the appropriate application of sustainable drainage techniques.

4.4. The proposed sustainable drainage techniques along with an outline drainage plan are discussed in further detail in **Section 6 & 7**.

Finished Floor Level Restrictions

4.5. No FFL restrictions in Flood Zone 1.

Flood Compensation

4.6. No compensation required in Flood Zone 1.

Flood Resilient Construction

4.7. No restrictions in Flood Zone 1.

Safe Access and Egress

4.8. Not required for Flood Zone 1.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 5 EXISTING DRAINAGE INFORMATION

PUBLIC SEWERS

5.1. The public sewers in the area are owned and maintained by United Utilities (UU). A copy of these records has been included within **Appendix C.**

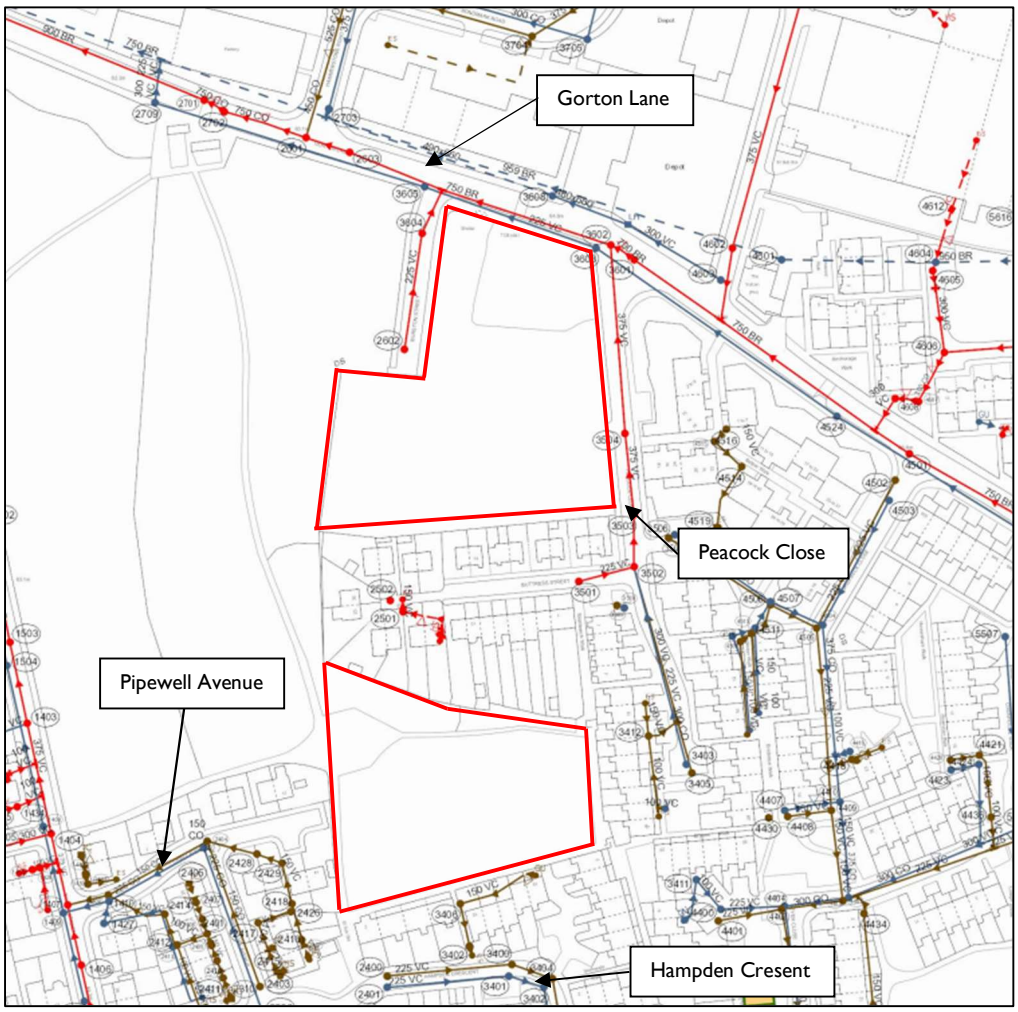


Figure 5.1 Sewer Records (United Utilities)

Surface Water Sewers

5.2. The nearest surface water sewer to the northern site is a 225mm pipe that runs along Gorton Lane. According to information from UU, the system is relatively shallow, with approximately 1.2 metres deep, and slopes from east to west.

5.3. For the southern site, there are two surface water networks close to the site:

- *Pipewell Avenue* *225mm pipe 1.8m deep.*
- *Hampden Cresent* *225mm pipe, 2m deep.*

Foul Water Sewers

5.4. The nearest foul water sewer to the northern site is the 225mm pipe within Peacock Close that connects into the combined sewer.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

5.5. As with the surface water, there are two foul water networks close to the southern site:

- *Pipewell Avenue* *150mm pipe 2.8m deep.*
- *Hampden Cresent* *225mm pipe, 3.1m deep.*

Combined Water Sewers

5.6. The closest combined network to the northern site starts at Buttress Street, carries on into Peacock Close and then enters Gorton Lane. There is also a 225mm combined water pipe in Burston Street that joins into the network within Gorton Lane.

- *Buttress Street* *225mm pipe 2.6m deep.*
- *Peacock Close* *375mm pipe, 3.3m deep.*
- *Gorton Lane* *750mm pipe, 4.3m deep.*
- *Burston Street* *225mm pipe, 1.1m deep*

5.7. For the southern site, the closest combined water network originates in Buttress Street.

Sewer Diversions

5.8. There are no assets shown within the PDS, no sewer diversions are expected.

PRIVATE DRAINAGE

5.9. No private drainage was found during GPR survey.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 6 SUSTAINABLE DRAINAGE STRATEGY

6.1. The general requirement set out by the NSSDS 2011 and NSTSSD 2015 technical documents is that 'the development must not increase the risk of flooding elsewhere.' In practical terms this means that the proposed development runoff rate must provide a betterment or be equal to the calculated greenfield rate.

Existing Peak Runoff Rate

6.2. The PDS is a greenfield site. The Flood Estimation Handbook (FEH) has been used to calculate the mean annual flood flow from the two sites using the HR Wallingford SuDS tool online.

Volume Wallingford Variables	Value
Ratio of M5-60 to M5-2 day rainfalls	0.355mm
Average Annual Rainfall (SAAR)	899mm
Red Line Boundary North Site	7872m^2/ 0.788 ha
Red Line Boundary South Site	5560m^2/ 0.560 ha

Table 6.1 Existing Peak Runoff Rate Variables

NORTH SITE

6.3. The results for the north site can be seen in **Figure 6.1** below, full calculations are available in **Appendix D**.

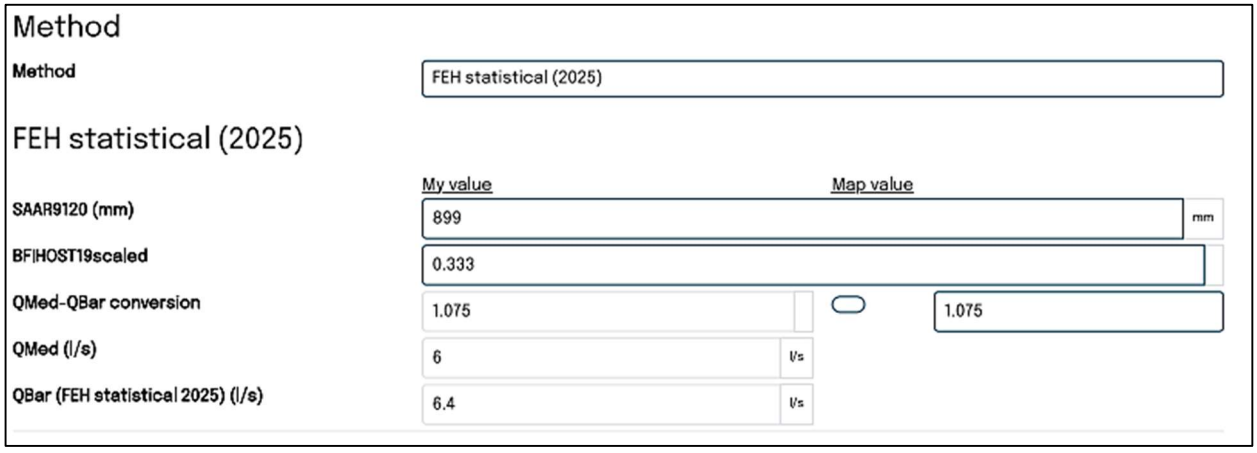


Figure 6.1 North Site QBAR Results

Growth Curve Factor

6.4. Growth curve factors have been derived for each of the 10 hydrological regions of the UK. These are based on the work carried out by the Flood Studies research and assists in calculating multiple peak runoff rates for different events using the estimate QBAR value.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

6.5. The HR Wallingford calculations are shown below in **Table 6.2**.

Hydrological Region	10				
Estimated QBAR Value	6.4				
Growth Curve Year	1	2	10	30	100
Total Greenfield Peak Runoff (l/s)	5.6	6.0	8.9	10.9	13.3

Table 6.2 North Site Peak Greenfield Runoff Rates

Proposed Development Runoff Rate

6.6. The proposed surface water discharge from the north site must be limited to or better than the estimated QBar value in **Figure 6.1**.

SOUTH SITE

6.7. The results for the south site can be seen in **Figure 6.2** below, full calculations are available in **Appendix D**

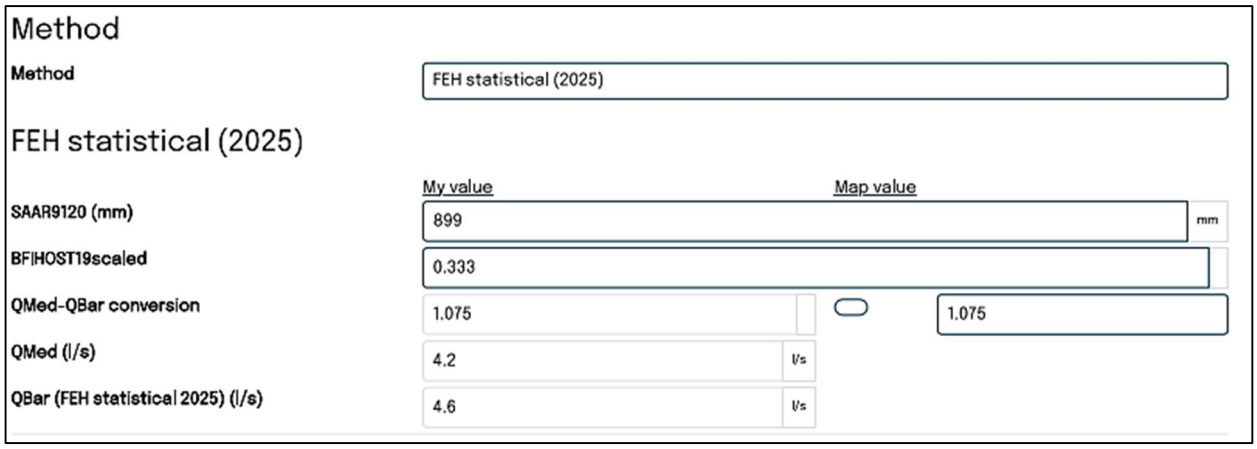


Figure 6.2 South Site QBAR Results

Growth Curve Factor

6.8. Growth curve factors have been derived for each of the 10 hydrological regions of the UK. These are based on the work carried out by the Flood Studies research and assists in calculating multiple peak runoff rates for different events using the estimate QBAR value.

6.9. The HR Wallingford calculations are shown below in **Table 6.3**.

Hydrological Region	10				
Estimated QBAR Value	4.6				
Growth Curve Year	1	2	10	30	100
Total Greenfield Peak Runoff (l/s)	4.0	4.2	6.3	7.8	9.5

Table 6.3 South Site Peak Greenfield Runoff Rates

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

Proposed Development Runoff Rate

6.10. The proposed surface water discharge from the south site must be limited to or better than the estimated QBar value in **Figure 6.2**.

PROPOSED RUNOFF DESTINATION

Surface Water Hierarchy

6.11. Paragraph 080 of the Flood Risk and Coastal Change Guidance within the Planning Practice Guidance sets out the following hierarchy of surface water runoff destinations:

i. Discharge into the ground (infiltration),

ii. Discharge to a surface waterbody,

iii. Discharge to a surface water sewer,

iv. Discharge to a combined sewer.

Discharge into the ground

6.12. There are five bands of soil classes in England which roughly describe the infiltration potential of an area. It is derived from factors such as, soil permeability, topography, and the likelihood of impermeable layers.

6.13. The soil classification for the PDS is type 4, a clayey and poorly drained soil. The site investigation identified that, for both the north and south site, the made ground compromised sand overlaying clay. For both sites, the infiltration tests showed that infiltration was too slow to calculate therefore discharging into the ground has been deemed unsuitable, the Phase 2 Geo-Environmental report can be seen in **Appendix E**.

Soil	WRAP	Runoff	Soil Value	Soil Characteristics
1	Very High	Very Low	0.15	Sandy, well drained
2	High	Low	0.30	Intermediate soils (sandy)
3	Moderate	Moderate	0.40	Intermediate soils (silty)
4	Low	High	0.45	Clayey, poorly drained
5	Very Low	Very High	0.50	Steep, rocky areas

Table 6.4 Soil Classification

Discharge to a surface water body

6.14. No surface water bodies on or around the site.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

Discharge to a surface water sewer

6.15. For the northern site, it is currently proposed to discharge into the public surface water sewer within Gorton Lane, at the rates proposed in **Figure 6.1.**

6.16. There are two networks close to the southern site. The network in Pipewell Avenue would be the most convenient connection point for the site, discharging at the rates proposed in **Figure 6.2**.

6.17. Following the submission of a Pre-Development Enquiry to United Utilities, points of connection have been approved in principle. The full United Utilities response can be seen in **Appendix F.**

Discharge to a combined sewer

6.18. If discharging into the surface water sewer is not feasible or cost-effective, the northern site has combined sewers along its east, north, and west boundaries that could serve as an alternative discharge point.

6.19. For the southern site, the closest combined sewer is located in Buttress Street, however the connection to this sewer has been deemed not feasible at this stage.

SUSTAINABLE DRAINAGE TECHNIQUES

6.20. Various SuDS techniques can be used for high and low-density developments. One or more of the below techniques could be incorporated at the detailed application stage to facilitate the required reduction/betterment in flow rates.

6.21. Some of these techniques will also provide all, or part of the required water quality treatment onsite by removing, capturing, and breaking down containments such as hydro-carbons and preventing the migration of sediment and heavy metals downstream.

SuDS Technique		Proposed Development Suitability
Porous pavements	Description	Pavements constructed with porous paving can provide runoff storage within the sub-base and runoff treatment.
	Suitability	Suitable for car parking and pedestrian areas. Suitability subject to detailed drainage design, topography, and infiltration rates.
Swales	Description	Relatively shallow naturally landscaped channels that convey and/or infiltrate the surface water runoff.
	Suitability	Due to the limited space these have not been proposed to provide storage and water quality treatment.
Retention Ponds	Description	Partially filled permanent water bodies that have been designed to provide temporary surface water storage during critical events.
	Suitability	No proposed for this development.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

Detention Basin	Description	Naturally vegetated depression. Designed to store surface water runoff on a temporary basis during critical events.
	Suitability	Proposed to provide storage and water quality treatment.
Soakaways	Description	Drainage structures designed to store and infiltrate runoff into the ground.
	Suitability	Not suitable for this type of development.
Green Roofs	Description	Vegetated roof areas that reduce and runoff and increase times of concentration.
	Suitability	Not suitable for this type of development.
French Drains	Description	Trench usually filled with stone/gravel and a perforated pipe. Provides attenuation, treatment through filtration and conveyance.
	Suitability	Not proposed for this development.
Underground Storage	Description	Attenuation structures installed below ground to provide surface water storage.
	Suitability	Suitable in hard landscaped areas.

Table 6.5 SuDS Techniques

CLIMATE CHANGE ALLOWANCE

6.22. The PDS is located within the Irwell Management Catchment, and the Environment Agency recommends that this development type should use a climate change allowance of **40%** is used during the 3.3% AEP and an allowance of **45%** is used during the 1% AEP event. This allowance will therefore need to be added to the rainfall intensities during the detailed design stage.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 7 PRELIMINARY DRAINAGE STRATEGY

7.1. A preliminary drainage strategy has been produced to identify any major issues that may affect the foul and surface water drainage for the proposed development. All recommendations are preliminary at this stage and should be developed/investigated further during the detailed application stage.

7.2. A preliminary drainage layout for both schemes, illustrating the below strategy, is included in **Appendix G.**

SURFACE WATER STRATEGY

North Site

7.3. A new drainage network will collect and convey the proposed development runoff to the existing surface water network within Gorton Lane.

7.4. Based on the runoff calculations in Section 6, the runoff from the development should be permitted to discharge at a rate of 6.4 l/s.

Development Area	Approx Impermeable Area	Climate Change +45% Attenuation
0.78ha	70% (assumed, including urban creep) = 0.546ha	337-484m^3

Table 8.1 Estimated Attenuation Volume – North Site

Note: The storage volumes noted above are estimates only and do not take into account the volume within the network or the potential/allowable surface flooding which may be available.

Water Quality

7.5. The site will only be allowed to discharge clean/treated surface water runoff. The exact treatment process will be confirmed during the detailed design stage.

7.6. At this stage we would recommend that the proposed car parking bay are permeable pavements, the open graded sub-base can cleanse the runoff. Runoff within the sub-base will discharge to the underground network (System C) before leaving the site.

South Site

7.7. A new drainage network will collect and convey the proposed development runoff towards the existing surface water sewer in Pipewell Avenue.

7.8. Based on the runoff calculations in Section 6, the runoff from the development should be permitted to discharge at a rate of 4.6l/s.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

Development Area	Approx Impermeable Area	Climate Change +45% Attenuation
0.56ha	70% (assumed, including urban creep) = 0.392ha	242-347m³

Table 8.2 Estimated Attenuation Volume – South Site

Note: The storage volumes noted above are estimates only and do not take into account the volume within the network or the potential/allowable surface flooding which may be available.

FOUL WATER STRATEGY

North Site

Foul Water Drainage

7.9. A new underground drainage network will collect and convey the effluent from the proposed development to the combined sewer within Burston Street.

Foul Water Flows

7.10. The Design and Construction Guidance recommends that drainage designs for residential developments should be based on 4000 litres per day per dwelling. Based on this the PDS would generate the following flows.

Q Foul Water (litres) = *4000 litres per dwelling*

Dwellings/Units = *52 units*

Q Foul Water (litres) = *52 x 4000 = 208000 litres*

Q Foul Water (l/s) = *208000 / (24 x 60 x 60) = 2.41 l/s*

Development Connection Point

7.11. The proposed flow rate and any connection point must be agreed with United Utilities during the detailed design stage. Any proposed drainage should also be designed in accordance with Building Regulations Document H1 and the Design and Construction Guidance.

South Site

Foul Water Drainage

7.12. A new underground drainage network will collect and convey the effluent from the proposed development to the existing foul water network within Pipewell Avenue.

Foul Water Flows

7.13. The Design and Construction Guidance recommends that drainage designs for residential developments should be based on 4000 litres per day per dwelling. Based on this the PDS would generate the following flows.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

Q Foul Water (litres) = *4000 litres per dwelling*

Dwellings/Units = *23 units*

Q Foul Water (litres) = *23 x 4000 = 92000 litres*

Q Foul Water (l/s) = *92000 / (24 x 60 x 60) = 1.06 l/s*

Development Connection Point

7.14. The proposed flow rate and any connection point must be agreed with United Utilities during the detailed design stage. Any proposed drainage should also be designed in accordance with Building Regulations Document H1 and the Design and Construction Guidance.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 8 FUTURE DRAINAGE MAINTENANCE

General Drainage Maintenance

8.1. The end-users will be provided with as-built plans to ensure that the private development drainage within their responsibility undergoes a regular maintenance regime (either as required or every 2-5 years). This includes, jetting, vacuumation and a visual/CCTV survey to check the structural condition of pipes and manholes.

SuDS Maintenance

8.2. The maintenance for the onsite SuDS elements will be split into the following sections and will be undertaken either by an appointed Maintenance Company or United Utilities once the scheme/plot has been completed.

- *Regular (weeding/inspections/sweeping/litter removal/grass cutting),*
- *Occasional (sediment removal/vacuum brushing) and*
- *Remedial maintenance (repair and replacement).*

8.3. The Operation and Maintenance Manual will be provided at the later stage and will be applied following the site completion. This manual will outline the location(s) of any drainage infrastructure and detail the maintenance that is required. It will also include the associated cost, and how often each activity should be carried out.

8.4. Records must be kept for any maintenance works undertaken and must be available for inspection when requested.

Site Specific SuDS elements

8.5. The design of the onsite surface water drainage networks will be carried out during the detailed design stage. But we envisage that the design will include the following SuDS elements.

- *Permeable paving*
- *Cellular Storage*
- *Detention Basin*

8.6. The maintenance required for each of the SuDS elements is shown below in **Table 9.1.**

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

Operation and Maintenance Activity	Suds Component												
	Pond	Wetland	Detention Basin	Infiltration Basin	Soakaway	Infiltration Trench	Filter Drain	Cellular Storage	Permeable Pavement	Swales/ Bioretention	Filter Strip	Green Roof	Proprietary Systems
Regular Maintenance – Monthly Basis													
Inspection	●	●	●	●	●	●	●	●	●	●	●	●	●
Litter and debris removal	●	●	●	●	○	●	●	○	●	●	●		○
Grass cutting	●	●	●	●	○	●	●	○	○	●	●		
Weed and invasive plant control	○	○	○	○		○	○		○		○	●	
Shrub management	○	○	○	○					○	○	○		
Shoreline vegetation management	●	●	○										
Aquatic vegetation management	●	●	○										
Occasional Maintenance – Annually or as required													
Sediment management	●	●	●	●	●	●	●	●	●	●	●		●
Vegetation replacement	○	○	○	○						○	○	●	
Vacuum sweeping and brushing									●				
Remedial Maintenance – As required													
Structure rehabilitation/repair	○	○	○	○	○	○	○	○	○	○	○	○	
Infiltration surface reconditioning				○	○	○	○		○	○	○		

● Will be required ○ May be required

Table 9.1 SuDS Maintenance Management

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 9 CONCLUSION

9.1. A Flood Risk Assessment is required to satisfy all requirements of the National Planning Policy Framework (NPPF) and the Flood Risk and Coastal Change Planning Practice Guidance (PPG).

9.2. This Flood Risk Assessment as far as reasonably practical; determines the potential flood risk associated with the site and has concluded the following:

a) The proposed site is located within Flood Zone 1 (Low probability risk of fluvial flooding).

b) The line and level of the existing drainage connection/outfall(s) should be confirmed during the detailed design stage via a CCTV survey or topographical survey.

c) The peak surface water runoff from the proposed developments must be restricted 6.4 l/s for the southern site and 4.6 l/s for the northern site. (**Section 6)**.

d) Surface water attenuation will be required because of the runoff restriction. The estimated attenuation is noted within **Section 7** and the exact type/volume will be confirmed during the detailed design stage.

e) Only clean/treated surface water runoff will be allowed to discharge from the site. Surface water runoff must be treated in accordance with CIRIA C753 (**Section 7)**.

f) The foul water effluent should discharge to the combined sewer in Burston Street, for the north site, and the foul water network with Pipewell Avenue, for the south site. The allowable foul water discharge rate must be approved by UU via a S106 and/or S104 application.

g) The proposed onsite drainage system must not contribute to any offsite flood risk or overland flow risk. Any residual risk must be effectively managed onsite with the use of appropriate drainage and/or topographical level consideration.

h) The proposed surface water network for the proposed developments must include the "Central" climate change allowance of 40%. The proposed network must also be checked against the "Upper" climate change allowance of 45% to ensure any surface flooding remains wholly within the development.

9.3. SGi recommends that the Local Planning Authority accept this Flood Risk Assessment and Drainage Strategy in support of the Planning Applications.

Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX A1



Topographical Survey Legend

Bin	Litter bin	TL	Tie line
BH	Bore Hole	TP	Telegraph pole
Bol	Bollard	TPS	Tactile paving slabs
BS	Bus stop	TS	Traffic signal light
BT	British telecom ic	TV	Television cover
CPS	Concrete paving slabs	VP	Vent pipe
DR	Drain	WM	Water meter
Elec	Electrical ic	WO	Wash Out
EP	Elec. pole	UTL	Unable to lift
ER	Earth rod	Fence annotation	
FH	Fire Hydrant	B/W	Barbed wire
FP	Flagpole	C/B	Closed boarded
FT	Floodlight	C/I	Corrugated iron
G	Gully	C/L	Chain link
GP	Gate post	C/P	Concrete panel
GV	Gas valve	H/R	Hand rail
IC	Inspection cover	I/R	Iron railings
JB	Junction box	O/B	Open boarded
KO	Kerb outlet	P/C	Post & chain
LB	Letter box	P/R	Post & rail
LP	Lamp post	P/W	Post & wire
Mkr	Utility marker	W/M	Wire mesh
MP	Mile post	Level prefix descriptions	
MW	Monitoring Well	AL	Arch level
NP	Name plate	BL	Bed level
P	Post	CL	Cover level
PM	Parking meter	EH	Eaves level
RE	Rodding eye	FL	Floor level
RS	Road sign	IL	Invert level
rwp	Rain water pipe	PL	Parapet level
SP	Sign post	RH	Roof/ridge level
ST	Stop tap	SL	Soffit level
SB	Service Box	Spr	Arch springing level
SV	Stop valve	Top	Top of pipe/culvert
TCB	Telephone call box	WH	Wall height
TH	Trial Hole	WL	Water level

BENCH MARK INFORMATION

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

NOTES

ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN

DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING

Levels defining edge of carriageway are observed at channel (bottom of kerb). Unless otherwise stated.

TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE THE AVERAGE SPREAD. THE DRIP LINE LAYER DENOTES THE TREES EXTREMITY

SURVEY STATIONS

stn1	388324.698	396596.218	64.820
stn2	388356.810	396655.635	64.747
stn3	388310.080	396672.199	63.905
stn3a	388291.191	396624.017	64.041
stna	388321.699	396466.405	65.555
stnb	388356.933	396486.911	65.709
stnc	388275.085	396426.940	65.394

REVISIONS

REV.	DESCRIPTION	SURVEYED	DRAWN	DATE
A	SLIP TRENCHES ADDED WHERE REQUESTED	MG	JC	01.07.2025
B	ADDITIONAL SLIP TRENCHES ADDED	MG	JC	10.07.2025
C	ADDITIONAL AREAS SURVEYED	MG/JB	JB	19.02.2026

JLP Surveying

JLP Surveying Consultants Ltd,
Suite 45 Rodney House,
King Street,
Wigan
WN1 1BT
Tel - 01942 243313
Fax - 01942 492230
Mobile - 07710 428498
EMAIL:- peterhouston@jlpsurveys.com

PROJECT

Peacock close
Manchester

DRAWING TITLE

Topographical Land Survey

SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
1 : 500	A1	1	09.05.2025	C

DRAWING NUMBER

S25-0347-1

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX B I



1B2P APT Type A M4(2)
2B3P APT Type B M4(2)
2B3P APT Type C M4(2)
2B3P APT Type D M4(3)
2B3P APT Type D.1 M4(3)
2B3P CORNER
Chiltern
H24.3
Rendlesham
Wychwood

CDM REGULATIONS 2015. All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record. All intellectual property rights reserved.

Designed with reference to the surveys, information and reports listed: Xxxxxxxxxxxxx Xxxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx.

Rev	Date	Description	Dwn	Ckd
P06	23/03/26	STAGE 3A WIP-SUBJECT TO ONGOING DESIGN COORDINATION	LE	JK
P07	28/05/26	ISSUED FOR CO-ORDINATION	JK	LE

Drawn LE
Checked JK
Date 21/01/26
Scale @ A1 1 : 250

PEACOCK CENTRE, GORTON

PROPOSED SITE PLAN - PEACOCK CENTRE

Project	Origin	Function	Space	Form	Discipline	Number
DN0385	PRP -	Z1 -	00 -	DR -	A -	20100

Revision P07 -
Status S2 - STAGE 3A

PRP



0m 5m 10m 15m 20m

KEY:

- BX — BLOCK REFERENCE
- XX — PLOT NUMBER
- BIKE STORE
- EV — WALL MOUNTED ELECTRIC VEHICLE CHARGER

HOUSE TYPES

- HT23.8 - 2B3P
- WHITELEAF - 2B3P
- CHILTERN - 2B4P
- HT23.7 - 3B4P
- RENDLESHAM - 3B5P
- WYCHWOOD - 3B5P
- HT23.1 - 3B5P
- HT24.3 - 4B6P

APARTMENT TYPES

- 1B2P APT Type A M4(2) - 5 no
- 1B2P APT Type A.2 M4(2) - 2 no
- 2B3P APT Type B M4(2) - 3 no
- 2B3P APT Type C M4(2) - 1 no
- 2B3P APT Type D M4(3) - 3 no
- 2B3P APT Type D.1 M4(3) -1 no
- 2B4P APT Type D.2 M4(2) -8 no
- 2B4P APT Type E M4(2) - 2no
- FACILITIES MANAGEMENT
- PLANT
- CIRCULATION

CDM REGULATIONS 2015. All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record. All intellectual property rights reserved.

Designed with reference to the surveys, information and reports listed: Xxxxxxxxxxxxx Xxxxxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx.

Rev	Date	Description	Dwn	Ckd
P07	28/05/26	ISSUED FOR CO-ORDINATION	JK	LE
P08	03/06/26	WIP ISSUED FOR CO-ORDINATION. LANDSCAPE PLANS UPDATED TO REFLECT PLANIT PLANNING LAYOUT.	LE	JK
P09	22/06/26	PLANNING ISSUE	LE	JK
P10	02/07/26	BLOCK 03 HOUSE TYPE UPDATED FOR PLANNING	LE	JK

Drawn	LE
Checked	JK
Date	21/01/26
Scale @ A1	1:250

PEACOCK CENTRE, GORTON

PROPOSED SITE PLAN - PIPEWELL AVENUE

Project	Origin	Function	Space	Form	Discipline	Number
DN0385	PRP -	PA -	00 -	DR -	A -	20101
Revision			Status			
P10 -			S4 -			

PRP

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX C1

United Utilities
Water for the North West

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Renata Bochenek

45
Cross Street,
Manchester,
M2 4JF

FAO:

Your Ref: The Peacock Centre
Our Ref: UUPS-ORD-635048
Date: 02/03/2025

Dear Sirs

Location: A P C POWDER COATING MANCHESTER LTD UNIT 4 BONDMARK ROAD, MANCHESTER, M18 8EP

I acknowledge with thanks your request dated 25/02/2025 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. http://www.unitedutilities.com/work-near-asset.aspx .

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please contact us .

Yours Faithfully,

Karen McCormack
Property Searches Manager

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

Water for the North West

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
0503		CO		150			VC	7.348296	
1704	61.62	SW	60.22	670			BR	38.27532	1 in 91
3801	63.98	SW	61.43	450			CO	42.45067	1 in 90
0501	63.6	CO	61.47	225			VC	31.90611	1 in 94
3605	63.11	SW	61.78	225			VC	97.41663	1 in 487
3304	65.6	SW	61.51	525			VC	32.64965	1 in 181
5827		SW		150			VC	10.66455	
1317		CO		150			VC	5.299322	
2429		FO		150			VC	9.202667	
2704	63.98	SW	61.72	375			CO	47.53946	1 in 280
2703	63.2	SW	61.53	375			CO	3.162278	
1506	62.69	CO	59.1	450			VC	35.69314	1 in 238
2304	64.97	FO	62.06	225			VC	91.59409	1 in 139
1404	63.75	CO	59.82	375			VC	38.93968	1 in 354
4302	66.23	SW	63.87	150			VC	51.88449	
4410	66.87	SW	64.76	150			VC	16.12452	1 in 16
1427		SW		100			VC	7.748961	
1505	62.89	SW	61.3	300			VC	47.29694	1 in 110
4304	66.57	SW	64.34	225			VC	21.09502	
2706	64.03	FO	59.44	450			CO	32.28003	1 in 231
1307		CO		150			VC	6.635079	
2300	64.36	SW	62.84	300			VC	20.23083	
1312		CO		150			VC	9.905248	
1503	63.38	CO	59.6	375			VC	41.7732	1 in 149
4502	66.52	FO	63.86	225			VC	57.70615	1 in 222
1501	63.06	CO	59.72	225			VC	9	1 in 23
0405		CO		150			VC	25.6127	
2205	64.83	SW	62.16	300			VC	42.77046	1 in 130
3201	65.57	SW	61.33	525			VC	28.01785	
1306	64.41	SW	0	300			VC	58.55476	
0802	60.4	CO	58.43	225			VC	25	1 in 62
4701	65.48	CO	61.88	375			VC	113.0541	1 in 153
2321		FO		150			PVC	1.822887	
5300	67.38	SW	65.01	300			CO	57.2014	1 in 97
3501	65.28	CO	62.68	225			VC	19.64688	1 in 68
1402	63.87	SW	61.56	225			VC	21.18962	1 in 26
2602	63.94	CO	62.79	225			VC	40.4475	
5838		FO		150			CO	23.52539	
5510	67.4	FO	65.01	225			VC	32.01562	1 in 100
3506	65.43	SW	63.32	300			CO	40.22437	1 in 251
3603	64.59	SW	63.3	225			VC	62.62587	1 in 42
2804	64.42	SW	62.16	375			VC	37	1 in 112
4509		SW		100			VC	8.151942	
3313		FO		150			VC	2.280165	
4424		SW		100			VC	27.53762	
4511		FO		150			VC	13.11808	
3213		FO		150			VC	13.31293	
1410	64.16	FO	60.71	150			VC	14.58127	1 in 34
1507		CO		100			VC	6.992642	
4400	66.51	SW	64.18	225			VC	22.02271	
4405	67.88	FO	62.41	300			CO	21.2132	1 in 193
5303	67.41	FO	64.26	225			VC	54.3783	1 in 121
5404	68.94	SW	66.4	300			VC	10.04988	1 in 56
4403	67.37	SW	62.76	450			CO	22.2036	
2707	66.41	SW	63.89	950			BR	53.00943	1 in 83
4803	65.47	CO	62.1	375			VC	41.48494	1 in 189
3701	63.99	SW	62.36	300			CO	56.75385	1 in 315
3504	65.29	CO	61.9	375			VC	55.19202	1 in 42
1455		CO		100			VC	2.513164	
2316		CO		100			VC	14.16059	
2709	62.66	SW	61.58	300			VC	8.062258	1 in 21
5702	67.5	CO	65.89	225			VC	6.403124	
1601	62.39	SW	60.87	300			VC	72.27724	1 in 219
4407	66.52	SW	65.21	100			VC	10.19804	1 in 46
4603	65.19	SW	63.82	300			VC	51.14398	1 in 50
2427		FO		150			VC	12.77713	
2308	64.48	CO	62.07	150			VC	11.83415	1 in 13
2707	64.12	SW	62.1	300			VC	27.89265	1 in 147
5402	69.2	SW	66.81	300			VC	30.67572	
1702	61.45	SW	60.12	300			VC	9	1 in 28
3608	64.58	SW	62.09	490			BR	82.5409	1 in 147
0420		CO		150			VC	12.48242	
2401	61.59	SW	56.81	900			BR	77.08094	1 in 63
2401	65.36	SW	63.25	225			VC	42.19004	1 in 65
3400	65.82	FO	61.86	225			VC	14.86607	1 in 99
1316		CO		150			VC	9.771783	
0502	63.3	CO	61.12	225			VC	35.01198	
4402	67.61	SW	63.11	450			CO	44.40721	1 in 261
3204	64.83	FO	61.4	225			VC	41.75877	1 in 80
3404	65.89	FO	61.71	225			VC	51.78803	1 in 75
4507	66.28	FO	62.32	225			VC	17.88854	1 in 149
4418		FO		100			VC	8.321901	
2705	64.02	FO	59.24	525			CO	26.92582	1 in 135
4510		FO		150			VC	4.811526	
5304	67.51	FO	64.69	225			VC	28.84441	1 in 67
2302	64.97	SW	62.8	300			VC	88.43874	1 in 138
1309		FO		100			VC	7.570709	
0408		CO		150			VC	13.05609	
1701	61.73	CO	0	600			VC	23.08679	
5504		CO		225			VC	22.91981	
3412		FO		150			VC	11.68498	
2803		SW	0	300			VC	52.88667	
5400	68.6	CO	65.22	300			VC	27.07397	1 in 45
1438		CO		100			VC	8.171019	
2411		FO		150			VC	6.403356	
3704	64.03	FO	59.5	450			CO	65.52099	1 in 345
5301	67.54	SW	65.46	225			VC	29.15476	1 in 71
4305	66.67	FO	61.26	300			VC	42.80187	1 in 306
1304	64.62	CO	63.09	225			VC	41.7732	1 in 45
5606	66.74	CO	63.69	300			VC	38.11824	1 in 238
4805	66.27	CO	63.17	300			VC	37.33631	1 in 249
2400	65.37	FO	62.27	225			VC	43.18565	1 in 105
1321		FO		100			VC	6.848864	
2314		CO		100			VC	19.66747	
1502	63.02	CO	59.32	450			VC	39.05125	1 in 178
4303	66.38	FO	63.99	150			VC	24.18677	1 in 56
1303	64.19	CO	62.15	225			VC	21.03481	1 in 16
3202	67.74	SW	61.1	600			VC	13.0384	1 in 326
2702	62.65	CO	58.49	750			BR	3.605551	1 in 45
1200	64.01	CO	63	300			VC	90.62009	1 in 349
3305	65.63	FO	60.76	300			CO	14.76482	1 in 164
3703	64	FO	59.87	375			CO	31.90611	1 in 123
3302	65.72	SW	61.66	525			VC	33.13608	1 in 221
2318		FO		150			VC	16.08166	
1450		FO		100			VC	3.680682	
3203	65.82	SW	60.38	300			VC	27.20294	1 in 453
1405	63.96	CO	60.41	300			VC	19.84008	1 in 40
2701	62.53	CO	59.24	900			BR	89.69392	1 in 63
4606	66.53	CO	63.53	300			VC	8.944272	1 in 112
3403	65.6	SW	63.49	300			CO	35.17101	1 in 64
1407	64.11	CO	60.13	375			VC	25.17172	1 in 87
3604	63.18	CO	0	225			VC	16.55295	
2428		FO		150			VC	17.62741	
5706		CO		150			VC	4.345753	
2410		FO		150			VC	5.725332	
2408		FO		100			VC	5.386767	
4506	66.31	SW	63.14	300			CO	19.69772	1 in 90
3807	64.24	SW	61.79	375			VC	29.12044	1 in 194
2603	63.23	CO	58.98	750			BR	15.81139	1 in 105
1301	64.47	CO	61.17	300			VC	35.23006	1 in 114
4206	66.59	FO	63.81	225			VC	39.11522	1 in 59
2803		SW	0	225			VC	53.45091	
3705	64.37	SW	62.18	300			CO	39.56008	1 in 172
5406	68.16	SW	65.14	300			VC	31.38471	1 in 101
4504	66.45	SW	62.9	375			CO	30.14963	
0704	61.6	CO	55.15	900			BR	125.3284	
3503	65.43	CO	62.05	375			VC	28.16026	1 in 188
3300	66.16	SW	61.84	525			VC	42.57934	1 in 237
3805	64.02	FO	60.59	225			VC	32.24903	1 in 230
3200	65.59	FO	60.57	300			VC	28.30194	1 in 149
3806	64.05	FO	60.34	300			CO	46.57253	1 in 186
0209	63.38	SW	59.99	300			VC	83.81527	1 in 113
2802	64.04	FO	61.09	300			CO	30.41381	1 in 253
0401	63.38	CO	61.34	225			VC	12.52996	
0506		CO		150			VC	12.50089	
5703	67.45	CO	65.83	225			VC	65.51414	1 in 262
4802	65.5	SW	62.16	750			BR	126.1269	1 in 105
1504	63.44	SW	61.67	300			VC	63.15061	1 in 171
2315		CO		100			VC	26.33124	
4505	66.46	FO	62.19	225			VC	31.14482	
4513		SW		100			VC	10.59137	
4408	66.42	SW	64.94	150			VC	15.13275	
2414		FO		150			VC	21.28805	
0400	63.37	CO	61.28	225			VC	54.08327	1 in 55
5605	67.08	FO	64.69	300			VC	37.05402	1 in 37
3602	64.67	CO	60.34	750			BR	95.57261	1 in 70
1437		FO		100			VC	7.527121	
4208	66	FO	60.32	300			VC	55.14526	1 in 153
0305	63.37	CO	61.62	225			VC	25.70992	
1406	63.89	CO	59.84	300			VC	21.21307	
3502	65.78	CO	62.37	375			VC	18	1 in 56
5808	66.46	CO	63.57	225			VC	25.96151	1 in 87
2305	65.33	FO	63.4	150			VC	9.450429	1 in 7
2413		SW		100			VC	32.91039	
4605	66.42	CO	63.68	300			VC	6.082763	1 in 152
4607	66.62	CO	63.36	300			VC	4.123106	1 in 206
4806	66.88	SW	64.67	675			BR	40.26164	1 in 16
4306	67.47	SW	62.84	525			CO	22.4722	1 in 45
2402	64.55	SW	62.69	225			CO	37.55204	1 in 139
5607	66.44	SW	64.28	375			CO	11.40175	1 in 57
2412		FO		100			VC	11.62709	
4602	65.24	CO	61.12	375			VC	25.31798	
2307	64.67	SW	62.98	225			VC	29.2039	1 in 195
3311		FO		100			VC	8.650914	
4804	65.52	CO	62.5	375			VC	42.44997	1 in 106
0403	64.06	CO	62.07	225			VC	74.72885	1 in 131
1408	64.11	SW	62.42	225			VC	16.0981	1 in 95
4434		FO		150			VC	7.476602	
2301	64.38	CO	61.18	225			VC	26.55988	1 in 2656
0702	61.52	CO	55.58	900			BR	24.08319	1 in 56
3505	65.44	FO	62.61	225			VC	41.88078	1 in 155
5604	67.14	SW	65.43	450			CO	47	1 in 61
3405	65.92	FO	63.12	225			VC	37.36308	1 in 117
2322		FO		100			PVC	11.85614	
0801	60.67	CO	58.03	225			VC	31.01612	1 in 16
3309		CO		100			VC	3.213643	
1434		CO		100			VC	3.594636	
1313		FO		100			VC	2.718893	
1401	63.88	SW	62.78	225			VC	20.09975	1 in 16
5405	68.62	SW	66.02	300			CO	11	1 in 25
0208	63.64	CO	53.12	300			BR	49.21046	1 in 328
3303	65.72	FO	60.91	300			CO	32.14032	1 in 214
2801	64.04	FO	61.86	375			CO	68.68042	1 in 48
5509	67.52	SW	66.25	225			VC	92.96236	1 in 58
2306	64.76	SW	62.91	225			CO	59.82872	1 in 272
1409	64.06	SW	62.25	300			VC	30.48883	1 in 82
4423		SW		100			VC	9.83701	
1201	64	SW	62.04	225			VC	16.76305	
2417		FO		100			PE	11.92871	
3803	64.25	SW	60.96	750			CO	246.2377	1 in 67
1322		FO		100			VC	8.246798	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4409	66.9	FO	64.63	150			VC	31.257	
3301	66.16	FO	61.12	300			VC	21.09502	1 in 234
4514		FO		150			VC	23.09241	
2404	64.59	FO	61.84	150			CO	38.75735	1 in 34
1603	61.91	SW	60.54	300			VC	61.39218	1 in 146
3402		FO		150			VC	3.305752	
2708	64.04	FO	59.55	450			CO	30.01666	1 in 300
4503	66.51	SW	64.34	225			VC	23.70654	1 in 263
4209	66.69	SW	64.42	300			VC	42.54409	1 in 60
4401	66.49	FO	63.37	225			VC	22.36068	1 in 30
3804	63.97	FO	60.73	225			VC	18.43909	1 in 168
5837		SW		150			VC	10.55518	
1451		FO		100			VC	10.09295	
4515		FO		150			VC	12.83874	
3411		SW		100			VC	13.19529	
1602	62.14	CO	58.71	600			VC	65	
1703	61.41	SW	59.8	860			BR	35.77709	
4501	66.46	CO	61.48	750			BR	116.2569	1 in 108
4608	66.5	CO	63.27	300			VC	13.0384	
2403	64.71	FO	62.73	150			CO	53.19392	1 in 60
3802	64.01	FO	61.81	225			VC	50.96077	1 in 78
4404	67.63	FO	62.26	300			CO	22.36068	1 in 43
5507	67.9	SW	66	225			VC	66.18913	
1400	63.71	SW	61.87	300			VC	56.93646	1 in 285
1515		CO		150			VC	23.44172	
3702	64.01	FO	60.08	300			CO	20.61553	1 in 187
2426		FO		150			VC	14.51134	
2407		FO		100			VC	6.11376	
3601	64.82	CO	60.4	700			BR	5	1 in 167
2317		CO		100			VC	9.366288	
3401	65.82	SW	62.6	225			VC	12.64911	1 in 67
1300	63.99	SW	62.33	300			VC	31.36376	1 in 392
2303	65.33	SW	63.93	300			VC	12.49528	1 in 11
4416		SW		100			VC	5.088661	
3402	65.94	SW	62.41	300			VC	48.6621	1 in 65
2409		FO		150			VC	4.063864	
4601	65.36	SW	63.25	959			BR	164.4688	1 in 105
1302	64.11	CO	60.86	300			VC	27.4737	1 in 27
4524	66.13	SW	64.64	225			VC	101.2571	1 in 77
2901	63.08	CO	58.83	750			BR	4.86607	1 in 186
0402	64.28	CO	62.29	225			VC	59.22848	1 in 114
1403	63.58	CO	59.7	375			VC	28.63564	1 in 286
3406		FO		150			VC	14.95315	
1428		CO		100			VC	6.470035	
2501		CO		150			VC	4.240685	
5612		CO		150			VC	12.95603	
0306		CO		100			VC	2.749093	
0307		CO		100			VC	3.376997	
4421		FO		100			VC	22.35733	
5621		CO		150			VC	5.432716	
1305	64.7	CO	63.09	225			VC	65.52099	1 in 82
2323		FO		100			VC	17.34791	
4519		FO		150			VC	0.4094835	
2325		FO		100			VC	4.904227	
4516		FO		150			VC	5.861765	
4436		FO		100			VC	10.84421	
0411		CO		150			VC	6.562401	
5704	67.28	CO	65.5	225			VC	68.65856	1 in 221
5407		FO	0	225			VC	67.6757	
1412		CO		150			VC	6.253372	
4420		FO		100			VC	10.03043	

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- DNM Network Monitoring Point
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

A P C POWDER COATING MANCHESTER LTD UNIT
4 BONDMARK ROAD,
MANCHESTER,
M18 8EP

Scale: 1:1250 **Date:** 02/03/2025

Sheet: 1 of 1

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Crown copyright and database rights 2025 Ordnance Survey 0000813445. Unauthorised reproduction will infringe these copyrights.

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX D I

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

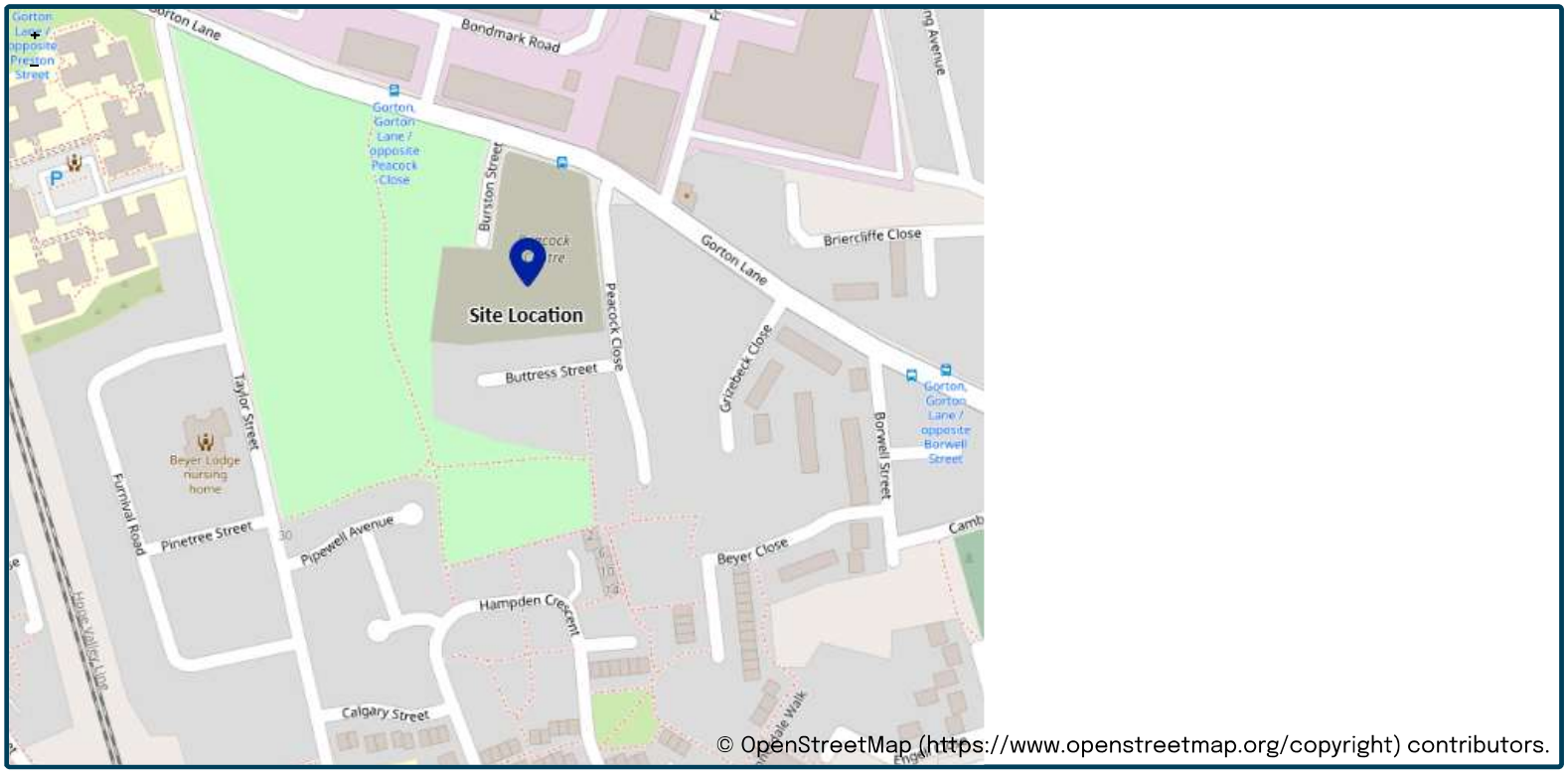
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	15/01/2026
Calculated by	PMB
Reference	C1878
Model version	2.2.2

Location

Site name	Peacock Centre (Peacock close)
Site location	Manchester



Site easting (British National Grid)	388321
Site northing (British National Grid)	396578

Site details

Total site area (ha)	0.787 ha

Greenfield runoff

Method

Method	FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	899 mm		
BFIHOST19scaled	0.333		
QMed-QBar conversion	1.075		1.075
QMed (l/s)	6 l/s		
QBar (FEH statistical 2025) (l/s)	6.4 l/s		

Growth curve factors

	My value		Map value
Hydrological region	10		10
1 year growth factor	0.87		
2 year growth factor	0.93		
10 year growth factor	1.38		
30 year growth factor	1.7		
100 year growth factor	2.08		
200 year growth factor	2.37		

Results

Method	FEH statistical (2025)	
Flow rate 1 year (l/s)	5.6	l/s
Flow rate 2 year (l/s)	6.0	l/s
Flow rate 10 years (l/s)	8.9	l/s
Flow rate 30 years (l/s)	10.9	l/s
Flow rate 100 years (l/s)	13.3	l/s
Flow rate 200 years (l/s)	15.2	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.2) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

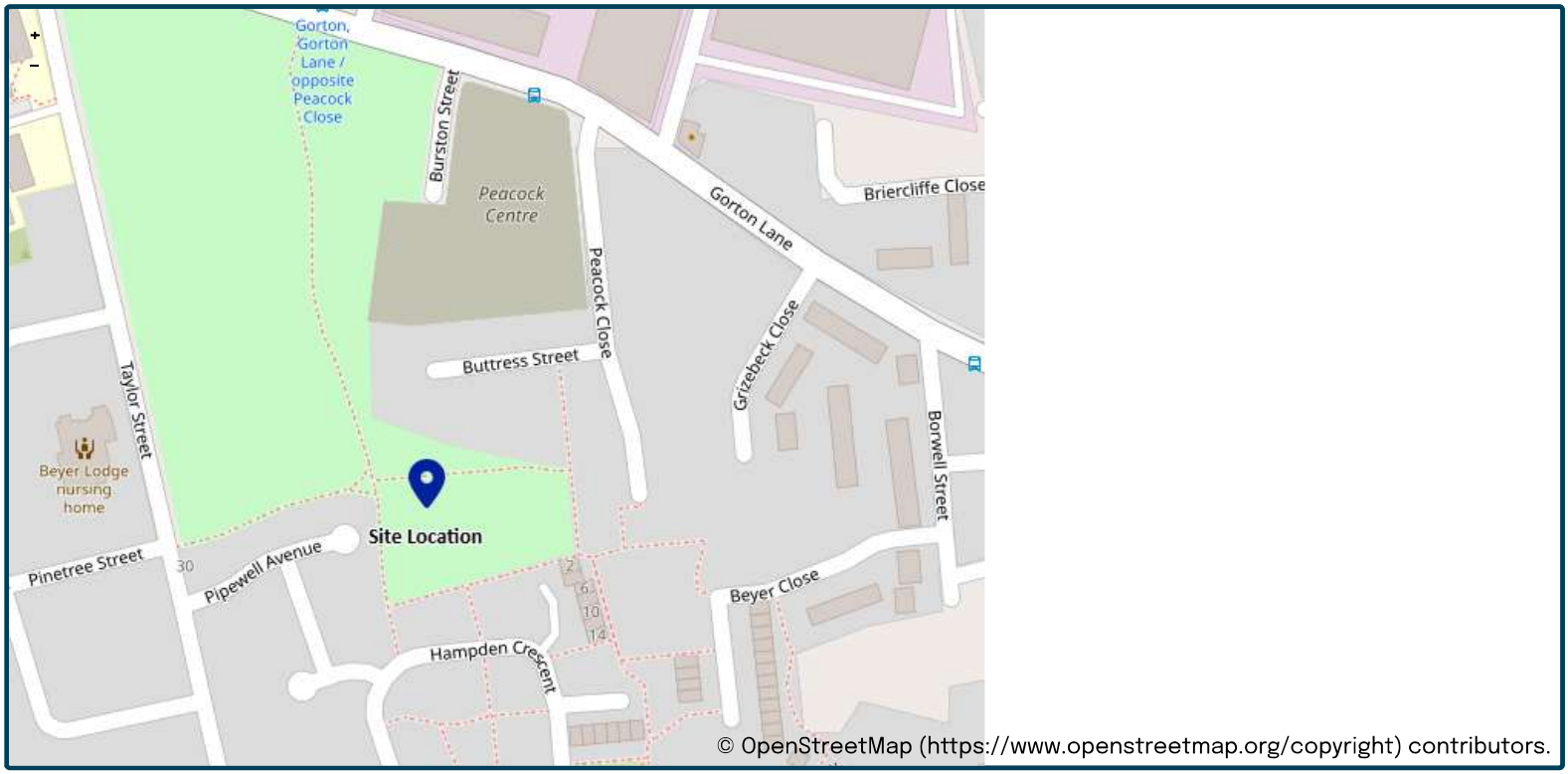
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	15/01/2026
Calculated by	PMB
Reference	C1878
Model version	2.2.2

Location

Site name	Peacock Centre (Pipewell Avenue)
Site location	Manchester



Site easting (British National Grid)	388291
Site northing (British National Grid)	396462

Site details

Total site area (ha)	0.560 ha

Greenfield runoff

Method

Method	FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	899 mm		
BFIHOST19scaled	0.333		
QMed-QBar conversion	1.075		1.075
QMed (l/s)	4.2 l/s		
QBar (FEH statistical 2025) (l/s)	4.6 l/s		

Growth curve factors

	My value		Map value
Hydrological region	10		10
1 year growth factor	0.87		
2 year growth factor	0.93		
10 year growth factor	1.38		
30 year growth factor	1.7		
100 year growth factor	2.08		
200 year growth factor	2.37		

Results

Method	FEH statistical (2025)	
Flow rate 1 year (l/s)	4.0	l/s
Flow rate 2 year (l/s)	4.2	l/s
Flow rate 10 years (l/s)	6.3	l/s
Flow rate 30 years (l/s)	7.8	l/s
Flow rate 100 years (l/s)	9.5	l/s
Flow rate 200 years (l/s)	10.8	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.2) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX E I

IGE consulting

Peacock Centre, Manchester

Phase 2 Geo-Environmental Investigation Report

For: Shepherd Gilmour (SGI) Consulting Engineers

Shepherd Gilmour
Consulting Engineers

Job Number:	**4396**
Report Reference:	**4396-03C**
Issue Status / Revision:	**Rev C** – Updated proposed development plans
Date:	**June 2026**
Written By:	[redacted]
Checked By:	[redacted]
Authorised By:	[redacted]
Previous Revisions and Date:	**1st Issue – June 2025** **Rev A Updated ground gas monitoring results – August 2025** **Rev B Updated Section 3.7.1**

IGE Consulting Ltd, 1st Floor, 15 Oxford Court, Manchester, M2 3WQ

Tel: 0161 914 9170

Email: contact@igeconsulting.co.uk

This report has been prepared for the sole use of Shepherd Gilmour (SGI) Consulting Engineers. It must not be copied or passed onto any third party or used for any purpose other than which it was prepared without the permission of the author. This report is copyright.

CONTENTS

1.0 INTRODUCTION

1.1 Brief

2.0 SCOPE OF INVESTIGATION WORK

2.1 Dynamic Sampling Boreholes
2.2 Trial Pits
2.3 Site Testing and Sampling
2.4 Laboratory Testing

3.0 FINDINGS

3.1 Ground Conditions
3.2 Visual and Olfactory Contamination Findings
3.3 Water Strikes
3.4 Conceptual Ground Model
3.5 Infiltration Testing Results
3.6 Geotechnical Site Testing
3.7 Geotechnical Laboratory Testing
3.8 Environmental Laboratory Test Results
3.9 Ground Gas Monitoring Results
3.10 Groundwater Depth Monitoring Results

4.0 ENVIRONMENTAL CONCLUSIONS

4.1 Assessment of Environmental Results
4.2 Conceptual Model for Human Health Risk
4.3 Conceptual Model for Ground Gas Risk
4.4 Conceptual Model for Controlled Waters Risk
4.5 Conceptual Model for Building Materials & Services
4.6 Outline Remedial Strategy / Imported Material

5.0 GEOTECHNICAL CONCLUSIONS

5.1 Geotechnical Assessment of Ground Conditions
5.2 Foundations
5.3 Floor Slabs
5.4 Groundwater
5.5 Earthworks and External Areas

6.0 RECOMMENDATIONS

APPENDICES

APPENDIX 1	LIMITATIONS OF INVESTIGATION WORK AND REPORT

APPENDIX 2	FIGURES AND DRAWINGS

- SI-01 Site Location Plan
- Proposed Development Plan: Proposed Site Plan – Peacock Centre, DN0385 PRP-Z1-00-DR-A-20100, Rev P07, dated January 2026
- Proposed Development Plan: Proposed Site Plan – Pipewell Avenue, DN0385 PRP-Z2-00-DR-A-20101, Rev P07, dated January 2026
- SI-05 Exploratory Hole Location Plan
- Indicative Cross Section of Parcel A
- Indicative Cross Section of Parcel B
- SI-06 Conceptual Ground Model

APPENDIX 3	DYNAMIC SAMPLE LOGS AND PHOTOGRAPHS
APPENDIX 4	TRIAL PIT LOGS AND PHOTOGRAPHS
APPENDIX 5	SOIL INFILTRATION TESTING RESULTS
APPENDIX 6	GEOTECHNICAL LABORATORY TEST RESULTS
APPENDIX 7	CHEMICAL LABORATORY TEST RESULTS
APPENDIX 8	CHEMICAL LABORATORY SCREENING TABLES
APPENDIX 9	GROUND GAS AND GROUNDWATER MONITORING RESULTS

1.0 INTRODUCTION

This Phase 2 Geo-Environmental Investigation Report has been prepared at the request of Shepherd Gilmour (SGI) Consulting Engineers. Instructions to proceed were received in February 2025.

This report pertains to a c. 1.35 Ha site divided into 2 No. parcels in Gorton, Manchester, c. 4.5km south-east of Manchester City Centre, at the approximate post code M18 8EG. Parcel A (north) is located to the south of Gorton Lane and Parcel B (south) is located to the east of Pipewell Avenue. The National Ordnance Survey Grid Reference for the centre of Parcel A is 388330E, 396605N and the Grid Reference for the centre of Parcel B is 388309E, 396472N.

The approximate site boundary is shown on the below extract of the site location plan (SI-01), highlighted in magenta with Parcel A indicated in red and Parcel B indicated in blue. The site location plan is contained in Appendix 2.

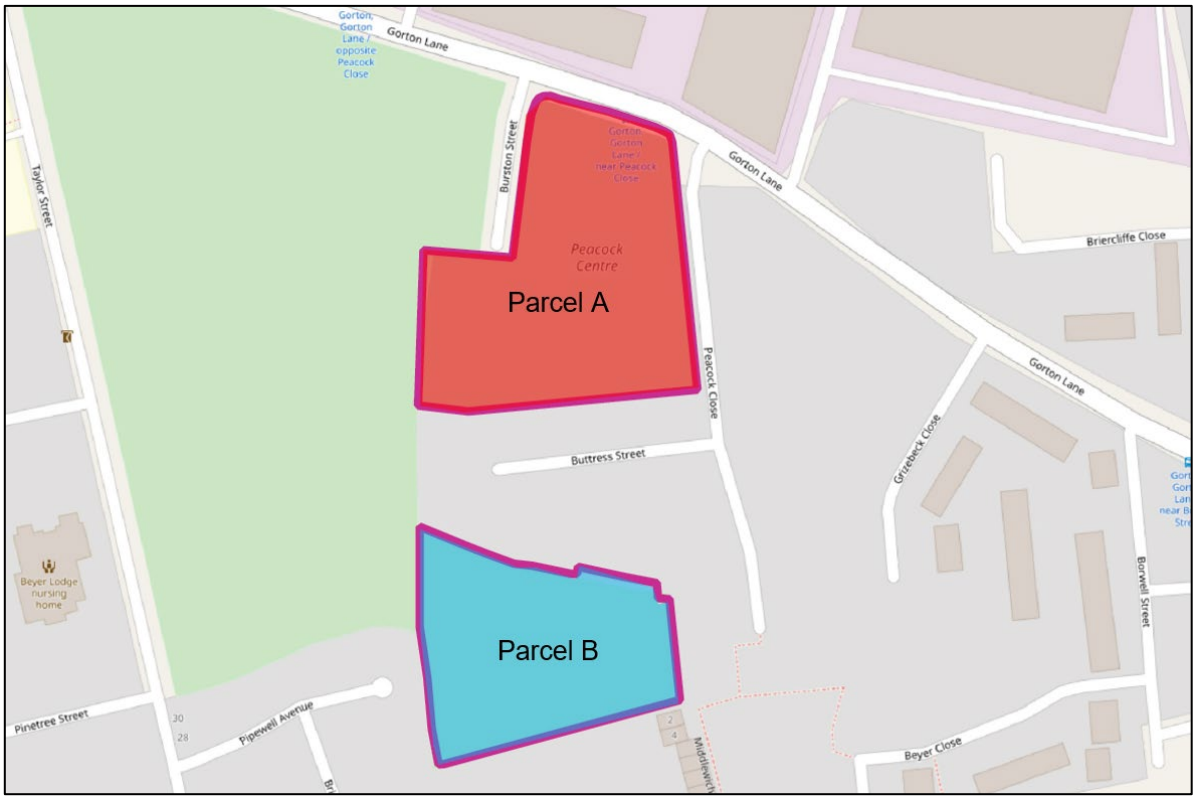


Figure 1: An extract of the site location plan with the 2 No. site parcels indicated in red and blue.

Parcel A (north)

The northern parcel of the site is currently vacant land recently cleared of vegetation, with the exception of established trees noted along the boundaries. The ground underfoot is predominantly rough grass and Made Ground with areas of cobble sets noted adjacent to access points. The site is bound by residential properties to the south, Peacock Close and residential properties to the east, Gorton Lane to the north and Burston Street and a public park to the west. Access to the site is off Peacock Close along the eastern site boundary.

Parcel B (south)

The site currently comprises open grassland used by the general public for recreational purposes with established trees along site boundaries and in discrete locations across the site. The site is bound by residential properties to the north, east, south and west, as well as a public park to the north-west. Access to the site is via the adjacent public park along an unnamed track, accessed from Gorton Lane to the north or along footpaths to the northeast, southeast and southwest.

An aerial photo of the site is included below.



Figure 2: Aerial image of the site dated April 2023 – Parcel A to the north, Parcel B to the south.

This Phase 2 Geo-Environmental Investigation Report is to be used for submission to the Local Authority as part of a planning application. It is the client's intention to develop the site into a low-rise residential development comprising semi-detached and terraced dwellings, as well as an apartment block, all with associated private gardens, soft landscaping and access roads.

Proposed development plans are contained in Appendix 2 with extracts below as Figures 3 and 4.



Figure 3: Extract of the Proposed Site Plan – Peacock Centre DN0385 PRP-Z1-00-DR-A-20100, Rev P07.



Figure 4: Extract of the Proposed Site Plan – Pipewell Avenue, DN0385 PRP-Z2-00-DR-A-20101, Rev P07.

1.1 Brief

The brief was to carry out an intrusive geo-environmental ground investigation for the site based upon the findings of the IGE Consulting *Phase 1 Geo-Environmental Report (4396-01)* and the proposed development outlined in Section 1.0. The investigation was to include the following tasks:

a) Undertake / install appropriate exploratory holes and collect representative samples from exploratory holes and arrange appropriate chemical testing in accordance with the latest legal framework, record olfactory and / or visual evidence of contamination during intrusive works and undertake on site in-situ and laboratory geotechnical testing;

b) Refine conceptual models to accommodate the findings of the ground investigation works in terms of the risk to human health, ground gas, controlled waters and the wider environment;

c) Identify the risks and evaluate whether a Phase 3 numerical risk assessment and / or a Remedial Strategy, is required.

d) Undertake an assessment of the ground conditions to provide outline recommendations for the proposed foundations.

A report was to be provided to summarise the findings and recommendations.

2.0 SCOPE OF INVESTIGATION WORK

This Phase 2 Geo-Environmental Investigation has been designed based on the findings of the IGE Consulting *Phase 1 Geo-Environmental Report (4396-01, May 2025)* and the client's requirements in relation to the proposed development outlined in Section 1.0.

The ground investigation works were undertaken between the 20th and 23rd May 2025 and comprised 11 No. dynamic sampling boreholes and 12 No. mechanically excavated trial pits undertaken across both parcels of the site. In *Parcel A* only, 2 No. trial pits were used to undertake infiltration testing. Subsequent laboratory testing was undertaken between 29th May 2025 and 19th June 2025.

Drilling of dynamic sampling boreholes was carried out by GP Drilling Ltd and the JCB 3CX wheeled excavator was provided by 3C Northwest. Testing of soil samples for environmental purposes was carried out by i2 Analytical Ltd in accordance with the Environment Agency's MCERTS (Monitoring Certification) quality assurance accreditation scheme. Testing of soils for geotechnical laboratory testing was undertaken by Murray Rix (Northern) Ltd in accordance with UKAS standards. These organisations were appointed directly by IGE Consulting to carry out these contracting works.

The locations of the exploratory holes were topographically surveyed (X-Y-Z axis) with an accuracy of 20mm.

The ground investigation was undertaken in general accordance with:

- BS 5930 (2015) + A1 (2020) Code of Practice for Ground Investigation;
- BS EN ISO 17892 Geotechnical Investigation and Testing - Laboratory Testing of Soil;
- BS 10175 (2011) + A2 (2017) Investigation of Potentially Contaminated Sites – Code of Practice;
- BS EN 1997-2 (2007) Eurocode 7 – Geotechnical Design – Ground Investigation and Testing;

- BS 8485 (2015) + A1 (2019) Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings; and
- Land Contamination Risk Management (2025).

Further details pertaining to the ground investigation works are outlined in the following sections.

The limitations of the investigation work and report are included in Appendix 1.

The trial pits and dynamic sample boreholes were undertaken in order to achieve the following:

- to establish the thickness, extent and characteristics of any possible Made Ground and underlying natural superficial deposits;
- to establish the presence and location of any obstructions left in-situ associated with former structures;
- to undertake in-situ geotechnical testing within these deposits;
- to obtain samples from these deposits for classification and laboratory testing;
- to undertake infiltration testing in line with BRE 365 for drainage design purposes; and
- to allow for the installation of ground gas and groundwater monitoring wells.

The locations of the exploratory holes are shown on the extracts of the Exploratory Hole Location Plans (SI-05) presented below as Figures 5 and 6, overlain on the proposed development plan with locations of former Peacock Centre buildings. The exploratory hole location plan is presented in full in Appendix 2.



Figure 5: Extract of the Exploratory Hole Location Plan (SI-05) for Parcel A. Site boundary is in magenta. Outlines of the former Peacock Centre are in pink.

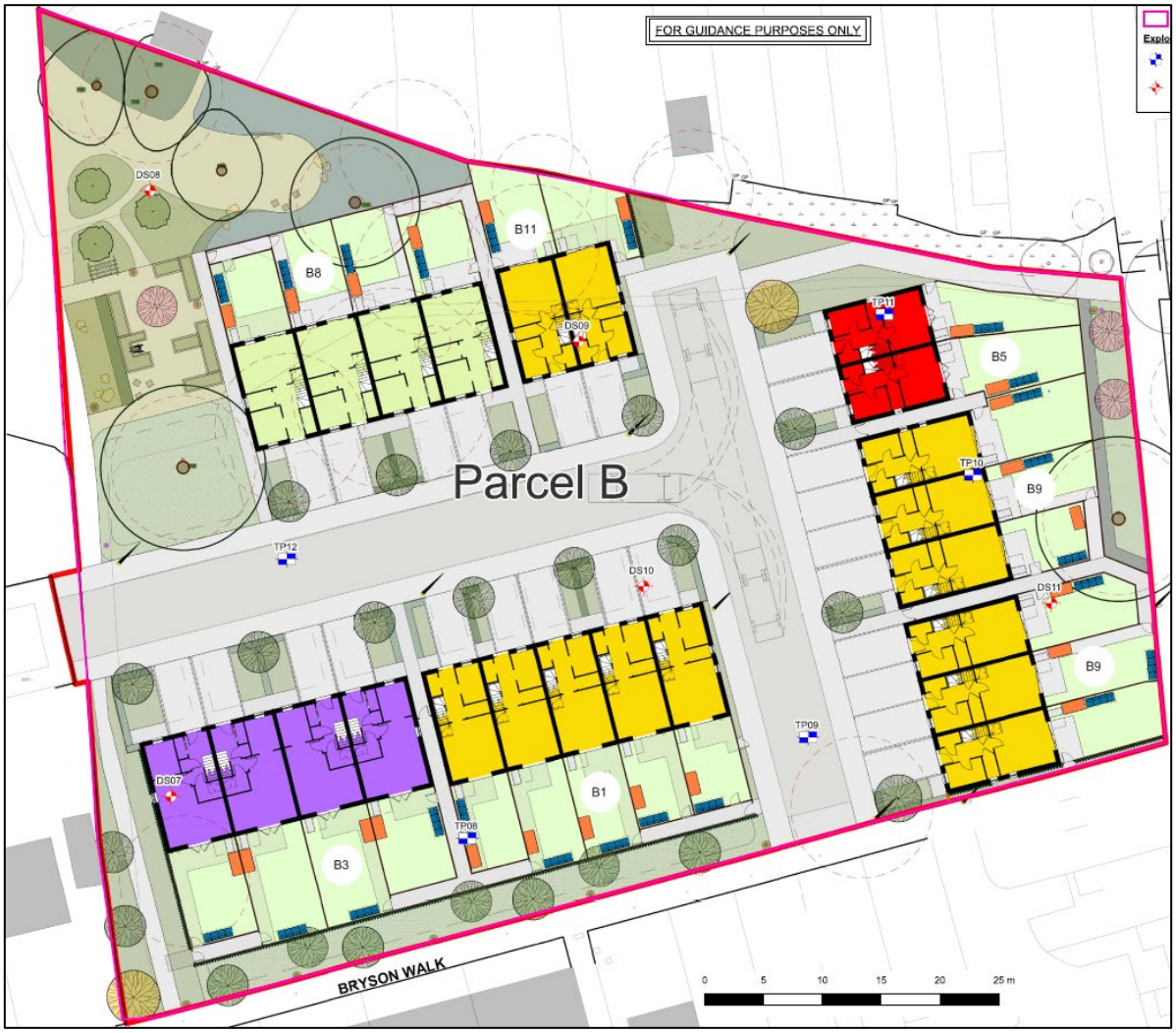


Figure 6: Extract of the Exploratory Hole Location Plan (SI-05) for Parcel B. Site boundary is in magenta.

2.1 Dynamic Sampling Boreholes

In total, 11 No. dynamic sampling boreholes were constructed across both parcels of the site.

6 No. dynamic sampling boreholes were constructed across Parcel A (DS01 to DS06, inclusive) to 5.45m bgl (59.90m and 59.12m AOD). 5 No. dynamic sample boreholes were progressed across Parcel B (DS07 to DS11, inclusive) to 5.45m bgl (60.49 to 59.69m AOD).

The dynamic sample boreholes were placed spatially across the site to gain a representative view of the ground conditions.

The locations of the dynamic sampling boreholes are shown on the exploratory hole location plan in Appendix 2 and the dynamic sampling borehole logs are contained in Appendix 3.

2.2 Trial Pits

In total, 12 No. trial pits were mechanically excavated across both parcels of the site. 7 No. trial pits were excavated across Parcel A (TP01 to TP07, inclusive) to depths of between 2.00m and 3.00m bgl (62.95m and 60.98m AOD). The trial pits were placed spatially across the site to gain a representative view of the ground conditions, as well as targeting the areas of former buildings to establish the presence of obstructions.

5 No. trial pits were excavated across Parcel B (TP08 to TP12, inclusive) to depths of between 2.70m and 2.85m bgl (63.18m and 62.37m AOD). The trial pits were placed spatially across the site to gain a representative view of the ground conditions.

The locations of the trial pits are shown on the exploratory hole location plan in Appendix 2 and trial pit exploratory hole logs and photographs are contained in Appendix 4.

2.3 Site Testing and Sampling

The following site tests and sampling were carried out:

a) Retrieval of environmental samples and bulk disturbed samples from trial pits and dynamic sampling sleeves for the purposes of chemical and geotechnical laboratory testing and classification.

b) Where possible, in-situ and ex-situ shear strength testing was undertaken within fine grained material (clay) from the trial pits and from the dynamic sampling borehole sleeve samples using a 19mm hand shear vane in accordance with BS1377-9.

c) Standard Penetration Tests (SPTs) were undertaken at regular 1.00m intervals between 1.20m and 5.00m bgl within the dynamic sampling boreholes.

d) BRE 365 infiltration testing was undertaken in 2 No. trial pits in Parcel A.

2.4 Laboratory Testing

2.4.1 Chemical Laboratory Testing

15 No. soil samples were obtained during exploratory hole construction and sent to i2 Analytical laboratories for chemical testing. These samples were placed into sterile sealed containers to facilitate MCERTS chemical laboratory testing of potential contaminants. Chemical testing suites are outlined below and are based upon a wide range of possible contaminative sources.

Asbestos ID, sulfate, pH, nitrate, total and free cyanide, arsenic, barium, beryllium, boron, cadmium, chromium, chromium (hexavalent), copper, lead, mercury, nickel, selenium, vanadium, zinc, total organic carbon, Total Petroleum Hydrocarbon screen and Speciated Polyaromatic Hydrocarbons.

2.4.2 Geotechnical Laboratory Testing

The following geotechnical laboratory tests were carried out on selected samples obtained from across the site:

a) Determination of liquid limit and plastic limit in accordance with BS EN ISO 17892-12:2018+A2:2022.

b) Determination of moisture content in accordance with BS EN ISO 17892-1:2014+A1:2022.

c) Determination of Particle Size Distribution in accordance with BS EN ISO 17892-4:2016, by sieving and pipette sedimentation.

d) BRE Special Digest suite for aggressive ground conditions.

3.0 FINDINGS

3.1 Ground Conditions

3.1.1 Ground Conditions Encountered in Parcel A

The typical ground conditions encountered across Parcel A are as follows:

- **Ground Surface (Made Ground)** comprising grey, very sandy GRAVEL underlain by ASPHALT to a depth of 0.10m bgl (64.85m to 64.47m AOD), underlain by:
- **Made Ground** comprising orangish brown and grey to dark grey, slightly gravelly to very gravelly SAND or very sandy GRAVEL to a depth of between of 0.20m to 0.70m bgl (64.75m to 64.25m AOD), underlain by:
- **Made Ground** comprising firm, brown and grey, slightly gravelly to gravelly, slightly sandy to sandy CLAY to depths of between 0.35m to 1.40m bgl (64.50m to 63.42m AOD), underlain by:
- **Made Ground** comprising dark grey or dark brown, very gravelly, (sometimes slightly clayey), ashy SAND to depths of between of 0.25m to 0.90m bgl (64.81m to 63.58m AOD), underlain by:
- **Glacial Till** comprising firm to very stiff, brown and grey, slightly gravelly, slightly sandy to sandy CLAY to depths of between 2.00m and 5.45m bgl (62.95m and 59.12m AOD) where the exploratory holes were terminated.

Notable Exceptions

The following notable exceptions to the above typical ground conditions were noted:

- The ground surface in DS04 was noted to be **Made Ground** comprising dark brown, gravelly, slightly sandy CLAY to a depth of 0.20m bgl (64.62m AOD): and
- **Made Ground** comprising dark brown, very gravelly, very clayey SAND was in encountered in TP04 and TP05 only to a depth of between of 0.30m to 0.50m bgl (64.60m to 64.42m AOD).

- At TP04 only, the presence of a suspected brick wall or foundation was recorded to 0.90m bgl (63.82m AOD). Owing to time constraints, the extent of this potential in-situ structure could not be fully determined.

Images of the typical Made ground and Glacial Till deposits encountered in Parcel A are shown below:



Figure 7: Typical Made Ground encountered in TP02.



Figure 8: Made Ground and typical Glacial Till encountered in DS05

The cross section presented in Figure 9, below, highlights the recorded depths of Made Ground across the site from southwest to northeast. It should be noted that the base of the Glacial Till was not established in any of the exploratory holes. A detailed cross section is included in Appendix 2.

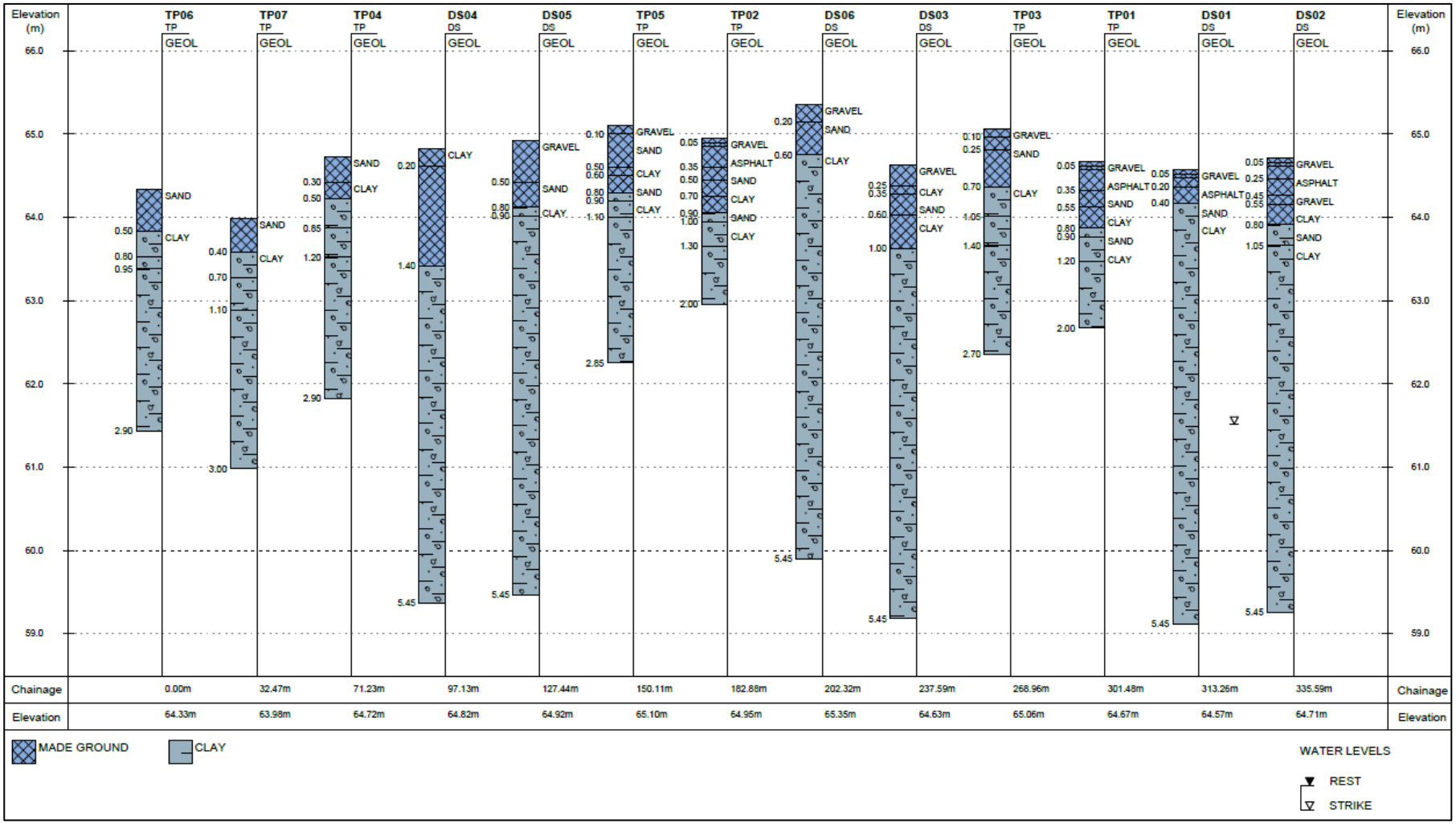


Figure 9: Indicative Cross Section of Parcel A from southwest to northeast. Blue is Made Ground. Grey is Glacial Till.

3.1.2 Ground Conditions Encountered in Parcel B

The typical ground conditions encountered across Parcel B are as follows:

- **Made Ground Topsoil** comprising brown, slightly gravelly to gravelly, slightly clayey SAND to a depth of between 0.15m to 0.50m bgl (65.59m to 64.74m AOD), underlain by:
- **Made Ground** comprising dark grey, very gravelly, slightly clayey, ashy SAND to depths of between of 0.30m to 1.05m bgl (65.48m to 64.51m AOD), underlain by:
- **Made Ground** comprising firm dark brown or dark grey, slightly gravelly, slightly sandy to sandy CLAY to a depth of between 0.45m and 1.15m bgl (65.12m to 64.33m AOD), underlain by:
- **Glacial Till** comprising firm to stiff, brown and grey, slightly gravelly, slightly sandy to sandy CLAY to depths of between 2.70m and 5.45m bgl (63.18m and 59.69m AOD), the base of the exploratory holes.

Notable Exceptions

The following notable exceptions to the above typical ground conditions were noted:

- **Made Ground** comprising brown mottled grey or dark grey, slightly gravelly, slightly sandy to sandy CLAY to a depth of between 0.50m to 1.20m bgl (65.04 to 64.02m AOD) was encountered in exploratory holes TP09, TP11 and TP12 only; and,
- **Glacial Till** comprising medium dense light brown, slightly gravelly, silty, clayey SAND to a depth of between 0.90m to 1.85m bgl (64.41m to 63.71m AOD) was encountered in exploratory holes DS09 and TP08 only.

Images of the typical ground conditions encountered in Parcel B, are shown below:



Figure 10: Typical Made Ground and Glacial Till encountered in DS08



Figure 11: Typical Made Ground and underlying Glacial Till encountered in TP11

The cross section presented in Figure 12, below, highlights the recorded depths of Made Ground across the site from west to east. It should be noted that the base of the Glacial Till was not established in any of the exploratory holes. The sand encountered in DS09 and TP08 are highlighted in yellow. A detailed cross section is included in Appendix 2.

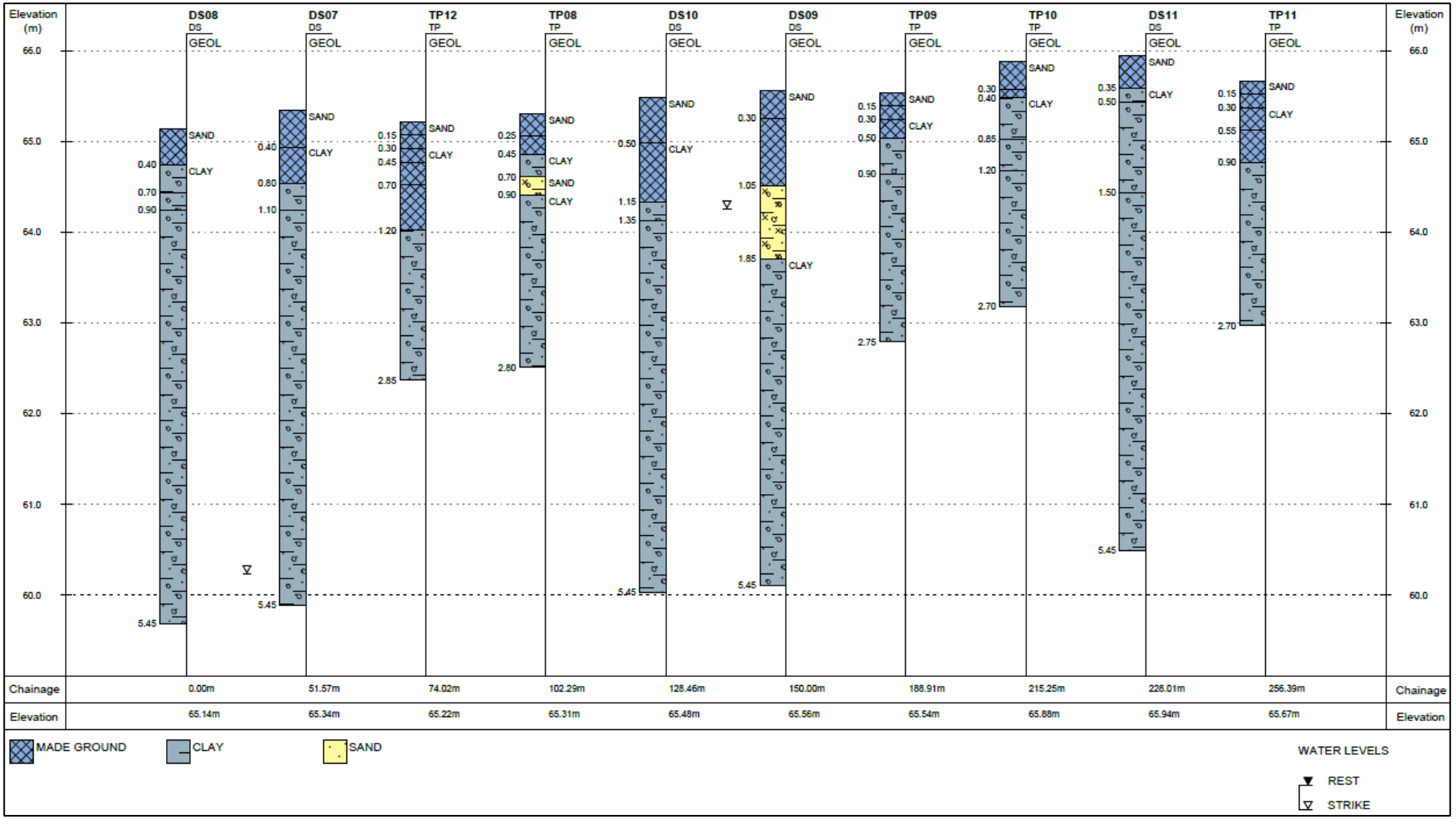


Figure 12: Indicative Cross Section of Parcel B from west to east. Blue is Made Ground. Grey and yellow are Glacial Till.

3.2 Visual and Olfactory Contamination Findings

During the intrusive exploratory hole investigation works, ashy sand and gravel of clinker were observed in the Made Ground encountered in DS02, DS03, DS05 and all of the trial pit locations (TP01 to TP07 inclusive) in Parcel A and encountered in all of the exploratory hole locations in Parcel B.

Gravel of brick, concrete, slate, plastic, glass, ceramic, fabric, timber, asphalt, and metal, cobbles of red brick, timber, concrete, asphalt and slate and boulders of concrete were observed in the Made Ground of all of the exploratory holes across both parcels of the site.

No other visual and / or olfactory evidence of contamination was encountered during the ground investigation.

3.3 Water Strikes

Water strikes were recorded within the underlying Made Ground and Glacial Till across both parcels of land, detailed in the table below:

Exploratory Hole	Location	Material	Depth of Strike (m bgl)	Comments
DS02	Parcel A	CLAY	3.20	Water strike within borehole.
DS07	Parcel B	CLAY	5.10	Water strike within borehole.
DS09		SAND	1.30	Slight surface water ingress due to flooding
TP11		MADE GROUND	0.30	Slight water ingress along northwestern side of the pit.

Water strikes are detailed on the exploratory hole logs contained in Appendices 3 and 4.

3.4 Conceptual Ground Model

The findings of the Phase 2 ground investigation works have been used to create a conceptual ground model of the site. The conceptual ground model demonstrates the consistent geological strata encountered across both parcels of the site. Bedrock

deposits were not encountered during the ground investigation - their depth is anticipated to be between c. 28.00m and 31.00m bgl (38.00 and 35.00m AOD) based on the BGS drift thickness model, as stated in the Phase 1 Geo-Environmental Investigation Report.

The detailed conceptual ground model is included in Appendix 2.

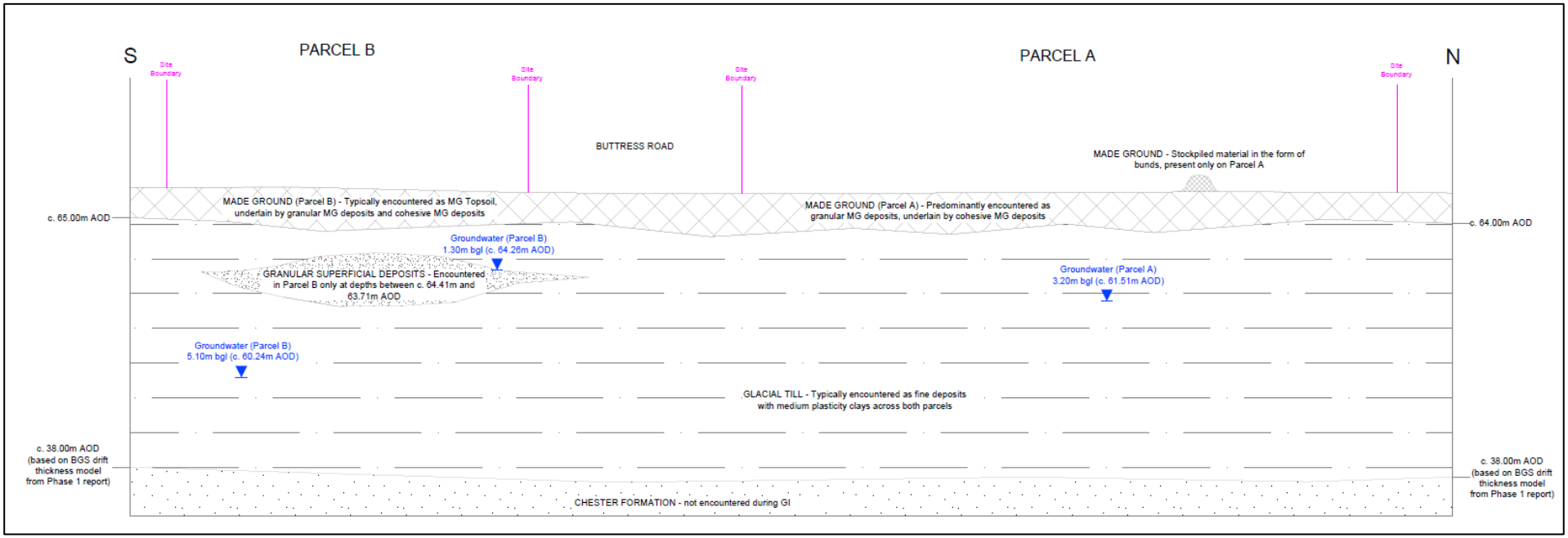


Figure 13: Extract of the conceptual ground model for the site.

3.5 Infiltration Testing Results

3.5.1 Infiltration Testing in Parcel A

Soil infiltration tests were undertaken at 2 No. locations (TP01 and TP02) in Parcel A at a depth of between 1.00m and 2.00m bgl, in accordance with BRE 365. Only a singular soil infiltration test could be undertaken in each trial pit due to the very slow infiltration rate.

Exploratory Hole	Test Depth (m bgl)	Test No.	Soil Infiltration Rate (m/sec^2)
TP01 / SA01	1.00 – 2.00	Test 1	Infiltration too slow to calculate
TP02 / SA02	1.00 – 2.00	Test 1	Infiltration too slow to calculate

The soil infiltration test calculations are contained within Appendix 5.

3.5.2 Infiltration Testing in Parcel B

Given the limited access and nature of Parcel B, soil infiltration testing was undertaken via falling head test method in DS07. The test was completed within the monitoring installation during a gas and groundwater monitoring visit. The depth of the testing is detailed in the table below. It was intended to complete an infiltration test via falling head method in DS09 but groundwater was encountered in the monitoring well.

Only a singular soil infiltration test could be undertaken in DS07 due to the very slow infiltration rate.

Exploratory Hole	Test Depth (m bgl)	Test No.	Soil Infiltration Rate (m/sec^2)
DS07	1.00 – 3.00	Test 1	Infiltration too slow to calculate

The soil infiltration test calculations are contained within Appendix 5.

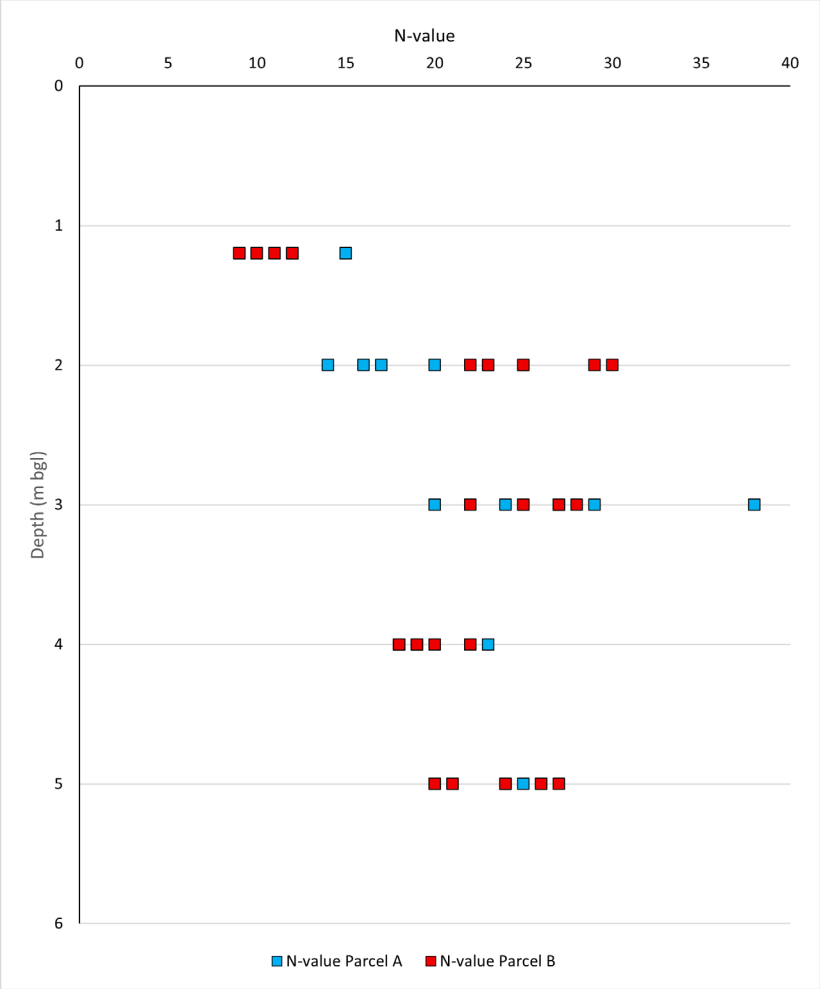
3.6 Geotechnical Site Testing

The results of the geotechnical testing undertaken during the ground investigation are summarised below. **Where the results have been presented graphically, information from Parcel A is shown in blue and Parcel B is shown in red.**

3.6.1 Standard Penetration Tests

Standard penetration tests (SPTs) were undertaken at regular 1.00m intervals during the construction of the dynamic sampling boreholes.

The following scatter graphs show that there was a positive correlation between increasing N-value with depth across both parcels. It should be noted those standard penetration tests crossing strata boundaries have been excluded from this graph.



SPT results are included on the dynamic sample borehole logs presented in Appendix 3.

3.6.2 Hand Shear Vane (19mm) Tests

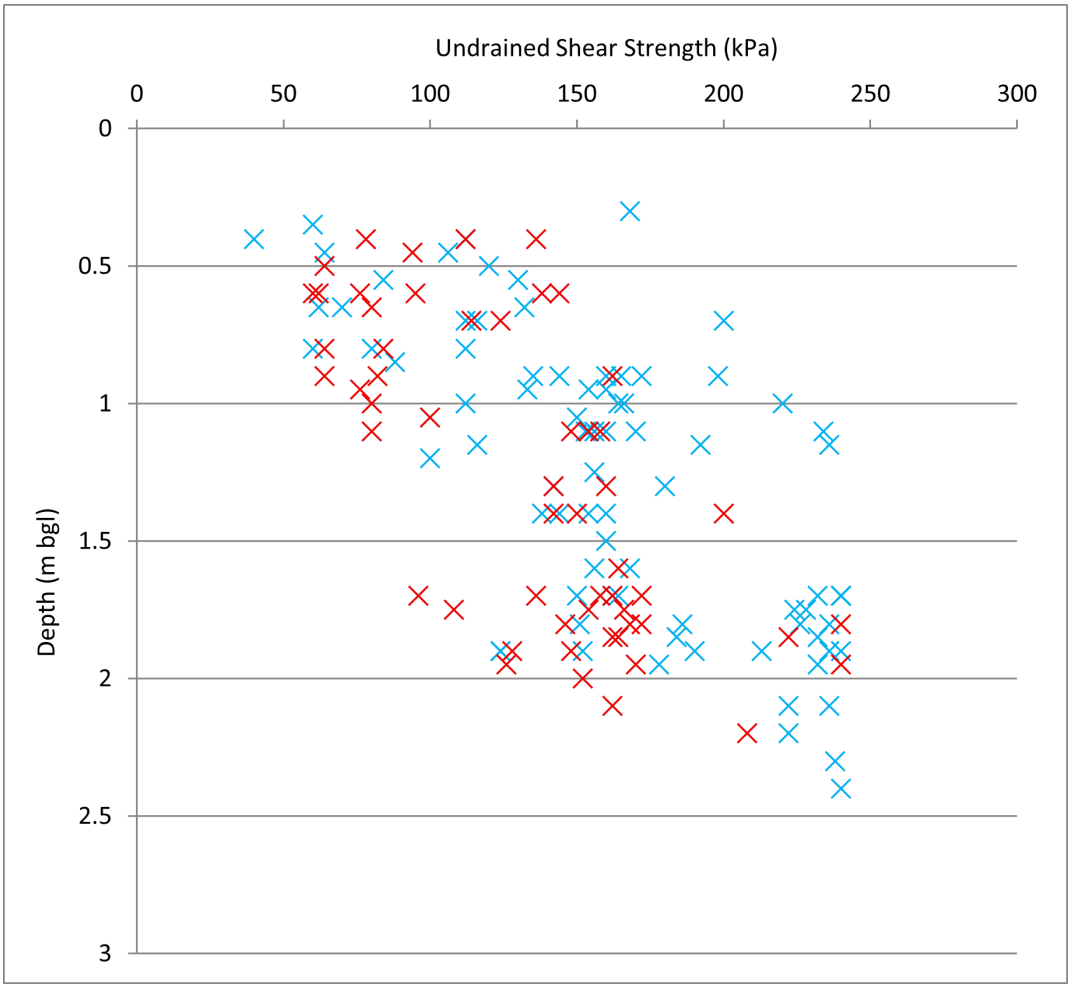
Where possible, both in-situ and ex-situ undrained shear strength testing was undertaken on samples of fine-grained material (clay) within trial pits and dynamic sampling boreholes using a 19mm hand shear vane in accordance with BS1377-9. It should be noted that undertaking hand shear vane tests below 2m bgl within dynamic sample boreholes is considered inappropriate; the increased sampling disturbance at depth can produce unrepresentative results.

At Parcel A, 81 No. hand shear vane tests were undertaken within the Glacial Till between depths of 0.30m and 2.40m bgl. Results ranged from 40 kPa (medium strength) to greater than 240 kPa (very high strength) with a median value of 160 kPa.

At Parcel B, 55 No. hand shear vane test were undertaken within the Glacial Till between depths of 0.40m and 2.20m bgl. Results ranged from 60 kPa (medium strength) to greater than 240 kPa (very high strength) with a median value of 142 kPa.

It should be noted that the Glacial Till within the trial pits was generally recovered as coarse gravel and cobble sized pieces below 1.90m bgl. The material was therefore unsuitable for hand shear vanes beneath this depth across both parcels of the site.

There was a general increase in undrained shear strength with depth within the Glacial Till deposits across both parcels of the site. The results for Parcel A are in blue and results for Parcel B are in red.



Hand shear vane test results are included on the trial pit logs and dynamic sampling borehole logs, contained within Appendices 3 and 4, respectively.

3.7 Geotechnical Laboratory Testing

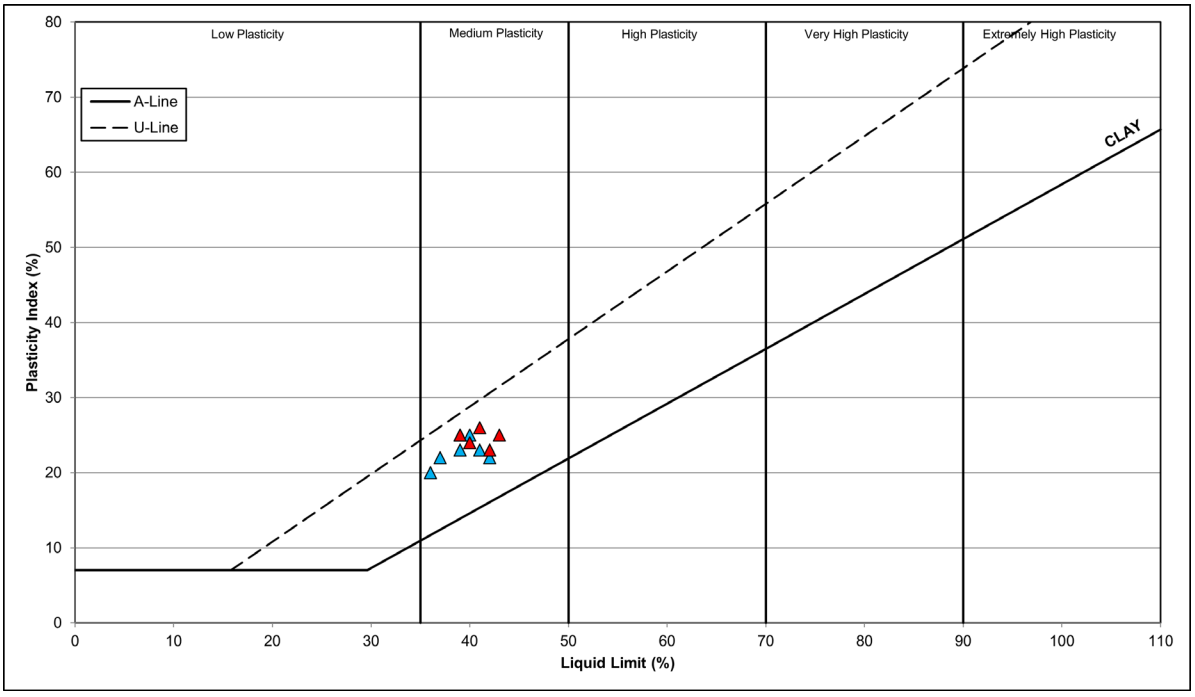
The results of the geotechnical laboratory tests undertaken during the ground investigation are summarised below. The full geotechnical laboratory test results are included in Appendices 6 and 7.

3.7.1 Atterberg Limit Tests

Atterberg limit tests were undertaken on a total of 12 No. samples of natural Glacial Till deposits; 7 No. samples from Parcel A and 5 No. from Parcel B. The results of the Atterberg testing are as follows:

Sample	Sample Depth (m bgl)	Location	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Passing through 425 micron (%)	Modified Plasticity Index
DS01	1.20 – 1.50	Parcel A	15.8	36	16	20	78	15.6
DS02	2.00 – 2.50		10	39	14	25	63	15.8
TP02	0.45		26.3	41	18	23	91	20.9
TP03	1.00		18.7	39	16	23	75	17.3
TP05	2.10		17.2	37	15	22	71	15.6
TP06	0.60		22.6	42	20	22	84	18.5
TP07	1.60		16.5	40	15	25	79	19.8
Parcel A Average			**18**	**39**	**16**	**23**	-	-
DS08	0.90 – 1.30	Parcel B	18.7	41	15	26	72	18.7
DS10	0.50 – 1.00		25.5	42	19	23	88	20.2
TP09	1.50		16.1	39	14	25	76	19.0
TP10	1.05		23.9	43	18	25	70	17.5
TP13	1.30		19.6	40	16	24	83	19.9
Parcel B Average			**21**	**41**	**16**	**25**	-	-

Green = low volume change potential. Orange = medium volume change potential.



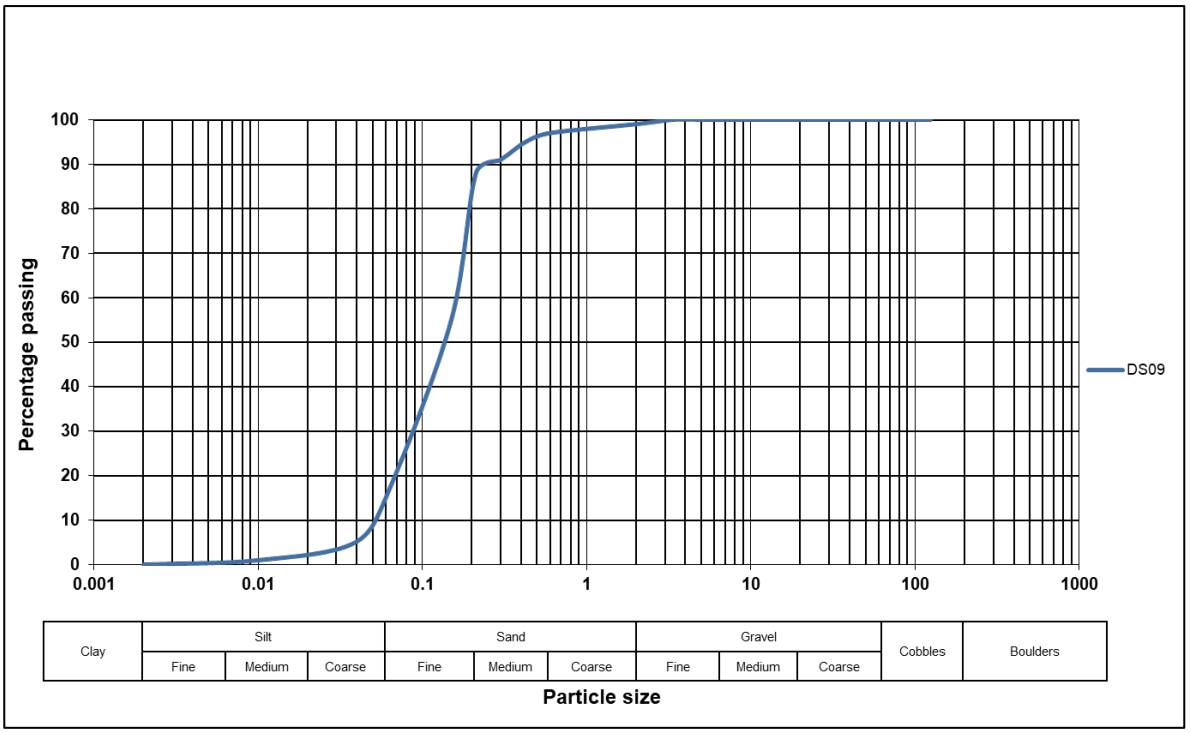
The Atterberg Limit tests indicate that the Glacial Till deposits across both parcels are generally of medium plasticity in-line with BS14688 Part 2.

The Glacial Till is generally of low volume change potential, with the exception of the sample from TP02 in Parcel A and DS10 in Parcel B; which are both of moderate volume change potential in-line with NHBC Chapter 4.2 guidance.

3.7.2 Particle Size Distribution Tests

A singular particle size distribution test was undertaken on 1 No. sample of coarse Glacial Till. The results of the PSD testing are shown below.

Exploratory Hole	Depth (m bgl)	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Cobbles (%)
DS09	1.10 – 1.80	0	17	82	1	0



The results reported that the material encountered in DS09 at 1.10m – 1.80m would be described as a slightly gravelly silty fine to coarse SAND.

3.7.3 BRE Special Digest Suite Testing

In accordance with BRE Special Digest 1: Concrete in Aggressive Ground (2005), both parcels of the site have been classified as brownfield with mobile groundwater. BRE SD1 testing suites were undertaken on 4 No. samples of the Made Ground encountered and 4 No. samples of Glacial Till, from across both parcels, in order to determine the Design Sulfate (DS) levels and the Aggressive Chemical Environment for Concrete (ACEC), with the findings summarised below:

Sample	Depth (m bgl)	Strata	Location	DS Class	ACEC Class
TP01	0.20	Made Ground	Parcel A	3	AC-3
DS04	0.80	Made Ground		1	AC-1
DS05	1.00	Glacial Till		1	AC-1
DS06	1.50	Glacial Till		1	AC-1
DS09	0.40	Made Ground	Parcel B	2	AC-2
DS10	0.75	Made Ground		1	AC-1
TP10	1.05	Glacial Till		1	AC-1
TP12	1.30	Glacial Till		1	AC-1

3.8 Environmental Laboratory Test Results

The findings of the chemical test results, summarised below, will be assessed against generic assessment criteria (GAC) for the purposes of screening allowable concentrations in comparison to the measured site concentrations. The GAC are defined based on the critical receptors identified at the site, detailed in the Phase 1 Investigation. Receptors are considered in relation to:

- Human health receptors (e.g. end-users, construction workers and the general public) via measured solid concentrations, and;
- Additional receptors which may be relevant e.g. flora/fauna, water, buried concrete.

The GAC adopted for assessment of soils in relation to Human Health are based on published LQM/CIEH S4ULs (2015) for those compounds for which published criteria

are available for varying scenarios (residential, commercial, allotment, public open space). In the absence of LQM/CIEH S4ULs (2015) the following GAC defining documents are adopted - CL:AIRE Soil GAC for Human Health Assessment (2010) and Category 4 Screening Levels (C4SLs) (2014).

The primary risk to human receptors from free cyanide in soils is an acute risk (i.e. a single dose could have a lethal affect as opposed to adverse effects from cumulative intake (chronic affect)). There is no current UK guidance available for calculating acute risks from free cyanide, therefore an in-house methodology has been used to derive an acute GAC of 60 mg/kg for all exposure scenarios. The value is given for Free or Easily Liberatable Cyanide but should be used to assess Total Cyanide in the absence of cyanide speciation. In cases where the Total Cyanide exceeds the GAC then analysis for Free or Easily Liberatable Cyanide should be completed.

Appendix 8 contains the full screening table for a total of 9 No. samples from Parcel A:

- 6 No. Made Ground samples:
  - DS02 at 0.60m bgl;
  - TP02 at 0.80m bgl;
  - TP03 at 0.50m bgl;
  - TP04 at 0.25m bgl;
  - TP05 at 0.65m bgl;
  - TP07 at 0.35m bgl; and
- 3 No. samples of Glacial Till:
  - DS02 at 1.00m bgl;
  - DS06 at 0.90m bgl; and
  - TP04 at 0.60m bgl.

Appendix 8 also contains the full screening table for a total of 6 No. samples from Parcel B:

- 2 No. Made Ground samples:
  - DS09 at 1.00m bgl;
  - TP10 at 0.20m bgl; and
- 4 No. samples of Glacial Till:

- DS07 at 0.90m bgl;
- DS09 at 1.30m bgl;
- DS11 at 0.45m bgl; and
- TP08 at 0.50m bgl.

Any exceedances of GACs are indicated below. All results have been assessed against the relevant GACs for a **residential with home grown produce** scenario based on a measured organic matter content of **2.5%**.

3.8.1 Asbestos

An asbestos screen was performed on all of the Made Ground samples across both parcels of the site.

1 No. sample from Parcel A, TP04 at 0.25m bgl was found to contain loose fibres of Chrysotile, quantified by weight at less than 0.001% (the laboratory detection limit).

No asbestos was found to be present within any of the samples tested from Parcel B.

3.8.2 Polycyclic aromatic hydrocarbons (PAHs)

Of the sixteen PAH compounds, a total of 19 No. exceedances of the residential with homegrown produce GAC were noted across 5 No. samples of Made Ground in Parcel A. No other exceedances were recorded in Parcel A and no PAH exceedances were recorded in Parcel B.

The exceedances are detailed in the table below:

PAH Determinand	Exceedance Location	Exceedance Depth (m bgl)	Result (mg/kg)	GAC (mg/kg)
Benzo(a)anthracene	TP02	0.80	9.1	7.2
	TP04	0.25	36	
	TP07	0.35	9.2	
Chrysene	TP04	0.25	34	15
Benzo(b)fluoranthene	DS02	0.60	2.8	2.6
	TP02	0.80	10	
	TP04	0.25	33	

	TP05	0.65	4.6	
	TP07	0.35	12	
Benzo(a)pyrene	DS02	0.60	2.9	2.2
	TP02	0.80	9.4*	
	TP04	0.25	33*	
	TP05	0.65	4.1	
	TP07	0.35	11*	
Dibenz(a,h)anthracene	DS02	0.60	0.29	0.24
	TP02	0.80	1.1	
	TP04	0.25	4	
	TP05	0.65	0.48	
	TP07	0.35	1.4	

**Exceeding S4UL and C4SL*

3.8.3 Metals and metalloids

A total of 5 No. exceedances of heavy metals or metalloids were recorded in 3 No. samples of the Made Ground from Parcel A. No other exceedances of heavy metals or metalloids were recorded in Parcel A and no exceedances of heavy metals or metalloids were recorded in Parcel B.

The exceedances are detailed in the table below:

Heavy metal / Metalloid Determinand	Exceedance Location	Exceedance Depth (m bgl)	Result (mg/kg)	GAC (mg/kg)
Arsenic	TP07	0.35	74	37
Copper	TP07	0.35	6800	2400
Lead	TP02	0.80	210	200
	TP04	0.25	240	
	TP07	0.35	510	

3.8.4 Total Petroleum Hydrocarbons (TPH)

TPH compounds were recorded in excess of the laboratory detection limit in the Made Ground samples taken from Parcel A; speciated TPH (TPH-CWG) analysis was carried out to determine if any GAC exceedances were present. No exceedances of the residential with homegrown produce GAC were recorded.

TPH compounds were recorded in excess of the laboratory detection limit in the Made Ground sample taken from Parcel B (TP10 at 0.20m bgl); speciated TPH (TPH-CWG) analysis was carried out to determine if any GAC exceedances were present. The speciated TPH analysis confirmed that there were no concentrations of TPH compounds present in excess of the residential with homegrown produce GAC in Parcel B. Full laboratory chemical testing results are presented in Appendix 7.

3.9 Ground Gas Monitoring

The following dynamic sampling boreholes were installed across both parcels of land with a standpipe to allow for monitoring of ground gas concentrations and any underlying groundwater which may be present:

Exploratory Hole	Location	Response Zone Stratum	Response Zone Depth m bgl *(m AOD)*	
			Top of Response Zone	Base of Response Zone
DS01	Parcel A	**Glacial Till** comprising stiff slightly gravelly slightly sandy CLAY	1.00 *(63.57)*	3.00 *(61.57)*
DS05		**Glacial Till** comprising stiff slightly gravelly slightly sandy CLAY	2.00 *(62.92)*	4.00 *(60.92)*
DS06		**Glacial Till** comprising stiff slightly gravelly slightly sandy CLAY	2.00 *(63.35)*	5.00 *(60.35)*
DS07	Parcel B	**Glacial Till** comprising firm to stiff slightly gravelly slightly sandy CLAY	1.00 *(64.34)*	3.00 *(62.34)*
DS09		**Glacial Till** comprising medium dense slightly gravelly silty clayey SAND	1.00 *(64.56)*	2.00 *(62.56)*
DS10		**Made Ground** comprising slightly gravelly slightly sandy CLAY.	0.50 *(64.98)*	1.00 *(64.48)*

The monitoring wells are constructed of 51mm diameter HDPE plain pipe to the depth of the response zone. The response zones comprise slotted pipe surrounded by a gravel annulus which are sealed above and below with hydrated bentonite seals. The monitoring wells are topped with a flush lockable cover.

All 6 No. visits out of a scheduled programme of 6 No. visits have been completed; the results have been summarised below:

Gas Monitoring Well	Steady O_2 Concentration (%)	Peak CO_2 Concentration (%)	Peak CH_4 Concentration (%)	Atmospheric Pressure (mbar)	Steady Gas Flow (l/hr)
DS01	8.3 – 19.6	0.8 – 7.9	0.1*	1002 – 1016	0.1*
DS05	10.0 – 20.2	0.6 – 8.9	0.1*	997 – 1015	0.1*
DS06	17.5 – 19.3	1.9 – 3.0	0.1*	997 – 1016	0.1*
DS07	19.5 – 20.7	0.3 – 1.5	0.1*	996 – 1015	0.1*
DS09	18.3 – 19.9	1.3 – 2.3	0.1*	997 – 1015	0.1*
DS10	19.4 – 20.2	0.9 – 1.2	0.1*	997 – 1015	0.1*

Ground gas monitoring was undertaken utilising a GFM 4300 gas analyser.

**Instrument detection limit*

The ground gas monitoring results are included in Appendix 9.

3.10 Groundwater Depth Monitoring

The above wells were also installed for the purposes of groundwater depth monitoring. Groundwater monitoring is ongoing, however, after 2 No. visits the following range of results has been recorded:

Groundwater Monitoring Well	Response Zone (m bgl)	Water Level (m bgl)	Remarks
DS01	1.00 – 3.00	2.30 – 2.57	No groundwater encountered on first visit
DS05	2.00 – 4.00	2.68 – 3.36	-
DS06	2.00 – 5.00	1.77 – 3.50	-
DS07	1.00 – 3.00	1.16 – 2.52	-
DS09	1.00 – 2.00	1.35 – 1.82	No groundwater encountered on last visit
DS10	0.50 – 1.00	0.87 – 1.00	No groundwater encountered on first visit

The groundwater monitoring results are included with the gas monitoring results in Appendix 9.

4.0 ENVIRONMENTAL CONCLUSIONS

4.1 Assessment of Environmental Results

Soil sample analyses have assessed the presence of contaminants on a spatial basis, and the concentrations at which they occur across the site.

Ashy sand and gravel of clinker was observed within the Made Ground material encountered in exploratory holes DS02, DS03, DS05, and TP01 to TP07 inclusive in Parcel A and all of the exploratory holes within Parcel B. No other visual or olfactory evidence of contamination was found.

A total of 15 No. GAC exceedances for the *'residential with home grown produce'* land use scenario were recorded in the Made Ground encountered in Parcel A. Asbestos was detected 1 No. Made Ground sample tested.

No GAC exceedances for the *'residential with home grown produce'* land use scenario were recorded for any of the natural samples (Glacial Till) sent for laboratory chemical testing from Parcel A. No asbestos was detected in any of the samples tested.

No GAC exceedances for the *'residential with home grown produce'* land use scenario were recorded for any of the samples (both Made Ground and Glacial Till) sent for laboratory chemical testing from Parcel B and no asbestos was detected in any of the samples tested.

Where no contamination is present, the existing surface materials (Made Ground) from both parcels of land are considered suitable for re-use under proposed roadways and car parking areas, but not suitable for re-use in garden areas (soft landscaping). The existing natural subsoil (Glacial Till) is anticipated to be suitable for re-use within the proposed garden areas, subject to further testing during earthworks.

The original conceptual models produced in the *IGE Consulting Phase 1 Geo-Environmental Investigation Report* have been revised / updated using the findings from the Geo-Environmental Ground Investigation.

4.2 Conceptual Model for Human Health Risk

The possible sources of on-site contamination identified within the Phase 1 report include on- and off-site Made Ground (including on-site bunds and areas of previous fires).

The human health receptors identified within the Phase 1 report include:

- End Users (residential land use scenario);
- Construction workers; and
- The general public and adjacent site users.

The human health pathways identified within the Phase 1 report include:

- Ingestion of dust and soil;
- Dermal contact with dust and soil;
- Inhalation (dust and vapours);
- Consumption of homegrown produce; and
- Inhalation and oral backgrounds.

4.2.1 Human Health Conclusions for Parcel A

Made Ground was identified during the ground investigation works in all of the exploratory holes in Parcel A, to a maximum depth of 1.40m bgl (63.42m AOD). Multiple exceedances of the GAC were recorded on site for the residential with home grown produce land use scenario. The Made Ground is considered a contaminative source.

Based on the above revised conceptual site model, the site is considered to pose a **moderate to low risk** to human health of site occupants, the general public and

construction workers. Remedial actions are required to break the source-pathway-receptor linkage.

4.2.2 Human Health Conclusions for Parcel B

Made Ground was also identified during the ground investigation works in all of the exploratory holes in Parcel B, to a maximum depth of 1.20m bgl (64.02m AOD), however no exceedances of the GAC were recorded on site for the residential with home grown produce land use scenario. The Made Ground on site on Parcel B can therefore be discounted as a contaminative source.

Based on the above revised conceptual site model, the site is considered to pose a **low risk** to human health of site occupants, the general public and construction workers. Any potential increase in risk to construction workers associated with acute interaction with soils can be mitigated with appropriate PPE and health and safety procedures.

4.3 Conceptual Model for Ground Gas Risk

Potential ground gas sources identified within the Phase 1 report include:

- On-Site Made Ground; and
- Off-Site infilled ponds.

Potential ground gas pathways identified within the Phase 1 report include:

- Preferential migration along foundations & service ducts;
- Migration within groundwater;
- Ingress through cavity walls & floors; and
- Inhalation.

Potential ground gas receptors identified within the Phase 1 report include:

- End Users (residential land use scenario);
- Construction workers; and
- The general public and adjacent site users.

4.3.1 Gas Screening Value

The results of the 6 No. ground gas monitoring visits have been assessed in accordance with BS 8485 (2015) + A1 (2019). The characteristic Gas Screening Value (GSV) is calculated by dividing the maximum methane or carbon dioxide concentration by 100 and multiplying by the maximum steady flow rate recorded at the same monitoring point (the instrument detection limit of 0.1 l/hr is utilised when below detection limit flow rates are recorded). If required, the worst case GSV can be calculated by dividing the maximum carbon dioxide and methane concentration by 100 and multiplying by the maximum steady flow rate on-site.

Ground gas monitoring to date has recorded a maximum peak carbon dioxide concentration of 8.9% v/v within DS05 in Parcel A and a maximum peak carbon dioxide concentration of 2.3% v/v within DS09 in Parcel B. No methane concentrations above the instrument detection limit (0.1% v/v) have been recorded in either parcel, with no steady flow rates above the instrument detection limit (0.1l/hr) recorded in either parcel.

As no steady flow rates were recorded on site, the GSV and the worst case GSV for carbon dioxide at Parcel A of the site can be calculated as (8.9/100)*0.1= 0.0089l/hr.

The GSV and the worst case GSV for carbon dioxide at Parcel B of the site can be calculated as (2.3/100)*0.1= 0.0023l/hr.

The GSV and the worst case GSV for methane across both parcels of the site can be calculated as (0.1/100)*0.1= 0.0001l/hr.

4.3.2 Ground Gas Conclusions

No significant ground gas sources have been identified on site. The Made Ground, previously identified as a potential ground gas source, present across Parcel A is considered to be of very low risk given the lack of putrescible / degradable constituents within the material and the low Total Organic Carbon (TOC) contents (0.2% to 3.1%) recorded in the laboratory chemical testing results. The higher TOCs recorded in the Made Ground materials are attributed to the presence of elevated PAHs.

Technical guidance (BS8485 + A1, 2019) states if carbon dioxide is measured greater than 5%, Characteristic Situation 2 (low risk) should be considered. However, no steady flow rates have been recorded and the risk is therefore reduced. Consequently, the ground gas risk for Parcel A is deemed to be **very low** and in-line with Characteristic Situation 1 (CS1). Therefore, no ground gas protection measures are deemed necessary for Parcel A, in the proposed development, in-line with BS8485 + A1 (2019).

No steady flow rates or elevated concentrations of ground gases have been observed during the monitoring visits completed in Parcel B. Consequently, the ground gas risk for Parcel B remains to be **very low** and in-line with Characteristic Situation 1 (CS1). Therefore, no ground gas protection measures are deemed necessary within the Parcel B proposed development, in-line with BS8485 + A1 (2019).

4.3.3 Radon

The Indicative Atlas of Radon in England and Wales produced by the Health Protection Agency and British Geological Survey indicates that the site lies within a lower probability area as less than 1% of homes are above the action level. Consequently, no radon protection measures are necessary in the construction of new dwellings or extensions.

4.4 Conceptual Model for Controlled Waters Risk

The possible sources of on-site contamination identified within the Phase 1 report include the identified on-site Made Ground.

The controlled water receptors identified within the Phase 1 report include:

- Groundwater contained within the underlying Secondary Undifferentiated Aquifer and Principal Aquifer; and
- Surface Water – none on site, Corn Brook (584m north-west).

The controlled waters pathways identified within the Phase 1 report include:

- Vertical migration through coarse Made Ground and coarse soils;
- Lateral migration along low permeability natural soils & pooling at relative low points;
- Vertical migration along future foundations and pooling at base;
- Migration through porous bedrock;
- Overland flow; and
- Lateral migration along historical drainage.

4.4.1 Controlled Waters Conclusions for Parcel A

Made Ground was encountered on site within Parcel A, with no visual and olfactory evidence noted. However, elevated concentrations of PAHs, TPH and heavy metals were noted within the laboratory chemical testing results. Given the lack of granular Glacial Till deposits encountered, and the presence of greater than 4.00m of cohesive Glacial Till material, it is considered unlikely any of these contaminants will migrate into underlying aquifers. Consequently, the risk to controlled waters is deemed **low** as no contaminative linkages have been identified. No further assessment or remedial measures are considered necessary for Parcel A.

4.4.2 Controlled Waters Conclusions for Parcel B

Made Ground was encountered on site, however, based on the chemical testing results and the lack of visual and olfactory evidence noted, no significant contaminative sources exist on site. Consequently, the risk to controlled waters is deemed **very low** as no contaminative linkages have been identified. No further assessment or remedial measures are considered necessary for Parcel B.

4.5 Conceptual Model for Building Materials & Services

In accordance with BRE Special Digest 1: Concrete in Aggressive Ground (2005), the whole site has been classified as brownfield with mobile groundwater.

The results for the Made Ground encountered in Parcel A indicate that it would be classified as Design Sulfate level DS-3 and subsequently within the Aggressive Chemical Environment for Concrete (ACEC) classification of AC-3. The results for the Made Ground encountered in Parcel B indicate that it could be classified as DS-2, AC-2. If concrete is required to be emplaced through the Made Ground in Parcel A or Parcel B, it should be designed to meet the requirements of DS-3, AC-3 and DS-2, AC-2, respectively.

The Glacial Till soils encountered across both parcels have been classified as DS-1, AC-1. Therefore, no special precautions are required regarding the use of concrete within the Glacial Till deposits.

4.6 Outline Remedial Strategy / Imported Material

As discussed in §4.2.1, due to the presence of asbestos and the human health GAC exceedances for the *residential with plant uptake scenario* recorded within the Made Ground encountered at Parcel A, remedial measures are required for the proposed development. A clean cover system will be required in all private gardens and areas of soft landscaping within Parcel A in order to break the contaminative linkages. Details of the required clean cover system are included below.

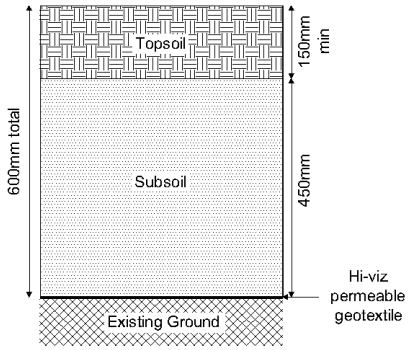
Furthermore, the Made Ground material encountered at Parcel B is not deemed physically suitable for use as a growing medium in areas of soft landscaping or private gardens. Topsoil material is therefore needed to be imported to the site and the following guidelines outlined below are recommended to be utilised.

4.6.1 Clean Cover System for Parcel A

Proposed site levels are currently unknown. If Made Ground is present to greater than 600mm below finalised garden levels (450mm in areas of soft landscaping)

across the site, the following procedure is outlined for use in all private gardens and in areas of soft landscaping:

1. Excavate to 600mm bgl in private gardens (450mm in soft landscaping areas).
2. A 600mm clean cover system is recommended to be added to the proposed private gardens (450mm in soft landscaping areas). This is to consist of:
   - No less than 150mm and no more than 300mm suitable topsoil, underlain by;
   - Suitable subsoil to a total (topsoil + subsoil) depth of 600mm (450mm in areas of soft landscaping), underlain by;
   - A high vis geotextile marker



3. Validate in line with the below strategy.

Clean Cover System Validation

The 600mm clean cover system is required to break contaminative linkages (450mm in areas of soft landscaping); validation requirements include:

- Details of the source of the cover material;
- Chemical test results to demonstrate that the soil is free from contamination and 'suitable for use' in-line with the below chemical testing suites and rates;
- Waste transfer notes to provide evidence of source; and
- Confirmation of cover depth by either measurement tape or topographical survey with photographs at a frequency of one pit per three plots.

No topsoil or subsoil is currently present on Parcel A of the site, therefore all topsoil and subsoil will need to be imported and this must be validated as detailed below to ensure its suitability for use (i.e., no glass or plastic is to be included and meets chemical testing acceptability criteria).

If topsoil or subsoil are required for Parcel B, all imported material must also be validated to ensure its suitability for use.

Imported topsoil and subsoil is required to be tested at source prior to import to confirm suitability. All topsoil and subsoil, whether site-won or imported is required to be tested at the following frequency, in line with Manchester :

Source	Material End Use	Sampling Frequency[1]	Testing Suites[3] (see below)
Greenfield Source:	Topsoil	1 per 200m^3	A, B, C, D, F
	Subsoil	1 per 200m^3	A, B, C, D, F
Brownfield Source:	Topsoil	1 per 50m^3	A, B, C, D, F, H
	Subsoil	1 per 100m^3	A, B, C, D, F
	General Fill[2]	1 per 1000m^3	A, B, C, E, G

1) Minimum 3 samples regardless of volume.
2) 'General Fill' is material used primarily to raise levels, specifically not within areas of private gardens, public open space, or soft landscaping, e.g. 6F2.
3) In addition to the standard suites given, the laboratory testing suite should include any additional contaminants of concern based on the source of the samples.

Testing Suites:

A. Asbestos ID, Asbestos quantification.
B. pH, total and free cyanide, soluble sulfate, organic matter.
C. Arsenic, Beryllium, Boron, Cadmium, Chromium (III and VI) Copper, Lead, Inorganic Mercury, Nickel, Selenium, Vanadium, Zinc.
D. Speciated PAHs: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene.
E. Total (non-speciated) PAHs.
F. Speciated Total Petroleum Hydrocarbons (TPH): Aliphatic >EC5 - EC6, >EC6 - EC8, >EC8 - EC10, >EC10 - EC12, >EC12 - EC16, >EC16 - EC21, >EC21 - EC35, and > EC35 - EC44, and Aromatic >EC5 - EC7, >EC7 - EC8, >EC8 - EC10, >EC10 - EC12, >EC12 - EC16, >EC16 - EC21, >EC21 - EC35, > EC35 - EC44.
G. Total Petroleum Hydrocarbons (TPH): TPH EC6 – EC40.
H. BTEX: Benzene, Toluene, Ethylbenzene, p- & m-xylene, o-xylene. Methyl tertiary butyl ether (MTBE).

Once tested, the results are to be compared against the following Acceptability Criteria:

Suite	Determinand (mg/kg unless stated)	Acceptability Criteria for:			
		Private Gardens	Public Open Space (residential)	Soft Landscaping or Public Open Space (Park)	General Fill
A	Asbestos (%)	ND	ND	ND	<0.001 – 0.01%

B	pH	>6 - <8[3]	>6 - <8[3]	>6 - <8[3]	>5 - <10[3]
	Total Cyanide	0.5[3]	0.5[3]	0.5[3]	0.5[3]
	Free Cyanide	0.5[3]	0.5[3]	0.5[3]	0.5[3]
	Soluble Sulfate (mg/l)	500[3]	500[3]	500[3]	500[3]
C	Arsenic	37	79	170	640
	Beryllium	1.7	2.2	63	12
	Boron	290	21000	46000	240000
	Cadmium	11	120	560	190
	Chromium (III)	910	1500	33000	8600
	Chromium (VI)	6	7.7	220	33
	Copper	2400	12000	44000	68000
	Lead	200[1]	630[1]	1300	2330[1]
	Inorganic Mercury	40	120	240	1100
	Nickel	130	230	800	980
	Selenium	250	1100	1800	12000
	Vanadium	410	2000	5000	9000
	Zinc	3700	81000	170000	730000
D	Naphthalene	2.3	4900	1200	
	Acenaphthylene	170	15000	29000	
	Acenaphthene	210	15000	29000	
	Fluorene	170	9900	20000	
	Phenanthrene	95	3100	6200	
	Anthracene	2400	74000	150000	
	Fluoranthene	280	3100	6300	
	Pyrene	620	7400	15000	
	Benzo(a)anthracene	7.2	29	49	
	Chrysene	15	57	93	
	Benzo(b)fluoranthene	2.6	7.1	13	
	Benzo(k)fluoranthene	77	190	370	
	Benzo(a)pyrene	2.2	5.7	11	
	Indeno(1,2,3-cd)pyrene	27	82	150	
	Dibenz(a,h)anthracene	0.24	0.57	1.1	
	Benzo(ghi)perylene	320	640	1400	
E	Total PAHs				1000[4]
F	TPH-CWG - Aliphatic >EC5 - EC6	42	570000	95000	
	TPH-CWG - Aliphatic >EC6 - EC8	100	600000	150000	
	TPH-CWG - Aliphatic >EC8 - EC10	27	13000	14000	
	TPH-CWG - Aliphatic >EC10 - EC12	130	13000	21000	
	TPH-CWG - Aliphatic >EC12 - EC16	1100	13000	25000	
	TPH-CWG - Aliphatic >EC16 - EC21	65000	250000	450000	
	TPH-CWG - Aliphatic >EC21 - EC35				
	TPH-CWG - Aliphatic > EC35 - EC44	65000	250000	450000	
	TPH-CWG - Aromatic >EC5 - EC7	70	56000	76000	
	TPH-CWG - Aromatic >EC7 - EC8	130	56000	87000	
	TPH-CWG - Aromatic >EC8 - EC10	34	5000	7200	
	TPH-CWG - Aromatic >EC10 - EC12	74	5000	9200	
	TPH-CWG - Aromatic >EC12 - EC16	140	5100	10000	
	TPH-CWG - Aromatic >EC16 - EC21	260	3800	7600	
	TPH-CWG - Aromatic >EC21 - EC35	1100	3800	7800	
	TPH-CWG - Aromatic > EC35 - EC44	1100	3800	7800	
G	TPH > EC6 - EC40				5000[4]
H	Benzene	0.087	72	90	
	Toluene	130	56000	87000*	
	Ethylbenzene	47	24000	17000*	
	p & m-xylene	56	41000	17000*&**	
	o-xylene	60	41000	17000*	
	MTBE (Methyl Tertiary Butyl Ether)	LOD[3]	LOD[3]	LOD[3]	

LQM/CIEH S4ULs for Human Health Risk Assessment (3rd edition, 2015) used unless stated:

1) *Category 4 Screening Levels (March 2014)*
2) *CL:AIRE Soil GAC for Human Health Assessment (January 2010)*
3) *In-house screening criteria used as no GAC methodology currently exists*
4) *Hazardous waste thresholds. This limit only applies to imported material, not to in-situ soil.*

Assumed 1% SOM (most conservative) for those values dependent upon SOM.
ND = Not Detected
LOD = Limit of Detection
**Exceeds vapour saturation limit*
***Exceeds solubility saturation limit*

The above acceptability criteria for PAHs for imported topsoil and subsoil are based on the published LQM/CIEH S4ULs (2015) for each individual PAH and not based on the Category 4 Screening Level using benzo(a)pyrene as a surrogate marker. This is as the source of the imported material is unknown therefore using the surrogate marker approach may not be suitable as the distribution of PAHs in the imported material may not be similar to those in the Culp et al. (1998)[1] study. Once chemical testing had been undertaken on imported soil and the distribution of PAHs compared to the distribution in the Culp et al. (1998) study, it may be suitable to use the surrogate marker approach / C4SL.

When the above has been completed and prior to occupation, this information will be compiled in a validation / completion report which will be submitted to and approved in writing by the local planning authority / NHBC.

4.6.2 Asbestos and Dust Management

Asbestos in the form of chrysotile loose fibres was recorded in a Made Ground sample in Parcel A (TP04 at 0.25m bgl) and quantified by weight at less than 0.001%, the laboratory detection limit. Consequently, based on the findings of the chemical laboratory test results, a risk assessment has been undertaken for the Made Ground using the *JIWG Decision Support Tool for the Categorisation of Work Activities Involving Asbestos in Soil or Construction & Demolition Materials in accordance with CAR 2012* (FINAL Version 2.1, March 2017).

The risk assessment for the Made Ground has been undertaken based on the worst-case scenario; identified <0.001% chrysotile loose fibres. It should be noted that this assessment has been made based on asbestos encountered in a single sample.
The JIWG risk assessment, concludes that the made ground is suitable for re-use in the proposed development outside of private gardens are areas of soft landscaping (i.e. beneath hardstanding or beneath a cover system). According to the above risk assessment, **control of asbestos regulations (CAR) do not apply to the re-use of the Made Ground** and no dust suppression or decontamination is required. However,

[1] Culp et al. (1998), *A comparison of the tumors induced by coal tar and benzo[a]pyrene in a 2-year bioassay*, **Carcinogenesis,** vol.19, no.1, pp.117–124.

care should be taken during earthworks as possible asbestos containing material (ACM) may be present within the Made Ground.

5.0 GEOTECHNICAL CONCLUSIONS

5.1 Geotechnical Assessment of Ground Conditions

The intrusive investigation works have revealed that the ground conditions across both parcels of the site comprise Made Ground underlain by Glacial Till. The principal strata identified are outlined in further detail below.

At the time of writing, no engineering levels have been confirmed for the development. The following recommendations are based on **existing levels** and should be revisited once levels are finalised.

5.1.1 Made Ground

Made Ground was recorded in all exploratory holes across both parcels and was noted to be variable, comprising both coarse and fine deposits. It is anticipated this material is suitable for re-use, subject to chemical testing, within proposed roadways and parking areas only. The material is not considered to be suitable as a founding strata for even the most lightly loaded structures and will not be considered further in this section.

At TP04, a relict brick wall or foundation was encountered. Cobbles and Boulders of brick and concrete were encountered across the site. Care should be taken to ensure that all historical structures and potential obstructions are excavated and removed prior to development.

5.1.2 Glacial Till

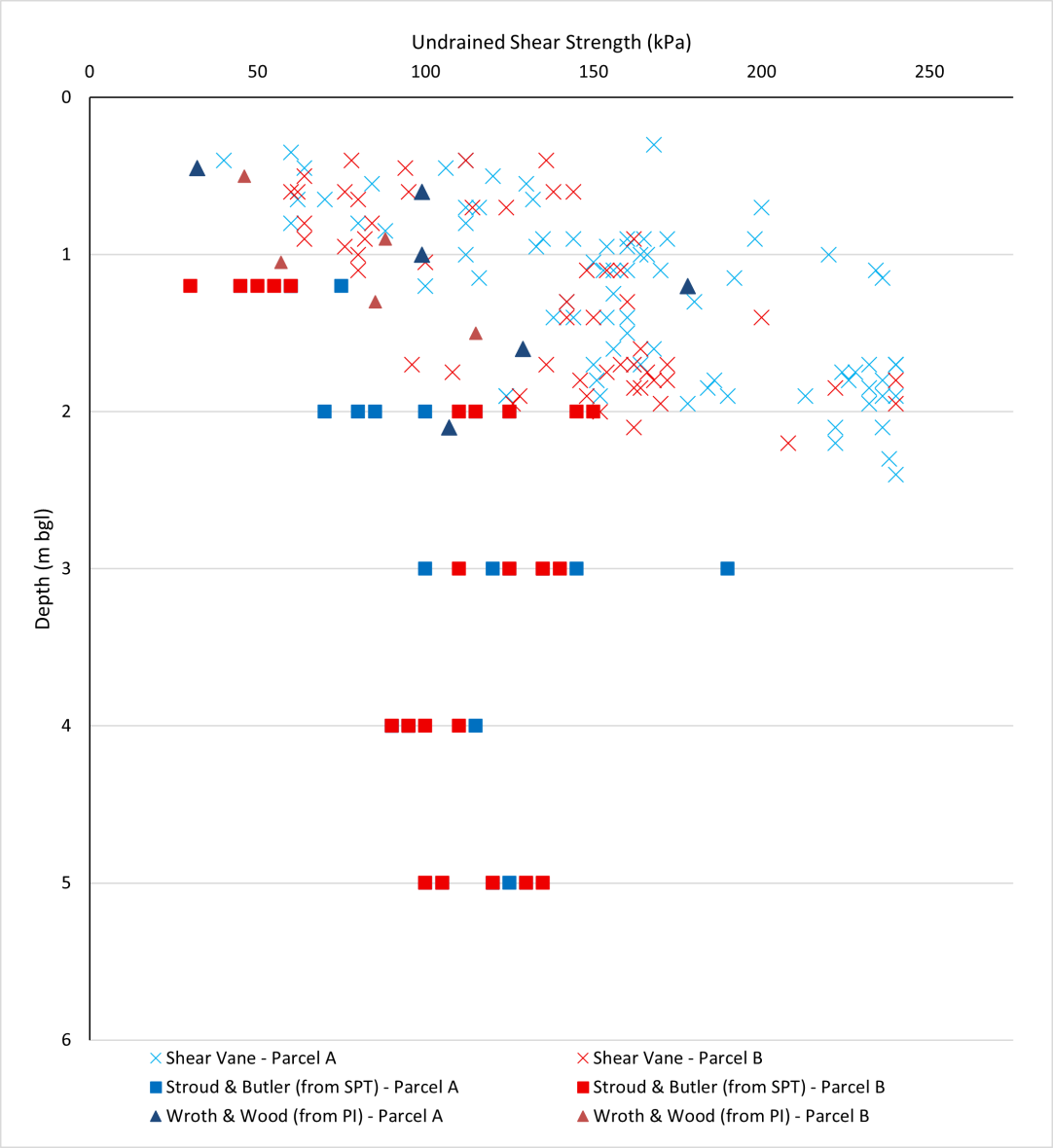
Glacial Till deposits were encountered in all exploratory holes and were noted to be consistent across both parcels the site, generally comprising firm to very stiff, brown and grey, slightly gravelly, slightly sandy clay. Given the consistency of the Glacial Till across both parcels, the data below is presented to reflect the site as a whole, rather than individual parcels.

136 No. hand shear vane results were undertaken within the Glacial Till which recorded undrained shear strengths of between 40kPa and 240+kPa (average 150kPa). Undrained shear strength was noted to generally increase with depth.

A total of 54 No. SPTs were undertaken in this stratum across both parcels, recording N-values of between 9 and 38 (average 21) which generally increased with depth. The correlation of *Stroud and Butler (1975)* allows for approximations of undrained shear strengths from N-values and gives good general accordance with the direct hand shear vane measurements.

A total of 12 No. Atterberg tests were undertaken on samples of shallow Glacial Till, across both parcels, at depths between 0.45m and 2.10m bgl, which indicated that the Glacial Till deposits are clays of medium plasticity and low to medium volume change potential.

The correlation of *Wroth and Wood (1978)* between plasticity indices and undrained shear strength gives good general accordance with the direct shear vane measurements and the empirical correlation of *Stroud & Butler* for Glacial Till material. The results from *Wroth and Wood* have therefore been used to augment the dataset, shown below:



5.2 Foundations

The Glacial Till was typically encountered by 1.00m bgl and is considered a suitable founding stratum for the proposed low-rise developments. It should be noted that Made Ground was encountered to a maximum depth of 1.40m bgl in Parcel A and 1.20m bgl in Parcel B.

Direct measurements of undrained shear strength below 1.00m are in excess of 100kPa, with the exception of two measured values of 80kPa. It is therefore assessed that utilising traditional (shallow) strip foundations would be a feasible option for the majority of the proposed plots, bearing onto the stiff Glacial Till beneath 1.00m bgl. All foundations should be lain at least 200mm into the Glacial Till material.

Assuming a traditional (shallow) strip foundation of 600mm width, and based on a conservative undrained shear strength estimate of 80kPa, a minimum allowable net bearing pressure of 175kN/m^2 (105 kN load) with differential settlement less than 25mm should be readily achievable.

For the proposed 3-storey apartment block in Parcel A, it is likely that wider and deeper foundations would be required. Assuming an undrained shear strength of 100kPa and a 1000mm wide trench foundation lain at 1.50m below ground level, a minimum allowable net bearing pressure of 220 kN/m^2 (220 kN load) with differential settlement of less than 25mm should be readily achievable.

Established trees are present at both parcels; heave precaution and foundation deepening (likely to incorporate mass fill trench foundations) are likely to be required in-line with Premier / NHBC guidance given the presence of medium volume change potential soils. Finalised levels of proposed plots will be required for the production of a detailed foundation zoning plan.

It is recommended that any localised ‘soft spot’ areas and / or relic footings associated with previous developments encountered during excavation works should be removed and foundations extended down to suitable formation strata. To minimise issues with potential differential settlement of the foundation structure, it is recommended that foundations are not constructed upon more than one stratum type, as delineated within the exploratory hole logs.

Given the identified existing services located both on and adjacent to each parcel of the site, an assessment of the impact of existing services upon the proposed foundations should be made before selecting a final foundation solution.

5.3 Floor Slabs

The client’s preferred build methodology (suspended or ground-bearing floor slabs) has not been communicated to IGE at this stage. Whilst suspended floor slabs would be suitable for all proposed plots, the use of ground-bearing floor slabs will be subject to proposed levels and would not be suitable if the proposed finished floor levels are

in excess of 600mm above existing natural strata or where foundations are greater than 1.50m bgl within areas of tree influence.

Given the presence of established trees and medium volume change potential soils, it is likely that the majority of plots will require suspended floor slabs.

5.4 Groundwater

Groundwater was encountered in 4 No. locations across both parcels of the site. In all instances this has been inferred to be representative of perched groundwater, rather than a ‘true’ groundwater body.

Resting groundwater levels were measured between 0.87m and 3.50m bgl during the completed monitoring programme across 6 No. visits.

It is therefore assessed that groundwater control may be required for excavations at the site including those made for foundations, earthworks and drainage purposes. Given the limited groundwater strikes and the fine grained Glacial Till, it is considered likely that any groundwater control required would likely be on a small scale, with sump-pumping the most likely technique. It should be noted that the ground investigation and monitoring period will not have accounted for all possible seasonal and temporal effects on the site’s groundwater regime.

5.5 Earthworks and External Areas

5.5.1 Highways and External areas

Given the cohesive nature of the Glacial Till, it is envisaged that any soft spots can be re-engineered, therefore the hard-surfaced external works including the access road and pavements may be constructed on proof-rolled natural sub-grade formations across the site. It is estimated that with careful management, particularly with regards fluctuations in moisture content , the Glacial Till could achieve California Bearing Ratios of between 4 and 5 %. Following completion of an engineering earthworks specification, it is recommended that in-situ CBR determinations are undertaken for detailed design of the highway / external areas.

Once finalised levels are understood and areas of cut and fill (if any) are know, a detailed earthworks engineering strategy should be produced to ensure successful management (and placement) of site soils.

5.5.2 Stockpile Management

During the course of the development there will be areas of stockpiled soils intended for use within the proposed roadways / car parking areas. These will have been subjected to off-site testing and approved for use on site. It is imperative that the stockpiles are well managed to avoid inadvertent mixing or depositing of surplus or deleterious materials that would compromise the continued use. We would recommend that the site management reviews the proposed positions for placement of stockpiles and places either fencing or warning signs to ensure compliance.

5.5.3 Export of Materials

Any soils to be removed from site must be classified in accordance with WM3 under the definition of waste and chemically tested to determine their destination, i.e. reuse or landfill. Waste ticket records must also be retained as proof of the export of materials from site.

6.0 RECOMMENDATIONS

- Following any variation in a finalised proposed development detailed design including earthworks design, proposed levels and arboricultural survey (tree survey) it is recommended that the above conclusions are re-appraised to determine the suitability.
- The conclusions of this report should be agreed with relevant regulatory authorities prior to the commencement of works.
- The site has been classified as Characteristic Situation 1. Therefore, no ground gas protection measures are deemed necessary for the site given a lack of sources identified.
- Remedial measures are deemed necessary within Parcel A only, given the exceedances identified and should comprise the installation of a clean cover system in areas of soft landscaping and private gardens.
- No remedial measures are deemed necessary on Parcel B, however, material for use as a growing medium will need to be imported for areas of soft landscaping and private gardens. This material will need to be assessed and tested inline with MCC Guidance.
- No remedial measures are deemed necessary with respect to groundwater at the site on either parcel.
- The presence of cobbles, boulders and a relict brick structure were noted during the ground investigation. These potential obstructions should be removed prior to development works beginning.
- If any hereto unidentified visual or olfactory evidence of contamination is encountered during earthworks or construction work, then the Local Authority Environmental Health Officer and Environment Agency should be contacted immediately to determine appropriate mitigation measures.
- It is recommended that plate bearing tests should be undertaken to obtain CBR values following completion of the earthworks activity at the proposed formation level for highway design.
- It is recommended that the presence and associated constraints of all site services are established prior to significant intrusive works beginning.

APPENDIX 1

LIMITATIONS OF INVESTIGATION WORK AND REPORT

LIMITATIONS OF REPORT

This consultancy report was compiled and carried out by IGE Consulting Limited ('IGE') for the client, as defined in the main report (the 'client'), on the basis of a defined programme and scope of works and the terms of a contract between IGE and the client. IGE undertook this with all reasonable skill and care, taking into account the limits of the scope of works required by the client, the prevailing site conditions, the time scale involved and the resources, including financial and manpower resources, agreed between IGE and the client. IGE cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices. This report may not be relied upon, or transferred to, by any other party without the written agreement of its author. If a third party relies on this report, it does so wholly at its own and sole risk and IGE disclaims any liability to such parties.

It is IGE's understanding that this report is to be used for the purpose described in the 'Brief' section of this report. That purpose was a significant factor in determining the scope and the services to be provided. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without IGE's review and advice shall be at the client's sole and own risk.

The information contained in this report is protected by disclosure under Part 3 of the Environmental Information Regulations 2004 pursuant to the provisions of Regulation 12(5) without the consent in writing of a Director of IGE.

This report is a function of the date it was written and should be read in light of any subsequent changes in legislation, statutory requirements and industry practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of IGE. In the absence of such written advice of IGE, reliance on the report in the future shall be at the client's own and sole risk. Should IGE be requested to review the report in the future, IGE shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between IGE and the client.

The observations and conclusions described in this report are based solely upon the scope of works agreed between the client and IGE. IGE has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report. IGE is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the agreed scope of works. For the avoidance of doubt, this report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species (e.g. Japanese Knotweed). It is recommended that the client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the identification of asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace full and proper surveys.

LIMITATIONS OF INVESTIGATION WORK

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations, the potential exists for ground conditions to be encountered which are different to those considered in this report. The explored extent of the site area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried

out for a limited number of parameters, based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Exploratory Holes

Where exploratory holes have been carried out as part of this investigation, the spacing has been determined to provide a reasonable indication of the general ground conditions across the site, but the number has ultimately been limited by commercial constraints. The findings of the exploratory holes relate specifically to the exploratory hole locations and are no absolute guarantee of the ground conditions between such locations. Due allowance should be made for the possibility of variation in conditions between exploratory hole locations.

Extent of Contamination Testing

The extent of contaminated land testing carried out on samples obtained from the site has been determined in accordance with the latest legal guidance issued by the government to provide, with reasonable certainty, the probable general levels of contamination present on site that could pose a significant hazard to human health or waters. The extent of site investigation works including chemical testing has also been limited by reasonable commercial constraints. Although extensive testing of samples has been carried out, the volume of samples taken for testing are a minute fraction of the total volume of soils and groundwater present on site. Therefore, there is a residual risk that undetected pockets of contamination may be present on site, situated between testing locations.

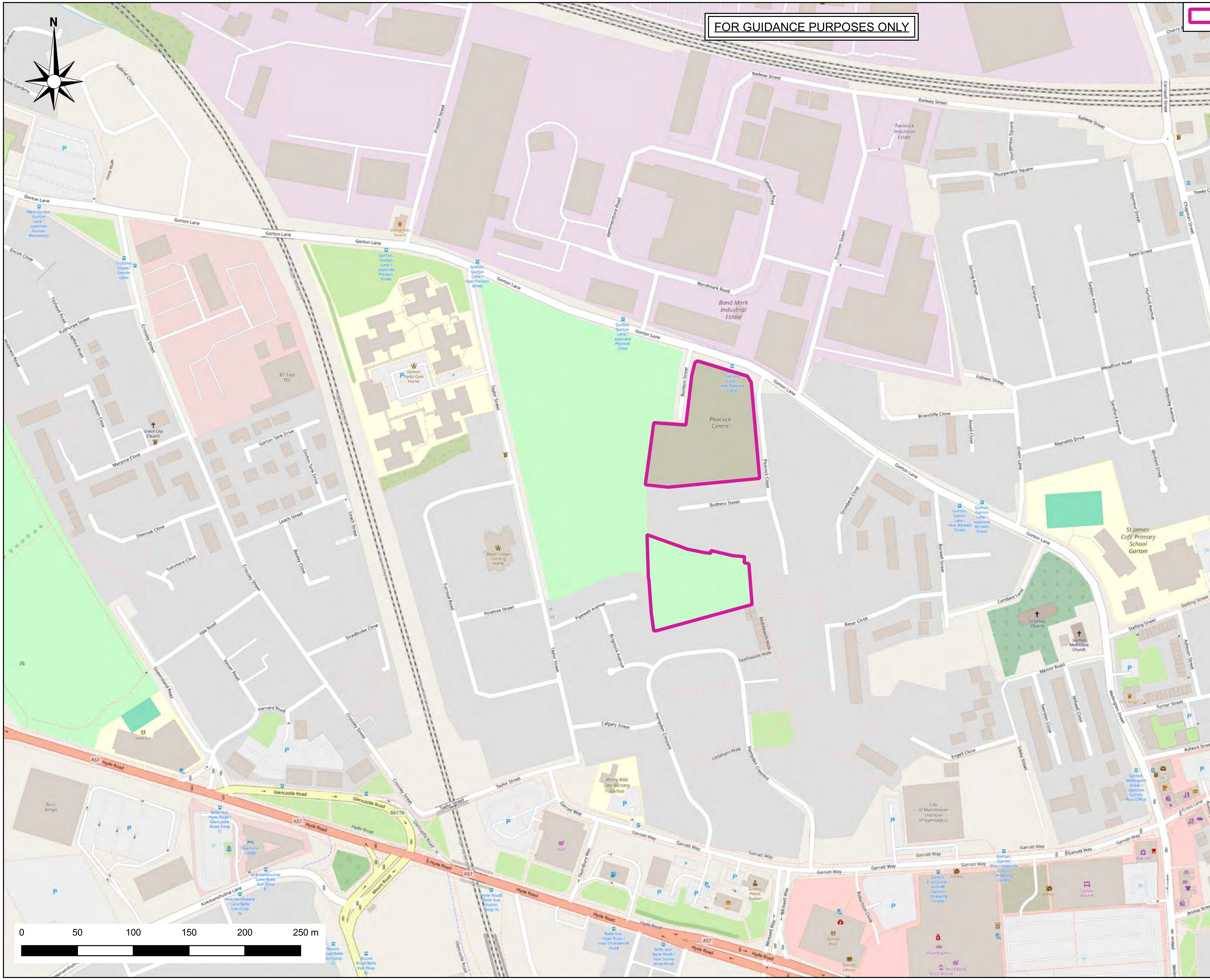
When investigating or developing potentially contaminated land it is important to recognise that sub-surface conditions may vary spatially and temporally. The absence of certain ground, ground gas, contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

Extent of Geo-Environmental Studies

This report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species e.g. Japanese Knotweed. It is recommended that the Client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the identification asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace a full and proper survey. If an Unexploded Ordnance (UXO) report has been obtained within the report, it has been so on the basis of Health and Safety concerns and no assessment has been made other than transcribing the recommendations of the sub-contractor contained within the report. In terms of a potential contaminative source, unless ordnance has been manufactured / stored on site, UXOs will only be determined as a contaminative source following a positive identification on site.

APPENDIX 2

FIGURES AND DRAWINGS



Rev	Drawn	Date	Description

Drawing Status:
Information

Contract:
Peacock Centre, Manchester

For: Shepherd Gilmour (SGI)
Consulting Engineers

Drawing Title:

Site Location Plan

IGE consulting

1st Floor, Oxford Court, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:3000 @A3	Date: Mar 2025
Drawn: AS	Checked: AE
Contract No. 4396	Drawing No. SI - 01 — P1



CDM REGULATIONS 2015. All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record. All intellectual property rights reserved.

Designed with reference to the surveys, information and reports listed: Xxxxxxxxxxxxxx Xxxxxxxxxxxx, Xxxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxxx Xxxxxxxxxx.

Rev	Date	Description	Dwn	Ckd
P06	23/03/26	STAGE 3A WIP-SUBJECT TO ONGOING DESIGN COORDINATION	LE	JK
P07	28/05/26	ISSUED FOR CO-ORDINATION	JK	LE

Drawn LE
Checked JK
Date 21/01/26
Scale @ A1 1 : 250

PEACOCK CENTRE, GORTON

PROPOSED SITE PLAN - PEACOCK CENTRE

Project	Origin	Function	Space	Form	Discipline	Number
DN0385	PRP -	Z1 -	00 -	DR -	A -	20100

Revision P07 -
Status S2 - STAGE 3A

PRP

0m 5m 10m 15m 20m

TAYLOR STREET
PLAYING FIELDS

PEACOCK CLOSE

MIDDLEWICH WALK

PIPEWELL AVE

BRYSON WALK

MIDDLEWICH WALK

B11
B8
B5
B9
B9
B1
B3

Chiltern H23.7 Rendlesham Whiteleaf

Rev	Date	Description
P05	23/03/26	STAGE 3A WIP-SUBJECT TO ONGOING DESIGN COORDINATION
P06	19/05/26	ISSUED FOR CO-ORDINATION
P07	28/05/26	ISSUED FOR CO-ORDINATION

	Dwn	Ckd
	LE	JK
	JK	LE
	JK	LE

Drawn LE
Checked JK
Date 21/01/26
Scale @ A1 1 : 250

PEACOCK CENTRE, GORTON

PROPOSED SITE PLAN -
PIPEWELL AVENUE

Project	Origin	Function	Space	Form	Discipline	Number
DN0385	PRP -	Z2 -	00 -	DR -	A -	20101

Revision P07 -
Status S2 - FOR INFORMATION

PRP

CDM REGULATIONS 2015. All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record. All intellectual property rights reserved.

Designed with reference to the surveys, information and reports listed: Xxxxxxxxxxxxx Xxxxxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx.

Approximate Site Boundary

Trial Pit Location

Dynamic Sample Borehole Location

FOR GUIDANCE PURPOSES ONLY

N

GORTON LANE

TAYLOR STREET PLAYING FIELDS

BURSTON STREET

PEACOCK CLOSE

MIDDLEWICH WALK

PIPEWELL AVE

BRYSON WALK

Parcel A

Parcel B

DS01 DS02 DS03 DS04 DS05 DS06 DS07 DS08 DS09 DS10 DS11

TP01 TP02 TP03 TP04 TP05 TP06 TP07 TP08 TP09 TP10 TP11 TP12

Apt. Bin Store Stair Lift Entrance Plant APT

B1 B2 B3 B4 B5 B7 B8 B9 B11 B12 B14

0 5 10 15 20 25 m

Rev	Drawn	Date	Description
A	ARE	Jun 26	Updated proposed development plan

Drawing Status:
Information

Contract:
Peacock Centre, Manchester

For: Shepherd Gilmour (SGi) Consulting Engineers

Drawing Title:

Exploratory Hole Location Plan

IGE consulting

First Floor, 15 Oxford Court, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:650 @A3	Date: May 2025
Drawn: ARE	Checked: AE
Contract No. 4396	Drawing No. SI-05 P1

FOR GUIDANCE PURPOSES ONLY

N

Approximate Site Boundary

On-Site Historical Peacock Centre (1933 - 2016)

Exploratory Hole Locations

Trial Pit Locations

Dynamic Sample Borehole Locations

TAYLOR STREET
PLAYING FIELDS

GORTON L...

BURSTON STREET

Parcel A

DS01 DS02 DS03 DS04 DS05 DS06

TP01 TP02 TP03 TP04 TP05 TP06 TP07

Apt. Bin Store Stair Lift Entrance Bike St. Plant APT

B2 B4 B7 B12 B13 B14

PEACOCK CLOSE

MIDDLEWICH WALK

0 5 10 15 20 25 m

Rev	Drawn	Date	Description
A	ARE	Jun 2026	Updated proposed development plan

Drawing Status:
Information

Contract:
Peacock Centre, Manchester

For: Shepherd Gilmour (SGi)
Consulting Engineers

Drawing Title:

Exploratory Hole Location Plan (Parcel A)

IGE consulting

First Floor, 15 Oxford Court, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:415 @A3	Date: Jun 2025	
Drawn: ARE	Checked: AE	
Contract No. 4396	Drawing No. SI-05	P2

FOR GUIDANCE PURPOSES ONLY

Approximate Site Boundary

Exploratory Hole Locations

Trial Pit Locations

Dynamic Sample Borehole Locations

Parcel B

DS08 DS09 DS10 DS11 DS07

TP11 TP10 TP12 TP09 TP08

B8 B11 B5 B9 B1 B3

BRYSON WALK

0 5 10 15 20 25 m

A	ARE	Jun 2026	Updated proposed development plans
Rev	Drawn	Date	Description

Drawing Status: Information

Contract:

Peacock Centre, Manchester

For: Shepherd Gilmour (SGi) Consulting Engineers

Drawing Title:

Exploratory Hole Location Plan (Parcel B)

IGE consulting

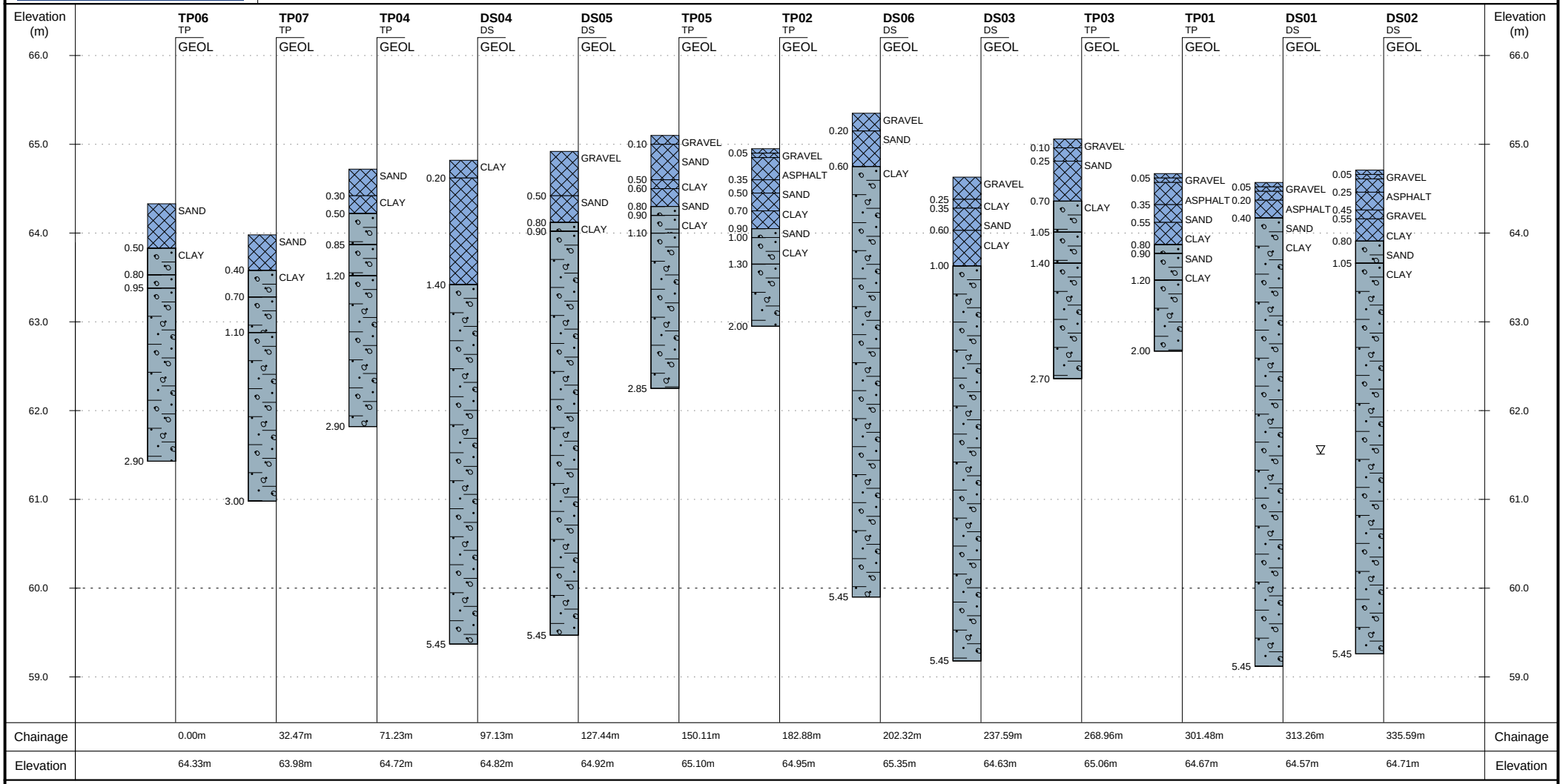
First Floor, 15 Oxford Court, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:300 @A3	Date: Jun 2025	
Drawn: ARE	Checked: AE	
Contract No. 4396	Drawing No. SI-05	P3

Cross-Section

Project Name	Project No.	Vertical Scale	Horizontal Scale
Peacock Centre - Parcel A	4396	1:63	NOT SCALED

Client	Consultant	Contractor
Shepherd Gilmour (SGi) Consulting Engineers	IGE Consulting	



MADE GROUND

CLAY

WATER LEVELS

REST

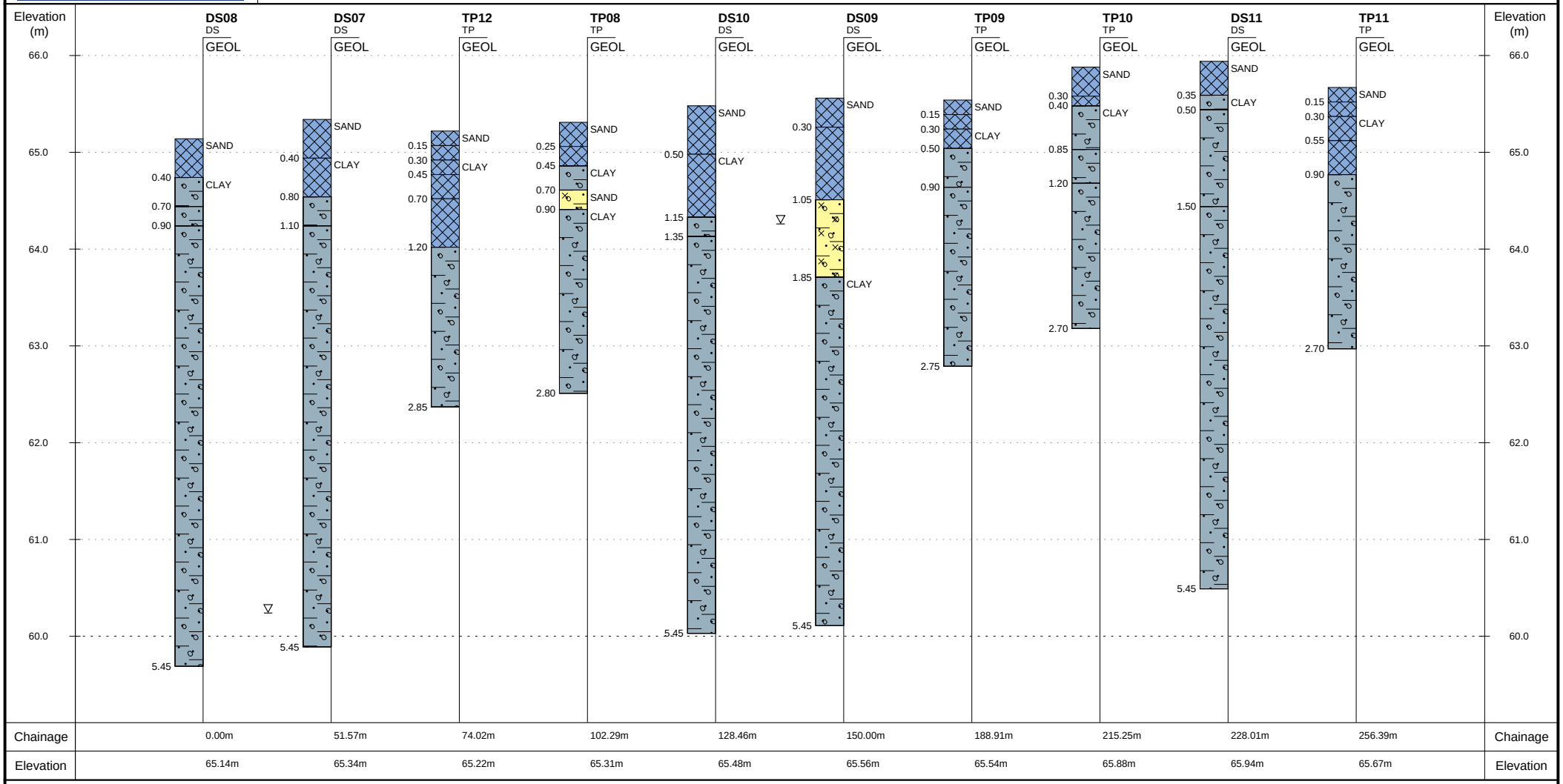
STRIKE

Pipe / Installation Details Omitted

Created using Pebble Geo

Cross-Section

Project Name Peacock Centre - Parcel B	**Project No.** 4396	**Vertical Scale** 1:58	**Horizontal Scale** NOT SCALED
Client Shepherd Gilmour (SGi) Consulting Engineers	**Consultant** IGE Consulting	**Contractor**	



MADE GROUND CLAY SAND

WATER LEVELS

REST

STRIKE

Pipe / Installation Details Omitted

Created using Pebble Geo

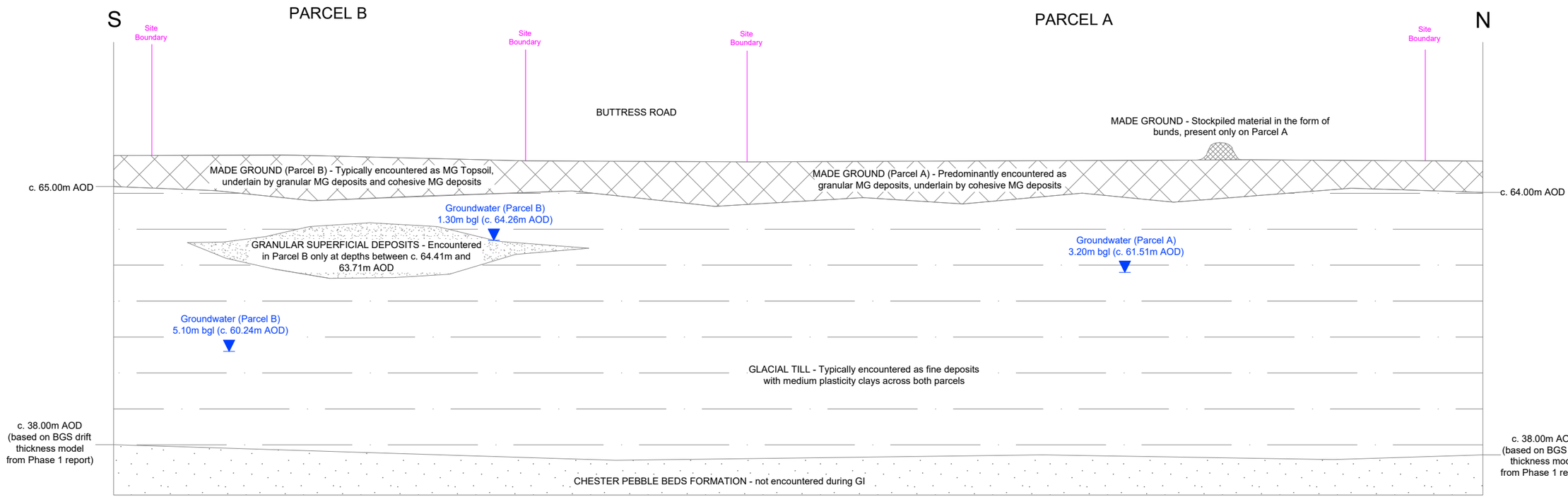
Notes

1 This drawings is indicative and not to scale.

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

Key

- Made Ground
- Glacial Till (Cohesive)
- Glacial Till (Granular)
- Chester Pebble Beds Formation



Rev	Drawn	Date	Description

Drawing Status
INFORMATION

Contract
PEACOCK CENTRE, MANCHESTER

FOR: SHEPHERD GILMOUR (SGI) CONSULTING ENGINEERS

Drawing Title
CONCEPTUAL GROUND MODEL

IGE consulting

First Floor, 15 Oxford Court, Manchester, M2 3WQ
email: contact@igeconsulting.co.uk
web: www.igeconsulting.co.uk

Scale	Date
NTS	JUN 2025
Drawn ARE	**Checked** AE

Contract No.	Drawing No.	
4396	SI - 06	P1

APPENDIX 3

DYNAMIC SAMPLE BOREHOLE LOGS AND PHOTOGRAPHS

Dynamic Sampler

DS01

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388321.16	396652.21	64.57	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					64.52	(0.05)		Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
		0.15	ES		64.47	0.05		
					64.37	(0.05) 0.10		ASPHALT. [MADE GROUND]
		0.35	HV	60 (kPa)		(0.10) 0.20		
		0.35	ES		64.17	(0.20) 0.40		Dark orangish brown very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse concrete and red brick. [MADE GROUND]
		0.55	HV	84 (kPa)				
		0.60-0.80	B					Yellowish brown mottled grey slightly gravelly slightly sandy CLAY. Gravel is angular to subangular fine to coarse concrete and red brick. [MADE GROUND]
		0.70	HV	116 (kPa)				
		0.80	ES					
		1.00	HV	164 (kPa)				Stiff to very stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.10	HV	170 (kPa)				
		1.20	SPT	N=15 (1,2/3,4,3,5)				
		1.20-1.50	B					
		1.20-1.65	D					
		1.60	ES					
		1.70	HV	240 (kPa)				
		1.75	HV	228 (kPa)				
		1.85	HV	232 (kPa)				
		2.00	SPT	N=25 (2,3/5,5,6,9)				
		2.00-2.45	D					*Becomes no longer mottled from 2.30m bgl. (2.30m)*
		3.00	SPT	N=29 (5,5/6,6,7,10)		(5.05)		
		3.00-3.45	D					
		3.50-4.00	B					
		4.00	SPT	N=18 (3,3/3,4,5,6)				
		4.00-4.45	D					
		5.00	SPT	N=20 (3,3/4,5,5,6)				
		5.00-5.45	D					
					59.12	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS01

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388321.16	396652.21	64.57	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client	Consultant	Contractor
Shepherd Gilmour (SGi) Consulting Engineers	IGE Consulting	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
			No water strike. Borehole dipped upon completion: no water.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=15 (1,2/3,4,3,5)
2.00 (S)				67	N=25 (2,3/5,5,6,9)
3.00 (S)				67	N=29 (5,5/6,6,7,10)
4.00 (S)				67	N=18 (3,3/3,4,5,6)
5.00 (S)				67	N=20 (3,3/4,5,5,6)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	ES		
	D		
	D		
	D		
	D		
	D		
	B		
	B		
	B		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 90% recovery
2.00	3.00	77mm - 85% recovery
3.00	4.00	67mm - 95% recovery
4.00	5.00	67mm - 75% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS01
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388321.16	396652.21	64.57	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS02
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388342.67	396646.19	64.71	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.02	ES		64.66	(0.05)		
					64.61	0.05		Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
						(0.05)		
					64.46	0.10		
		0.30	ES			(0.15)		ASPHALT. [MADE GROUND]
		0.40	HV	112 (kPa)		0.25		
					64.26	(0.20)		
						0.45		Dark grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
					64.16	(0.10)		
		0.60	ES			0.55		
		0.70	HV	112 (kPa)		(0.25)		
					63.91	0.80		Yellowish brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse yellow brick, sandstone and mudstone. [MADE GROUND]
		0.90	HV	160 (kPa)		(0.25)		
		1.00	ES		63.66	1.05		Dark grey very gravelly clayey fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker, yellow brick and sandstone. [MADE GROUND]
		1.20	SPT	N=12 (2,2/2,3,3,4)				
		1.20-1.65	D					Brownish grey slightly gravelly slightly sandy CLAY. Gravel is angular to subangular fine to medium red brick, clinker and sandstone. [MADE GROUND]
		1.70	HV	240 (kPa)				
		1.90	HV	240 (kPa)				Firm orangish brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		2.00	SPT	N=23 (4,4/4,6,6,7)				
		2.00-2.45	D					Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		2.00-2.50	B					*Suspected cobble of mudstone between 1.85m and 1.95m bgl. (1.85 - 1.95m)*
								Becomes no longer mottled from 2.10m bgl. (2.10m)
		3.00	SPT	N=20 (3,4/4,4,5,7)				
	▽	3.00-3.45	D			(4.40)		
		4.00	SPT	N=19 (3,3/3,5,5,6)				
		4.00-4.45	D					
		4.00-4.50	B					
		5.00	SPT	N=26 (3,4/5,6,6,9)				
		5.00-5.45	D					
					59.26	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions

		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS02

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388342.67	396646.19	64.71	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client	Consultant	Contractor
Shepherd Gilmour (SGi) Consulting Engineers	IGE Consulting	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
3.20				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
3.20			Water strike at 3.20m bgl. Borehole dipped upon completion: water at 3.91m bgl.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=12 (2,2/2,3,3,4)
2.00 (S)				67	N=23 (4,4/4,6,6,7)
3.00 (S)				67	N=20 (3,4/4,4,5,7)
4.00 (S)				67	N=19 (3,3/3,5,5,6)
5.00 (S)				67	N=26 (3,4/5,6,6,9)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	ES		
	D		
	D		
	D		
	D		
	D		
	B		
	B		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 100% recovery
2.00	3.00	77mm - 100% recovery
3.00	4.00	67mm - 90% recovery
4.00	5.00	67mm - 70% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS02
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388342.67	396646.19	64.71	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS03

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388320.12	396623.34	64.63	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES			(0.25)		Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
		0.30	HV	168 (kPa)	64.38	0.25		
		0.30	ES		64.28	(0.10)		Yellowish brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse yellow brick, clinker, glass, sandstone and mudstone. [MADE GROUND]
		0.50	ES			0.35 (0.25)		
		0.70	HV	200 (kPa)	64.03	0.60		Dark grey very gravelly fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker and sandstone. [MADE GROUND]
		0.75	ES			(0.40)		
		0.90	HV	172 (kPa)				
		1.05	HV	150 (kPa)	63.63	1.00		Firm dark grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse red brick, clinker, mudstone and sandstone. [MADE GROUND]
		1.10	ES					
		1.15	HV	192 (kPa)				
		1.20	SPT	N=12 (1,2/2,3,3,4)				
		1.20-1.65	D					Firm to stiff greyish brown slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.70	HV	240 (kPa)				*Becomes brown mottled dark grey from 1.25m bgl. (1.25m)*
		1.80	HV	236 (kPa)				
		1.90	HV	236 (kPa)				
		1.95	HV	232 (kPa)				
		2.00	SPT	N=20 (3,3/4,4,5,7)				
		2.00-2.45	D					
		3.00	SPT	N=25 (4,4/5,6,6,8)				
		3.00-3.45	D					
		3.00-3.50	B			(4.45)		*Becomes no longer mottled from 3.10m bgl. (3.10m)*
		4.00	SPT	N=18 (3,3/3,4,4,7)				
		4.00-4.45	D					
		4.50-5.00	B					
		5.00	SPT	N=24 (3,4/4,6,6,8)				
		5.00-5.45	D					
					59.18	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS03

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388320.12	396623.34	64.63	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
			No water strike. Borehole dipped upon completion: no water.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=12 (1,2/2,3,3,4)
2.00 (S)				67	N=20 (3,3/4,4,5,7)
3.00 (S)				67	N=25 (4,4/5,6,6,8)
4.00 (S)				67	N=18 (3,3/3,4,4,7)
5.00 (S)				67	N=24 (3,4/4,6,6,8)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	ES		
	ES		
	D		
	D		
	D		
	D		
	D		
	B		
	B		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 85% recovery
2.00	3.00	77mm - 85% recovery
3.00	4.00	67mm - 90% recovery
4.00	5.00	67mm - 65% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS03
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388320.12	396623.34	64.63	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS04

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388305.87	396597.01	64.82	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.20)		Dark brown gravelly slightly sandy CLAY with numerous roots and rootlets. Gravel is angular to subrounded fine to coarse concrete, red brick, slate, plastic, mudstone and sandstone. [MADE GROUND]
					64.62	0.20		
		0.40	ES					Brown slightly gravelly slightly sandy CLAY with low cobble content. Gravel is angular to subrounded fine to coarse concrete, red brick, slate, plastic, mudstone and sandstone. Cobbles are angular red brick. [MADE GROUND]
		0.45	HV	64 (kPa)				
		0.65	HV	70 (kPa)				
		0.80	HV	60 (kPa)		(1.20)		
		0.80	ES					
		1.20	SPT	N=4 (2,2/1,1,1,1)				
		1.20-1.65	D					
		1.20-2.00	B					
		1.30	ES		63.42	1.40		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.80	ES					
		1.90	HV	124 (kPa)				
		2.00	SPT	N=17 (2,2/3,3,5,6)				
		2.00-2.45	D					
		2.50	ES					
		3.00	SPT	N=27 (4,5/5,6,7,9)				
		3.00-3.45	D					
		3.70-4.00	B			(4.05)		
		4.00	SPT	N=23 (4,4/4,5,6,8)				
		4.00-4.45	D					
		5.00	SPT	N=24 (4,4/4,5,7,8)				*Becomes no longer mottled from 4.70m bgl. (4.70m)*
		5.00-5.45	D					
					59.37	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions

		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS04

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388305.87	396597.01	64.82	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
			No water strike. Borehole dipped upon completion: no water.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=4 (2,2/1,1,1,1)
2.00 (S)				67	N=17 (2,2/3,3,5,6)
3.00 (S)				67	N=27 (4,5/5,6,7,9)
4.00 (S)				67	N=23 (4,4/4,5,6,8)
5.00 (S)				67	N=24 (4,4/4,5,7,8)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	ES		
	ES		
	D		
	D		
	D		
	D		
	D		
	B		
	B		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 80% recovery
2.00	3.00	77mm - 95% recovery
3.00	4.00	67mm - 90% recovery
4.00	5.00	67mm - 50% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions **Logger**

0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS04
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388305.87	396597.01	64.82	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS05

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388325.48	396573.90	64.92	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Legend	Description
		0.05	ES					Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
						(0.50)		*Becomes brownish grey from 0.20m bgl. (0.20m)*
		0.35	ES					
					64.42	0.50		
						(0.30)		Dark grey very gravelly fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker and sandstone. [MADE GROUND]
		0.70	ES		64.12	0.80		
		0.90	HV	198 (kPa)	64.02	(0.10) 0.90		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		1.00	HV	220 (kPa)				
		1.00	ES					
		1.15	HV	236 (kPa)				
		1.20	SPT	N=12 (2,1/2,3,3,4)				Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.20-1.65	D					
		1.75	HV	224 (kPa)				
		1.80	HV	226 (kPa)				
		1.90	HV	124 (kPa)				
		2.00	SPT	N=16 (3,3/3,4,4,5)				
		2.00-2.45	D					
								Becomes no longer mottled from 2.30m bgl. (2.30m)
		3.00	SPT	N=24 (4,4/5,5,6,8)				
		3.00-3.45	D					
		3.00-3.50	B			(4.55)		
		4.00	SPT	N=19 (3,3/3,4,4,8)				
		4.00-4.45	D					
		4.50-5.00	B					
		5.00	SPT	N=25 (3,4/4,6,6,9)				
					59.47	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS05

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388325.48	396573.90	64.92	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
			No water strike. Borehole dipped upon completion: no water.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=12 (2,1/2,3,3,4)
2.00 (S)				67	N=16 (3,3/3,4,4,5)
3.00 (S)				67	N=24 (4,4/5,5,6,8)
4.00 (S)				67	N=19 (3,3/3,4,4,8)
5.00 (S)				67	N=25 (3,4/4,6,6,9)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	ES		
	D		
	D		
	D		
	D		
	B		
	B		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 95% recovery
2.00	3.00	77mm - 100% recovery
3.00	4.00	67mm - 90% recovery
4.00	5.00	67mm - 80% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS05
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388325.48	396573.90	64.92	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS06

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388348.06	396601.81	65.35	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES		65.15	(0.20) 0.20		Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
		0.40	ES		64.75	(0.40) 0.60		Orangish brown slightly gravelly fine to coarse SAND. Gravel is subangular to rounded fine to medium sandstone, mudstone and red brick. [MADE GROUND]
								Cobble of red brick at 0.20m bgl. (0.20m)
		0.80	HV	112 (kPa)				Stiff dark brown slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		0.90	ES					
		0.95	HV	160 (kPa)				
		1.10	HV	234 (kPa)				
		1.20	SPT	N=9 (1,2/2,2,2,3)				
		1.20-1.65	D					*Becomes brown mottled dark grey from 1.30m bgl. (1.30m)*
		1.50	ES					
		1.70	HV	164 (kPa)				
		1.80	HV	186 (kPa)				
		1.95	HV	178 (kPa)				
		2.00	SPT	N=14 (2,2/3,3,3,5)				
		2.00-2.45	D					
		2.00-2.50	B					
		3.00	SPT	N=38 (5,6/8,8,10,12)		(4.85)		
		3.00-3.45	D					*Becomes no longer mottled from 3.05m bgl. (3.05m)*
		3.20-3.80	B					
		4.00	SPT	N=18 (4,3/4,4,4,6)				
		4.00-4.45	D					
		4.00-5.00	B					
		5.00	SPT	N=21 (3,4/4,4,6,7)				
		5.00-5.45	D					
					59.90	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions

		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS06

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388348.06	396601.81	65.35	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-20	2025-05-20

Client	Consultant	Contractor
Shepherd Gilmour (SGi) Consulting Engineers	IGE Consulting	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
			No water strike. Borehole dipped upon completion: no water.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=9 (1,2/2,2,2,3)
2.00 (S)				67	N=14 (2,2/3,3,3,5)
3.00 (S)				67	N=38 (5,6/8,8,10,12)
4.00 (S)				67	N=18 (4,3/4,4,4,6)
5.00 (S)				67	N=21 (3,4/4,4,6,7)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	ES		
	D		
	D		
	D		
	D		
	D		
	B		
	B		
	B		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 90% recovery
2.00	3.00	77mm - 95% recovery
3.00	4.00	67mm - 90% recovery
4.00	5.00	67mm - 75% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS06
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388348.06	396601.81	65.35	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-20	2025-05-20

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS07

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388275.94	396445.17	65.34	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Legend	Description
		0.20	ES			(0.40)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, clinker, ceramic, concrete, sandstone and mudstone. [MADE GROUND]
					64.94	0.40		
		0.60	HV	62 (kPa)		(0.40)		Dark brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse red brick, clinker, ceramic, concrete, sandstone and mudstone. [MADE GROUND]
		0.65	ES					
		0.80-1.10	B		64.54	0.80		
		0.90	HV	64 (kPa)		(0.30)		Firm light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.90	ES					
		1.00	HV	80 (kPa)	64.24	1.10		
		1.20	SPT	N=9 (2,2/2,1,2,4)				Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.20-1.65	D					
		1.30	ES					
		1.70	HV	136 (kPa)				
		1.75	HV	166 (kPa)				
		1.85	HV	162 (kPa)				
		1.95	HV	170 (kPa)				
		2.00	SPT	N=30 (3,4/4,8,7,11)				
		2.00-2.45	D					
		2.00-2.50	B					
		3.00	SPT	N=25 (5,5/5,5,7,8)				
		3.00-3.45	D					
						(4.35)		*No longer mottled from 3.40m bgl. (3.40m)*
		4.00	SPT	N=18 (3,3/3,4,5,6)				
		4.00-4.45	D					
		4.00-4.50	B					
	▽	5.00	SPT	N=27 (4,4/6,6,7,8)				
	▽	5.00-5.45	D					
					59.89	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions

		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS07

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388275.94	396445.17	65.34	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client	Consultant	Contractor
Shepherd Gilmour (SGi) Consulting Engineers	IGE Consulting	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
5.10				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
5.10			Water strike at 5.10m bgl. Borehole dipped upon completion: water at 5.38m bgl.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=9 (2,2/2,1,2,4)
2.00 (S)				67	N=30 (3,4/4,8,7,11)
3.00 (S)				67	N=25 (5,5/5,5,7,8)
4.00 (S)				67	N=18 (3,3/3,4,5,6)
5.00 (S)				67	N=27 (4,4/6,6,7,8)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	B		
	ES		
	D		
	ES		
	D		
	B		
	D		
	D		
	B		
	D		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 100% recovery
2.00	3.00	77mm - 100% recovery
3.00	4.00	67mm - 85% recovery
4.00	5.00	67mm - 70% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS07
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388275.94	396445.17	65.34	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS08

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388274.17	396496.71	65.14	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.40)		Brown slightly gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, clinker, glass, ceramic, concrete, sandstone and mudstone. [MADE GROUND]
		0.30	ES		64.74	0.40		
		0.50	HV	64 (kPa)		(0.30)		*Roots no longer present from 0.20m bgl. (0.20m)*
		0.60	ES					
		0.65	HV	80 (kPa)	64.44	0.70		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.80	HV	84 (kPa)		(0.20)		
		0.80	ES		64.24	0.90		
		0.90-1.30	B					Firm light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.95	HV	76 (kPa)				
		1.20	SPT	N=10 (2,1/2,2,3,3)				
		1.20-1.65	D					
		1.50	ES					Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.70	HV	172 (kPa)				
		1.80	HV	172 (kPa)				
		1.85	HV	164 (kPa)				
		2.00	SPT	N=29 (4,4/5,7,8,9)				
		2.00-2.45	D					
		3.00	SPT	N=27 (5,5/5,6,6,10)				
		3.00-3.45	D					
		3.00-3.50	B			(4.55)		
		4.00	SPT	N=19 (3,4/3,4,5,7)				
		4.00-4.45	D					
		4.50-5.00	B					
		5.00	SPT	N=20 (4,4/4,5,5,6)				
					59.69	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS08

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388274.17	396496.71	65.14	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client	Consultant	Contractor
Shepherd Gilmour (SGi) Consulting Engineers	IGE Consulting	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
			No water strike. Borehole dipped upon completion: no water.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=10 (2,1/2,2,3,3)
2.00 (S)				67	N=29 (4,4/5,7,8,9)
3.00 (S)				67	N=27 (5,5/5,6,6,10)
4.00 (S)				67	N=19 (3,4/3,4,5,7)
5.00 (S)				67	N=20 (4,4/4,5,5,6)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	B		
	D		
	ES		
	D		
	D		
	B		
	D		
	B		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 100% recovery
2.00	3.00	77mm - 80% recovery
3.00	4.00	67mm - 100% recovery
4.00	5.00	67mm - 60% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS08
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388274.17	396496.71	65.14	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS09

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388310.63	396483.88	65.56	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Legend	Description
		0.10	ES			(0.30)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [MADE GROUND]
		0.40	ES		65.26	0.30		Dark grey very gravelly slightly clayey fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker, yellow brick, glass and sandstone. [MADE GROUND]
		1.00	ES			(0.75)		
		1.10-1.80	B		64.51	1.05		Medium dense light brown slightly gravelly silty fine to coarse SAND. Gravel is subangular to rounded fine mudstone and coal. [GLACIAL TILL]
	▽	1.20	SPT	N=10 (2,2/2,2,2,4)				
		1.20-1.65	D					
		1.30	ES			(0.80)		
		1.90	HV	128 (kPa)	63.71	1.85		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.95	HV	126 (kPa)				
		2.00	SPT	N=23 (3,2/4,5,7,7)				
		2.50-3.00	B					
		3.00	SPT	N=27 (5,6/6,7,7,7)				
		3.00-3.45	D					
		3.80-4.20	B			(3.60)		
		4.00	SPT	N=20 (4,3/4,4,5,7)				
		4.00-4.45	D					
		5.00	SPT	N=26 (3,4/5,6,7,8)				
		5.00-5.45	D					
					60.11	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions

		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS09

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388310.63	396483.88	65.56	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client	Consultant	Contractor
Shepherd Gilmour (SGi) Consulting Engineers	IGE Consulting	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.30				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.30			Water strike at 1.30m bgl. Borehole dipped upon completion: water at 4.14m bgl.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=10 (2,2/2,2,2,4)
2.00 (S)				67	N=23 (3,2/4,5,7,7)
3.00 (S)				67	N=27 (5,6/6,7,7,7)
4.00 (S)				67	N=20 (4,3/4,4,5,7)
5.00 (S)				67	N=26 (3,4/5,6,7,8)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	B		
	D		
	ES		
	B		
	D		
	B		
	D		
	D		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 100% recovery
2.00	3.00	77mm - 85% recovery
3.00	4.00	67mm - 60% recovery
4.00	5.00	67mm - 85% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS09
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388310.63	396483.88	65.56	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS10

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388316.13	396463.05	65.48	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Legend	Description
		0.25	ES			(0.50)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, clinker, ceramic, glass, slate and sandstone. [MADE GROUND]
		0.50-1.00	B		64.98	0.50		
		0.60	HV	60 (kPa)				Dark grey slightly gravelly slightly sandy CLAY. Gravel is angular to subrounded fine to coarse red brick and sandstone. [MADE GROUND]
		0.75	ES					
		0.80	HV	64 (kPa)		(0.65)		
		1.10	HV	80 (kPa)				
		1.20	SPT	N=11 (2,2/2,2,3,4)	64.33	1.15		
		1.20-1.65	D			(0.20)		Firm light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		1.40	ES		64.13	1.35		
		1.70	HV	162 (kPa)				Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.85	HV	222 (kPa)				
		1.95	HV	240 (kPa)				
		2.00	SPT	N=25 (3,4/5,5,6,9)				
		2.00-2.45	D					
		2.00-2.50	B					
								No longer mottled from 2.40m bgl. (2.40m)
		3.00	SPT	N=22 (4,3/5,5,5,7)				
		3.00-3.45	D					
						(4.10)		
		3.50-4.00	B					
		4.00	SPT	N=19 (3,3/3,4,5,7)				
		4.00-4.45	D					
		5.00	SPT	N=24 (3,3/4,6,6,8)				
		5.00-5.45	D					
					60.03	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions

		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS10

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388316.13	396463.05	65.48	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
			No water strike. Borehole dipped upon completion: no water.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=11 (2,2/2,2,3,4)
2.00 (S)				67	N=25 (3,4/5,5,6,9)
3.00 (S)				67	N=22 (4,3/5,5,5,7)
4.00 (S)				67	N=19 (3,3/3,4,5,7)
5.00 (S)				67	N=24 (3,3/4,6,6,8)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	B		
	ES		
	D		
	ES		
	D		
	B		
	D		
	B		
	D		
	D		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 100% recovery
2.00	3.00	77mm - 80% recovery
3.00	4.00	67mm - 100% recovery
4.00	5.00	67mm - 65% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS10
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388316.13	396463.05	65.48	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS11

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388350.80	396461.62	65.94	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.15	ES			(0.35)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, clinker, ceramic, glass, slate and sandstone. [MADE GROUND]
		0.40	HV	78 (kPa)	65.59	0.35 (0.15)		
		0.45	ES		65.44	0.50		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.60	HV	76 (kPa)				
		0.90	HV	82 (kPa)				Firm light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.90-1.20	B			(1.00)		
		1.10	ES					
		1.20	SPT	N=12 (2,2/3,3,3,3)				
		1.20-1.65	D					
		1.50	ES		64.44	1.50		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.70	HV	96 (kPa)				
		1.75	HV	108 (kPa)				
		1.80	HV	168 (kPa)				
		1.90	HV	148 (kPa)				
		2.00	SPT	N=22 (3,3/4,5,5,8)				
		2.00-2.45	D					
		3.00	SPT	N=28 (5,5/5,7,8,8)				
		3.00-3.45	D					
		3.00-3.50	B			(3.95)		
		4.00	SPT	N=22 (4,3/4,5,5,8)				
		4.00-4.45	D					
		4.00-4.50	B					
		5.00	SPT	N=21 (4,4/3,4,6,8)				
					60.49	5.45		*End of Borehole at 5.45m*

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Dynamic Sampler

DS11

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388350.80	396461.62	65.94	1:35

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
			No water strike. Borehole dipped upon completion: no water.

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)				67	N=12 (2,2/3,3,3,3)
2.00 (S)				67	N=22 (3,3/4,5,5,8)
3.00 (S)				67	N=28 (5,5/5,7,8,8)
4.00 (S)				67	N=22 (4,3/4,5,5,8)
5.00 (S)				67	N=21 (4,4/3,4,6,8)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	B		
	ES		
	D		
	ES		
	D		
	D		
	B		
	D		
	B		

Depth Related Remarks

Top Depth (m)	Base Depth (m)	Remarks
1.20	2.00	87mm - 100% recovery
2.00	3.00	77mm - 85% recovery
3.00	4.00	67mm - 95% recovery
4.00	5.00	67mm - 80% recovery

Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

Dynamic Sampler

DS11
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
DS	388350.80	396461.62	65.94	1:35
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-21	2025-05-21

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor



Remarks
Borehole terminated at target depth.

Method, Plant, Stability, Dimensions		Logger
0.00 - 1.20m	IP	ARE
1.20 - 5.45m	DS	ARE

Checked By: LM **Approved By:** AE

APPENDIX 4

TRIAL PIT LOGS AND PHOTOGRAPHS

Trial Pit

TP01

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388330.09	396644.54	64.67	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					64.62	(0.05)		Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
						0.05 (0.05)		
					64.57	0.10		ASPHALT. [MADE GROUND]
		0.20	ES			(0.25)		Dark grey very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse concrete and red brick. [MADE GROUND]
					64.32	0.35		Yellowish brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse yellow brick, sandstone and mudstone. [MADE GROUND]
						(0.20)		
		0.50	HV	120 (kPa)				
					64.12	0.55		Dark grey very gravelly fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker and sandstone. [MADE GROUND]
		0.60	ES			(0.25)		
		0.80	B		63.87	0.80		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
						(0.10)		
		0.90	HV	144 (kPa)	63.77	0.90		Firm orangish brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
						(0.30)		
					63.47	1.20		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.40	HV	138 (kPa)				
		1.40	B					
		1.60	HV	156 (kPa)		(0.80)		
		1.90	B					
					62.67	2.00		*End of Trial Pit at 2.00m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. No water ingress. BRE 365 infiltration testing completed between 1.00m and 2.00m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 240°
L = 1.70m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP01

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388330.09	396644.54	64.67	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	B		
	B		
	B		

Remarks
Trial pit terminated at target depth. No water ingress. BRE 365 infiltration testing completed between 1.00m and 2.00m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 240°
L = 1.70m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP01

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388330.09	396644.54	64.67	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor









Remarks
Trial pit terminated at target depth. No water ingress. BRE 365 infiltration testing completed between 1.00m and 2.00m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 240°
L = 1.70m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP02

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388328.62	396601.86	64.95	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					64.90	(0.05) 0.05		Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
					64.85	(0.05) 0.10		ASPHALT. [MADE GROUND]
						(0.25)		Dark orangish brown very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse concrete and red brick. [MADE GROUND]
		0.30	ES					*Orange COBBLES of angular red brick between 0.25m and 0.35m bgl. (0.25 - 0.35m)*
					64.60	0.35		
						(0.15)		Yellowish brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse yellow brick, clinker, glass, sandstone and mudstone. [MADE GROUND]
		0.45	B		64.45	0.50		
						(0.20)		Dark orangish brown very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse concrete and red brick. [MADE GROUND]
					64.25	0.70		Dark grey very gravelly fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker and sandstone. [MADE GROUND]
		0.80	ES			(0.20)		
		0.90	HV	165 (kPa)	64.05	0.90		Stiff dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.95	B			(0.10)		
					63.95	1.00		Stiff orangish brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		1.10	HV	156 (kPa)		(0.30)		
		1.20	B					
		1.25	HV	156 (kPa)				
					63.65	1.30		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.40	HV	144 (kPa)				
		1.60	HV	168 (kPa)		(0.70)		
		1.85	HV	184 (kPa)				
		1.95	B					
					62.95	2.00		*End of Trial Pit at 2.00m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. No water ingress. BRE 365 infiltration testing completed between 1.00m and 2.00m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 135°
L = 2.10m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP02

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388328.62	396601.86	64.95	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	B		
	B		
	B		
	B		

Remarks
Trial pit terminated at target depth. No water ingress. BRE 365 infiltration testing completed between 1.00m and 2.00m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 135°
L = 2.10m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP02

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388328.62	396601.86	64.95	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor









Remarks
Trial pit terminated at target depth. No water ingress. BRE 365 infiltration testing completed between 1.00m and 2.00m bgl.

Method, Plant, Stability, Dimensions

0.00 - 2.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 135°
L = 2.10m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP03

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388351.29	396619.87	65.06	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.10)		Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
					64.96	0.10		
		0.15	ES			(0.15)		Dark brown very gravelly fine to coarse ashy SAND with medium cobble content. Gravel is angular to subangular fine to coarse red brick, clinker and sandstone. Cobbles are angular red brick. [MADE GROUND]
					64.81	0.25		Orangish brown slightly gravelly fine to coarse SAND. Gravel is subangular to rounded fine to medium sandstone, mudstone and red brick. [MADE GROUND]
		0.50	ES			(0.45)		
					64.36	0.70		Stiff dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.80	HV	80 (kPa)				
		0.80	ES			(0.35)		
		1.00	HV	112 (kPa)				
		1.00	B		64.01	1.05		Stiff yellowish brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		1.15	HV	116 (kPa)				
		1.15	B					
		1.20	HV	100 (kPa)		(0.35)		
		1.40	HV	160 (kPa)	63.66	1.40		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.70	HV	162 (kPa)				
		1.90	HV	190 (kPa)		(1.30)		
		2.30	HV	238 (kPa)				
		2.60	B					
					62.36	2.70		*End of Trial Pit at 2.70m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.40m and 2.70m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 165°
L = 2.30m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP03

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388351.29	396619.87	65.06	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	B		
	B		
	B		

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.40m and 2.70m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 165°
L = 2.30m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP03

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388351.29	396619.87	65.06	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor









Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.40m and 2.70m: no HSVs.

Method, Plant, Stability, Dimensions

0.00 - 2.70m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 165°
L = 2.30m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP04

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388300.38	396571.70	64.72	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.30)		Dark brown very gravelly very clayey fine to coarse SAND with numerous roots and rootlets and medium cobble content. Gravel is angular to subrounded fine to coarse clinker, ceramic, slate, fabric, plastic and sandstone. Cobbles are angular to subangular red brick, timber and slate. [MADE GROUND]
		0.25	ES					
					64.42	0.30		*Suspected foundation encountered along west side of pit between ground level and 0.90m bgl. (0.00 - 0.90m)*
		0.40	HV	40 (kPa)		(0.20)		Dark brown gravelly slightly sandy CLAY with rare roots and rootlets and medium cobble content. Gravel is angular to subrounded fine to coarse clinker, ceramic, slate, fabric, plastic and sandstone. Cobbles are angular to subangular red brick and timber. [MADE GROUND]
					64.22	0.50		
		0.60	ES					Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.65	HV	62 (kPa)		(0.35)		
					63.87	0.85		Stiff yellowish brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.95	HV	154 (kPa)		(0.35)		
		1.10	HV	160 (kPa)				
		1.10	ES					
		1.10	B		63.52	1.20		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.30	HV	180 (kPa)				
		1.70	HV	232 (kPa)				
		2.00	B			(1.70)		
		2.10	HV	222 (kPa)				
		2.40	HV	240 (kPa)				
		2.80	B					
					61.82	2.90		*End of Trial Pit at 2.90m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.50m and 2.90m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.90m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 345°
L = 2.40m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP04

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388300.38	396571.70	64.72	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	B		
	B		
	B		

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.50m and 2.90m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.90m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 345°
L = 2.40m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP04
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388300.38	396571.70	64.72	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor









Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.50m and 2.90m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.90m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 345°
L = 2.40m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP05

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388348.10	396575.51	65.10	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.10)		Grey very sandy angular to subangular fine to coarse GRAVEL of concrete, limestone and red brick. [MADE GROUND]
					65.00	0.10		
		0.20	ES					Dark brown very gravelly very clayey fine to coarse SAND with medium cobble content and low boulder content. Gravel is angular to subrounded fine to coarse red brick, clinker, concrete, timber, slate and sandstone. Cobbles are angular to subangular red brick, timber and slate. Boulders are angular to subrounded concrete (up to 0.20x0.30x0.20m). [MADE GROUND]
		0.45	HV	106 (kPa)		(0.40)		
					64.60	0.50		
						(0.10)		Yellowish brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse red brick, clinker, glass, sandstone and mudstone. [MADE GROUND]
					64.50	0.60		
		0.65	ES					Dark grey very gravelly fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker and sandstone. [MADE GROUND]
						(0.20)		
					64.30	0.80		
		0.85	HV	88 (kPa)		(0.10)		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.85	B		64.20	0.90		
		1.00	HV	166 (kPa)		(0.20)		Stiff yellowish brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		1.00	B					
					64.00	1.10		
		1.20	ES					Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.50	HV	160 (kPa)				
		1.60	B					
		1.70	HV	150 (kPa)				
		1.90	HV	213 (kPa)		(1.75)		
		2.10	HV	236 (kPa)				
		2.10	B					
		2.80	B					
					62.25	2.85		*End of Trial Pit at 2.85m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.30m and 2.85m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.85m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 240°
L = 2.50m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP05

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388348.10	396575.51	65.10	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	ES		
	B		
	B		
	B		
	B		
	B		

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.30m and 2.85m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.85m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 240°
L = 2.50m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP05
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388348.10	396575.51	65.10	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor









Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.30m and 2.85m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.85m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 240°
L = 2.50m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP06

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388278.56	396570.66	64.33	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.50)		Dark grey very gravelly slightly clayey fine to coarse ashy SAND with frequent roots and rootlets and medium cobble content. Gravel is angular to subangular fine to coarse red brick, asphalt, concrete, clinker, timber and sandstone. Cobbles are angular red brick, asphalt and concrete. Boulders are angular concrete (up to 0.20x0.30x0.20m). [MADE GROUND]
		0.45	ES		63.83	0.50		
		0.60	B					Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.65	HV	132 (kPa)		(0.30)		
		0.70	ES					
					63.53	0.80		Firm yellowish brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.90	HV	135 (kPa)		(0.15)		
					63.38	0.95		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY with low cobble content. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. Cobbles are rounded sandstone. [GLACIAL TILL]
		1.10	HV	153 (kPa)				
		1.30	HV	142 (kPa)				
		1.40	B					
		1.80	HV	151 (kPa)		(1.95)		
		2.30	B					
		2.85	B					
					61.43	2.90		*End of Trial Pit at 2.90m*

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.20m and 2.90m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.90m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 75°
L = 2.50m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP06

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388278.56	396570.66	64.33	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	B		
	B		
	B		
	B		

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.20m and 2.90m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.90m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 75°
L = 2.50m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP06

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388278.56	396570.66	64.33	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor









Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.20m and 2.90m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.90m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 75°
L = 2.50m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP07

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388277.69	396603.12	63.98	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.40)		Dark grey very gravelly slightly clayey fine to coarse ashy SAND with frequent roots and rootlets and medium cobble content. Gravel is angular to subangular fine to coarse red brick, asphalt, concrete, clinker, timber and sandstone. Cobbles are angular red brick, asphalt and concrete. Boulders are angular concrete (up to 0.20x0.30x0.20m). [MADE GROUND]
		0.35	ES		63.58	0.40		
		0.55	HV	130 (kPa)		(0.30)		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.75	ES		63.28	0.70		
		0.90	B			(0.40)		Firm light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.95	HV	133 (kPa)				
					62.88	1.10		
		1.40	HV	154 (kPa)				Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.60	B					
		1.90	HV	152 (kPa)				
						(1.90)		
		2.10	B					
		2.20	HV	222 (kPa)				
		2.70	B					
					60.98	3.00		*End of Trial Pit at 3.00m*

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.40m and 3.00m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 120°
L = 2.60m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP07

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388277.69	396603.12	63.98	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	ES		
	ES		
	B		
	B		
	B		
	B		

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.40m and 3.00m: no HSVs.

Method, Plant, Stability, Dimensions

0.00 - 3.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 120°
L = 2.60m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP07
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388277.69	396603.12	63.98	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-22	2025-05-22

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor









Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.40m and 3.00m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 3.00m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 120°
L = 2.60m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP08

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388301.13	396441.61	65.31	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.25)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, clinker, ceramic, concrete, sandstone and mudstone. [MADE GROUND]
					65.06	0.25		
		0.30	ES			(0.20)		Dark grey very gravelly slightly clayey fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker, metal, glass, slate, plastic, mudstone and sandstone. [MADE GROUND]
					64.86	0.45		
		0.50	ES					Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.55	B			(0.25)		
		0.60	HV	95 (kPa)				
					64.61	0.70		
						(0.20)		Light brown slightly gravelly silty fine to coarse SAND. Gravel is subangular to rounded fine mudstone and coal. [GLACIAL TILL]
					64.41	0.90		
		0.95	B					Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.10	HV	158 (kPa)				
		1.40	HV	200 (kPa)				
		1.70	B					
		1.80	HV	240 (kPa)		(1.90)		
		2.20	B					*Brown slightly gravelly very clayey fine to coarse SAND between 2.10m and 2.30m bgl. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. (2.10 - 2.30m)*
					62.51	2.80		*End of Trial Pit at 2.80m*

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.00m and 2.80m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.80m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 330°
L = 2.30m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP08

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388301.13	396441.61	65.31	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor







Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.00m and 2.80m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.80m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 330°
L = 2.30m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP09

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388330.10	396450.19	65.54	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.15)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, clinker, ceramic, concrete, sandstone and mudstone. [MADE GROUND]
		0.20	ES		65.39	0.15		
						(0.15)		Dark grey very gravelly slightly clayey fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker, glass, mudstone and sandstone. [MADE GROUND]
		0.40	HV	112 (kPa)	65.24	0.30		
						(0.20)		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [MADE GROUND]
					65.04	0.50		*5cm diameter land drain at 0.45m bgl, orientated NW / SE (0.45 - 0.50m)*
		0.65	ES					
		0.70	HV	124 (kPa)		(0.40)		Firm light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.70	B					
					64.64	0.90		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY with low cobble content. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. Cobbles are rounded sandstone. [GLACIAL TILL]
		1.00	B					
		1.10	HV	154 (kPa)				
		1.40	HV	150 (kPa)				
		1.50	B					
		1.75	HV	154 (kPa)		(1.85)		
		2.00	HV	152 (kPa)				
		2.20	B					
					62.79	2.75		*End of Trial Pit at 2.75m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.10m and 2.75m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.75m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 330°
L = 2.60m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP09
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388330.10	396450.19	65.54	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor







Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.10m and 2.75m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.75m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 330°
L = 2.60m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP10

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388344.12	396472.49	65.88	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.30)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, sandstone and mudstone. [MADE GROUND]
		0.20	ES		65.58	0.30		
						(0.10)		Dark grey very gravelly slightly clayey fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker, glass, mudstone and sandstone. [MADE GROUND]
					65.48	0.40		
		0.55	ES					Stiff dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		0.60	HV	138 (kPa)		(0.45)		
		0.70	B					
					65.03	0.85		Stiff light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [GLACIAL TILL]
		1.05	HV	100 (kPa)		(0.35)		
		1.05	B					
					64.68	1.20		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY with low cobble content. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. Cobbles are rounded sandstone. [GLACIAL TILL]
		1.30	HV	142 (kPa)				
		1.40	B					
		1.60	HV	164 (kPa)		(1.50)		
		2.20	HV	208 (kPa)				
		2.60	B					
					63.18	2.70		*End of Trial Pit at 2.70m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.40m and 2.70m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 270°
L = 2.10m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP10
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388344.12	396472.49	65.88	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor







Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.40m and 2.70m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 270°
L = 2.10m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP11

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388336.59	396486.18	65.67	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.15)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, sandstone and mudstone. [MADE GROUND]
					65.52	0.15		
						(0.15)		Dark grey very gravelly slightly clayey fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker, glass, mudstone and sandstone. [MADE GROUND]
					65.37	0.30		
		0.40	ES					
		0.45	HV	94 (kPa)		(0.25)		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [MADE GROUND]
		0.45	B					
					65.12	0.55		
		0.70	HV	114 (kPa)				Firm light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [MADE GROUND]
		0.70	B			(0.35)		
		0.80	ES					
								5cm diameter land drain at 0.85m bgl, orientated NW / SE (0.85 - 0.90m)
					64.77	0.90		Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.10	HV	148 (kPa)				
		1.40	HV	142 (kPa)				
		1.60	B					
		1.80	HV	146 (kPa)		(1.80)		
		2.50	B					
					62.97	2.70		*End of Trial Pit at 2.70m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. Slight water ingress from northwestern side of pit. Clay recovered as coarse gravel and cobble sized pieces between 1.90m and 2.70m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 240°
L = 2.40m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP11
PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388336.59	396486.18	65.67	1:15

Project Name	Project No.	Start Date	End Date
Peacock Centre	4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor







Remarks
Trial pit terminated at target depth. Slight water ingress from northwestern side of pit. Clay recovered as coarse gravel and cobble sized pieces between 1.90m and 2.70m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.70m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 240°
L = 2.40m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Trial Pit

TP12

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388285.78	396465.35	65.22	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.15)		Brown gravelly slightly clayey fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subrounded fine to coarse red brick, sandstone and mudstone. [MADE GROUND]
					65.07	0.15		
		0.25	ES			(0.15)		Dark grey very gravelly slightly clayey fine to coarse ashy SAND. Gravel is angular to subangular fine to coarse red brick, clinker, glass, mudstone and sandstone. [MADE GROUND]
					64.92	0.30		
		0.40	HV	136 (kPa)		(0.15)		
		0.40	ES					
		0.40	B		64.77	0.45		Firm dark grey slightly gravelly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [MADE GROUND]
		0.50	B					
		0.60	HV	144 (kPa)		(0.25)		Firm light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. [MADE GROUND]
					64.52	0.70		
		0.90	HV	162 (kPa)				Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [MADE GROUND]
		0.90	ES			(0.50)		
					64.02	1.20		*5cm diameter land drain at 1.15m bgl, orientated N / S (1.15 - 1.20m)*
		1.30	HV	160 (kPa)				Stiff brown mottled dark grey slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to medium sandstone, mudstone and coal. [GLACIAL TILL]
		1.30	B					
		1.70	HV	158 (kPa)				
		1.80	B			(1.65)		
		2.10	HV	162 (kPa)				
		2.65	B					
					62.37	2.85		*End of Trial Pit at 2.85m*

0.5 1.0 1.5 2.0 2.5 3.0

Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.20m and 2.85m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.85m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 195°
L = 2.50m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

Created using Pebble Geo

Trial Pit

TP12

PHOTO PAGE

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	388285.78	396465.35	65.22	1:15
Project Name		**Project No.**	**Start Date**	**End Date**
Peacock Centre		4396	2025-05-23	2025-05-23

Client
Shepherd Gilmour (SGi) Consulting Engineers

Consultant
IGE Consulting

Contractor







Remarks
Trial pit terminated at target depth. No water ingress. Clay recovered as coarse gravel and cobble sized pieces between 2.20m and 2.85m: no HSVs.

Method, Plant, Stability, Dimensions
0.00 - 2.85m TP JCB 3CX
Trial pit stable during excavation.
Orientation: 195°
L = 2.50m
W = 0.70m

Logger
ARE

Checked By: LM **Approved By:** AE

APPENDIX 5

SOIL INFILTRATION TEST CALCULATIONS

Multidisciplinary Geo-Environmental Consultants

First Floor, 15 Oxford Court
Manchester
M2 3WQ

Tel: 0161 914 9171
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk

DETERMINATION OF SOIL INFILTRATION RATE (*f*)

Site Name: Peacock Centre, Gorton, Manchester
Job Number: 4396
Date: 22/05/2025
Exploratory Hole: TP01/SA01 Test 1

Effective depth (m)	100% Full	75% Full	50% Full	25% Full
0.95	1.05	1.29	1.53	1.76

Time (mins)	Depth (m bgl)
0	1.05
1	1.05
2	1.05
3	1.05
4	1.05
5	1.05
6	1.05
7	1.05
8	1.05
9	1.05
10	1.05
30	1.05
45	1.05
60	1.05
90	1.05
120	1.05
150	1.05
180	1.05
250	1.05
395	1.05

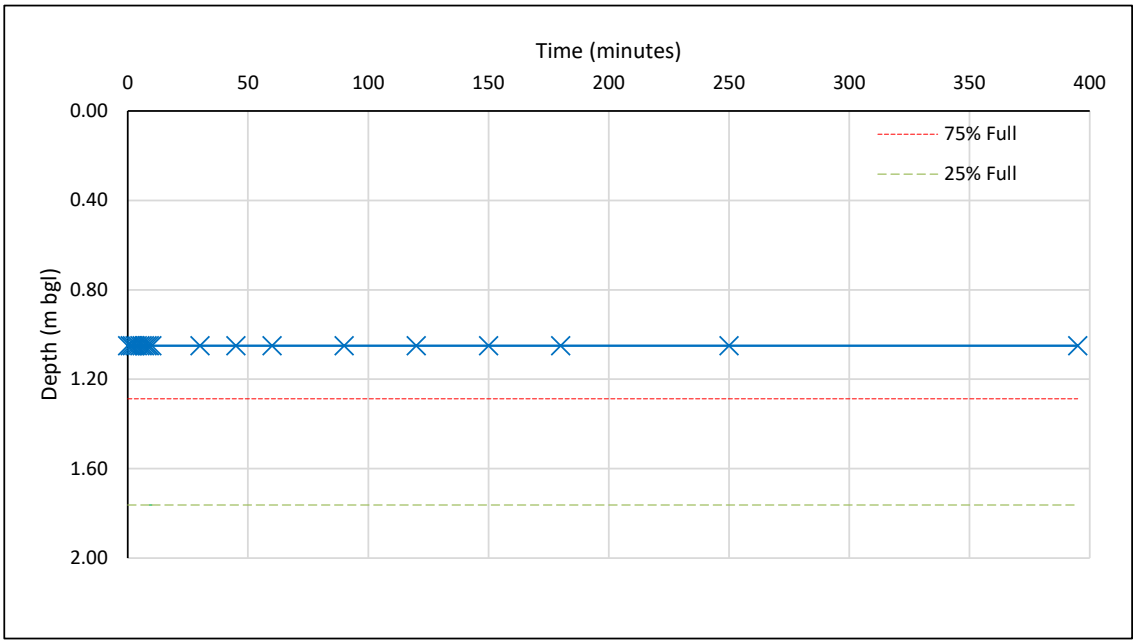
Pit dimensions (m):	
Length:	**1.70**
Width:	**0.70**
Depth:	**2.00**

Gravel used?	Yes
Void ratio of gravel fill =	0.3

Vp75-25 (m^3) =	0.57
ap50 (m^2) =	1.041
tp75-25 (secs) =	N/A
***f* (m/s) =**	**N/A**

Calculations carried out in accordance with BRE 365 Soil Infiltration Test Pits

Infiltration too slow to calculate



DETERMINATION OF SOIL INFILTRATION RATE (*f*)

First Floor, 15 Oxford Court
Manchester
M2 3WQ

Tel: 0161 914 9171
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk

Site Name: Peacock Centre, Gorton, Manchester
Job Number: 4396
Date: 22/05/2025
Exploratory Hole: TP02/SA02 Test 1

Effective depth (m)	100% Full	75% Full	50% Full	25% Full
0.90	1.10	1.33	1.55	1.78

Time (mins)	Depth (m bgl)
0	1.10
1	1.10
2	1.10
3	1.10
4	1.10
5	1.10
6	1.10
7	1.10
8	1.10
9	1.10
10	1.10
20	1.10
30	1.10
60	1.10
90	1.10
120	1.10
150	1.10
200	1.10
260	1.10
350	1.10

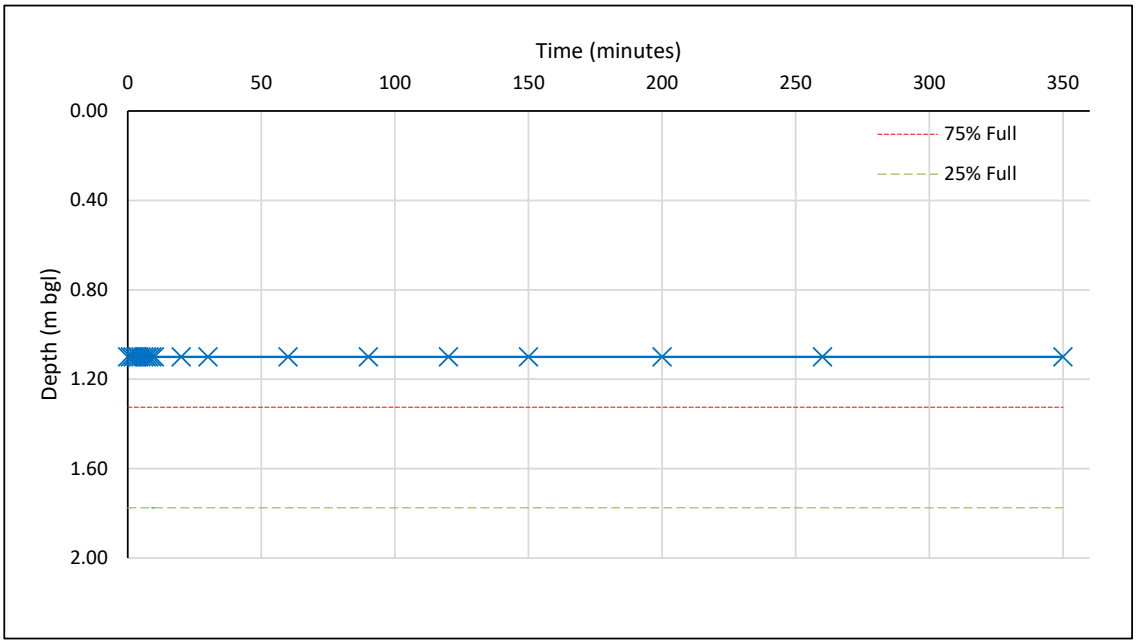
Pit dimensions (m):	
Length:	**2.10**
Width:	**0.70**
Depth:	**2.00**

Gravel used?	Yes
Void ratio of gravel fill =	0.3

Vp75-25 (m^3) =	0.66
ap50 (m^2) =	1.197
tp75-25 (secs) =	N/A
***f* (m/s) =**	**N/A**

Calculations carried out in accordance with BRE 365 Soil Infiltration Test Pits

Infiltration too slow to calculate



Dynamic Sample Hole Falling Head Test

Site: 4396 Peacock Centre, Manchester DS07

	Time (min)	Water Depth (m below top of casing)	Head (from water level) (m)
FIELD MEASUREMENTS	0.00	1.000	2.000
	1.00	1.000	2.000
	2.00	1.000	2.000
	3.00	1.000	2.000
	4.00	1.000	2.000
	5.00	1.000	2.000
	6.00	1.000	2.000
	7.00	1.000	2.000
	8.00	1.000	2.000
	9.00	1.000	2.000
	10.00	1.000	2.000
	48.00	1.010	1.990
	60.00	1.010	1.990

INPUT PARAMETERS		
Borehole Depth	3.000	m
Casing Depth	0.000	m
Difference in Length between bottom of casing/boreholes, L	3.000	m
Water Depth	1.000	m
Casing Diameter,D	0.077	m
Cross Sectional area of casing, A	0.005	m^2
Height of casing above ground level	0.000	m
Approximate long term water table (or base of BH see rules)	3.000	m
Borehole End Condition	d	
a= Soil flush with bottom at impervious boundary	0.154	
b= Soil flush with bottom in uniform soil	0.212	
c= Well point or hole extended at impervious boundary	4.097	
d= Well point or hole extended in uniform soil	0.490	
e= Soil in casing with bottom at impervious boundary	0.002	
f= Soil in casing with bottom in uniform soil	0.002	
Intake factor, F (Select correct end condition)	0.490	
Variable Head, H^1	2.000	m
Time, T^1	0.000	min
Variable Head, H^2	1.000	m
Time, T^2	60.000	min

K unsat (m/s)	
Infiltration too slow to calculate	

APPENDIX 6

GEOTECHNICAL LABORATORY TEST RESULTS

MURRAY RIX
CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client IGE Consulting Ltd

Address Office 16
Bartle House
Oxford Court
Manchester
M2 3WQ

Contract Peacock Close

Job Number MRN 25015/19
Date of Issue 19 June 2025

Approved Signatories

S J Hutchings, O P Davies

Notes

1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.

2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.

3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.

5 The results included within the report are representative of the samples submitted for analysis.

6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.

Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

UKAS TESTING 1580

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

M U R R A Y R I X

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

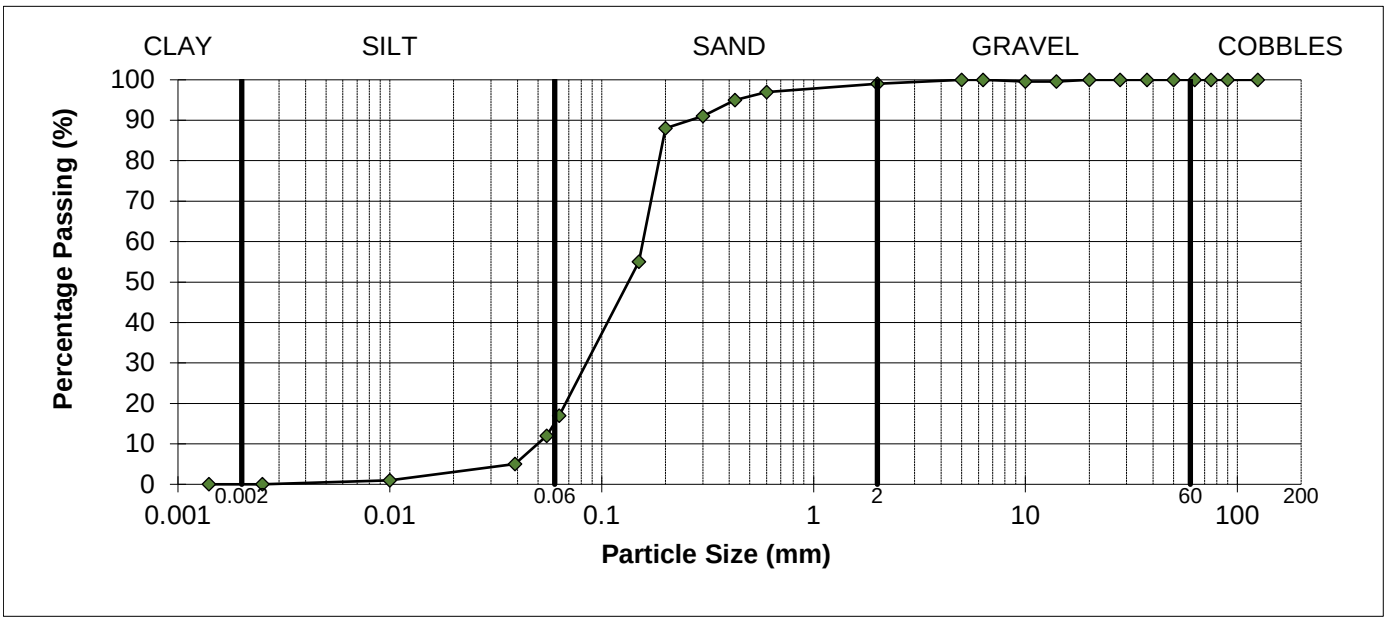
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	DS09 1.1-1.8m	DATE SAMPLED	21-May-25
LAB SAMPLE No	5098704	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Brown silty slightly gravelly SAND
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		2	99	
90	100		0.6	97	
75	100		0.425	95	
63	100		0.3	91	
50	100		0.2	88	
37.5	100		0.15	55	
28	100		0.063	17	
20	100		0.055	12	
14	100		0.039	5	
10	100		0.01	1	
6.3	100		0.0025	0	
5	100		0.0014	0	



REMARKS
As received water content = 24.3%

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

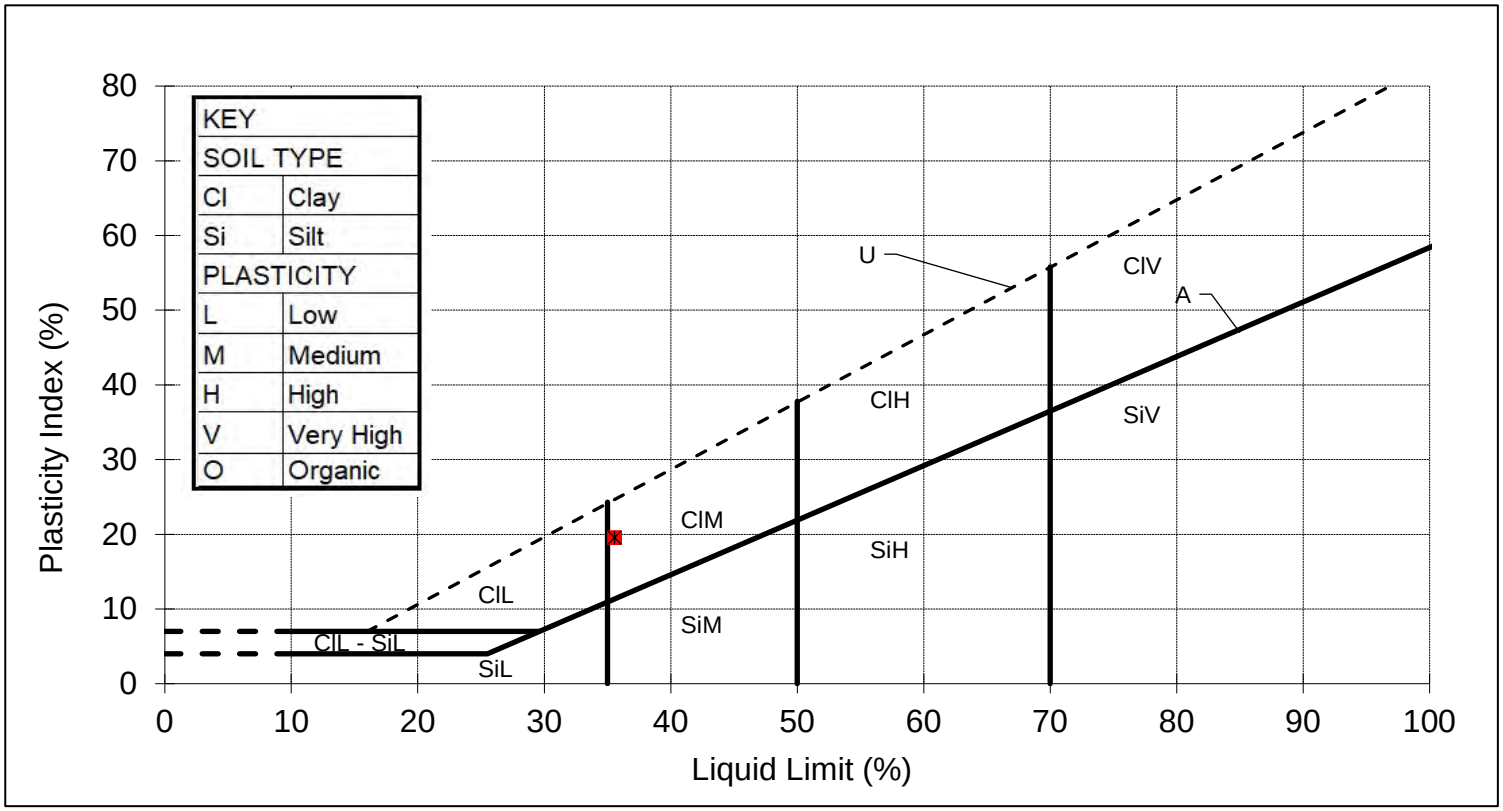
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	DS01 1.2-1.5m	DATE SAMPLED	20-May-25
SAMPLE No.	5098701	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	35.6	0.998	
Determination 2 (avg)	20.3	35.7		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
15.8	36	16	20	78



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

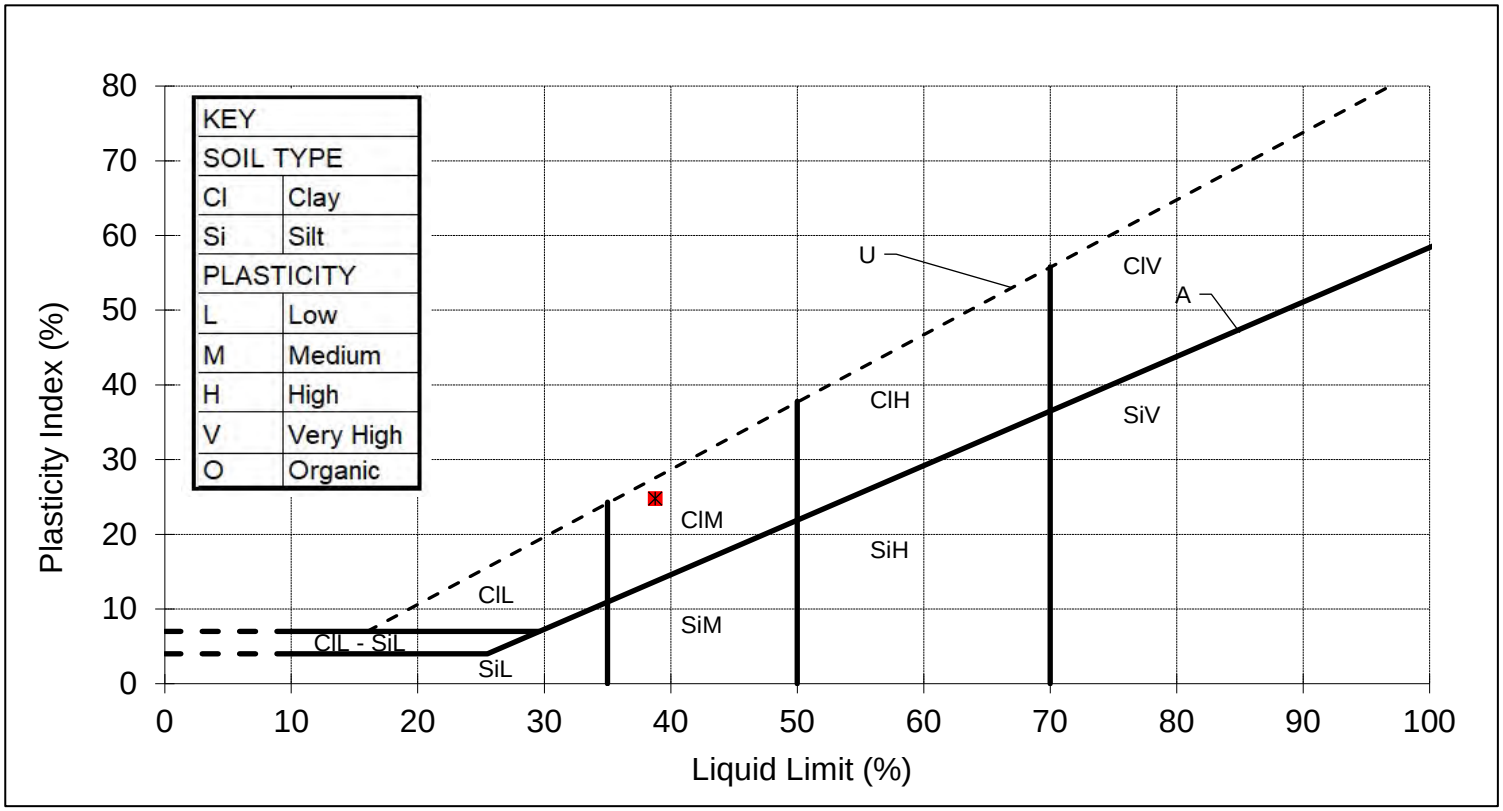
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	DS02 2.-2.5m	DATE SAMPLED	20-May-25
SAMPLE No.	5098702	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	38.9	1.002	
Determination 2 (avg)	19.8	38.5		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
10.0	39	14	25	63



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

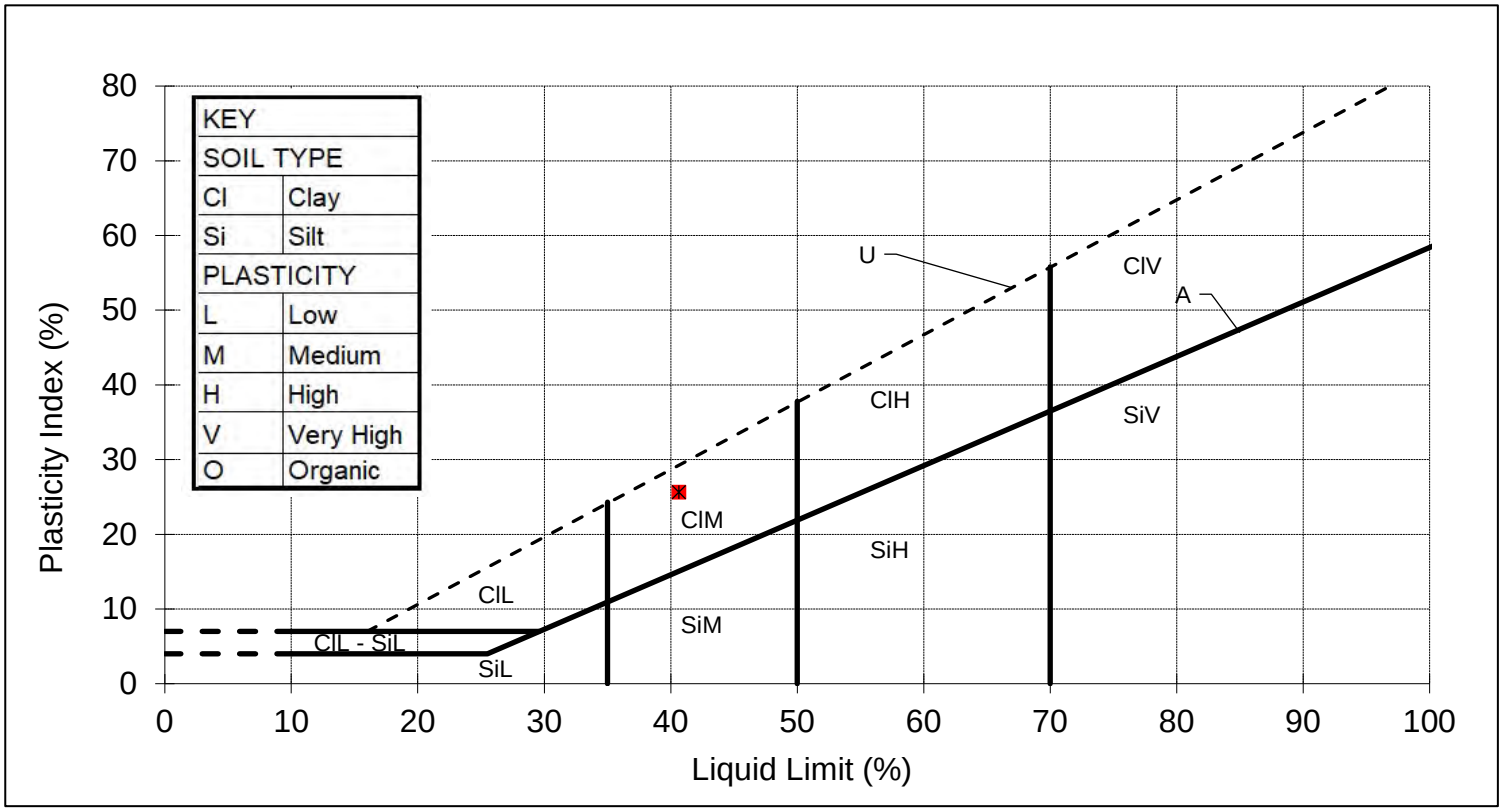
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	DS08 0.9-1.3m	DATE SAMPLED	21-May-25
SAMPLE No.	5098703	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	18.9	39.9	1.019	
Determination 2 (avg)	18.8	39.9		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18.7	41	15	26	72



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

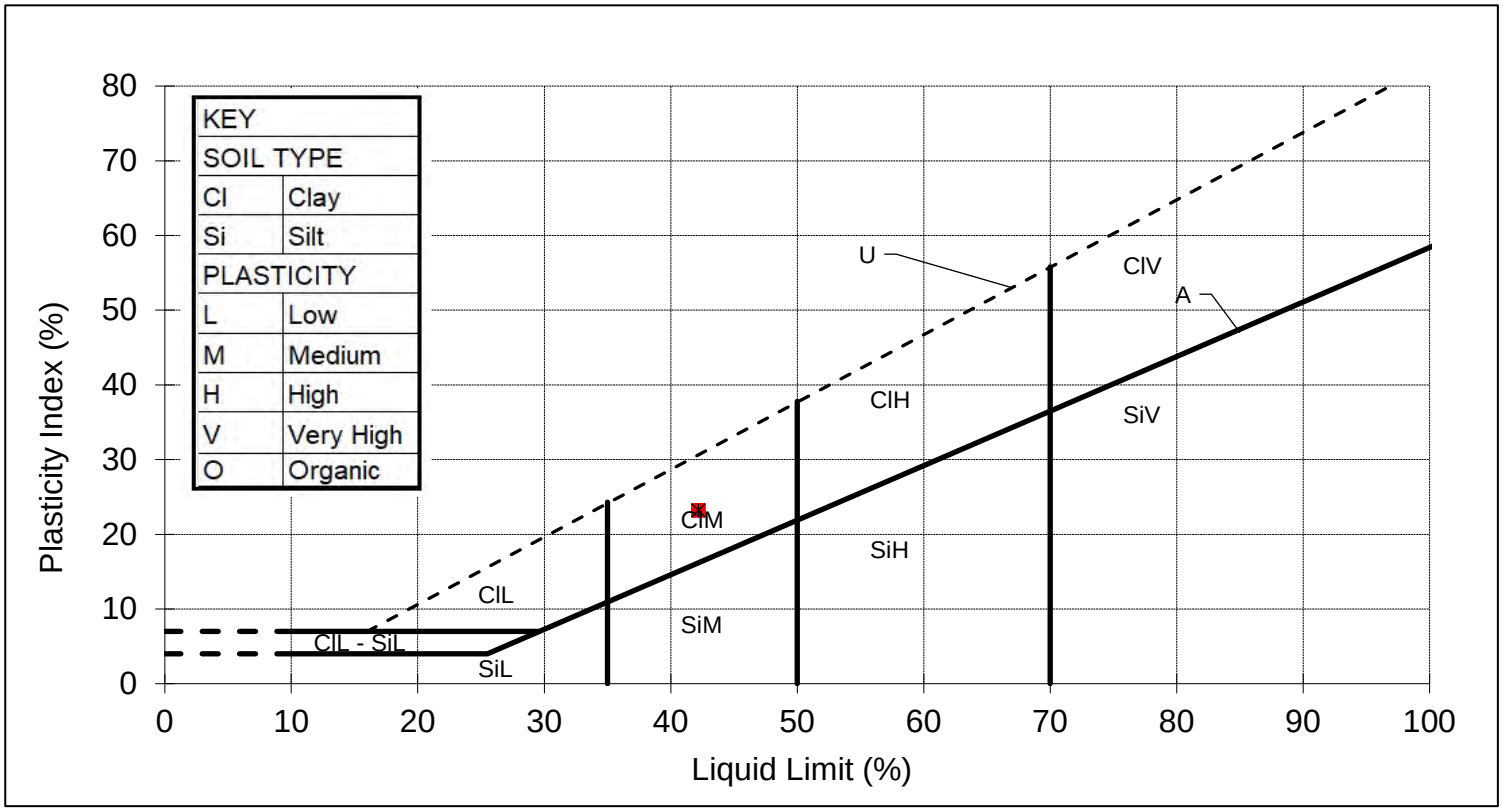
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	DS10 0.5-1.0m	DATE SAMPLED	21-May-25
SAMPLE No.	5098705	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	42.3	1.001	
Determination 2 (avg)	19.9	42.0		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
25.5	42	19	23	88



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

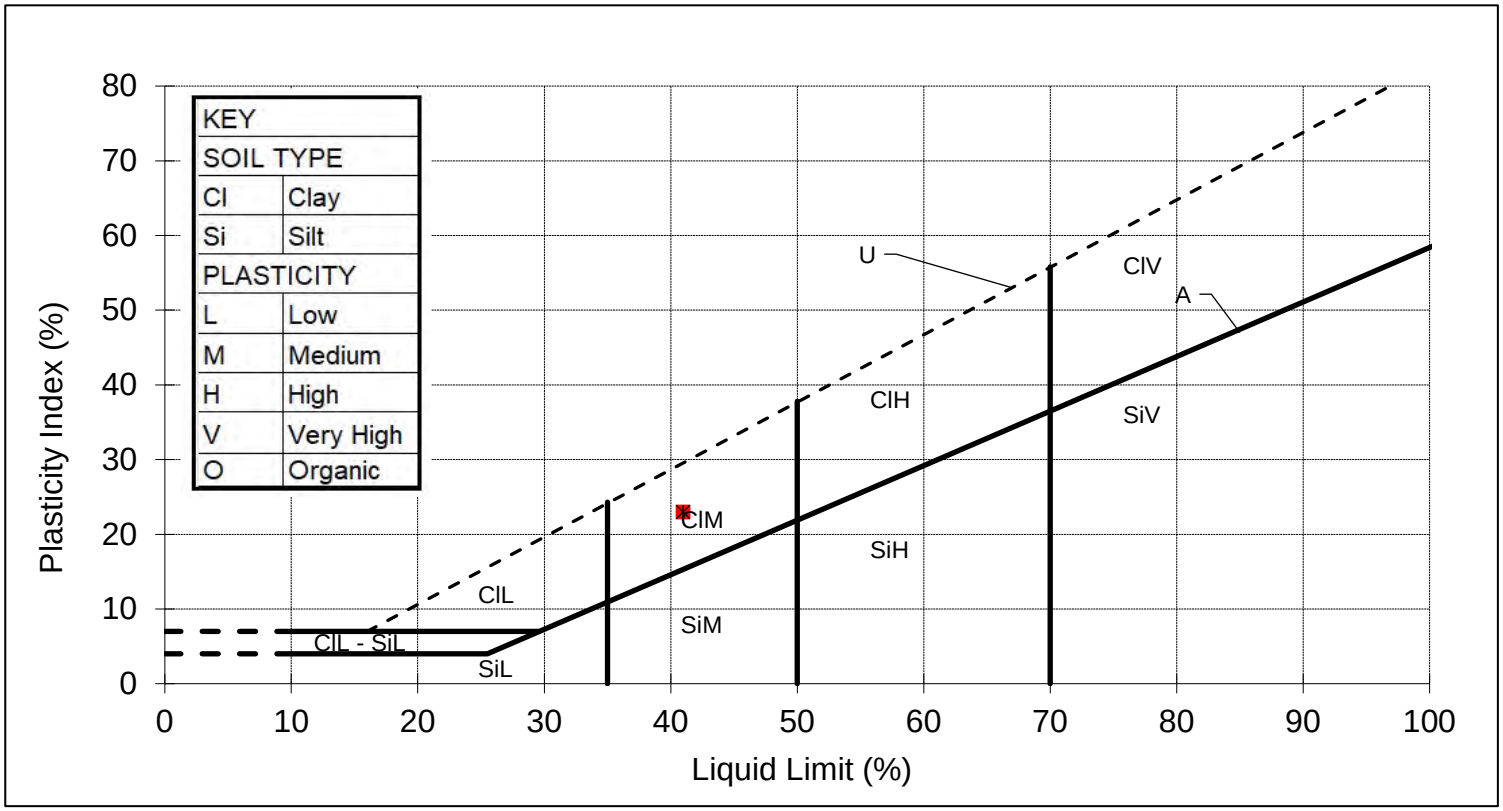
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	TP02 0.45m	DATE SAMPLED	22-May-25
SAMPLE No.	5098706	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.7	41.5	0.990	
Determination 2 (avg)	20.6	41.3		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
26.3	41	18	23	91



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

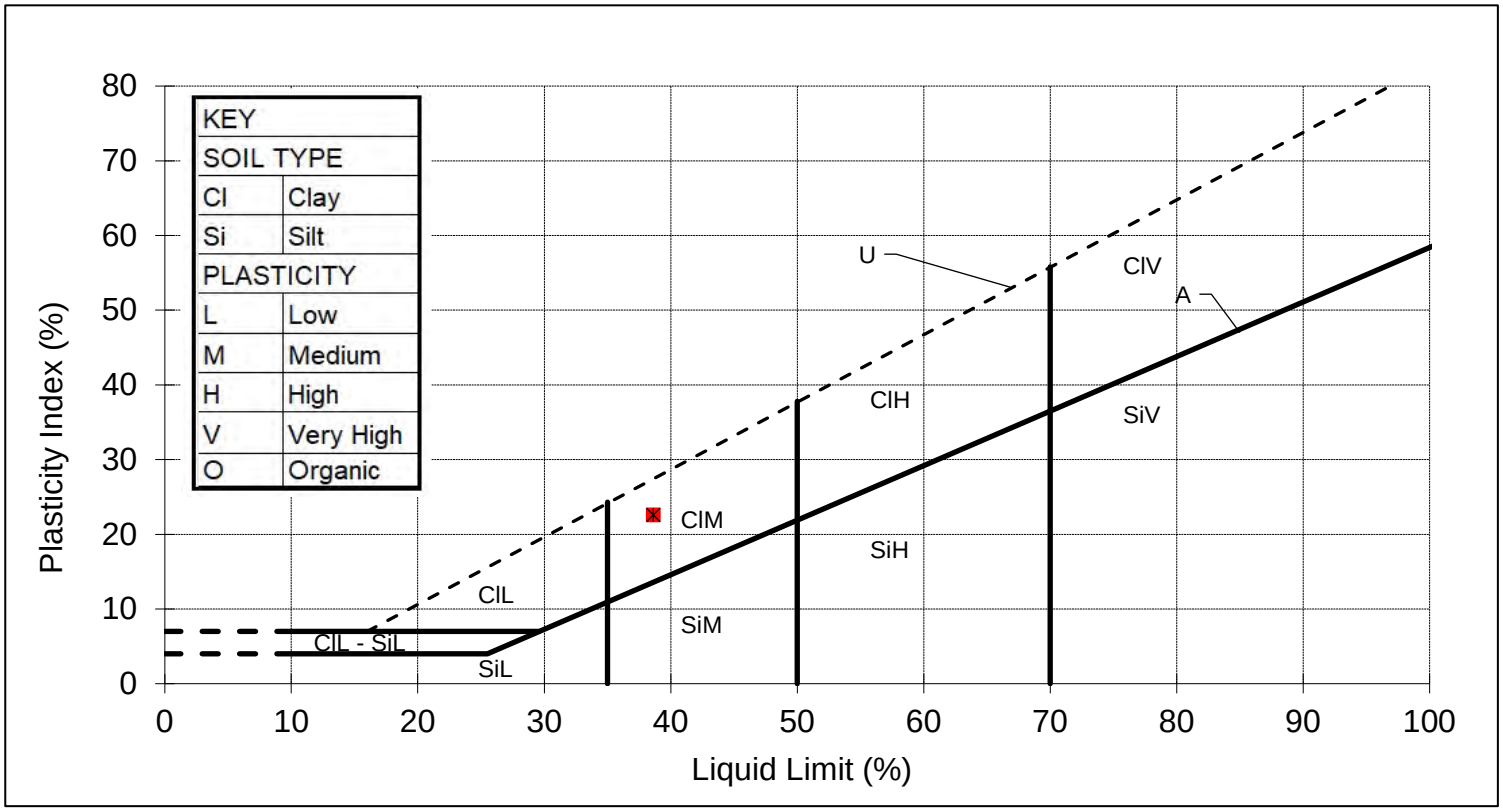
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	TP03 1.0m	DATE SAMPLED	22-May-25
SAMPLE No.	5098707	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	38.6	0.998	
Determination 2 (avg)	20.3	38.8		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18.7	39	16	23	75



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

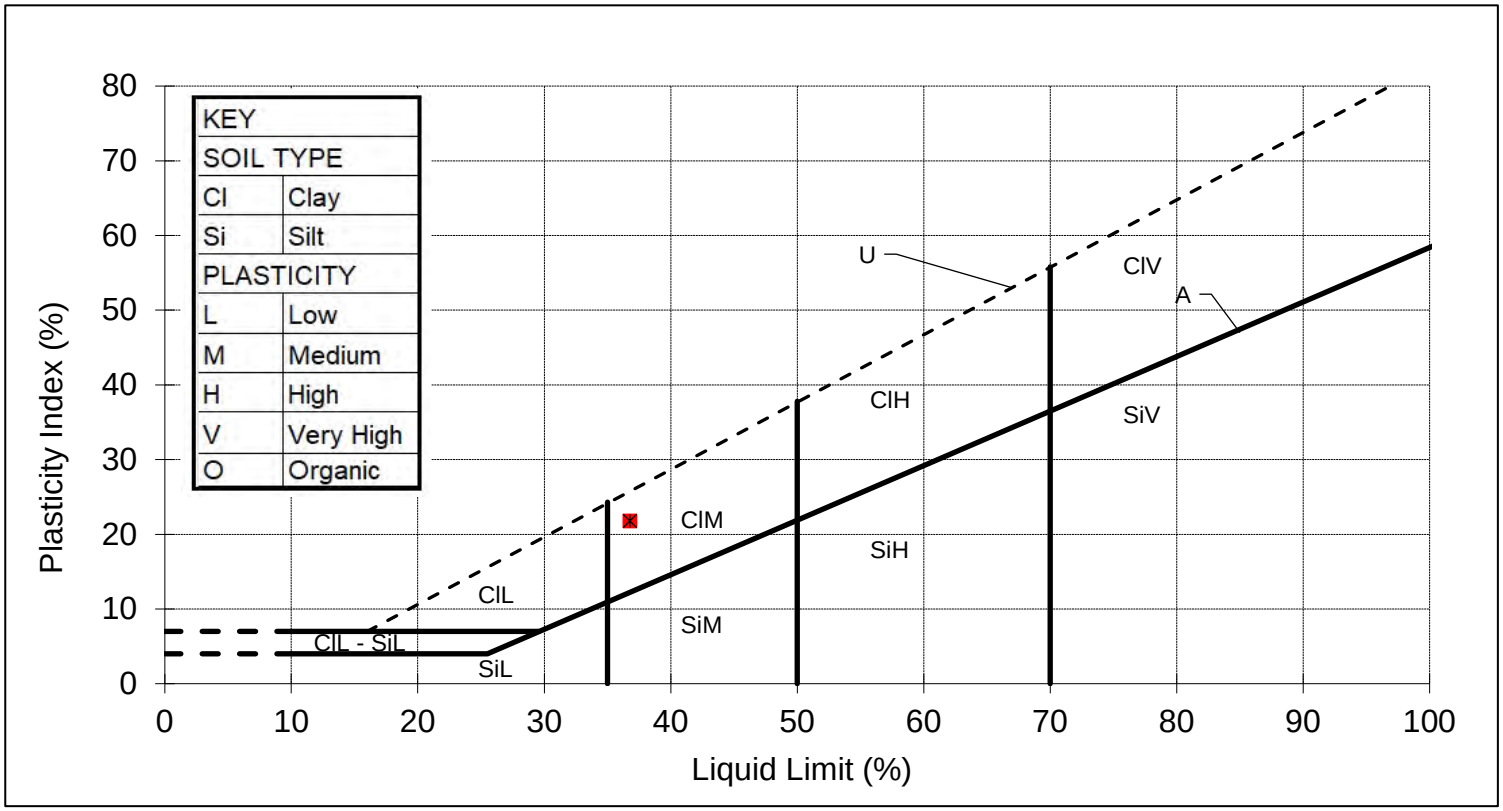
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	TP05 2.1m	DATE SAMPLED	22-May-25
SAMPLE No.	5098708	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	36.9	0.998	
Determination 2 (avg)	20.3	36.8		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
17.2	37	15	22	71



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

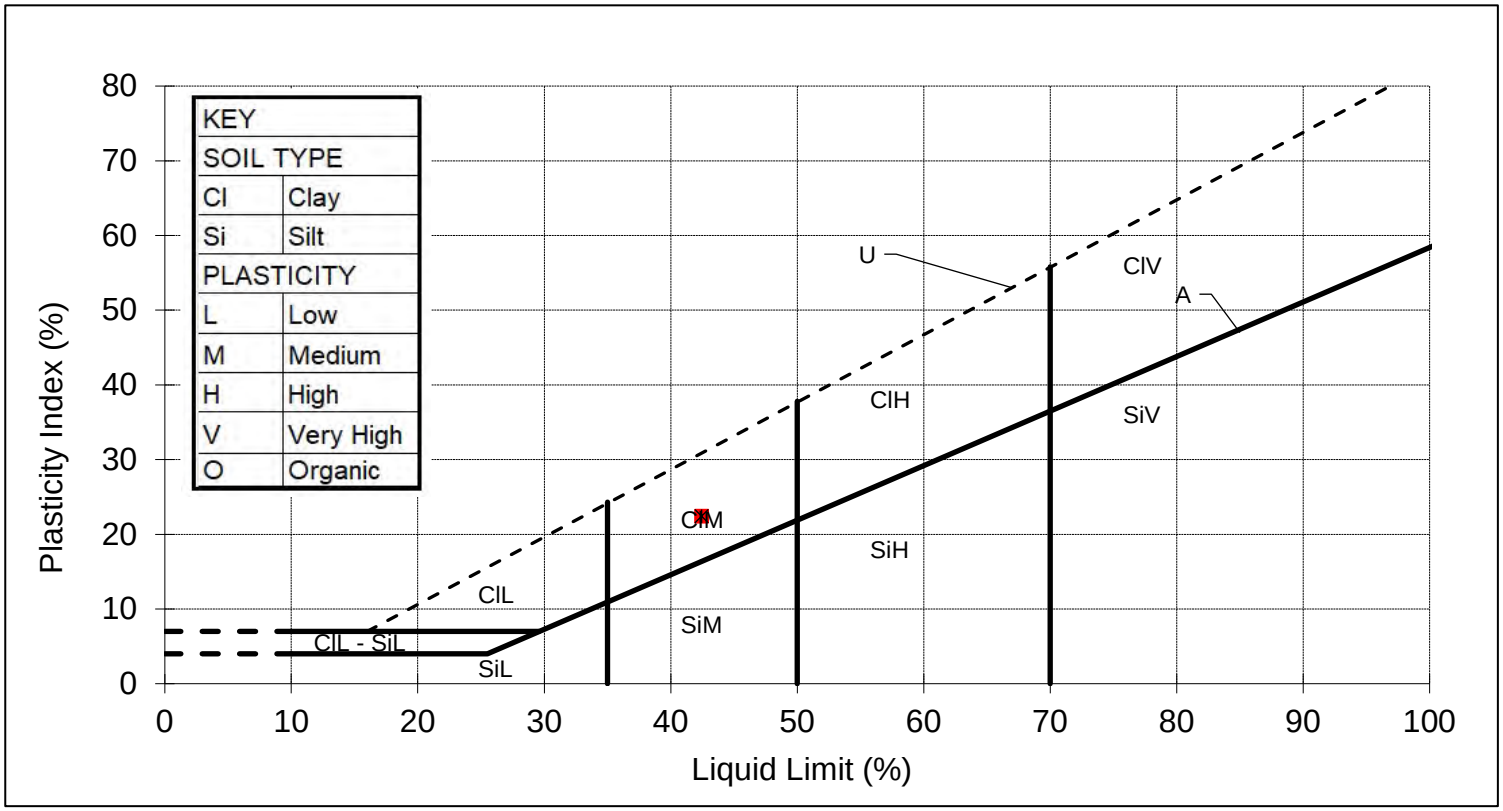
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	TP06 0.6m	DATE SAMPLED	22-May-25
SAMPLE No.	5098709	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	19.9	42.3	0.998	
Determination 2 (avg)	20.3	42.7		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
22.6	42	20	22	84



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

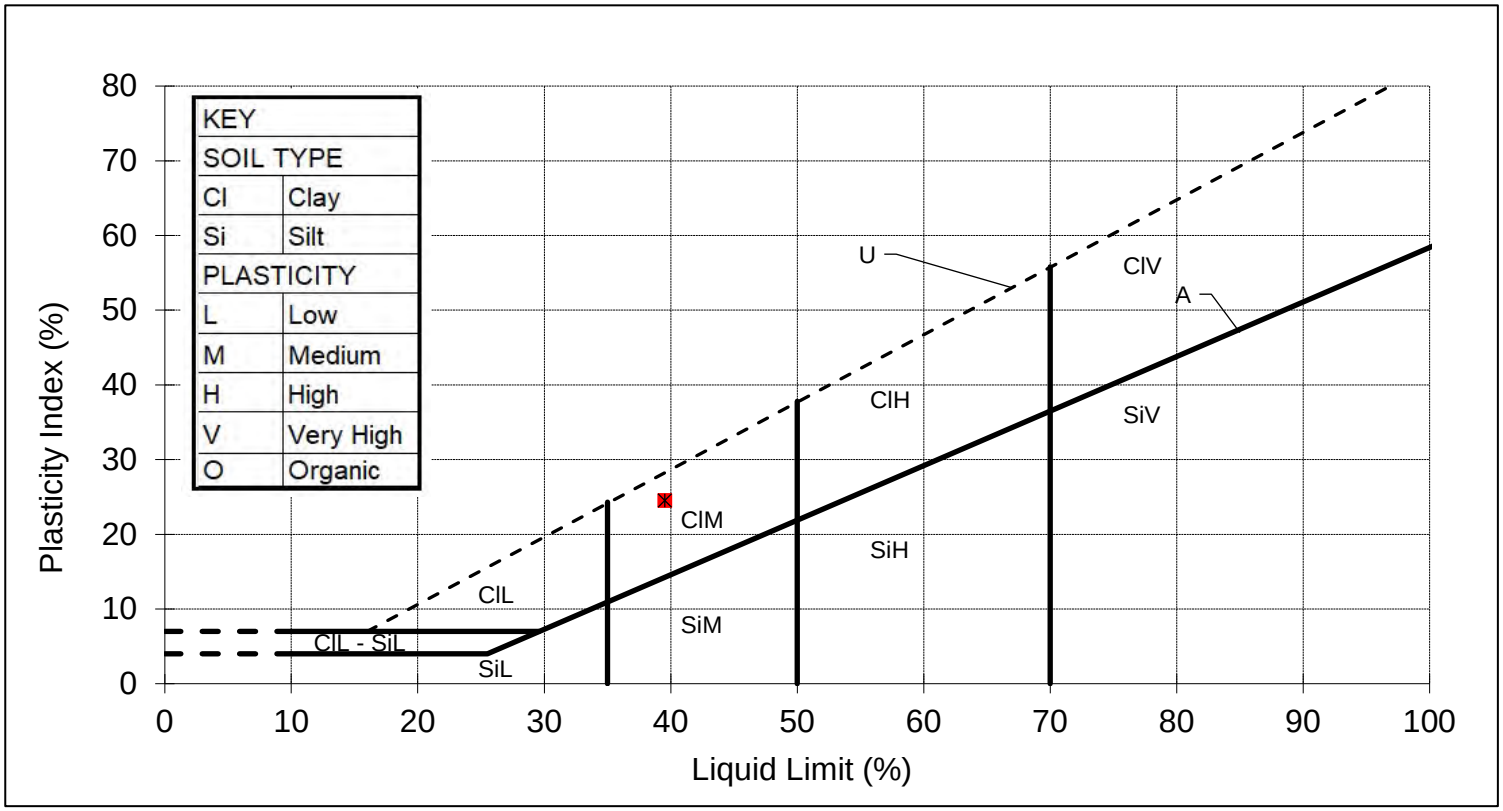
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	TP07 1.6m	DATE SAMPLED	22-May-25
SAMPLE No.	5098710	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	39.5	1.003	
Determination 2 (avg)	19.7	39.3		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
16.5	40	15	25	79



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) DATE 19-Jun-25
(Director / Head of Laboratory)

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

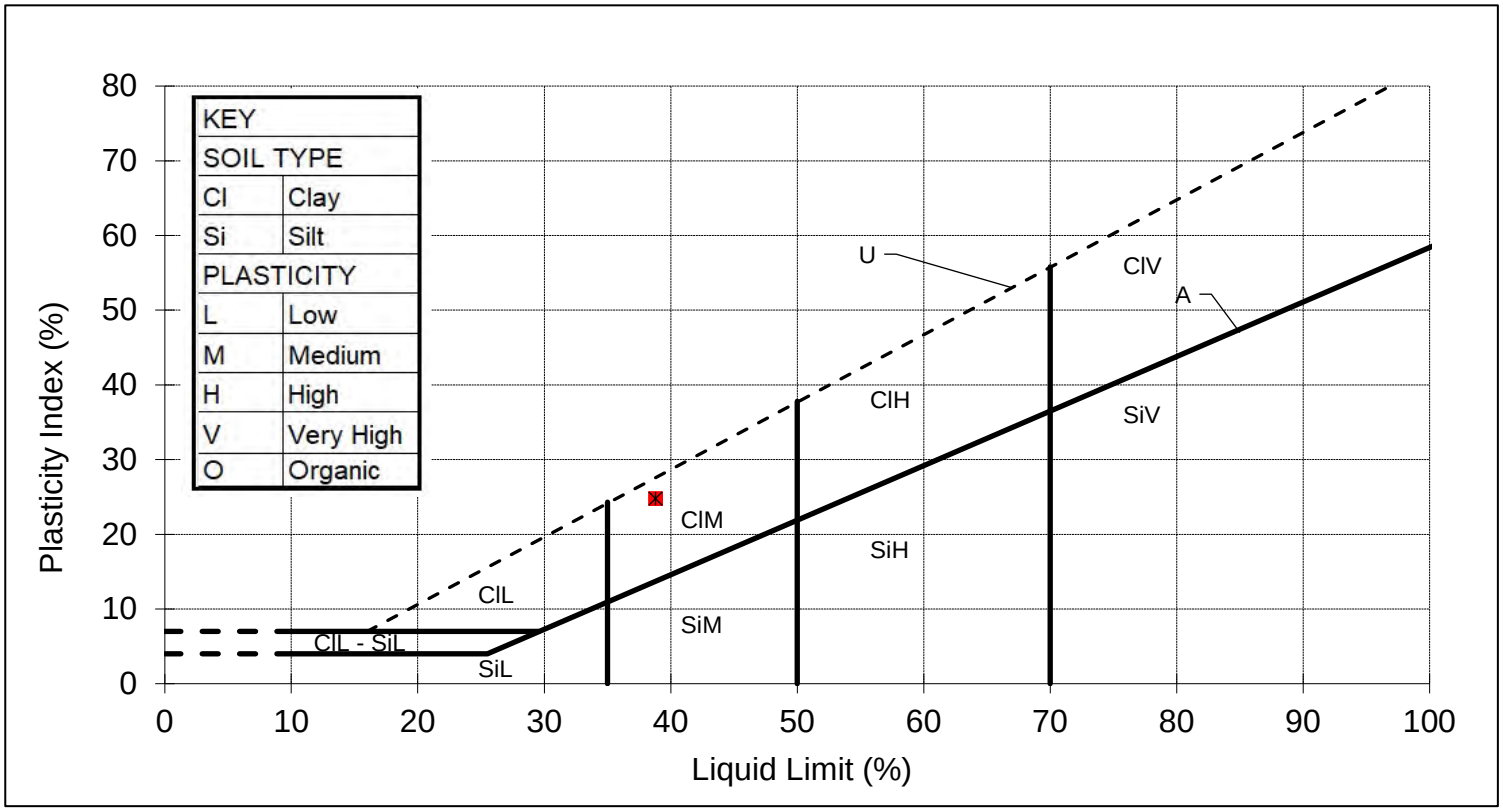
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	TP09 1.5m	DATE SAMPLED	23-May-25
SAMPLE No.	5098711	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	19.2	38.2	1.014	
Determination 2 (avg)	19.4	38.3		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
16.1	39	14	25	76



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) DATE 19-Jun-25
(Director / Head of Laboratory)

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

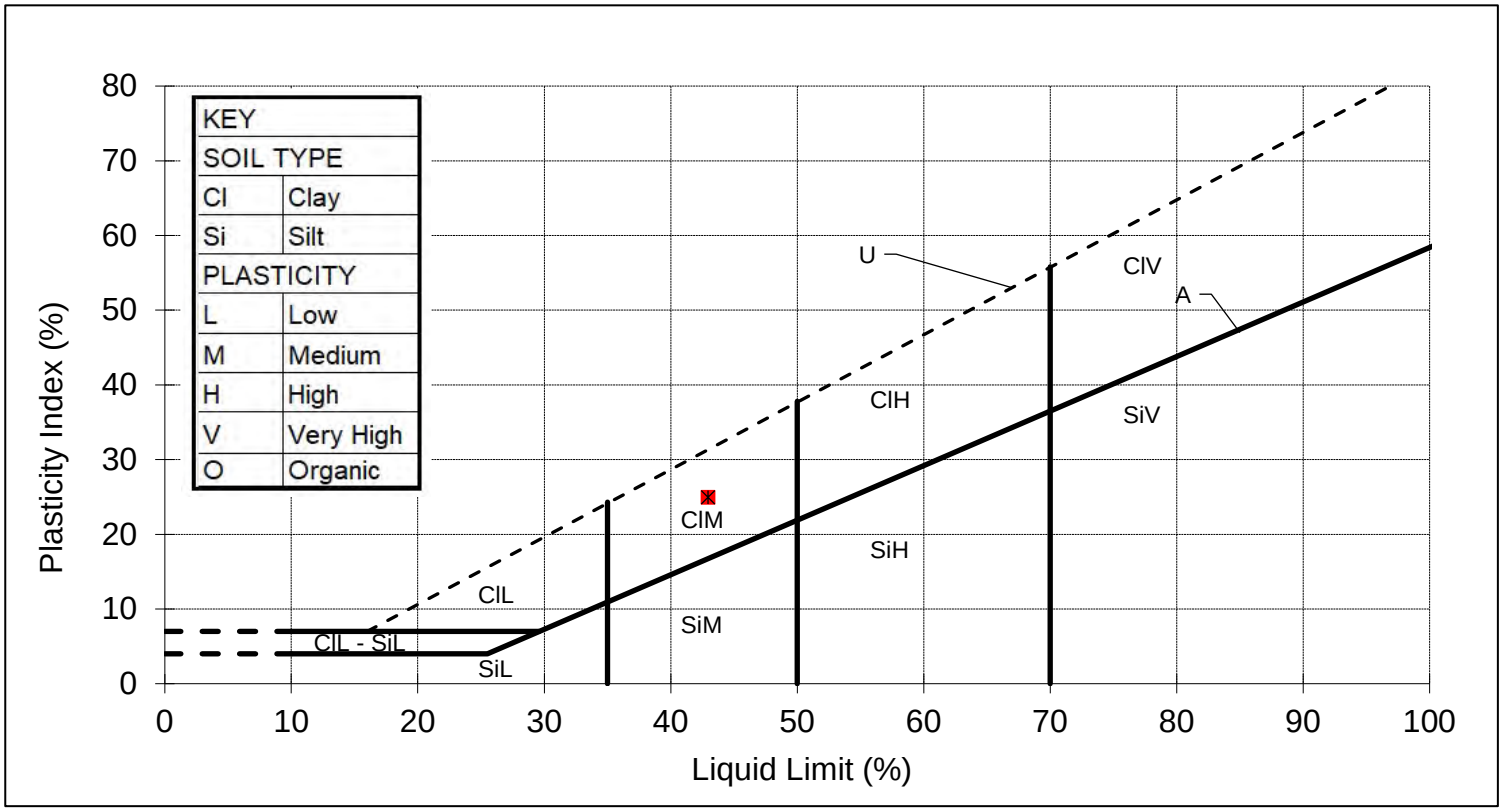
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	TP10 1.05m	DATE SAMPLED	23-May-25
SAMPLE No.	5098712	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	21.2	43.8	0.984	
Determination 2 (avg)	20.8	43.5		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
23.9	43	18	25	70



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) DATE 19-Jun-25
(Director / Head of Laboratory)

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

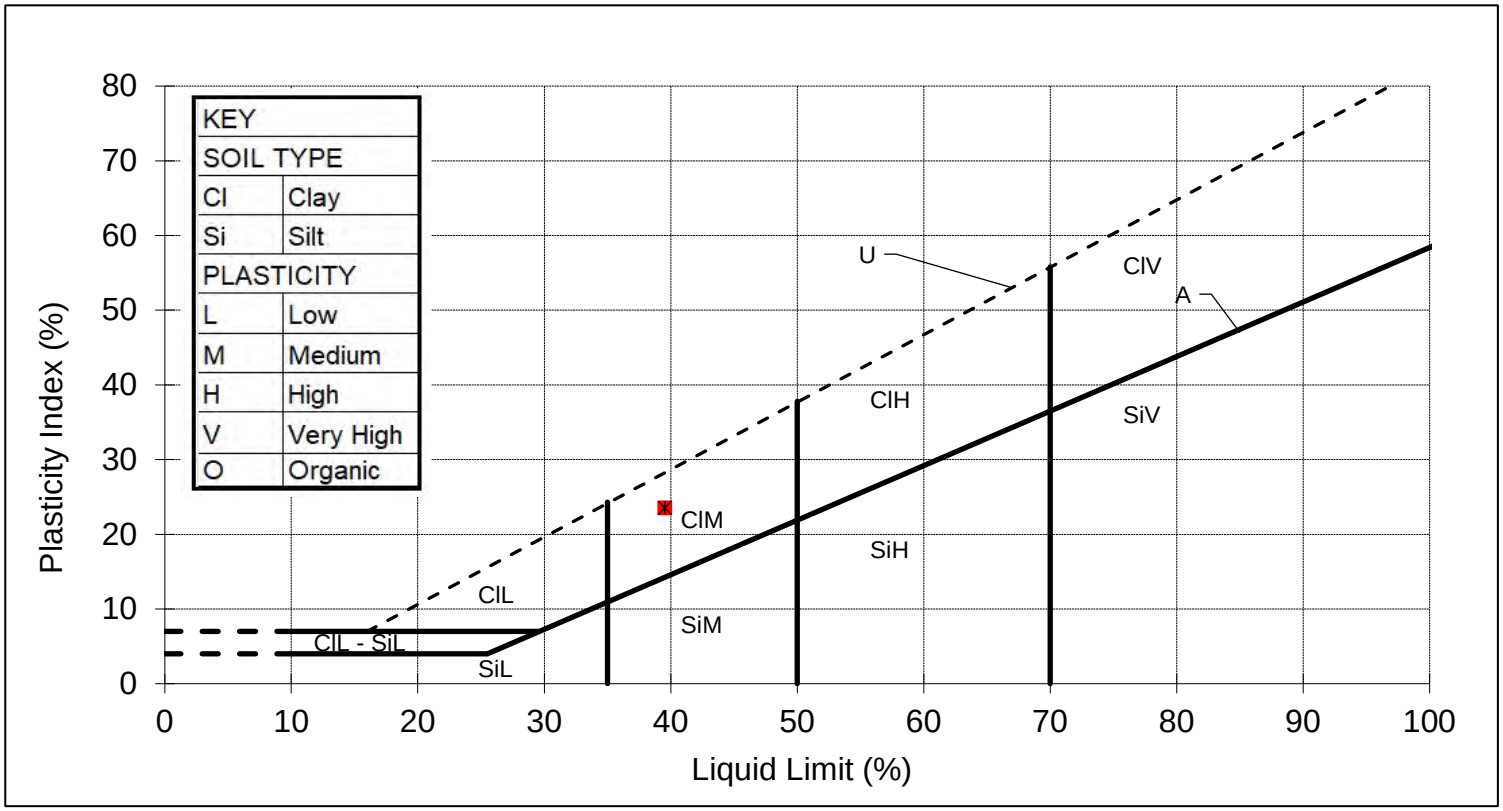
CLIENT	IGE Consulting Ltd
SITE	Peacock Close
JOB NUMBER	MRN 25015/19

SAMPLE LABEL	TP13 1.3m	DATE SAMPLED	23-May-25
SAMPLE No.	5098713	DATE RECEIVED	03-Jun-25
DATE TESTED	04-Jun-25	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	21.0	40.2	0.982	
Determination 2 (avg)	21.3	40.3		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
19.6	40	16	24	83



REMARKS

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 19-Jun-25

APPENDIX 7

LABORATORY CHEMICAL TESTING RESULTS

IGE Consulting
Office 11
Bartle House
Oxford Court
Manchester
M2 3WQ

e: amyellams@igeconsulting.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-027800

Project / Site name:	Peacock Close	Samples received on:	28/05/2025
Your job number:	4396	Samples instructed on/ Analysis started on:	28/05/2025
Your order number:	4396 ARE	Analysis completed by:	09/06/2025
Report Issue Number:	1	Report issued on:	09/06/2025
Samples Analysed:	15 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561549	561550	561551	561552	561553
Sample Reference				DS02	DS02	DS06	TP02	TP03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.6	1	0.9	0.8	0.5
Date Sampled				20/05/2025	20/05/2025	20/05/2025	20/05/2025	22/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	54.7	4.9
Moisture Content	%	0.01	NONE	14	14	15	17	6.8
Total mass of sample received	kg	0.1	NONE	0.6	0.5	0.6	0.5	0.6
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	-	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	-	-	DSO	DSO
Analysis completed	N/A	N/A	N/A	07/06/2025	-	-	07/06/2025	07/06/2025
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.2	7.8	8.1	8.4	11.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	350	100	230	720	59
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	175	51.6	117	362	29.4
Organic Matter (automated)	%	0.1	MCERTS	3.1	1	1.3	4.2	0.3
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.8	0.6	0.8	2.4	0.2
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.12	< 0.05	< 0.05	1.3	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.51	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.43	< 0.05	< 0.05	1.9	0.12
Fluorene	mg/kg	0.05	MCERTS	0.31	< 0.05	< 0.05	2	0.06
Phenanthrene	mg/kg	0.05	MCERTS	2.7	< 0.05	0.17	12	1.2
Anthracene	mg/kg	0.05	MCERTS	0.55	< 0.05	< 0.05	3	0.32
Fluoranthene	mg/kg	0.05	MCERTS	4.9	0.5	0.28	17	1.5
Pyrene	mg/kg	0.05	MCERTS	4.8	0.52	0.27	18	1.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.3	0.25	0.13	9.1	0.61
Chrysene	mg/kg	0.05	MCERTS	2.3	0.31	0.16	8.6	0.63
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.8	0.41	0.17	10	0.65
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.2	0.14	< 0.05	4.2	0.29
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.9	0.34	0.14	9.4	0.59
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.2	0.18	0.06	3.9	0.26
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.29	< 0.05	< 0.05	1.1	0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.3	0.18	0.07	4.7	0.29

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561549	561550	561551	561552	561553
Sample Reference				DS02	DS02	DS06	TP02	TP03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.6	1	0.9	0.8	0.5
Date Sampled				20/05/2025	20/05/2025	20/05/2025	20/05/2025	22/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	28.1	2.81	1.44	107	7.92
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	30	9.3	9.2	29	2.4
Barium (aqua regia extractable)	mg/kg	1	MCERTS	110	170	190	360	51
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	1.8	1.3	2.3	0.97
Boron (water soluble)	mg/kg	0.2	MCERTS	3	1.3	0.3	0.7	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.2	0.3 **i	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	36	31	24	7.4
Copper (aqua regia extractable)	mg/kg	1	MCERTS	75	29	31	300	9.8
Lead (aqua regia extractable)	mg/kg	1	MCERTS	66	12	17	210	8.1
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	37	34	36	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1	1.4	1.1	2.2	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	30	40	33	51	11
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	68	50	62	130	23
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	-	-	22	< 8.0
TPHCWG - Aliphatic >EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	< 8.4	-	-	< 8.4	< 8.4
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	-	-	22	< 10
TPHCWG - Aliphatic >EC5 - EC44 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	-	-	22	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	-	-	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	-	-	1.6	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	2	-	-	12	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	14	-	-	60	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	30	-	-	76	14
TPHCWG - Aromatic >EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	< 8.4	-	-	< 8.4	< 8.4
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	47	-	-	150	14
TPHCWG - Aromatic >EC5 - EC44 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	47	-	-	150	14
TPH Total >EC6 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	-	< 10	< 10	-	-
Petroleum Range Organics (EC6 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	-	< 10	< 10	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561549	561550	561551	561552	561553
Sample Reference				DS02	DS02	DS06	TP02	TP03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.6	1	0.9	0.8	0.5
Date Sampled				20/05/2025	20/05/2025	20/05/2025	20/05/2025	22/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	-	-	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561554	561555	561556	561557	561558
Sample Reference				TP04	TP04	TP05	TP07	DS07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.25	0.6	0.65	0.35	0.9
Date Sampled				22/05/2025	22/05/2025	22/05/2025	22/05/2025	22/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Stone Content	%	0.1	NONE	59.1	< 0.1	40.7	27.6	< 0.1
Moisture Content	%	0.01	NONE	11	14	13	16	17
Total mass of sample received	kg	0.1	NONE	0.6	0.6	0.6	0.6	0.5
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	-	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	DSO	-	DSO	DSO	-
Analysis completed	N/A	N/A	N/A	07/06/2025	-	07/06/2025	07/06/2025	-
Actinolite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	Detected	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.2	8.1	6.9	7.9	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	62	220	4400	300	64
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	31.1	112	2180	151	32
Organic Matter (automated)	%	0.1	MCERTS	3.3	1.6	4.4	5.3	1.2
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.9	1	2.6	3.1	0.7
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0	19	5.6	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	9.3	< 5.0	< 5.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	1.3	< 0.05	0.57	0.39	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	1	< 0.05	0.08	0.14	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	9.6	< 0.05	0.68	0.3	< 0.05
Fluorene	mg/kg	0.05	MCERTS	5.5	< 0.05	0.42	0.19	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	93	0.15	3.8	3.8	< 0.05
Anthracene	mg/kg	0.05	MCERTS	24	< 0.05	0.95	1.3	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	110	0.23	6	16	< 0.05
Pyrene	mg/kg	0.05	MCERTS	86	0.22	5.9	16	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	39	0.13	3.3	9.2	< 0.05
Chrysene	mg/kg	0.05	MCERTS	34	0.12	3.6	8.4	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	33	0.15	4.6	12	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	19	< 0.05	1.5	5.2	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	33	0.14	4.1	11	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	16	0.05	1.7	5.2	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	4	< 0.05	0.48	1.4	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	17	0.05	2.2	5.7	< 0.05

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561554	561555	561556	561557	561558
Sample Reference				TP04	TP04	TP05	TP07	DS07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.25	0.6	0.65	0.35	0.9
Date Sampled				22/05/2025	22/05/2025	22/05/2025	22/05/2025	22/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	519	1.23	39.9	97.8	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	6.4	37	74	9.1
Barium (aqua regia extractable)	mg/kg	1	MCERTS	280	100	350	280	110
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	0.73	4	2.7	1.3
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.3	0.9	1.6	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	< 0.2	< 0.2	0.6 **i	< 0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	21	29	43	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	76	22	400	6800	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	240	18	170	510	16
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.7	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	15	63	61	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.3	< 1.0	2.3	2.8	1.2
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	31	27	67	110	37
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	29	79	300	52
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	< 0.010	-
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	< 0.010	-
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	6.1	-	< 2.0	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	16	-	< 8.0	12	-
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	26	-	22	78	-
TPHCWG - Aliphatic >EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	< 8.4	-	< 8.4	20	-
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	48	-	22	90	-
TPHCWG - Aliphatic >EC5 - EC44 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	48	-	22	110	-
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	< 0.010	-
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	< 0.010	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	-	< 0.020	< 0.020	-
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	1.2	-	< 1.0	< 1.0	-
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	76	-	4.1	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	410	-	21	56	-
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	350	-	35	120	-
TPHCWG - Aromatic >EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	9.7	-	< 8.4	41	-
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	840	-	59	180	-
TPHCWG - Aromatic >EC5 - EC44 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	850	-	59	220	-
TPH Total >EC6 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	-	< 10	-	-	< 10
Petroleum Range Organics (EC6 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	ISO 17025	-	< 1.0	-	-	< 1.0
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	-	< 10	-	-	< 10

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561554	561555	561556	561557	561558
Sample Reference				TP04	TP04	TP05	TP07	DS07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.25	0.6	0.65	0.35	0.9
Date Sampled				22/05/2025	22/05/2025	22/05/2025	22/05/2025	22/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	-
Benzene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	-
Toluene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	-
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	-	< 8.0	< 8.0	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	-

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561559	561560	561561	561562	561563
Sample Reference				DS09	DS09	DS11	TP08	TP10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1	1.3	0.45	0.5	0.2
Date Sampled				21/05/2025	21/05/2025	21/05/2025	23/05/2025	23/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Stone Content	%	0.1	NONE	29.2	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	19	14	19	5.8
Total mass of sample received	kg	0.1	NONE	0.6	0.5	0.6	0.6	0.5
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	-	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSO	-	-	PDO	PDO
Analysis completed	N/A	N/A	N/A	07/06/2025	-	-	06/06/2025	06/06/2025
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.8	8.4	8.2	8.4	7.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	62	44	100	110	12
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	30.8	21.9	50.5	52.8	6.1
Organic Matter (automated)	%	0.1	MCERTS	5.1	0.6	1.8	2.4	4.4
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	3	0.3	1	1.4	2.6
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	1.2	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.53	< 0.05	< 0.05	< 0.05	0.49
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.46	< 0.05	0.06	< 0.05	1.2
Pyrene	mg/kg	0.05	MCERTS	0.46	< 0.05	0.05	< 0.05	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.31	< 0.05	< 0.05	< 0.05	0.61
Chrysene	mg/kg	0.05	MCERTS	0.35	< 0.05	< 0.05	< 0.05	0.73
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.26	< 0.05	< 0.05	< 0.05	0.88
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.1	< 0.05	< 0.05	< 0.05	0.37
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.16	< 0.05	< 0.05	< 0.05	0.77
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05	< 0.05	0.4
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.09
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.43

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561559	561560	561561	561562	561563
Sample Reference				DS09	DS09	DS11	TP08	TP10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1	1.3	0.45	0.5	0.2
Date Sampled				21/05/2025	21/05/2025	21/05/2025	23/05/2025	23/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.91	< 0.80	< 0.80	< 0.80	7.27
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	21	4.1	6.2	8.1	18
Barium (aqua regia extractable)	mg/kg	1	MCERTS	680	46	98	110	180
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2	0.47	0.84	1	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	0.5	0.2	0.9	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.9	< 0.2	< 0.2	< 0.2	0.6
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	10	22	24	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	140	12	17	24	66
Lead (aqua regia extractable)	mg/kg	1	MCERTS	66	6.4	14	24	150
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	40	8.6	18	19	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	< 1.0	< 1.0	1.1	1.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	63	12	24	29	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	320	17	36	45	130
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	< 8.4	-	-	< 8.4	< 8.4
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	-	-	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC44 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	-	-	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	-	-	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	2.1
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	-	-	< 10	11
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	-	-	< 10	20
TPHCWG - Aromatic >EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	< 8.4	-	-	< 8.4	< 8.4
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	-	-	< 10	32
TPHCWG - Aromatic >EC5 - EC44 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	-	-	< 10	32
TPH Total >EC6 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	-	< 10	< 10	-	-
Petroleum Range Organics (EC6 - EC10) $_{HS_1D_TOTAL}$	mg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
TPH (EC10 - EC40) $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	-	< 10	< 10	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				561559	561560	561561	561562	561563
Sample Reference				DS09	DS09	DS11	TP08	TP10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1	1.3	0.45	0.5	0.2
Date Sampled				21/05/2025	21/05/2025	21/05/2025	23/05/2025	23/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	-	-	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-027800
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample	Analysis completed	Analyst ID
561554	TP04	0.25-	150	Loose Fibres	Chrysotile	< 0.001	< 0.001	07/06/2025	DSO

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 25-027800
Project / Site name: Peacock Close

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
561549	DS02	None Supplied	0.6	Brown clay and loam with gravel and vegetation
561550	DS02	None Supplied	1	Brown clay with gravel
561551	DS06	None Supplied	0.9	Brown clay and sand with gravel
561552	TP02	None Supplied	0.8	Black sandy loam with gravel and stones
561553	TP03	None Supplied	0.5	Brown sand with gravel and stones
561554	TP04	None Supplied	0.25	Brown loam and clay with vegetation and stones
561555	TP04	None Supplied	0.6	Brown clay and loam with gravel and vegetation
561556	TP05	None Supplied	0.65	Brown loam with gravel and stones
561557	TP07	None Supplied	0.35	Brown loam with gravel and stones
561558	DS07	None Supplied	0.9	Brown clay and sand with gravel
561559	DS09	None Supplied	1	Black sand with vegetation and stones
561560	DS09	None Supplied	1.3	Brown sandy clay
561561	DS11	None Supplied	0.45	Brown clay and sand
561562	TP08	None Supplied	0.5	Brown clay and sand with gravel
561563	TP10	None Supplied	0.2	Brown sandy loam with gravel and vegetation

Analytical Report Number : 25-027800
Project / Site name: Peacock Close

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS

Analytical Report Number : 25-027800
Project / Site name: Peacock Close

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	MCERTS
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	W	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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

**i- Data reported unaccredited - Sample affected by spectral interference from high As. Data reported with additional background correction applied

IGE Consulting
Office 11
Bartle House
Oxford Court
Manchester
M2 3WQ

e: amyellams@igeconsulting.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-028891

Project / Site name:	Peacock Close	Samples received on:	28/05/2025
Your job number:	4396	Samples instructed on/ Analysis started on:	03/06/2025
Your order number:	4396 ARE	Analysis completed by:	10/06/2025
Report Issue Number:	1	Report issued on:	10/06/2025
Samples Analysed:	6 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 25-028891
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				568083	568084	568085	568086	568087
Sample Reference				TP01	DS04	DS05	DS06	DS09
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.2	0.8	1	1.5	0.4
Date Sampled				22/05/2025	20/05/2025	20/05/2025	20/05/2025	21/05/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Stone Content	%	0.1	NONE	22.9	< 0.1	< 0.1	< 0.1	26.3
Moisture Content	%	0.01	NONE	4.3	16	18	13	7.8
Total mass of sample received	kg	0.1	NONE	0.8	0.3	0.8	0.9	0.8
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.8	8.2	8.5	8	7.7
Total Sulphate as SO_4	%	0.005	MCERTS	0.253	0.055	0.044	0.046	0.118
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	140	170	320	240	120
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	72.4	85.9	162	120	60.3
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.6	1.1	8.8	3.4	2
Total Sulphur	mg/kg	50	MCERTS	2600	280	160	210	930
Total Sulphur	%	0.005	MCERTS	0.258	0.028	0.016	0.021	0.093
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	< 0.5	< 0.5	4.5	< 0.5	< 0.5
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Heavy Metals / Metalloids								
Magnesium (leachate equivalent)	mg/l	2.5	NONE	6.3	17	19	12	4.4
Magnesium (water soluble)	mg/kg	5	NONE	13	34	38	25	8.8

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 25-028891
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				568088
Sample Reference				DS10
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.75
Date Sampled				21/05/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	18
Total mass of sample received	kg	0.1	NONE	0.9

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.2
Total Sulphate as SO_4	%	0.005	MCERTS	0.044
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	110
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	57.3
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	2.2
Total Sulphur	mg/kg	50	MCERTS	330
Total Sulphur	%	0.005	MCERTS	0.033
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	0.9
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	0.06
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	11
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	5.2

Heavy Metals / Metalloids

Magnesium (leachate equivalent)	mg/l	2.5	NONE	10
Magnesium (water soluble)	mg/kg	5	NONE	21

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 25-028891
Project / Site name: Peacock Close

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
568083	TP01	None Supplied	0.2	Brown loam with gravel and stones
568084	DS04	None Supplied	0.8	Brown loam and clay with gravel and vegetation
568085	DS05	None Supplied	1	Brown clay and sand
568086	DS06	None Supplied	1.5	Brown clay and sand
568087	DS09	None Supplied	0.4	Brown loam with gravel and stones
568088	DS10	None Supplied	0.75	Brown loam and clay with gravel and vegetation

Analytical Report Number : 25-028891
Project / Site name: Peacock Close

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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

Sample Deviation Report

Analytical Report Number : 25-028891
Project / Site name: Peacock Close

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
DS04	N/A	S	568084	c	pH in soil (automated)	L099-PL	c
DS05	N/A	S	568085	c	pH in soil (automated)	L099-PL	c
DS06	N/A	S	568086	c	pH in soil (automated)	L099-PL	c
DS09	N/A	S	568087	c	pH in soil (automated)	L099-PL	c
DS10	N/A	S	568088	c	pH in soil (automated)	L099-PL	c

IGE Consulting
Office 11
Bartle House
Oxford Court
Manchester
M2 3WQ

e: amyellams@igeconsulting.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-029262

Project / Site name:	Peacock Close	Samples received on:	04/06/2025
Your job number:	4396	Samples instructed on/ Analysis started on:	04/06/2025
Your order number:	4396 ARE	Analysis completed by:	10/06/2025
Report Issue Number:	1	Report issued on:	10/06/2025
Samples Analysed:	2 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 25-029262
Project / Site name: Peacock Close
Your Order No: 4396 ARE

Lab Sample Number				570206	570207
Sample Reference				TP10	TP12
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				1.05	1.3
Date Sampled				23/06/2025	23/06/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	15
Total mass of sample received	kg	0.1	NONE	0.5	0.6
General Inorganics					
pH (L099)	pH Units	N/A	MCERTS	6.9	7.4
Total Sulphate as SO_4	%	0.005	MCERTS	0.028	0.033
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	120	120
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	58.2	60.5
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.8	1.6
Total Sulphur	mg/kg	50	MCERTS	160	190
Total Sulphur	%	0.005	MCERTS	0.016	0.019
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	3.8	0.9
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	0.24	0.06
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0
Heavy Metals / Metalloids					
Magnesium (leachate equivalent)	mg/l	2.5	NONE	7.7	11
Magnesium (water soluble)	mg/kg	5	NONE	16	22

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 25-029262
Project / Site name: Peacock Close

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
570206	TP10	None Supplied	1.05	Brown loam and clay with gravel and vegetation
570207	TP12	None Supplied	1.3	Brown loam and clay with gravel and vegetation

Analytical Report Number : 25-029262
Project / Site name: Peacock Close

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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

APPENDIX 8

LABORATORY CHEMICAL SCREENING TABLES

Project: Peacock Centre, Manchester

Job No: 4396

Lab Sample Number			561549	561550	561551	561552	561553	561554	561555	561556	561557	561558	561559	561560	561561	561562	561563	Statistical Analysis					GAC - S4UL unless stated				C4SL		
Sample Reference			DS02	DS02	DS06	TP02	TP03	TP04	TP04	TP05	TP07	DS07	DS09	DS09	DS11	TP08	TP10	Statistical Results											
Depth (m)			0.6	1	0.9	0.8	0.5	0.25	0.6	0.65	0.35	0.9	1	1.3	0.45	0.5	0.2											
Date Sampled			20/05/2025	20/05/2025	20/05/2025	20/05/2025	22/05/2025	22/05/2025	22/05/2025	22/05/2025	22/05/2025	22/05/2025	21/05/2025	21/05/2025	21/05/2025	23/05/2025	23/05/2025												
Analytical Parameter (Soil Analysis)	**Units**	**LoD**																Count	Standard Deviation	Minimum	Maximum	Mean	Maximum	**2.5% Residential with Home Grown Produce**	Pass/ Fail	Exceedances	**Residential with home grown produce**	Pass/ Fail	Exceedances
Stone Content	%	0.1	0.1	0.1	0.1	54.7	4.9	59.1	0.1	40.7	27.6	0.1	29.2	0.1	0.1	0.1	0.1	15	21.77	0.1	59.1	14.5	59.1						
Moisture Content	%	0.01	14	14	15	17	6.8	11	14	13	16	17	17	19	14	19	5.8	15	3.88	5.80	19.00	14.17	19.00						
Total mass of sample received	kg	0.1	0.6	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.5	0.6	0.6	0.5	15	0.05	0.500	0.600	0.567	0.600						
Asbestos																													
Asbestos in Soil Screen	Type	N/A	Not-detected	-	-	Not-detected	Not-detected	CHRYSOTILE	-	Not-detected	Not-detected	-	Not-detected	-	-	Not-detected	Not-detected	9	-	-	-	-							
Asbestos Quantification Total	%	0.001	-	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	1	-	0.00	0.00	0.00							
General Inorganics																													
pH - Automated	pH Units	N/A	7.2	7.8	8.1	8.4	11.5	8.2	8.1	6.9	7.9	7.9	7.8	8.4	8.2	8.4	7.3	15	1.03	6.90	11.50	8.14							
Total Cyanide	mg/kg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15	0.00	1.00	1.00	1.00	1.00	**60**	Pass	0			
Free Cyanide	mg/kg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15	0.00	1.00	1.00	1.00	1.00	**60**	Pass	0			
Water Soluble Sulfate as SO4 16hr extraction (2:1)	mg/kg	2.5	350	100	230	720	59	62	220	4400	300	64	62	44	100	110	12	15	1106.12	12.00	4400.00	455.53							
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	175	51.6	117	362	29.4	31.1	112	2180	151	32	30.8	21.9	50.5	52.8	6.1	15	547.94	6.10	2180.00	226.88							
Organic Matter (automated)	%	0.1	3.1	1	1.3	4.2	0.3	3.3	1.6	4.4	5.3	1.2	5.1	0.6	1.8	2.4	4.4	15	1.70	0.30	5.30	**2.67**							
Total Organic Carbon (automated)	%	0.1	1.8	0.6	0.8	2.4	0.2	1.9	1	2.6	3.1	0.7	3	0.3	1	1.4	2.6	15	0.99	0.20	3.10	**1.56**							
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	2	2	2	2	2	2	2	19	5.6	2	2	2	2	2	2	15	4.42	2.00	19.00	3.37							
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	5	5	5	5	5	5	5	9.3	5	5	5	5	5	5	5	15	1.11	5.00	9.30	5.29							
Speciated PAHs																													
Naphthalene	mg/kg	0.05	0.12	0.05	0.05	1.3	0.05	1.3	0.05	0.57	0.39	0.05	1.2	0.05	0.05	0.05	0.05	15	0.50	0.05	1.30	0.36	1.30	**5.60**	Pass	0			
Acenaphthylene	mg/kg	0.05	0.05	0.05	0.05	0.51	0.05	1	0.05	0.08	0.14	0.05	0.05	0.05	0.05	0.05	0.05	15	0.26	0.05	1.00	0.15	1.00	**420**	Pass	0			
Acenaphthene	mg/kg	0.05	0.43	0.05	0.05	1.9	0.12	9.6	0.05	0.68	0.3	0.05	0.05	0.05	0.05	0.05	0.05	15	2.46	0.05	9.60	0.90	9.60	**510**	Pass	0			
Fluorene	mg/kg	0.05	0.31	0.05	0.05	2	0.06	5.5	0.05	0.42	0.19	0.05	0.05	0.05	0.05	0.05	0.05	15	1.45	0.05	5.50	0.60	5.50	**400**	Pass	0			
Phenanthrene	mg/kg	0.05	2.7	0.05	0.17	12	1.20	93	0.15	3.8	3.8	0.05	0.53	0.05	0.05	0.05	0.49	15	23.76	0.05	93.00	7.87	93.00	**220**	Pass	0			
Anthracene	mg/kg	0.05	0.55	0.05	0.05	3	0.32	24	0.05	0.95	1.3	0.05	0.05	0.05	0.05	0.05	0.09	15	6.13	0.05	24.00	2.04	24.00	**5400**	Pass	0			
Fluoranthene	mg/kg	0.05	4.9	0.50	0.28	17	1.50	110	0.23	6	16	0.05	0.46	0.05	0.06	0.05	1.2	15	28.08	0.05	110.00	10.55	110.00	**560**	Pass	0			
Pyrene	mg/kg	0.05	4.8	0.52	0.27	18	1.30	86	0.22	5.9	16	0.05	0.46	0.05	0.05	0.05	1.2	15	22.08	0.05	86.00	8.99	86.00	**1200**	Pass	0			
Benzo(a)anthracene	mg/kg	0.05	2.3	0.25	0.13	9.1	0.61	39	0.13	3.3	9.2	0.05	0.31	0.05	0.05	0.05	0.61	15	10.08	0.05	39.00	4.34	39.00	**11.00**	Fail	1			
Chrysene	mg/kg	0.05	2.3	0.31	0.16	8.6	0.63	34	0.12	3.6	8.4	0.05	0.35	0.05	0.05	0.05	0.73	15	8.80	0.05	34.00	3.96	34.00	**22**	Fail	1			
Benzo(b)fluoranthene	mg/kg	0.05	2.8	0.41	0.17	10	0.65	33	0.15	4.6	12	0.05	0.26	0.05	0.05	0.05	0.88	15	8.79	0.05	33.00	4.34	33.00	**3.30**	Fail	4			
Benzo(k)fluoranthene	mg/kg	0.05	1.2	0.14	0.05	4.2	0.29	19	0.05	1.5	5.2	0.05	0.1	0.05	0.05	0.05	0.37	15	4.93	0.05	19.00	2.15	19.00	**93**	Pass	0			
Benzo(a)pyrene	mg/kg	0.05	2.9	0.34	0.14	9.4	0.59	33	0.14	4.1	11	0.05	0.16	0.05	0.05	0.05	0.77	15	8.71	0.05	33.00	4.18	33.00	**2.70**	Fail	5	**5.00**	Fail	3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	1.2	0.18	0.06	3.9	0.26	16	0.05	1.7	5.2	0.05	0.09	0.05	0.05	0.05	0.4	15	4.19	0.05	16.00	1.95	16.00	**36**	Pass	0			
Dibenz(a,h)anthracene	mg/kg	0.05	0.29	0.05	0.05	1.1	0.05	4	0.05	0.48	1.4	0.05	0.05	0.05	0.05	0.05	0.09	15	1.05	0.05	4.00	0.52	4.00	**0.28**	Fail	5			
Benzo(ghi)perylene	mg/kg	0.05	1.3	0.18	0.07	4.7	0.29	17	0.05	2.2	5.7	0.05	0.05	0.05	0.05	0.05	0.43	15	4.48	0.05	17.00	2.14	17.00	**340**	Pass	0			
Total PAH																													
Speciated Total EPA-16 PAHs	mg/kg	0.8	28.1	2.81	1.44	107	7.92	519	1.23	39.9	97.8	0.8	3.91	0.8	0.8	0.8	7.27	15	133.13	0.80	519.00	54.64							
Heavy Metals / Metalloids																													
Arsenic (aqua regia extractable)	mg/kg	1	30	9.3	9.2	29	2.4	12	6.4	37	74	9.1	21	4.1	6.2	8.1	18	15	18.60	2.40	74.00	18.39	74.00	**37**	Fail	1			
Barium (aqua regia extractable)	mg/kg	1	110	170	190	360	51	280	100	350	280	110	680	46	98	110	180	15	165.28	46.00	680.00	207.67	680.00	-	Pass	0			
Boron (water soluble)	mg/kg	0.2	3	1.3	0.3	0.7	1.5	0.3	0.3	0.9	1.6	0.3	0.5	0.5	0.2	0.9	1.5	15	0.76	0.20	3.00	0.92	3.00	**290**	Pass	0			
Cadmium (aqua regia extractable)	mg/kg	0.2	0.2	0.2	0.2	0.3	0.2	0.4	0.2	0.2	0.6	0.2	0.9	0.20	0.20	0.20	0.6	15	0.21	0.20	0.90	0.32	0.90	**11**	Pass	0	**22**	Pass	0
Chromium (hexavalent)	mg/kg	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	15	0.00	1.20	1.20	1.20	1.20	**6**	Pass	0	**21**	Pass	0
Chromium (aqua regia extractable)	mg/kg	1	20	36	31	24	7.4	21	21	29	43	32	22	10	22	24	19	15	9.19	7.40	43.00	24.09	43.00	**910**	Pass	0			
Copper (aqua regia extractable)	mg/kg	1	75	29	31	300	9.8	76	22	400	6800	23	140	12	17	24	66	15	1736.91	9.80	6800.00	534.99	6800.00	**2400**	Fail	1			
Lead (aqua regia extractable)	mg/kg	1	66	12	17	210	8.1	240	18	170	510	16	66	6.4	14	24	150	15	138.42	6.40	510.00	101.83	510.00	**200**	Fail	3	**200**	Fail	3
Mercury (aqua regia extractable)	mg/kg	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.7	0.3	0.3	0.3	0.3	0.3	0.3	15	0.10	0.30	0.70	0.33	0.70	**40**	Pass	0			
Nickel (aqua regia extractable)	mg/kg	1	21	37	34	36	12	23	15	63	61	24	40	8.6	18	19	20	15	16.40	8.60	63.00	28.77	63.00	**130**	Pass	0			
Selenium (aqua regia extractable)	mg/kg	1	1	1.4	1.1	2.2	1	1.3	1	2.3	2.8	1.2	1.1	1	1	1.1	1.4	15	0.57	1.00	2.80	1.39	2.80	**250**	Pass	0			
Vanadium (aqua regia extractable)	mg/kg	1	30	40	33	51	11	31	27	67	110	37	63	12	24	29	29	15	25.08	11.00	110.00	39.60	110.00	**410**	Pass	0			
Zinc (aqua regia extractable)	mg/kg	1	68	50	62	130	23	150	29	79	300	52	320	17	36	45	130	15	94.64	17.00	320.00	99.40	320.00	**3700**	Pass	0			
Monoaromatics & Oxygenates																													
Benzene	µg/kg	5	5	-	-	5	5	5	-	5	5	-	5	-	-	5	5	9	0.00	5	5	5.00	5	**170**	Pass	0	**870**	Pass	0
Toluene	µg/kg	5	5	-	-	5	5	5	-	5	5	-	5	-	-	5	5	9	0.00	5	5	5.00	5	**290000**	Pass	0			
Ethylbenzene	µg/kg	5	5	-	-	5	5	5	-	5	5	-	5	-	-	5	5	9	0.00	5	5	5.00	5	**110000**	Pass	0			
p & m-xylene	µg/kg	8	8	-	-	8	8	8	-	8	8	-	8	-	-	8	8	9	0.00	8	8	8.00	8	**130000**	Pass	0			
o-xylene	µg/kg	5	5	-	-	5	5	5	-	5	5	-	5	-	-	5	5	9	0.00	5	5	5.00	5	**140000**	Pass	0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	5	-	-	5	5	5	-	5	5	-	5	-	-	5	5	9	0.00	5	5	5.00		-						
Petroleum Hydrocarbons																													
Petroleum Range Organics (C6 - C10)	mg/kg	1	-	1	1	-	-	-	1	-	-	1	-	1	1	-	-	6	0.00	1.00	1.00	1.00							
TPH C10 - C40	mg/kg	10	-	10	10	-	-	-	10	-	-	10	-	10	10	-	-	6	0.00	10.00	10.00	10.00							
TPH C6 - C40	mg/kg	10	-	10	10	-	-	-	10	-	-	10	-	10	10	-	-	6	0.00	10.00	10.00	10.00							
TPH-CWG - Aliphatic >EC5 - EC8	mg/kg	0.01	0.01	-	-	0.01	0.01	0.01	-	0.01	0.01	-	0.01	-	-	0.01	0.01	9	0.000	0.010	0.010	0.010	0.010	**78**	Pass	0			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.01	0.01	-	-	0.01	0.01	0.01	-	0.01	0.01	-	0.01	-	-	0.01	0.01	9	0.000	0.010	0.010	0.010	0.010	**230**	Pass	0			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.01	0.01	-	-	0.01	0.01	0.01	-	0.01	0.01	-	0.01	-	-	0.01	0.01	9	0.000	0.010	0.010	0.010	0.010	**65**	Pass	0			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	1	-	-	1	1	1	-	1	1	-	1	-	-	1	1	9	0.00	1.00	1.00	1.00	1.00	**330**	Pass	0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	2	-	-	2	2	6.1	-	2	2	-	2	-	-	2	2	9	1.37	2.00	6.10	2.46	6.10	**2400**	Pass	0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	8	-	-	8	8	16	-	8	12	-	8	-	-	8	8	9	2.83	8.00	16.00	9.33	16.00						
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	8	-	-	22	8	26	-	22	78	-	8	-	-	8	8	9	22.70	8.00	78.00	20.89	78.00	**92000**	Pass	0			
TPH-CWG - Aliphatic >EC35 - EC44	mg/kg	8.4	8.4	-	-	8.4	8.4	8.4	-	8.4	20	-	8.4	-	-	8.40	8.40	9	3.87	8.40	20.00	9.69	20.00	**92000**	Pass	0			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	10	-	-	22	10	48	-	22	90	-	10	-	-	10	10	9	27.14	10.00	90.00	25.78		-					
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	10	-	-	22	10	48	-	22	110	-	10	-	-	10	10	9	33.20	10.00	110.00	28.00		-					
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.01	0.01	-	-	0.01	0.01	0.01	-	0.01	0.01	-	0.01	-	-	0.01	0.01	9	0.000	0.010	0.010	0.010	0.010	**140**	Pass	0			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.01	0.01	-	-	0.01	0.01	0.01	-	0.01	0.01	-	0.01	-	-	0.01	0.01	9	0.000	0.010	0.010	0.010	0.010	**290**	Pass	0			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.02	0.02	-	-	0.02	0.02	0.02	-	0.02	0.02	-	0.02	-	-	0.02	0.02	9	0.000	0.020	0.020	0.020	0.020	**83**	Pass	0			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	1	-	-	1.6	1	1.2	-	1	1	-	1	-	-	1	1	9	0.20	1.00	1.60	1.09	1.60	**180**	Pass	0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	2	-	-	12	2	76	-	4.1	2	-	2	-	-	2	2.1	9	24.38	2.00	76.00	11.58	76.00	**330**	Pass	0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	14	-	-	60	10	410	-	21	56	-	10	-	-	10	11	9	130.21	10.00	410.00	66.89	410.00	**540**	Pass	0			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	30	-	-	76	14	350	-	35	120	-	10	-	-	10	20	9	109.81	10.00	350.00	73.89	350.00	**1500**	Pass	0			
TPH-CWG - Aromatic >EC35 - EC44	mg/kg	8.4	8.4	-	-	8.4	8.4	9.7	-	8.4	41	-	8.40	-	-	8	8	9	10.82	8.40	41.00	12.17	41.00	**1500**	Pass	0			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	47	-	-	150	14	840	-	59	180	-	10.0	-	-	10	32	9	266.34	10.00	840.00	149.11		-					
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	47	-	-	150	14	850	-	59	220	-	10.0	-	-	10	32	9	270.47	10.00	850.00	154.67		-					

GAC used: LQM/CIEH Suitable 4 Use Levels for Human Health Risk Assessment (3rd edition, 2015)

Category 4 Screening Levels (March 2014) used for Arsenic

In-house methodology used for Cyanide - no GAC currently available

Exceeded GAC & C4SL

Exceeded GAC but not C4SL

Recorded below laboratory detection limit

This spreadsheet has been developed by IGE Consulting Ltd

APPENDIX 9

GROUND GAS AND GROUNDWATER MONITORING RESULTS

Site: Peacock Centre, Manchester

Job No.: 4396

Exploratory Hole	Date	Time	Engineer	Response zone range	Water level	Base level	Atm. pressure	Pressure Trend	Flow		CH_4		LEL		Hex		CO_2		O_2			H_2S	CO	Total Volatiles (PID)		Remarks
				(m bgl)	(m bgl)	(m bgl)	(mbar)		(l/hr)		(%)		(%)		(%)		(%)		(%)			(ppm)	(ppm)	(ppm)		
									peak	steady	peak	steady	peak	steady	peak	steady	peak	steady	high	steady	low	peak	peak	peak	steady	
DS01	06/06/2025	12:40	ARE	1.00 - 3.00	-	2.92	1002	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.004	0.004	4.0	4.0	20.1	15.1	12.8	1	1	2.7	0.2	No groundwater encountered; did not bail.
	20/06/2025	10:33	LL		2.46	2.95	1016	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.8	0.8	21.0	19.6	19.6	1	1	5.1	0.7	DS01 bailed to 2.90m bgl at 10:48; Redipped at 11:03 to 2.89m bgl.
	30/06/2025	09:15	LL		2.55	2.96	1010	Falling	-64.0	0.1	0.1	0.1	0.1	0.1	0.001	0.001	5.8	5.8	21.1	11.3	11.3	1	1	3.7	3.0	Bung became loose prior to monitoring gas quantities.
	16/07/2025	11:45	LG		2.25	2.99	1015	Rising	81.0	0.1	0.1	0.1	0.1	0.1	0.001	0.001	7.9	7.9	19.3	8.3	8.3	1	1	-	-	Flow fell to 0 after 15 seconds. Bailed dry at 11:53; Redipped at 12:36 to 2.94m bgl.
	28/07/2025	13:14	AH		2.57	2.95	1012	Rising	92.2	0.1	0.1	0.1	0.1	0.1	0.001	0.001	6.9	6.9	20.4	11.7	11.7	1	1	-	-	-
	07/08/2025	13:58	AH		2.30	2.96	1003	Rising	77.9	0.1	0.1	0.1	0.1	0.1	0.001	0.001	7.5	7.5	20.8	10.6	10.6	1	1	-	-	-
DS05	06/06/2025	13:05	ARE	2.00 - 4.00	3.36	3.86	997	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.004	0.003	5.1	5.1	20.3	12.1	12.0	1	1	4.4	2.7	DS05 bailed until empty at 3.86m bgl at 13:25; Redipped at 15:01 to 3.86m bgl.
	20/06/2025	10:00	LL		2.85	3.89	1015	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.6	0.6	21.1	20.2	20.1	1	1	10.8	2.0	DS05 bailed to 3.86m bgl at 10:16; Redipped at 10:50 to 3.83m bgl.
	30/06/2025	08:30	LL		3.05	3.89	1010	Falling	-67.8	0.1	0.1	0.1	0.1	0.1	0.001	0.001	7.4	7.4	21.0	11.1	11.1	1	1	8.0	0.1	DS05 bailed to 3.86m bgl at 08:53; Redipped at 09:30 to 3.83m bgl.
	16/07/2025	11:31	LG		2.68	3.93	1015	Rising	66.7	0.1	0.1	0.1	0.1	0.1	0.001	0.001	8.9	8.9	20.8	10.0	10.0	1	1	-	-	Flow fell to 0 after 15 seconds. Bailed dry at 11:39; Redipped to 3.83m bgl at 12:33.
	28/07/2025	12:39	AH		2.91	3.95	1014	Rising	95.8	0.1	0.1	0.1	0.1	0.1	0.001	0.001	8.2	8.2	18.1	12.1	12.1	1	1	-	-	Bailed dry at 12:53; Redipped at 13:26 to 3.87m bgl
	07/08/2025	13:31	AH		2.89	3.89	1002	Rising	85.3	0.1	0.1	0.1	0.1	0.1	0.001	0.001	7.9	7.8	20.8	13.0	13.0	1	1	-	-	-
DS06	06/06/2025	13:32	ARE	2.00 - 5.00	3.50	4.62	997	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.002	0.002	3.0	3.0	19.2	17.5	17.5	1	1	6.5	4.2	Suspected bend in pipe; unable to bail.
	20/06/2025	10:19	LL		2.58	4.66	1016	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	2.3	2.3	21.2	19.0	19.0	1	1	7.5	5.1	Suspected bend in pipe; unable to bail.
	30/06/2025	08:56	LL		2.24	4.65	1012	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.7	1.7	21.2	19.3	19.3	1	1	3.6	2.2	Suspected bend in pipe; unable to bail.
	16/07/2025	12:03	LG		1.86	4.70	1015	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	2.5	2.5	20.1	18.7	18.7	1	1	-	-	Suspected bend in pipe; unable to bail.
	28/07/2025	13:01	AH		1.81	4.67	1013	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	2.0	2.0	20.9	18.2	18.2	1	1	-	-	Suspected bend in pipe; unable to bail.
	07/08/2025	13:46	AH		1.77	4.66	1001	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.9	1.9	21.0	18.8	18.8	1	1	-	-	Suspected bend in pipe; unable to bail.
DS07	06/06/2025	13:55	ARE	1.00 - 3.00	1.98	2.97	996	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.002	0.002	1.4	1.4	19.6	19.5	19.5	1	1	5.4	3.1	DS07 bailed until empty at 2.97m bgl at 14:08; Redipped at 14:44 to 2.97m bgl.
	20/06/2025	11:38	LL		2.38	2.98	1015	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.5	1.5	21.3	20.0	20.0	1	1	6.6	4.7	Falling head testing completed following ground gas monitoring.
	30/06/2025	10:18	LL		1.16	2.98	1010	Falling	-42.3	0.1	0.1	0.1	0.1	0.1	0.002	0.002	0.3	0.3	21.2	20.7	20.7	1	1	7.2	5.8	Bailed to 2.84m bgl at 10:26; Redipped at 11:41 to 2.80m bgl.
	16/07/2025	10:46	LG		2.25	3.00	1015	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.3	1.3	20.7	19.7	19.7	1	1	-	-	Bailed to 2.95m bgl at 10:54; Redipped at 12:22 to 2.93m bgl.
	28/07/2025	14:03	AH		2.52	2.98	1011	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.5	1.5	21.2	19.8	19.8	1	1	-	-	-
	07/08/2025	13:16	AH		2.30	2.96	1002	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.4	1.4	21.1	19.8	19.8	1	1	-	-	-
DS09	06/06/2025	14:16	ARE	1.00 - 2.00	1.35	2.00	997	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.002	0.002	1.3	1.2	20.3	19.6	19.6	1	1	4.5	2.5	DS09 bailed to 1.96m bgl at 14:25; Redipped at 14:49 to 1.66m bgl.
	20/06/2025	11:29	LL		1.35	1.97	1014	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.3	1.3	21.4	19.9	19.9	1	12	4.5	4.5	DS09 bailed to 1.76m bgl at 12:08; Redipped at 12:38 to 1.61m bgl.
	30/06/2025	09:49	LL		1.49	1.82	1012	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.5	1.5	21	19.6	19.6	1	1	5.0	3.3	Minimal groundwater encountered; did not bail.
	16/07/2025	11:14	LG		1.73	1.86	1015	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	2.0	2.0	20.8	19.3	19.3	1	1	-	-	Bailed dry at 11:26; Redipped at 12:28 to 1.82m bgl.
	28/07/2025	13:36	AH		1.82	1.84	1013	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	2.3	2.3	20.9	18.9	18.9	1	1	-	-	Minimal groundwater encountered; did not bail.
	07/08/2025	12:57	AH		-	1.84	1003	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	2.2	2.2	21.2	18.3	18.3	1	1	-	-	Minimal groundwater encountered; did not bail.
DS10	06/06/2025	14:51	ARE	0.50 - 1.00	-	1.03	997	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.2	1.2	20.5	19.4	19.3	1	1	9.7	2.2	No groundwater encountered; did not bail.
	20/06/2025	11:17	LL		1.00	1.05	1013	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	1.0	1.0	21.3	20.1	19.7	1	27	8.3	0.1	Minimal groundwater encountered; did not bail.
	30/06/2025	10:05	LL		0.88	1.05	1013	Falling	0.1	0.1	0.1	0.1	0.1	0.1	0.002	0.002	1.1	1.1	20.8	20.0	20.0	1	1	0.1	0.1	Minimal groundwater encountered; did not bail.
	16/07/2025	10:58	LG		0.87	1.06	1015	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.9	0.9	20.9	20.1	20.1	1	1	-	-	Bailed to 1.04 at 11:11; Redipped at 12:25 to 0.97m bgl.
	28/07/2025	13:53	AH		0.95	1.05	1013	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.9	0.9	20.4	20.2	20.2	1	1	-	-	Minimal groundwater encountered; did not bail.
	07/08/2025	13:01	AH		0.96	1.08	1003	Rising	0.1	0.1	0.1	0.1	0.1	0.1	0.001	0.001	0.9	0.9	20.9	20.1	20.1	1	1	-	-	Minimal groundwater encountered; did not bail.

Response zone flooded. Results considered unreliable in accordance with BS8485:2015 + A1 2019

Values recorded below instrument detection limit



IGE Consulting Ltd: 15 Oxford Court, Manchester, M2 3WQ

Email: contact@igeconsulting.co.uk

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX F1

WASTEWATER PRE-DEVELOPMENT ENQUIRY

United Utilities
Water for the North West

United Utilities Grasmere House, 2nd Floor
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Dear Philip,

Pre-Development Enquiry for Pipewell Avenue Manchester M18 8LX UU Reference Number: 08879016

We have assessed your application based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your strategy will need review by other authorities as part of the planning process. We advise conducting necessary site investigations to confirm viability of your proposals.

Modelled Flood Risk

Please see the image on **page 3** for details

I can confirm that we do not have modelled flood risk within the vicinity of the proposed development.

Please note that our modelling data is indicative, and only representative of the 1:100year storm event.

Please see **comment 2** of the attached guidance sheet

Asset Protection

1. We have reviewed our records and can confirm that there does not appear to be any charted public sewers located within the boundary of the proposed development.

Please see **comment 3** of the attached guidance sheet and **Working Near Our Pipelines Guidance document**

Foul Water

Foul flow from the northern site will be allowed to drain into the public 225mm combined sewer system.

Our preferred point of discharge would be to the North of your proposed development at an unrestricted rate.

Manhole reference SD2602, **Grid reference** 388293, 396621

Foul flow from southern site will be allowed to drain into the public 150mm Foul sewer system.

Our preferred point of discharge would be to the South of your proposed development at an unrestricted rate.

Manhole reference SD2404, **Grid reference** 388226, 396450

Please see the images on **page 3** for clarification

Surface Water

Follow the National Planning Policy Guidance drainage hierarchy and Provide evidence for discounting higher options before considering public sewer discharge. Consult the Lead Local Flood Authority regarding surface water concerns.

Please see comment **4** within the guidance sheet

Infiltration

Please see comment **4** within the guidance sheet

Public Sewer

United Utilities will consider a connection for the northern site to the 225mm diameter public surface water sewer within Gorton Lane located North of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities requests that any agreed rate does not exceed 5 l/s.

Manhole reference SD3605, **Grid reference** 388300, 396676

United Utilities will consider a connection for the southern site to the225 mm diameter public surface water sewer within Pipewell Avenue located West of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities requests that any agreed rate does not exceed 5 l/s.

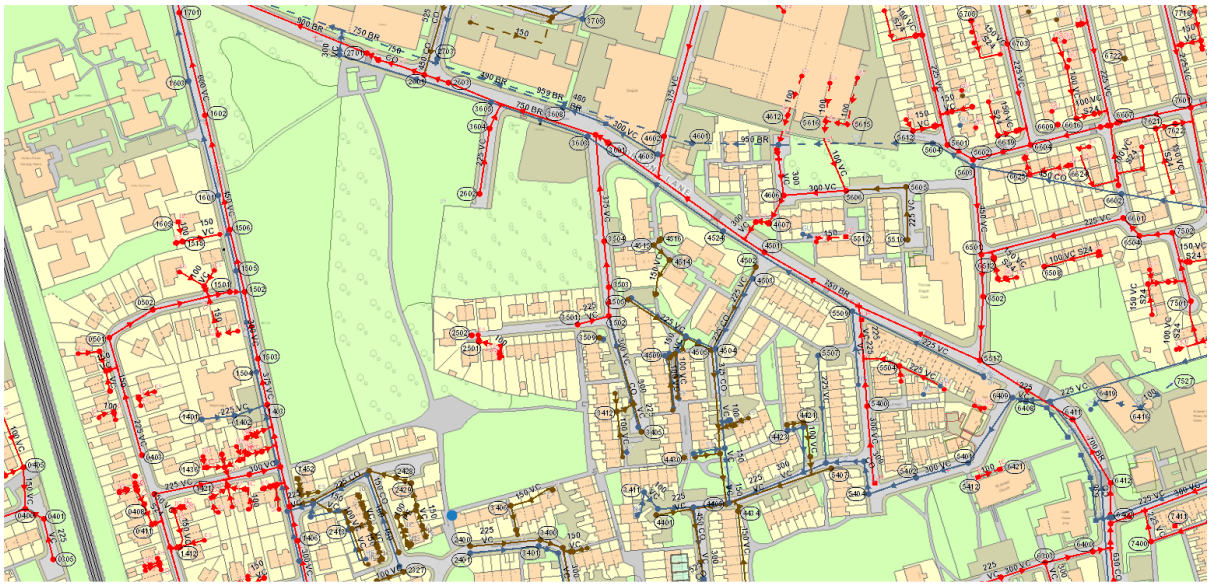
Manhole reference SD2402, **Grid reference** 388224, 396448

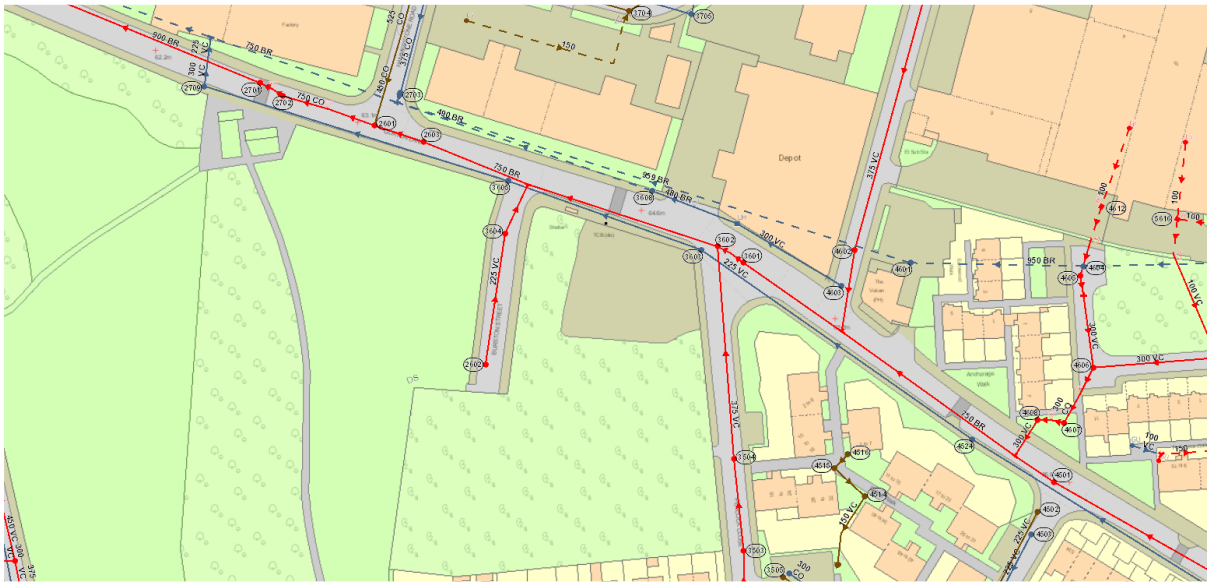
Please see images on **page 3** for clarification

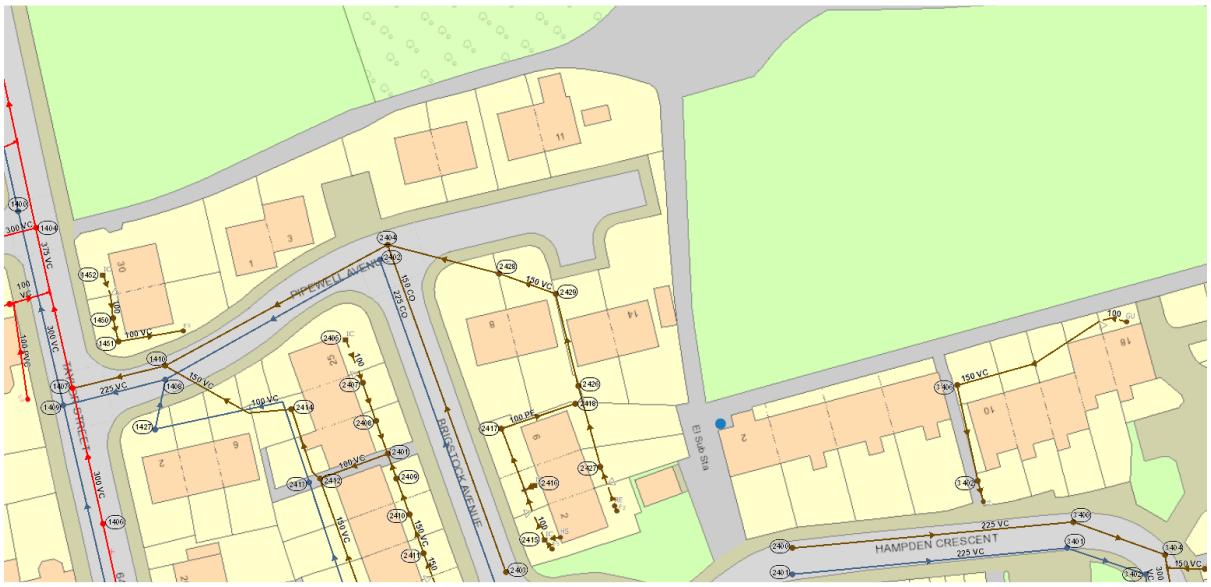
Site Images

WASTEWATER PRE-DEVELOPMENT ENQUIRY

United Utilities
Water for the North West





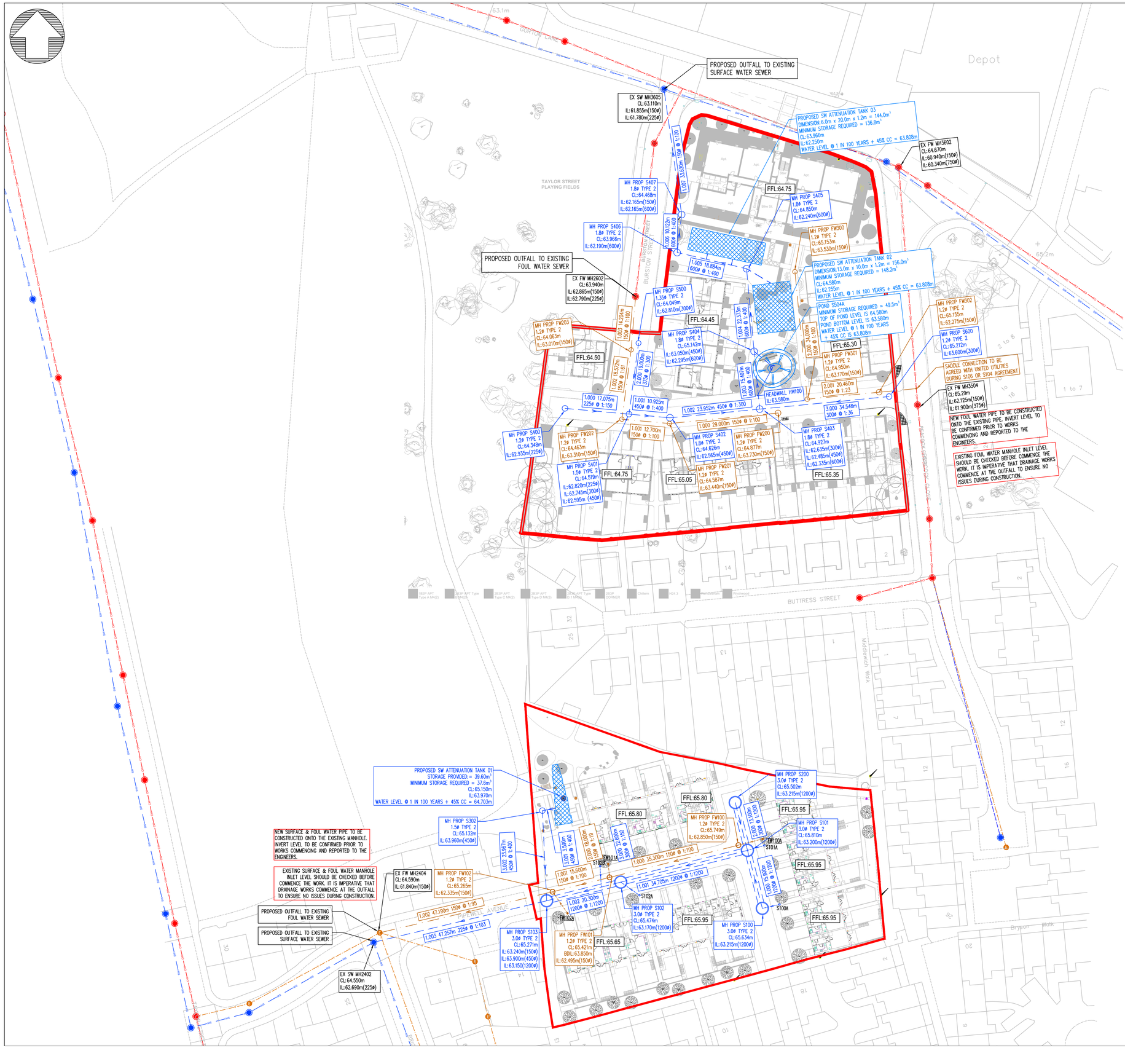


WASTEWATER PRE-DEVELOPMENT ENQUIRY

United Utilities
Water for the North West

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX G I



Drainage notes

1. This drainage drawing is to be read in conjunction with all relevant Architect's, Engineer's drawings and specifications.
2. Do not scale this drawing. Any ambiguities, omissions and errors on the drawings shall be brought to the Engineer's attention immediately. All dimensions must be checked and verified on-site before construction commences.
3. All external underground drainage works are to be constructed in accordance with the Civil Engineering Specification for the Water Industry 7th Edition (CESWI), Sewers for Adoption 7th Edition (SFA) and any site-specific details provided on the contract drawings.
4. All internal underground drainage works are to be constructed in accordance with the Building Regulations Approved Document H (2015 Edition) and any site-specific details provided on the contract drawings.
5. The contractor must survey any retained drainage on-site and report the line, level and condition of the existing drainage to the engineer. We would recommend that the existing drainage is cleansed before any surveying and that these works are undertaken before the contractor commences on-site.
6. Any redundant manholes are to be broken out to at least 600mm below formation level and backfilled with an approved compacted granular material.
7. Any redundant pipes up to and including 300mm diameter are to be filled with a 10:1 PFA/cement mix or broken out and backfilled with an approved compacted granular material. Any redundant pipes over 300mm diameter are to be broken out and backfilled with an approved compacted granular material.
8. Adoptable Drainage Pipes:- All foul and surface water pipes up to and including 300mm diameter are to be Vitrified Clay in accordance with BS EN 295-1. All pipes greater than 300mm diameter to be Concrete Class 120 in accordance with BS EN 1916:2002.
9. Private Drainage Pipes:- All foul and surface water pipes up to and including 100mm diameter are to be Vitrified Clay in accordance with BS EN 295-1 or Solid Walled PVC-U in accordance with BS EN 1401. All foul and surface water pipes greater than 100mm diameter are to be Vitrified Clay in accordance with BS EN 295-1, Concrete Class 120 in accordance with BS EN 1916:2002 or Structural Walled PVC-U in accordance with WIS 4-35-01 and BS EN 13476.
10. All concrete manholes are to be in accordance with BS EN 1917. All plastic inspection chambers are to be in accordance with BS EN 13598.
11. All pipes laid within vehicle trafficked areas with less than 900mm of cover shall be surrounded in Class Z bedding. All pipes less than 300mm below the underside of a ground floor slab shall be surrounded in Class Z bedding. Where Class Z bedding is used as a surround a compressible material must be placed at every pipe joint to provide flexibility. All other pipes are to be laid in a Class S bedding.
12. All underground drainage must be protected during the construction phase where intermediate cover is less than 900mm.
13. Where foul and surface drains and/or sewers cross within 100mm of each other then concrete protection (Class Z bedding) may be required to prevent any potential cross-contamination.
14. All cover levels shown are approximate only. All manhole covers are to be set at the proposed finished pavement or floor level provided by the Architect.
15. For typical manhole construction details, pipe bedding/trench details and typical drainage details refer to SGi typical details drawing.
16. The internal foul and surface water pop-up positions and sizes shown are indicative only. The internal pop-up positions and pop-up sizes are to be confirmed by the architect/M&E consultant and cross referenced by the contractor before the works commence. Any errors are to be reported to the Engineer as soon as possible.
17. The external gully connections and channel drain connections are to be 150mm diameter unless otherwise stated. All gully and channel drain outlets to be trapped and roddable. All internal gullies and channel drains to be specified by others.
18. Channel drains to have a 200mm minimum concrete bed and haunch and be fitted with a heal guard cast iron grating. Gratings to be to load Class D400 specification unless otherwise agreed.
19. All foul water stacks and RWP's to have low level rodding access plates unless an alternative means of access or maintenance is agreed. The access plate size must be in accordance with Document H and sited above any connected ground floor appliance spill level.
20. All drainage connections passing through foundation bases and/or edge beams to be located within sealed sleeves. With the approval of the Engineer, drainage connections may be cast-in with flexible joints either side. Flexible joints to be no greater than 150mm from face of the concrete.
21. All manhole covers located within the road and car parking areas shall be Class D400. Covers within hard and soft landscaped areas with pedestrian traffic only shall be Class B125. Covers located within block/slab paving areas are to be recessed to suit the proposed paving and of the appropriate grade. All internal covers are to be recessed, double sealed bolt down type such as howe green 5000 series or similar approved.
22. Channels within Type 1 & 2 manholes must use pre-formed using clayware sections for pipes up to and including 300mm diameter. All manhole channels to be set at the appropriate level for the incoming and outgoing pipe gradients.
23. All manholes connections to be formed at soffit to soffit unless otherwise stated. All internal branch connections to be made with swept bends in the direction of flow in the main pipe.

KEY:

- PROPOSED MAIN FOUL WATER DRAINAGE MANHOLE/ PIPE
- PROPOSED MAIN SURFACE WATER DRAINAGE MANHOLE/ PIPE
- PROPOSED SITE BOUNDARY
- PROPOSED CELLULAR STORAGE
- PROPOSED POND

Rev.	Description	Rev. by	Date
P11	UPDATED TO PIPEWELL AVENUE NEW LAYOUT (06.07.2026)	AYM	07-07-2026
P10	UPDATED S.W. DRAINAGE TO REFLECT TANKS BEING OFFLINE	AYM	12-06-2026
P09	UPDATED FFL	PMB	30-03-2026
P08	ADDED NEW LAYOUT	PMB	16-03-2026
P07	UPDATED TANK AND DRAWING NUMBER, ADDED FFL	PMB	04-03-2026
P06	UPDATED TO SUIT NEW LANDSCAPE ARCHITECT DRAWING	PMB	23-02-2026
P05	UPDATED DRAWING TO SUIT NEW LAYOUT	PMB	18-02-2026

Shepherd Gilmour
Consulting Engineers
3rd Floor Phoenix House,
45 Cross Street,
Manchester, M2 4JF
T: 0161 837 1500 W: www.sginfrastructure.co.uk

Client
CLARION HOUSING ASSOCIATION LIMITED AND CLARION HOUSING PROPERTY DEVELOPMENT SERVICES LIMITED

Architect
PRP

Project
THE PEACOCK CENTRE MANCHESTER

Title
PROPOSED DRAINAGE LAYOUT

Date	19.03.2025	Drawn By	NU
Size	A1	Checked By	RBG
Scale	1:500	Approved By	RBG

Dwg. No. DN0385-SGI-XX-XX-DR-CE-00500 Rev P11

Filename: S:\Projects\DN-Bur-0385-SBR\03 Tech\01 Drainage\01 Civil\Revit Model\DN-0385-SBR-ZZ-XXXX-PM-Proposed Drainage Layout.dwg
Plot Date/Time: 10/7/2026 8:48:46 AM

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	Foul Sewage (l/s/ha)	0.000	Maximum Backdrop Height (m)	1.500
M5-60 (mm)	18.000	Volumetric Runoff Coeff.	1.000	Min Design Depth for Optimisation (m)	1.200
Ratio R	0.360	PIMP (%)	100	Min Vel for Auto Design only (m/s)	1.00
Maximum Rainfall (mm/hr)	50	Add Flow / Climate Change (%)	0	Min Slope for Optimisation (1:X)	500
Maximum Time of Concentration (mins)	30	Minimum Backdrop Height (m)	0.200		

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.258	4-8	0.194

Total Area Contributing (ha) = 0.452

Total Pipe Volume (m³) = 367.920

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	17.075	0.115	148.5	0.024	5.00	0.0	0.600		o	225	Pipe/Conduit	
2.000	19.000	0.065	292.3	0.026	5.00	0.0	0.600		o	300	Pipe/Conduit	
1.001	10.925	0.030	364.2	0.052	0.00	0.0	0.600		o	450	Pipe/Conduit	
1.002	23.952	0.080	299.4	0.067	0.00	0.0	0.600		o	450	Pipe/Conduit	
3.000	34.548	0.965	35.8	0.067	5.00	0.0	0.600		o	300	Pipe/Conduit	
1.003	15.407	0.040	385.2	0.080	0.00	0.0	0.600		o	600	Pipe/Conduit	
4.000	6.144	0.530	11.6	0.021	5.00	0.0		0.050	→_/		Pond/Tank	
1.004	22.373	0.055	406.8	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
5.000	16.000	0.002	8000.0	0.000	5.00	0.0		0.050	→[↓]		Cellular Storage	
5.001	6.736	0.015	449.1	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
1.005	18.884	0.050	377.7	0.115	0.00	0.0	0.600		o	600	Pipe/Conduit	
1.006	10.000	0.025	400.0	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
6.000	23.000	0.002	11500.0	0.000	5.00	0.0		0.050	→[↓]		Cellular Storage	
6.001	6.717	0.015	447.8	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.27	62.935	0.024	0.0	0.0	0.0	1.07	42.6	4.3
2.000	50.00	5.35	62.810	0.026	0.0	0.0	0.0	0.91	64.6	4.7
1.001	50.00	5.52	62.595	0.102	0.0	0.0	0.0	1.06	168.5	18.4
1.002	50.00	5.86	62.565	0.169	0.0	0.0	0.0	1.17	186.0	30.5
3.000	50.00	5.22	63.600	0.067	0.0	0.0	0.0	2.64	186.3	12.1
1.003	50.00	6.07	62.335	0.316	0.0	0.0	0.0	1.23	349.1	57.1
4.000	50.00	5.04	63.580	0.021	0.0	0.0	0.0	2.51	20270.6	3.8
1.004	50.00	6.38	62.295	0.337	0.0	0.0	0.0	1.20	339.6	60.8
5.000	50.00	6.90	62.257	0.000	0.0	0.0	0.0	0.14	1299.8	0.0
5.001	50.00	7.00	62.255	0.000	0.0	0.0	0.0	1.14	323.1	0.0
1.005	50.00	7.25	62.240	0.452	0.0	0.0	0.0	1.25	352.6	81.6
1.006	50.00	7.39	62.190	0.452	0.0	0.0	0.0	1.21	342.5	81.6
6.000	50.00	8.43	62.182	0.000	0.0	0.0	0.0	0.11	664.7	0.0
6.001	50.00	8.53	62.180	0.000	0.0	0.0	0.0	1.14	323.5	0.0

©1982-2020 Innovyze

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.007	33.620	0.310	108.5	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.007	50.00	9.11	62.165	0.452	0.0	0.0	0.0	0.96	17.0«	81.6

©1982-2020 Innovyze

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S400	64.348	1.413	Open Manhole	1200	1.000	62.935	225				
S500	64.049	1.239	Open Manhole	1200	2.000	62.810	300				
S401	64.519	1.924	Open Manhole	1500	1.001	62.595	450	1.000	62.820	225	
								2.000	62.745	300	
S402	64.626	2.061	Open Manhole	1800	1.002	62.565	450	1.001	62.565	450	
S600	65.212	1.612	Open Manhole	1200	3.000	63.600	300				
S403	64.927	2.592	Open Manhole	1800	1.003	62.335	600	1.002	62.485	450	
								3.000	62.635	300	
HW100 Pond	64.580	1.000	Open Manhole	1	4.000	63.580					
S404	65.142	2.847	Open Manhole	1800	1.004	62.295	600	1.003	62.295	600	
								4.000	63.050		1155
S700 Tank 1	64.580	2.323	Open Manhole	1800	5.000	62.257					
S701 Tank 1	64.580	2.325	Open Manhole	1800	5.001	62.255	600	5.000	62.255		
S405	64.850	2.610	Open Manhole	1800	1.005	62.240	600	1.004	62.240	600	
								5.001	62.240	600	
S406	63.966	1.776	Open Manhole	1800	1.006	62.190	600	1.005	62.190	600	
S800 Tank 2	63.966	1.784	Open Manhole	1800	6.000	62.182					
S801 Tank 2	63.966	1.786	Open Manhole	1800	6.001	62.180	600	6.000	62.180		
S407 HY	64.468	2.303	Open Manhole	1800	1.007	62.165	150	1.006	62.165	600	
								6.001	62.165	600	
	63.110	1.255	Open Manhole	0		OUTFALL		1.007	61.855	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S400	388275.443	396590.230	388275.443	396590.230	Required	
S500	388294.975	396607.534	388294.975	396607.534	Required	
S401	388292.449	396588.702	388292.449	396588.702	Required	
S402	388303.330	396587.725	388303.330	396587.725	Required	
S600	388361.558	396593.366	388361.558	396593.366	Required	
S403	388327.171	396590.035	388327.171	396590.035	Required	
HW100 Pond	388330.421	396601.456	388330.421	396601.456	Required	
S404	388325.685	396605.370	388325.685	396605.370	Required	
S700 Tank 1	388332.093	396607.548	388332.093	396607.548	Required	
S701 Tank 1	388330.191	396623.435	388330.191	396623.435	Required	
S405	388325.004	396627.733	388325.004	396627.733	Required	
S406	388306.539	396631.570	388306.539	396631.570	Required	
S800 Tank 2	388331.146	396630.555	388331.146	396630.555	Required	
S801 Tank 2	388308.649	396635.339	388308.649	396635.339	Required	
S407 HY	388306.438	396641.682	388306.438	396641.682	Required	

©1982-2020 Innovyze

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
	388301.742	396674.972			No Entry	

©1982-2020 Innovyze

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	225	S400	64.348	62.935	1.188	Open Manhole	1200
2.000	o	300	S500	64.049	62.810	0.939	Open Manhole	1200
1.001	o	450	S401	64.519	62.595	1.474	Open Manhole	1500
1.002	o	450	S402	64.626	62.565	1.611	Open Manhole	1800
3.000	o	300	S600	65.212	63.600	1.312	Open Manhole	1200
1.003	o	600	S403	64.927	62.335	1.992	Open Manhole	1800
4.000	→_/		HW100 Pond	64.580	63.580	0.000	Open Manhole	1
1.004	o	600	S404	65.142	62.295	2.247	Open Manhole	1800
5.000	→[↓]		S700 Tank 1	64.580	62.257	1.122	Open Manhole	1800
5.001	o	600	S701 Tank 1	64.580	62.255	1.725	Open Manhole	1800
1.005	o	600	S405	64.850	62.240	2.010	Open Manhole	1800
1.006	o	600	S406	63.966	62.190	1.176	Open Manhole	1800
6.000	→[↓]		S800 Tank 2	63.966	62.182	0.583	Open Manhole	1800
6.001	o	600	S801 Tank 2	63.966	62.180	1.186	Open Manhole	1800
1.007	o	150	S407 HY	64.468	62.165	2.153	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	17.075	148.5	S401	64.519	62.820	1.474	Open Manhole	1500
2.000	19.000	292.3	S401	64.519	62.745	1.474	Open Manhole	1500
1.001	10.925	364.2	S402	64.626	62.565	1.611	Open Manhole	1800
1.002	23.952	299.4	S403	64.927	62.485	1.992	Open Manhole	1800
3.000	34.548	35.8	S403	64.927	62.635	1.992	Open Manhole	1800
1.003	15.407	385.2	S404	65.142	62.295	2.247	Open Manhole	1800
4.000	6.144	11.6	S404	65.142	63.050	1.092	Open Manhole	1800
1.004	22.373	406.8	S405	64.850	62.240	2.010	Open Manhole	1800
5.000	16.000	8000.0	S701 Tank 1	64.580	62.255	1.124	Open Manhole	1800
5.001	6.736	449.1	S405	64.850	62.240	2.010	Open Manhole	1800
1.005	18.884	377.7	S406	63.966	62.190	1.176	Open Manhole	1800
1.006	10.000	400.0	S407 HY	64.468	62.165	1.703	Open Manhole	1800
6.000	23.000	11500.0	S801 Tank 2	63.966	62.180	0.585	Open Manhole	1800
6.001	6.717	447.8	S407 HY	64.468	62.165	1.703	Open Manhole	1800
1.007	33.620	108.5		63.110	61.855	1.105	Open Manhole	0

©1982-2020 Innovyze

4th Floor, Colchester House
40 Peter Street
Manchester, M2 5GP

Date 12/06/2026 09:23
File C1878-Drainage Strategy Peacock Close 008...

Designed by sgicivils
Checked by

Micro Drainage | Network 2020.1.3

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.024	0.024	0.024
2.000	-	-	100	0.026	0.026	0.026
1.001	-	-	100	0.052	0.052	0.052
1.002	-	-	100	0.067	0.067	0.067
3.000	-	-	100	0.067	0.067	0.067
1.003	-	-	100	0.080	0.080	0.080
4.000	-	-	100	0.021	0.021	0.021
1.004	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.000	0.000	0.000
5.001	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.115	0.115	0.115
1.006	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.000	0.000	0.000
6.001	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.452	0.452	0.452

©1982-2020 Innovyze

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
1.000	S400	225	1.188	1.474	Unclassified	1200	0	1.188	Unclassified
2.000	S500	300	0.939	1.474	Unclassified	1200	0	0.939	Unclassified
1.001	S401	450	1.474	1.611	Unclassified	1500	0	1.474	Unclassified
1.002	S402	450	1.611	1.992	Unclassified	1800	0	1.611	Unclassified
3.000	S600	300	1.312	1.992	Unclassified	1200	0	1.312	Unclassified
1.003	S403	600	1.992	2.247	Unclassified	1800	0	1.992	Unclassified
4.000	HW100 Pond				Pond/Tank	1	0	0.000	Unclassified
1.004	S404	600	2.010	2.247	Unclassified	1800	0	2.247	Unclassified
5.000	S700 Tank 1				Cellular Storage	1800	0	1.122	Unclassified
5.001	S701 Tank 1	600	1.725	2.010	Unclassified	1800	0	1.725	Unclassified
1.005	S405	600	1.176	2.010	Unclassified	1800	0	2.010	Unclassified
1.006	S406	600	1.176	1.703	Unclassified	1800	0	1.176	Unclassified
6.000	S800 Tank 2				Cellular Storage	1800	0	0.583	Unclassified
6.001	S801 Tank 2	600	1.186	1.703	Unclassified	1800	0	1.186	Unclassified
1.007	S407 HY	150	1.105	2.153	Unclassified	1800	0	2.153	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.007		63.110	61.855	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	18.000	Cv (Summer)	1.000
Return Period (years)	100	Ratio R	0.360	Cv (Winter)	1.000
Region	England and Wales	Profile Type	Summer	Storm Duration (mins)	30

©1982-2020 Innovyze

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S407 HY, DS/PN: 1.007, Volume (m³): 9.6

Unit Reference	MD-SCU-0076-8000-1850-8000	Sump Available	Yes
Design Head (m)	1.850	Diameter (mm)	76
Design Flow (l/s)	8.0	Invert Level (m)	62.165
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	100
Objective	Linear discharge profile	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.850	8.0	Kick-Flo®	0.114	2.2
Flush-Flo™	0.095	2.2	Mean Flow over Head Range	-	5.4

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.2	0.600	4.7	1.600	7.5	2.600	9.4	5.000	12.8	7.500	15.6
0.200	2.8	0.800	5.4	1.800	7.9	3.000	10.1	5.500	13.4	8.000	16.1
0.300	3.4	1.000	6.0	2.000	8.3	3.500	10.8	6.000	14.0	8.500	16.6
0.400	3.9	1.200	6.5	2.200	8.7	4.000	11.5	6.500	14.6	9.000	17.0
0.500	4.3	1.400	7.0	2.400	9.0	4.500	12.2	7.000	15.1	9.500	17.5

©1982-2020 Innovyze

Storage Structures for Storm

Tank or Pond Pipe: 4.000

Manning's N 0.050 Invert Level (m) 63.580

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	11.0	1.000	88.0	1.001	0.0

Cellular Storage Pipe: 5.000

Manning's N 0.050 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 1.0
Invert Level (m) 62.257 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	130.0	0.0	1.200	130.0	0.0	1.201	0.0	0.0

Cellular Storage Pipe: 6.000

Manning's N 0.050 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 1.0
Invert Level (m) 62.182 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	120.0	0.0	1.200	120.0	0.0	1.201	0.0	0.0

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	S400	0.500
2.000	S500	0.500
1.001	S401	0.500
1.002	S402	0.500
3.000	S600	0.500
1.003	S403	0.500
4.000	HW100 Pond	0.500
1.004	S404	0.500
5.000	S700 Tank 1	0.500
5.001	S701 Tank 1	0.500
1.005	S405	0.500
1.006	S406	0.500
6.000	S800 Tank 2	0.500
6.001	S801 Tank 2	0.500
1.007	S407 HY	0.500

©1982-2020 Innovyze

CASDeF Controller for Storm

PN	US/MH Name	Level Not Exceeded	Modify Control	Modify Pipe Size	Max Pipe Diameter	No. Pipe Failures	Add Storage	No. Storage Failures	Use CASDeF
1.000	S400	64.348	Yes	No	1263	0	Yes	0	Yes
2.000	S500	64.049	Yes	No	1089	0	Yes	0	Yes
1.001	S401	64.519	Yes	No	1774	0	Yes	0	Yes
1.002	S402	64.626	Yes	No	1911	0	Yes	0	Yes
3.000	S600	65.212	Yes	No	1462	0	Yes	0	Yes
1.003	S403	64.927	Yes	No	2442	0	Yes	0	Yes
4.000	HW100 Pond	64.580	Yes	No	1000	0	Yes	0	Yes
1.004	S404	65.142	Yes	No	2450	0	Yes	0	Yes
5.000	S700 Tank 1	64.580	Yes	No	2173	0	Yes	0	Yes
5.001	S701 Tank 1	64.580	Yes	No	2175	0	Yes	0	Yes
1.005	S405	64.850	Yes	No	1625	0	Yes	0	Yes
1.006	S406	63.966	Yes	No	1626	0	Yes	0	Yes
6.000	S800 Tank 2	63.966	Yes	No	1625	0	Yes	0	Yes
6.001	S801 Tank 2	63.966	Yes	No	1636	0	Yes	0	Yes
1.007	S407 HY	64.468	Yes	No	1100	0	Yes	0	Yes

Volume Summary (Static)

Length Calculations based on Centre-Centre

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	S400	1.598	0.679	0.000	2.277
2.000	S500	1.401	1.343	0.000	2.744
1.001	S401	3.400	1.738	0.000	5.138
1.002	S402	5.245	3.809	0.000	9.054
3.000	S600	1.823	2.442	0.000	4.265
1.003	S403	6.596	4.356	0.000	10.952
4.000	HW100 Pond	0.000	49.544	0.000	49.544
1.004	S404	7.245	6.326	0.000	13.571
5.000	S700 Tank 1	5.911	148.262	0.000	154.173
5.001	S701 Tank 1	5.916	1.905	0.000	7.821
1.005	S405	6.642	5.339	0.000	11.981
1.006	S406	4.519	2.827	0.000	7.347
6.000	S800 Tank 2	4.540	136.857	0.000	141.397
6.001	S801 Tank 2	4.545	1.899	0.000	6.444
1.007	S407 HY	5.860	0.594	0.000	6.455
Total		65.241	367.920	0.000	433.162

Volume Summary (Static)

Length Calculations based on True Length

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	S400	1.598	0.625	0.000	2.223
2.000	S500	1.401	1.248	0.000	2.649
1.001	S401	3.400	1.475	0.000	4.875
1.002	S402	5.245	3.523	0.000	8.768
3.000	S600	1.823	2.336	0.000	4.159
1.003	S403	6.596	3.847	0.000	10.443
4.000	HW100 Pond	0.000	42.283	0.000	42.283
1.004	S404	7.245	5.817	0.000	13.062
5.000	S700 Tank 1	5.911	131.582	0.000	137.494
5.001	S701 Tank 1	5.916	1.396	0.000	7.312
1.005	S405	6.642	4.830	0.000	11.472
1.006	S406	4.519	2.318	0.000	6.838
6.000	S800 Tank 2	4.540	126.146	0.000	130.686
6.001	S801 Tank 2	4.545	1.390	0.000	5.935
1.007	S407 HY	5.860	0.578	0.000	6.439
Total		65.241	329.396	0.000	394.637

©1982-2020 Innovyze

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 1.000
Region England and Wales Ratio R 0.360 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 1, 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)
1.000	S400	360 Winter	100	+45%	100/120 Summer				63.330	0.170	0.000	0.06	
2.000	S500	360 Winter	100	+45%	100/120 Summer				63.330	0.220	0.000	0.05	
1.001	S401	360 Winter	100	+45%	100/15 Summer				63.330	0.285	0.000	0.09	
1.002	S402	360 Winter	100	+45%	100/15 Summer				63.329	0.314	0.000	0.11	
3.000	S600	15 Summer	100	+45%					63.707	-0.193	0.000	0.28	
1.003	S403	360 Winter	100	+45%	100/60 Summer				63.328	0.393	0.000	0.14	
4.000	HW100 Pond	15 Summer	100	+45%					63.586	-0.994	0.000	0.00	
1.004	S404	360 Winter	100	+45%	100/60 Summer				63.327	0.432	0.000	0.13	
5.000	S700 Tank 1	360 Winter	100	+45%					63.326	-0.132	0.000	0.00	
5.001	S701 Tank 1	360 Winter	100	+45%	100/30 Summer				63.326	0.471	0.000	0.02	
1.005	S405	360 Winter	100	+45%	100/30 Summer				63.327	0.487	0.000	0.17	
1.006	S406	360 Winter	100	+45%	100/30 Summer				63.325	0.535	0.000	0.23	
6.000	S800 Tank 2	360 Winter	100	+45%					63.324	-0.059	0.000	0.00	
6.001	S801 Tank 2	360 Winter	100	+45%	100/30 Summer				63.324	0.544	0.000	0.01	
1.007	S407 HY	360 Winter	100	+45%	1/15 Summer				63.324	1.009	0.000	0.39	

PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S400		2.4	SURCHARGED	
2.000	S500		2.6	SURCHARGED	
1.001	S401		10.2	SURCHARGED	
1.002	S402		16.8	SURCHARGED	
3.000	S600		47.1	OK	
1.003	S403		31.5	SURCHARGED	
4.000	HW100 Pond		14.8	OK	
1.004	S404		33.6	SURCHARGED	
5.000	S700 Tank 1		0.1	OK	
5.001	S701 Tank 1		3.0	SURCHARGED	
1.005	S405		44.3	SURCHARGED	
1.006	S406		42.6	SURCHARGED	
6.000	S800 Tank 2		0.1	OK	
6.001	S801 Tank 2		2.9	SURCHARGED	
1.007	S407 HY		6.4	SURCHARGED	

©1982-2020 Innovyze