

# LAND AT NANT Y CAFN, SEVEN SISTERS, NEATH, SA10 9EY

## Ground Investigation Report

Report No. Q0867/GIR

September 2022

### DOCUMENT CONTROL

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## CONTENTS

|            |                                                |           |
|------------|------------------------------------------------|-----------|
| <b>0.0</b> | <b>FOREWORD .....</b>                          | <b>3</b>  |
| <b>1.0</b> | <b>INTRODUCTION .....</b>                      | <b>4</b>  |
| 1.1        | General .....                                  | 4         |
| 1.2        | Purpose of Ground Investigation.....           | 4         |
| <b>2.0</b> | <b>SITE DETAIL .....</b>                       | <b>5</b>  |
| 2.1        | Site Description.....                          | 5         |
| 2.2        | Published Geology.....                         | 5         |
| <b>3.0</b> | <b>FIELDWORK .....</b>                         | <b>7</b>  |
| 3.1        | General .....                                  | 7         |
| 3.2        | Exploratory Hole Locations .....               | 7         |
| 3.3        | Dynamic Windowless Sample Boreholes.....       | 7         |
| 3.4        | In-Situ Testing.....                           | 8         |
| 3.5        | Sampling - General .....                       | 8         |
| <b>4.0</b> | <b>LABORATORY TESTING.....</b>                 | <b>9</b>  |
| 4.1        | General .....                                  | 9         |
| 4.2        | Geotechnical Laboratory Testing .....          | 9         |
| <b>5.0</b> | <b>GROUND CONDITIONS ENCOUNTERED .....</b>     | <b>10</b> |
| 5.1        | General .....                                  | 10        |
| 5.2        | Ground Conditions .....                        | 10        |
| <b>6.0</b> | <b>GEOTECHNICAL ENGINEERING APPRAISAL.....</b> | <b>11</b> |
| 6.1        | General .....                                  | 11        |
| 6.2        | Engineering Properties of Strata .....         | 11        |
| 6.3        | Foundations .....                              | 11        |
| 6.4        | Construction Work .....                        | 12        |
| 6.4        | Soakaways .....                                | 13        |
| <b>7.0</b> | <b>REFERENCES .....</b>                        | <b>14</b> |

## APPENDIX

|                                                         |            |
|---------------------------------------------------------|------------|
| <b>APPENDIX I – SITE PLANS .....</b>                    | <b>I</b>   |
| <b>APPENDIX II – TRIAL PIT LOGS.....</b>                | <b>II</b>  |
| <b>APPENDIX III – SOAKAWAY TEST RESULTS.....</b>        | <b>III</b> |
| <b>APPENDIX IV – GEOTECHNICAL TESTING RESULTS .....</b> | <b>IV</b>  |

## **0.0 FOREWORD**

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The following Conditions and Notes on Site Investigation Procedures should be read in conjunction with this report.

### **0.1 General**

Recommendations made and opinions expressed in the report are based on the strata observed in the excavations, together with the results of site and laboratory tests. No responsibility can be held for conditions which have not been revealed by the Exploratory Holes or which occur between Exploratory Holes. Whilst the report may suggest the likely configuration of strata, both between Exploratory Holes and below the maximum depth of investigation, this is only indicative and liability cannot be accepted for its accuracy.

Unless specifically stated, no account has been taken of possible subsidence due to mineral extraction below or close to the site.

### **0.2 Investigation Procedures**

Windowless Sample Boreholes have been employed within the project. All Exploratory Hole operations, sampling and logging of soils, rocks and in-situ testing complies with the recommendations of the British Code of Practice BS 5930:2015+A1:2020 'Site Investigations', British Code of Practice BS 10175:2011+A1:2017 'Investigation of Potentially Contaminated Sites' and BS 1377:1990 (as updated), 'Methods of Test for Soils for Engineering Purposes'.

### **0.3 Routine Sampling**

Representative bulk disturbed and environmental samples of the different strata are taken following completion of logging. These samples are sealed and labelled in clear plastic bags and 2kg plastic tubs. Soil samples obtained for environmental testing are sampled and sealed in borosilicate amber jars or in specialist vessels where required. All samples are returned from site to QGL's facility for controlled storage within 24 hours of sampling to await test scheduling/ requirements.

### **0.4 In-Situ Testing, Surveying & Instrumentation**

In-situ testing comprised:

- Soakaway testing

### **0.5 Groundwater**

Where possible, the depth of entry of any influx of groundwater is recorded during the course of boring operations. The rate of inflow into the excavation or borehole is monitored during the course of the excavation or during boring procedures. Upon encountering any water strikes, work is temporarily halted and the water levels monitored for a standard twenty-minute period recording the change in water level at the end of the twenty minutes.

Groundwater conditions observed in the excavations are those appertaining to the period of investigation. It should be noted, however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions or other causes.

### **0.6 Retention of Samples**

After satisfactory completion of all the scheduled laboratory tests on any sample, the remaining material is discarded. Unless otherwise instructed or detailed within the Contract, all soil and/or rock samples not tested will be discarded 28 days after submission of the approved final report.

## 1.0 INTRODUCTION

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### 1.1 General

Upon the instructions of iPlan Architecture on behalf of Scully Property Group Ltd (the Client), Quantum Geotechnic Ltd (QGL) has been commissioned to undertake a ground investigation for a proposed residential development on land at Nant y Cafn, Seven Sisters.

The proposed development is for a residential end use with associated infrastructure. The location and current proposed layout drawings, as supplied by the Client, are presented within Appendix I for reference.

In this interpretative report, a factual account of the fieldwork, details of the strata encountered and groundwater observations is provided. Guidance and recommendations on geotechnical matters are discussed along with information in support of the drainage strategy for the site.

General notes on the techniques employed by Quantum Geotechnic Ltd are described in the Foreword together with the limitations inherent in this type of work.

### 1.2 Purpose of Ground Investigation

The ground investigation was designed to address two particular elements highlighted by the Client:

- Site Investigation for foundation appraisal
- Surface Water Infiltration tests to BRE Digest 365

The intrusive investigation works comprised a series of machine excavated trial holes along with in-situ soakaway testing.

### 1.3 Scope of Work

The general scope of work undertaken in the preparation of this assessment was as follows:

- Conduct an intrusive ground investigation with the aim to identify the underlying ground conditions targeting the issues that could potentially impact the proposed new buildings
- Carry out laboratory testing to gain further geotechnical data.
- Provide an interpretative report presenting an analysis of the available information and offering recommendations on foundation options for the proposed development with regards to geotechnical parameters and ground percolation parameters to inform the drainage strategy for the site.

No preliminary risk assessment of coal mining risk assessment was requested as part of this commission, nor any assessment of geo-environmental aspects of the site.

General notes on the techniques employed by Quantum Geotechnic are described in the Foreword together with the limitations inherent in carrying out ground investigation work.

## 2.0 SITE DETAIL

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### 2.1 Site Description

The site area under review lies within the village of Seven Sisters, Neath.

The site is rough/grassed rectangular vacant parcel of land, with some tree cover. The site is bounded to the east by an industrial works and to the west by the A4109 Dulais Road. The site is relatively flat over most of its footprint.

The approximate National Grid Reference of the centre of the site is 280970E 207680N with a nearby postcode of SA10 9EY. The ground level at the site is around 133mAOD. The site extent and layout of the proposed development is indicated on the site plans presented in Appendix I.

An aerial view of the site from current on-line mapping is presented below with the approximate site boundary highlighted in yellow.



*Figure 1: Site Location [Not to Scale] © Microsoft 2022*

### 2.2 Published Geology

Details of the geology of the site are provided by British Geological Survey (BGS) Sheet SN80NW at 1:10,560 scale, and BGS's online resource Geology Viewer.

Superficial deposits comprising of Glacial Till (Diamicton in current nomenclature) is indicated mantling the site. The thickness of these deposits is not indicated.

The geological mapping indicates the site to be underlain by strata from the Middle Coal Measures of the Carboniferous Period; typically, mudstones, siltstones and sandstones which can contain productive coal seams.

The geological map indicates a shallow dip of the solid strata towards the south. Although no faulting is shown close to the site, the general area appears to be affected by thrusts, as indicated top the east of the site.

The geological map does not show any coal seams that may affect the site, nor any mine entries.

Consultation with the Coal Authority Interactive Map Viewer confirms that no mine entries are on or close to the site, nor any recorded shallow workings underlie the site.

An extract of the geological sheet is presented below.

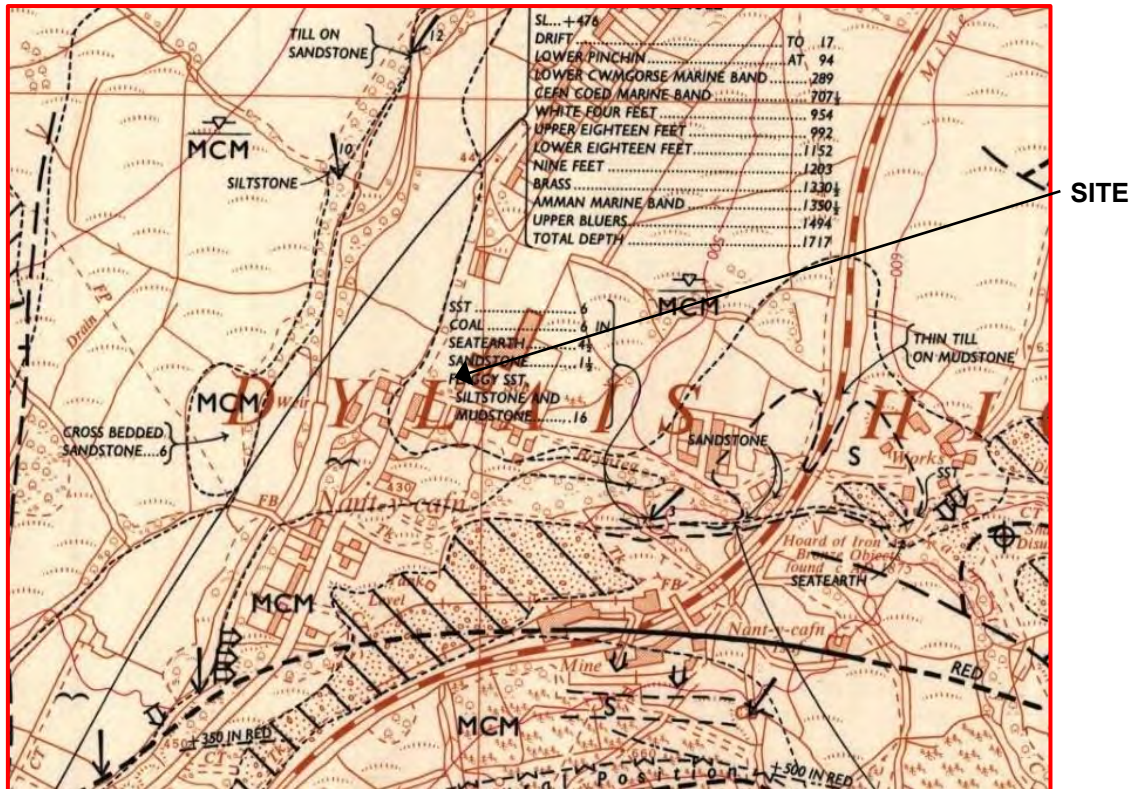


Figure 2: BGS Sheet SN80NW Extract ©NERC [Not to Scale]

### 3.0 FIELDWORK

#### 3.1 General

On 21<sup>st</sup> July 2022 QGL undertook a ground investigation for the proposed residential development at the site at Nant y Cafn, Seven Sisters. Supervision and attendance were provided by an Engineering Geologist from Quantum on all aspects of the site works.

All works were undertaken in strict accordance with Government Guidelines and Procedures in relation to the COVID-19 pandemic and adhering to Quantum's Safe Working Procedures.

All exploratory hole locations were surveyed by an eCAT4 Cable Avoidance Tool prior to breaking ground.

A summary of the fieldworks is outlined below:

- 5 No. machine excavated trial pits
- In-situ testing, by Soakaway Testing
- Geotechnical Soil Sampling
- Logging of all samples recovered

#### 3.2 Exploratory Hole Locations

The exploratory hole locations were set out by a QGL Engineering Geologist. The five trial pits were positioned across the whole area of the proposed development to maximise coverage of a site of this size.

An Exploratory Hole Location Plan is presented in Appendix I.

#### 3.3 Dynamic Windowless Sample Boreholes

A total of five machine excavated trial pits were excavated during the site works. Logs of the soils encountered are made and soil samples are taken in accordance with BS5930:2015+A1:2020; BS EN ISO 14688-1:2018 and BS EN ISO 14688-2:2018, by a Quantum Engineering Geologist.

The sequence of deposits encountered during the investigation is detailed within the Engineering Geologist's logs presented within Appendix II. The logs highlight the nature of the soils encountered and provide descriptions of the strata revealed at the site. Photographs of the excavation and spoil are presented with the logs in Appendix II. A summary of the trial pits is provided below in Table 1 below.

*Table 1: Summary of Trial Pits*

| Exploratory Hole ID | Terminated Depth (m.bgl) | Observations                                                 |
|---------------------|--------------------------|--------------------------------------------------------------|
| TP/SA01             | 2.3                      | Pit terminated due to hard digging: Soakaway Test undertaken |
| TP/SA02             | 2.5                      | Pit terminated due to hard digging: Soakaway Test undertaken |
| TP/SA03             | 3.0                      | Target Depth: Soakaway Test undertaken                       |
| TP/SA04             | 2.7                      | Pit terminated due to hard digging: Soakaway Test undertaken |
| TP/SA05             | 2.1                      | Pit terminated due to encountering Land Drain                |

### **3.4 In-Situ Testing**

#### **3.4.1 Soakaway Testing**

Soakaway tests were performed in four of the five trial pits. A test was not carried out in TP05 as a gravel surrounded land drain was encountered within the excavation.

The tests were undertaken in general accordance with BRE365. The records of the tests are included in Appendix III.

### **3.5 Sampling - General**

Samples from the trial pits were taken for logging and geotechnical testing purposes.

Sample type and sample depths from the investigation holes are recorded on the Engineering Geologist's Exploratory Hole Logs found within the relevant Appendices.

## 4.0 LABORATORY TESTING

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### 4.1 General

The laboratory testing was scheduled by Quantum and comprised a number of geotechnical tests on selected soil samples obtained during the investigation.

### 4.2 Geotechnical Laboratory Testing

All the geotechnical soil testing work was carried out in accordance with the procedures stipulated in the relevant sections of BS 1377:1990 Parts 1 - 9 *Methods of test for soils for civil engineering purposes*. Table 2 details the tests undertaken.

*Table 2: Geotechnical Tests Undertaken*

| Type of Test             | No of Tests |
|--------------------------|-------------|
| Moisture Content         | 7           |
| Liquid/Plastic Limits    | 5           |
| pH value                 | 5           |
| Soluble Sulphate Content | 5           |

A full set of geotechnical laboratory test results are included in the certificates provided within Appendix IV.

## 5.0 GROUND CONDITIONS ENCOUNTERED

### 5.1 General

The sequence of deposits encountered during the investigation is detailed within the Engineering Geologist's logs presented within Appendix II. The following sections summarise the findings of the exploratory holes.

### 5.2 Ground Conditions

A summary of the distribution and depths of strata encountered is tabulated below.

*Table 3: Summary of Depths of Strata Encountered.*

| Strata                   | TP/SA01     | TP/SA02     | TP/SA03     | TP/SA04     | TP/SA05     |
|--------------------------|-------------|-------------|-------------|-------------|-------------|
| Made Ground/Topsoil      | GL – 0.5m   | GL – 0.5m   | GL – 0.3m   | GL – 0.3m   | GL – 1.0m   |
| Diamicton (Glacial Till) | 0.5 - >2.3m | 0.5 - >2.5m | 0.3 - >3.0m | 0.3 - >2.7m | 1.0 - >2.1m |

#### 5.2.1 Made Ground/Topsoil

All trial pits encountered either Made Ground or topsoil or sub-soil. The Made Ground comprised essentially re-worked natural soils; predominantly a gravelly Silt/Clay, or silty clayey Gravel. A relic road surface was encountered at two trial pit positions.

#### 5.2.2 Glacial Deposits

All the trial pits proved Glacial soils, either as a cohesive dominant soil or granular dominant soil. The latter being proved deeper in TP/SA3 and TP/SA04. The Glacial soils were a heterogenous mixture of variably silty and sandy gravelly CLAY (cohesive dominant) and slightly clayey/silty sandy GRAVEL (granular dominant).

The base of the Glacial Till was not proved in the excavations.

#### 5.2.3 Groundwater Conditions

Groundwater was only noted as seepages at the base of TP/SA03 (3.0m depth) and TP/SA04 (2.7m depth).

The groundwater conditions observed in these exploratory holes are those appertaining to the period of the investigation. However, it should be noted that groundwater levels are subject to seasonal and climatic conditions or may vary due to other causes.

## 6.0 GEOTECHNICAL ENGINEERING APPRAISAL

### 6.1 General

It is proposed to construct five residential properties, as indicated on the Plans included in Appendix I.

The site investigation was designed to provide geotechnical information to allow foundations to be designed for the new development and to inform the site's drainage strategy.

The precise foundation details or loads are not known at present; therefore this geotechnical assessment is generic in its conclusions and may need revision once further construction details are known.

### 6.2 Engineering Properties of Strata

The soils proved on site were predominantly Glacial in origin. Classification testing on the soils was carried out in addition to determination of basic chemical properties. The results are summarised below and presented in full in Appendix IV.

*Table 4: Summary of Geotechnical Testing Properties*

| Parameter                           | Units    | Min. | Max. | Ave. | Characteristic |
|-------------------------------------|----------|------|------|------|----------------|
| Moisture Content                    | %        | 22   | 42   | 30   | 30             |
| Liquid Limit                        | %        | 40   | 59   | 48   | 48             |
| Plastic Limit                       | %        | 20   | 27   | 25   | 25             |
| Plasticity Index                    | %        | 20   | 32   | 23   | 23             |
| Modified Plasticity Index           | %        | 17   | 32   | 21   | 21             |
| Chemical Properties:                |          |      |      |      |                |
| pH Value                            | Units    | 5.6  | 8.1  | 6.0  | 5.6            |
| Soluble Sulphate (SO <sub>4</sub> ) | mg/litre | 14   | 120  | 45   | 120            |

The soils tested nearly all fall into 'CI' classification; a Clay of Intermediate plasticity. The modified plasticity Index average 21% places the soils at the boundary of low to medium volume change potential. One exception is the sample from 1.2m depth in TP/SA05 which falls into the CH classification. It may be that this is re-worked or imported soil associated with the installation of the land drain encountered at that location.

### 6.3 Foundations

#### 6.3.1 Foundation Recommendations

Made Ground has been proved on site to extend to a depth of 1m at TP/SA05, although the Glacial Till below this may be re-worked below this depth owing to the existence of the land drain.

Foundations should be founded in the natural Glacial Soils proved over most of the site. The depth of foundation should be in accordance with NHBC requirements for medium volume change potential, i.e., 0.9m depth where foundations are outside the zone of influence of trees, or 1.25m depth if new restricted planting is envisaged.

An allowable bearing capacity of 100kN/m<sup>2</sup> will be available in the natural soils at the depths quoted, that will limit settlements to acceptable levels for a strip footing.

A ground bearing floor slab would be also possible for the proposed structures, with appropriate proof rolling,

removal of any soft spot etc., and replacement with suitable granular fill.

### **6.3.2 Foundation Concrete Class Designation**

The Aggressive Chemical Environment for Concrete (ACEC) classification for the site has been assessed according to the guidelines within BRE Special Digest 1 (2005), Table C1 for *Greenfield* locations. For classification purposes, based on the BRE guidance, the groundwater must be classed as 'mobile' unless proven to be 'static' over a 24hr period. Groundwater seepages were recorded in two of the trial holes, but the possibility of perched waters cannot be discounted.

The pH values of the soil samples taken from across the site ranged from 5.6 to 8.0. The levels of water-soluble sulphate (SO<sub>4</sub>) content of the tested soil samples recorded levels up to 120mg/l.

Based on the above where concrete may come into contact with the shallow soils on site, the Design Sulphate (DS) class for the site is DS-1, and the Aggressive Chemical Environment for Concrete (ACEC) site classification is AC-1, based on the pH value and assuming mobile groundwater conditions.

## **6.4 Construction Work**

### Site Preparation

Any earthworks should be carried out in accordance with BS 6031: 2009 Code of Practice for Earthworks. Workmanship for excavation shall comply with BS 8000: Part 1, sections 3.1, 3.2 and 3.3.

Prior to commencing any earthworks / groundworks for the development, any live services on and in the vicinity of the site should be accurately located and protected, or if required diverted.

Any exposed formations should be protected from the effects of the weather, site traffic, or water in order to prevent deterioration of this surface. It is recommended that any exposed formations be protected with a minimum thickness of up to 150mm of suitable granular material or a thin layer of blinding concrete, which should be placed immediately after excavation and exposure.

Depending on the foundation option adopted for the scheme, physical treatment in the form of proof rolling, excavating hard spots, re-engineering of the superficial deposits may be required. This however would need further discussion depending on the foundation solution adopted.

The location and line of the land drain proved in TP/SA05 should be established prior to construction of foundations.

### Cutting and Filling

Cutting and filling is not envisaged to be required for this development scheme.

### Excavation Plant

On the basis of the observations made during the exploratory investigation, it is considered that excavations within the shallow soils can be undertaken by conventional excavation plant, although care should be taken to observe any possible water strikes within the granular bands within the soils.

### Stability of Excavations

Although the trial pit excavations remained relatively stable for the duration of the excavation, logging and testing, any excavations in the shallow soils cannot be assumed to remain stable even in the short term. It is recommended that excavations are either battering back to a suitable safe angle or supported if they are to

remain open at all. If variable soil thicknesses are proved elsewhere on the site, then consideration of shoring excavations would be prudent.

It is advised that any excavations left open for any length of time are protected, owing to the likelihood for ground condition deterioration if exposed to inclement weather.

#### Control of Groundwater

Groundwater was not encountered during the ground investigation site works.

The strata encountered is made ground and as such may contain perched groundwater bodies. The tidal setting of the site could lead to ingress of tidal water in extreme events. Any ingress is likely to be accompanied by instability of any excavations owing to the granular nature of the soils.

### **6.4 Soakaways**

Four soakaway tests were performed, the results of which are presented in Appendix III. Table 5 below summarises the findings of the soakaway tests. The four tests did not drain away over the duration of the test.

*Table 5: Soakaway Test Results Summary*

| <b>Trial Pit ID</b> | <b>Trial Pit Base Depth (mbgl)</b> | <b>Permeability Result (m/sec)</b>                  |
|---------------------|------------------------------------|-----------------------------------------------------|
| TP/SA01             | 2.3                                | Unable to Calculate – Insufficient Outflow of Water |
| TP/SA02             | 2.5                                | Unable to Calculate – Insufficient Outflow of Water |
| TP/SA03             | 3.0                                | Unable to Calculate – Insufficient Outflow of Water |
| TP/SA04             | 2.7                                | Unable to Calculate – Insufficient Outflow of Water |

Based on the test results, soakaway drainage is not considered suitable for the site.

## 7.0 REFERENCES

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### British Geological Survey:

- British Geological Survey (BGS) Sheet SN80NW, at 1:10,560 scale (1980)
- BGS Lexicon of Named Rock Units ([www.bgs.ac.uk/lexicon](http://www.bgs.ac.uk/lexicon))
- BGS Geology of Britain Viewer ([www.bgs.ac.uk](http://www.bgs.ac.uk))

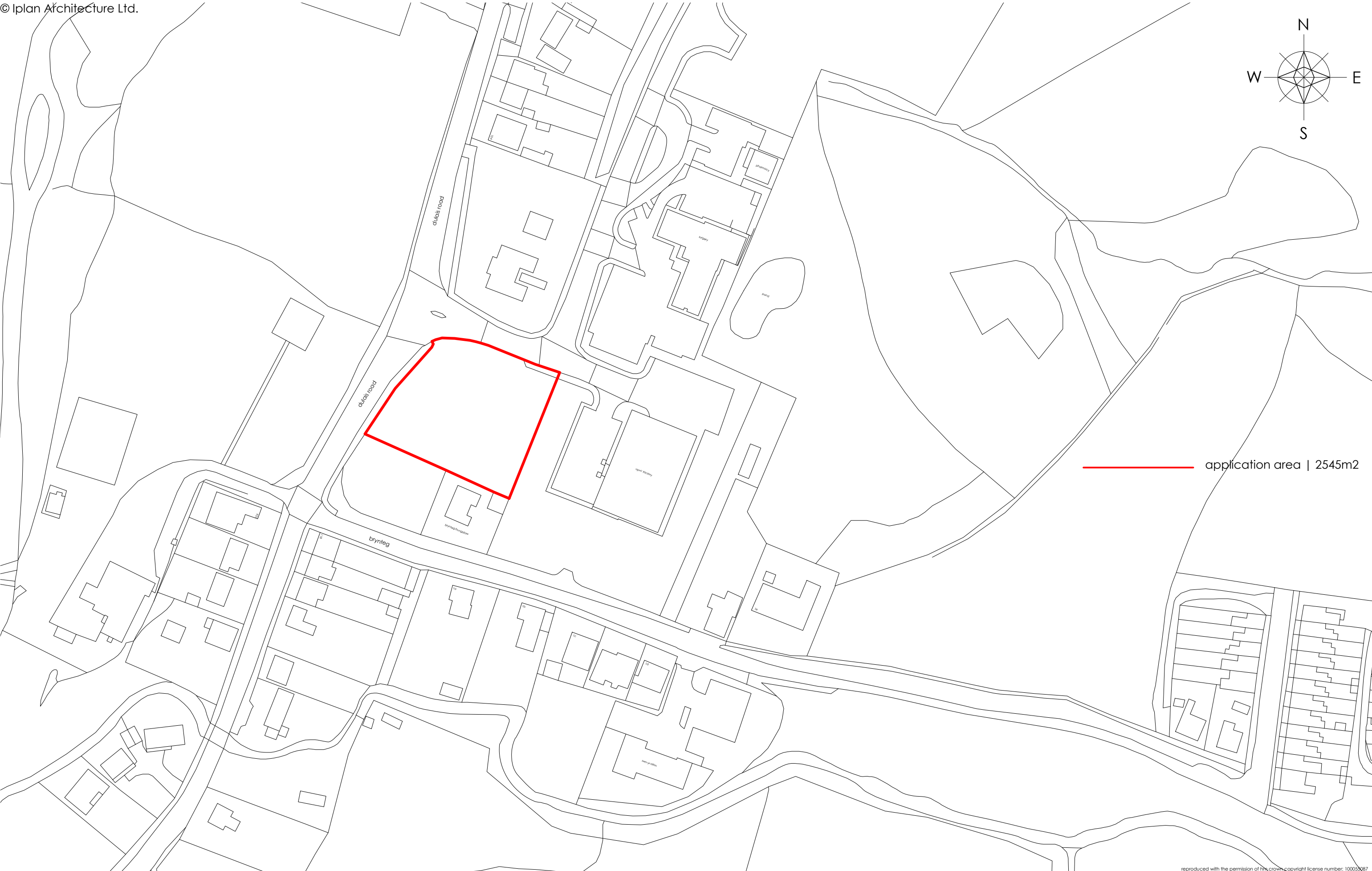
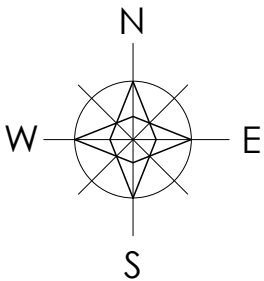
### Specialist Publications: -

- British Code of Practice BS 5930:2015+A1:2020 '*Code of Practice for Site Investigations*'
- British Code of Practice BS 1377:1990 '*Methods of test for soils for civil engineering purposes*'
- British Code of Practice BS 10175:2011+A2:2017 '*Code of Practice for Investigation of Potentially Contaminated Sites*'
- British Code of Practice BS EN ISO 14688-1:2018 Geotechnical investigation and testing. Identification and classification of soil. Identification and description
- British Code of Practice BS EN ISO 14688-2:2018 Geotechnical investigation and testing. Identification and classification of soil. Principles for a classification.
- British Code of Practice BS EN ISO 14689-1:2018 Ground Investigation and Testing – Identification and classification of rock
- Health and Safety Executive Guidance Note EH40/90
- BRE (2005) Special Digest 1:2005, 3<sup>rd</sup> Edition, Concrete in aggressive ground. BRE, Garston.
- BS 6031: 2009 Code of Practice for Earthworks.
- ICE UK Specification for Ground Investigation Second Edition.
- Specification for Highways Works Series 600 Earthworks

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## APPENDIX I – SITE PLANS

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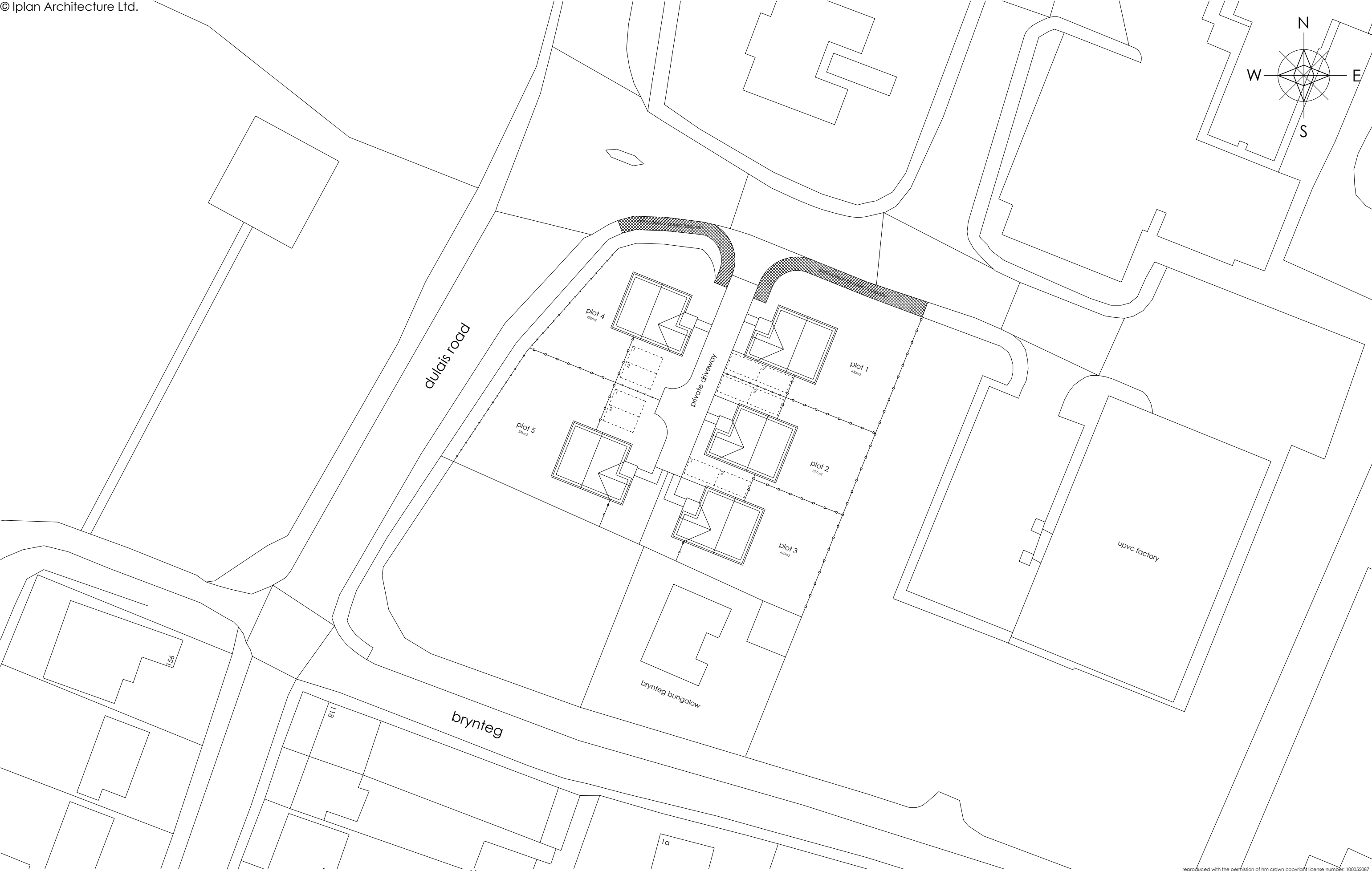
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| revision |  |
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|------------------------------------------|-------------------------------|---------------|
| project                                  | drawing                       | date          |
| LAND @ NANT Y CAFN, SEVEN SISTERS, NEATH | LOCATION PLAN                 | FEB 2022      |
| client                                   | drawing no.                   | scale         |
| SCULLY PROPERTY GROUP LTD                | 21.259.01                     | 1   1250 @ A3 |
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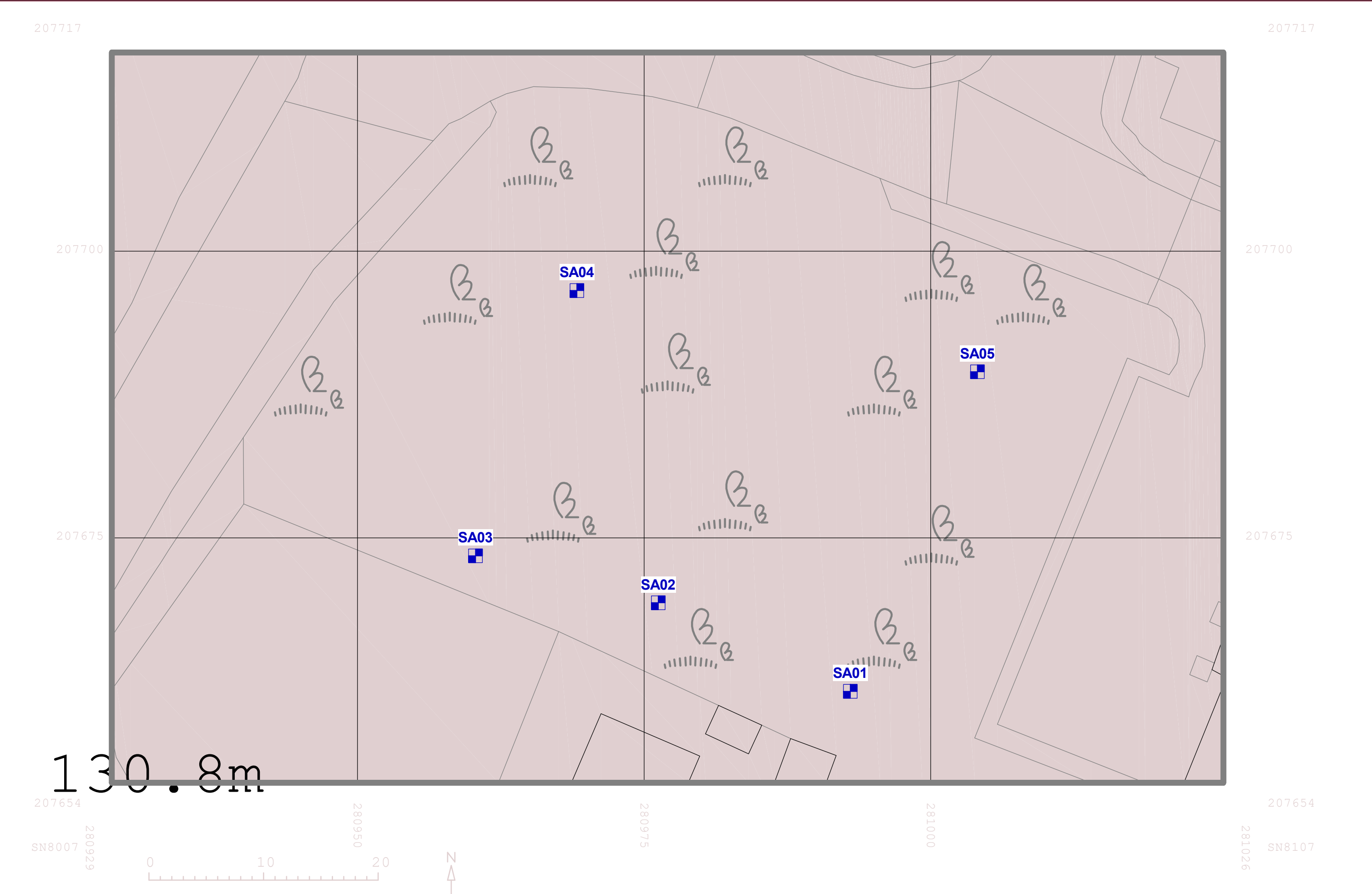
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pre-application

| revision |  |
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| <b>project</b>                           | <b>drawing</b>                | <b>date</b>  |
| LAND @ NANT Y CAFN, SEVEN SISTERS, NEATH | BLOCK PLAN                    | FEB 2022     |
| <b>client</b>                            | <b>drawing no.</b>            | <b>scale</b> |
| SCULLY PROPERTY GROUP LTD                | 21.259.02                     | 1   500 @ A3 |
| www.iplanarchitecture.co.uk              | hello@iplanarchitecture.co.uk | 07765 660189 |



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## APPENDIX II – TRIAL PIT LOGS

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| <b>Contract : Nant Y Cafn, Seven Sisters</b><br><b>Client : iPlan Architecture</b> |             |                 |                                                                                       |                                                    |                                                                                                                                                     |                                                                                                                                                                                                                                                                                     | <b>Trial Pit No.</b><br><b>SA01</b> |                          |       |
|------------------------------------------------------------------------------------|-------------|-----------------|---------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-------|
| Date : 7/21/22<br>Location : Land Adjacent to Nant Y Cafn                          |             |                 | Job Number : Q0867<br>Engineer : Quantum Geotechnic Ltd                               |                                                    | Ground Level : 134.80 m A.O.D.<br><i>Level to Ordnance Datum</i><br>Coordinates: 280992.99 E<br>207661.62 N<br><i>Co-ordinates to National Grid</i> |                                                                                                                                                                                                                                                                                     |                                     |                          |       |
| m B.G.L.                                                                           | Samples     |                 | Tests                                                                                 |                                                    | Strata                                                                                                                                              |                                                                                                                                                                                                                                                                                     |                                     |                          | WATER |
|                                                                                    | Depth       | Type No.        | Depth                                                                                 | Test Results                                       | Depth (Thickness)                                                                                                                                   | Description                                                                                                                                                                                                                                                                         | Legend                              | Red. Level A.O.D.        |       |
| 1                                                                                  | 0.20 - 0.50 | B1              |                                                                                       |                                                    | 0.10                                                                                                                                                | TOPSOIL: Grass over soft brown slightly clayey slightly sandy gravelly SILT. Sand is fine to medium. Gravel is fine to coarse angular to sub-angular mudstone brick.                                                                                                                |                                     | 134.70                   |       |
|                                                                                    |             |                 |                                                                                       |                                                    | 0.10                                                                                                                                                | [RESIDUAL SOIL]                                                                                                                                                                                                                                                                     |                                     |                          |       |
|                                                                                    |             |                 |                                                                                       |                                                    | 0.10                                                                                                                                                | MADE GROUND: ASPHALTIC CONCRETE. [RELIC ROAD SURFACE]                                                                                                                                                                                                                               |                                     | 134.60                   |       |
|                                                                                    |             |                 |                                                                                       |                                                    | 0.20                                                                                                                                                | MADE GROUND: Orange brown black slightly clayey silty sandy fine to coarse angular mudstone siltstone sandstone brick GRAVEL with high angular sandstone brick cobble content. Sand is fine to coarse. [RE-WORKED GROUND]                                                           |                                     |                          |       |
|                                                                                    |             |                 |                                                                                       |                                                    | 0.30                                                                                                                                                |                                                                                                                                                                                                                                                                                     |                                     |                          |       |
| 2                                                                                  | 1.00 - 1.50 | B2              |                                                                                       |                                                    | 0.50                                                                                                                                                | Soft to locally firm orange brown mottled grey slightly silty slightly sandy gravelly CLAY with high angular to sub-angular sandstone ironstone cobble/ boulder content. Sand is fine to coarse angular to sub-rounded mudstone siltstone sandstone coal. [GLACIAL TILL - COHESIVE] |                                     | 134.30                   |       |
|                                                                                    |             |                 |                                                                                       |                                                    | 1.80                                                                                                                                                |                                                                                                                                                                                                                                                                                     |                                     |                          |       |
|                                                                                    | 2.00 - 2.30 | B3              |                                                                                       |                                                    | 2.30                                                                                                                                                | Trial Pit Terminated at 2.30mbgl Upon Difficult Digging Conditions                                                                                                                                                                                                                  |                                     | 132.50                   |       |
| <b>PLAN</b><br>                                                                    |             |                 | Groundwater: No Groundwater Strikes<br><br>Stability: N/A<br><br>Shoring: N/A         |                                                    |                                                                                                                                                     | Remarks :                                                                                                                                                                                                                                                                           |                                     |                          |       |
| Equipment Used: 8t Tracked Excavator                                               |             |                 |                                                                                       |                                                    |                                                                                                                                                     |                                                                                                                                                                                                                                                                                     |                                     |                          |       |
|                                                                                    |             |                 | Plas Newydd, Llanedi, Pontarddulais<br>SA4 0FO<br>Tel: 01554 744880<br>Fax:<br>email: |                                                    |                                                                                                                                                     | Operator:<br>QGL                                                                                                                                                                                                                                                                    |                                     | Logged By:<br>L. Simlett |       |
| Sheet No.<br>1 Of 3                                                                |             | m Per Page<br>4 |                                                                                       | All measurements in metres unless otherwise stated |                                                                                                                                                     |                                                                                                                                                                                                                                                                                     |                                     |                          |       |

|                                                                                    |                                                         |                                                                                                                                                     |
|------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contract : Nant Y Cafn, Seven Sisters</b><br><b>Client : iPlan Architecture</b> |                                                         | <b>Trial Pit No.</b><br><b>SA01</b>                                                                                                                 |
| Date : 7/21/22<br>Location : Land Adjacent to Nant Y Cafn                          | Job Number : Q0867<br>Engineer : Quantum Geotechnic Ltd | Ground Level : 134.80 m A.O.D.<br><i>Level to Ordnance Datum</i><br>Coordinates: 280992.99 E<br>207661.62 N<br><i>Co-ordinates to National Grid</i> |



|                                                                                    |                                                                                       |                         |                                 |                            |                   |                                                    |                                                                                       |
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|  | Plas Newydd, Llanedi, Pontarddulais<br>SA4 0FO<br>Tel: 01554 744880<br>Fax:<br>email: | <b>Operator:</b><br>QGL | <b>Logged By:</b><br>L. Simlett | <b>Sheet No.</b><br>2 Of 3 | <b>m Per Page</b> | All measurements in metres unless otherwise stated |  |
|                                                                                    |                                                                                       |                         |                                 |                            |                   |                                                    |                                                                                       |

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|------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <b>Contract : Nant Y Cafn, Seven Sisters</b><br><b>Client : iPlan Architecture</b> |                                                         | <b>Trial Pit No.</b><br><b>SA01</b>                              |                                                                                 |
| Date : 7/21/22<br>Location : Land Adjacent to Nant Y Cafn                          | Job Number : Q0867<br>Engineer : Quantum Geotechnic Ltd | Ground Level : 134.80 m A.O.D.<br><i>Level to Ordnance Datum</i> | Coordinates: 280992.99 E<br>207661.62 N<br><i>Co-ordinates to National Grid</i> |



|                                                                                    |                                                                                       |                         |                                 |                            |                   |                                                    |                                                                                       |
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|  | Plas Newydd, Llanedi, Pontarddulais<br>SA4 0FQ<br>Tel: 01554 744880<br>Fax:<br>email: | <b>Operator:</b><br>QGL | <b>Logged By:</b><br>L. Simlett | <b>Sheet No.</b><br>3 Of 3 | <b>m Per Page</b> | All measurements in metres unless otherwise stated |  |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|---------------------------------|----------------------------|-------------------|----------------------------------------------------|---------------------------------------------------------------------------------------|

| <b>Contract : Nant Y Cafn, Seven Sisters</b><br><b>Client : iPlan Architecture</b> |             |          |                                                                                       |              |                                                                                                                                                     |                                                                                                                                                                                                                                                                                     | <b>Trial Pit No.</b><br><b>SA02</b> |                                  |                                                        |
|------------------------------------------------------------------------------------|-------------|----------|---------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|--------------------------------------------------------|
| Date : 7/21/22<br>Location : Land Adjacent to Nant Y Cafn                          |             |          | Job Number : Q0867<br>Engineer : Quantum Geotechnic Ltd                               |              | Ground Level : 134.30 m A.O.D.<br><i>Level to Ordnance Datum</i><br>Coordinates: 280976.24 E<br>207669.34 N<br><i>Co-ordinates to National Grid</i> |                                                                                                                                                                                                                                                                                     |                                     |                                  |                                                        |
| m B.G.L.                                                                           | Samples     |          | Tests                                                                                 |              | Strata                                                                                                                                              |                                                                                                                                                                                                                                                                                     |                                     |                                  | WATER                                                  |
|                                                                                    | Depth       | Type No. | Depth                                                                                 | Test Results | Depth (Thickness)                                                                                                                                   | Description                                                                                                                                                                                                                                                                         | Legend                              | Red. Level A.O.D.                |                                                        |
| 1                                                                                  | 0.20 - 0.50 | B1       |                                                                                       |              | 0.50                                                                                                                                                | TOPSOIL: Soft brown slightly sandy gravelly CLAY/ SILT. Sand is fine to medium. Gravel is fine to coarse angular to sub-angular mudstone siltstone. [RESIDUAL SOIL]                                                                                                                 |                                     |                                  |                                                        |
|                                                                                    |             |          |                                                                                       |              | 0.50                                                                                                                                                | Soft to locally firm orange brown mottled grey slightly silty slightly sandy gravelly CLAY with high angular to sub-angular sandstone ironstone cobble/ boulder content. Sand is fine to coarse angular to sub-rounded mudstone siltstone sandstone coal. [GLACIAL TILL - COHESIVE] |                                     | 133.80                           |                                                        |
|                                                                                    | 1.00 - 1.50 | B2       |                                                                                       |              | 2.00                                                                                                                                                |                                                                                                                                                                                                                                                                                     |                                     |                                  |                                                        |
| 2                                                                                  | 2.20 - 2.50 | B3       |                                                                                       |              | 2.50                                                                                                                                                | Trial Pit Terminated at 2.50mbgl Upon Dificult Digging Conditions                                                                                                                                                                                                                   |                                     | 131.80                           |                                                        |
| <b>PLAN</b><br>                                                                    |             |          | Groundwater: No Groundwater Strike<br><br>Stability: N/A<br><br>Shoring: N/A          |              |                                                                                                                                                     | Remarks :                                                                                                                                                                                                                                                                           |                                     |                                  |                                                        |
| Equipment Used: 8t Tracked Excavator                                               |             |          |                                                                                       |              |                                                                                                                                                     |                                                                                                                                                                                                                                                                                     |                                     |                                  |                                                        |
|                                                                                    |             |          | Plas Newydd, Llanedi, Pontarddulais<br>SA4 0FO<br>Tel: 01554 744880<br>Fax:<br>email: |              |                                                                                                                                                     | Operator: QGL<br>Logged By: L. Simlett                                                                                                                                                                                                                                              |                                     | Sheet No. 1 Of 3<br>m Per Page 4 | All measurements in metres unless otherwise stated<br> |

**Contract : Nant Y Cafn, Seven Sisters**

**Client : iPlan Architecture**

**Trial Pit No.**

**SA02**

Date : 7/21/22

Job Number : Q0867

Ground Level : 134.30 m A.O.D.  
*Level to Ordnance Datum*

Location : Land Adjacent to Nant Y Cafn

Engineer : Quantum Geotechnic Ltd

Coordinates: 280976.24 E  
207669.34 N  
*Co-ordinates to National Grid*



Plas Newydd, Llanedi, Pontarddulais  
SA4 0FO  
Tel: 01554 744880  
Fax:  
email:

Operator:  
QGL

Logged By:  
L. Simlett

Sheet No.  
2 Of 3

m Per  
Page

All measurements in  
metres unless  
otherwise stated



|                                              |                                   |                      |                                                                    |
|----------------------------------------------|-----------------------------------|----------------------|--------------------------------------------------------------------|
| <b>Contract : Nant Y Cafn, Seven Sisters</b> |                                   | <b>Trial Pit No.</b> |                                                                    |
| <b>Client : iPlan Architecture</b>           |                                   | <b>SA02</b>          |                                                                    |
| Date : 7/21/22                               | Job Number : Q0867                | Ground Level :       | 134.30 m A.O.D.<br><i>Level to Ordnance Datum</i>                  |
| Location : Land Adjacent to Nant Y Cafn      | Engineer : Quantum Geotechnic Ltd | Coordinates:         | 280976.24 E<br>207669.34 N<br><i>Co-ordinates to National Grid</i> |



|                                                                                    |                                                                                       |           |            |           |       |                                                          |                                                                                       |
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|  | Plas Newydd, Llanedi, Pontarddulais<br>SA4 0FO<br>Tel: 01554 744880<br>Fax:<br>email: | Operator: | Logged By: | Sheet No. | m Per | All measurements in<br>metres unless<br>otherwise stated |  |
|                                                                                    |                                                                                       | QGL       | L. Simlett | 3 Of 3    | Page  |                                                          |                                                                                       |

| <b>Contract : Nant Y Cafn, Seven Sisters</b><br><b>Client : iPlan Architecture</b> |             |                 |                                                                                       |                                                    |                                                                                                                                                     |                                                                                                                                                                                                                                                           | <b>Trial Pit No.</b><br><b>SA03</b> |                          |       |
|------------------------------------------------------------------------------------|-------------|-----------------|---------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-------|
| Date : 7/21/22<br>Location : Land Adjacent to Nant Y Cafn                          |             |                 | Job Number : Q0867<br>Engineer : Quantum Geotechnic Ltd                               |                                                    | Ground Level : 133.25 m A.O.D.<br><i>Level to Ordnance Datum</i><br>Coordinates: 280960.29 E<br>207673.44 N<br><i>Co-ordinates to National Grid</i> |                                                                                                                                                                                                                                                           |                                     |                          |       |
| m B.G.L.                                                                           | Samples     |                 | Tests                                                                                 |                                                    | Strata                                                                                                                                              |                                                                                                                                                                                                                                                           |                                     |                          | WATER |
|                                                                                    | Depth       | Type No.        | Depth                                                                                 | Test Results                                       | Depth (Thickness)                                                                                                                                   | Description                                                                                                                                                                                                                                               | Legend                              | Red. Level A.O.D.        |       |
| 1                                                                                  | 0.10 - 0.30 | B1              |                                                                                       |                                                    | 0.30                                                                                                                                                | TOPSOIL: Soft brown slightly sandy gravelly CLAY/ SILT. Sand is fine to medium. Gravel is fine to coarse angular to sub-angular mudstone siltstone. [RESIDUAL SOIL]                                                                                       |                                     |                          |       |
|                                                                                    |             |                 |                                                                                       |                                                    | 0.30                                                                                                                                                | Soft to locally firm orange brown mottled grey slightly silty sandy gravelly CLAY with high angular to sub-angular sandstone ironstone cobble. Sand is fine to coarse angular to sub-rounded mudstone siltstone sandstone coal. [GLACIAL TILL - COHESIVE] |                                     | 132.95                   |       |
| 2                                                                                  | 1.20 - 1.50 | B2              |                                                                                       |                                                    | 1.70                                                                                                                                                |                                                                                                                                                                                                                                                           |                                     |                          |       |
|                                                                                    |             |                 |                                                                                       |                                                    | 2.00                                                                                                                                                | Grey slightly clayey slightly silty sandy fine to coarse sub-angular to well-rounded mudstone siltstone sandstone GRAVEL with high angular to su-angular mudstone siltstone cobble content. Sand is fine to medium. [GLACIAL TILL - GRANULAR]             |                                     | 131.25                   |       |
| 3                                                                                  | 2.70 - 3.00 | B3              |                                                                                       |                                                    | 1.00                                                                                                                                                |                                                                                                                                                                                                                                                           |                                     |                          |       |
|                                                                                    |             |                 |                                                                                       |                                                    | 3.00                                                                                                                                                | Trial Pit Terminated at 3.00mbgl Upon Specification Depth                                                                                                                                                                                                 |                                     | 130.25                   |       |
| <b>PLAN</b><br>                                                                    |             |                 | Groundwater: Groundwater Seepage<br><br>Stability: N/A<br><br>Shoring: N/A            |                                                    |                                                                                                                                                     | Remarks :                                                                                                                                                                                                                                                 |                                     |                          |       |
| Equipment Used: 8t Tracked Excavator                                               |             |                 |                                                                                       |                                                    |                                                                                                                                                     |                                                                                                                                                                                                                                                           |                                     |                          |       |
|                                                                                    |             |                 | Plas Newydd, Llanedi, Pontarddulais<br>SA4 0FO<br>Tel: 01554 744880<br>Fax:<br>email: |                                                    |                                                                                                                                                     | Operator:<br>QGL                                                                                                                                                                                                                                          |                                     | Logged By:<br>L. Simlett |       |
| Sheet No.<br>1 Of 3                                                                |             | m Per Page<br>4 |                                                                                       | All measurements in metres unless otherwise stated |                                                                                                                                                     |                                                                                                                                                                                                                                                           |                                     |                          |       |

**Contract : Nant Y Cafn, Seven Sisters**

**Client : iPlan Architecture**

**Trial Pit No.**

**SA03**

Date : 7/21/22

Job Number : Q0867

Ground Level : 133.25 m A.O.D.  
*Level to Ordnance Datum*

Location : Land Adjacent to Nant Y Cafn

Engineer : Quantum Geotechnic Ltd

Coordinates: 280960.29 E  
207673.44 N  
*Co-ordinates to National Grid*



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Fax:  
email:

Operator:  
QGL

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L. Simlett

Sheet No.  
2 Of 3

m Per  
Page

All measurements in  
metres unless  
otherwise stated



**Contract : Nant Y Cafn, Seven Sisters**

**Client : iPlan Architecture**

**Trial Pit No.**

**SA03**

Date : 7/21/22

Job Number : Q0867

Ground Level : 133.25 m A.O.D.  
*Level to Ordnance Datum*

Location : Land Adjacent to Nant Y Cafn

Engineer : Quantum Geotechnic Ltd

Coordinates: 280960.29 E  
207673.44 N  
*Co-ordinates to National Grid*



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Operator:  
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Sheet No.  
3 Of 3

m Per  
Page

All measurements in  
metres unless  
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|------------------------------------------------------------------------------------|--|--|---------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------|--|
| <b>Contract : Nant Y Cafn, Seven Sisters</b><br><b>Client : iPlan Architecture</b> |  |  |                                                         |  |                                                                                                                                                     |  | <b>Trial Pit No.</b><br><b>SA04</b> |  |
| Date : 7/21/22<br>Location : Land Adjacent to Nant Y Cafn                          |  |  | Job Number : Q0867<br>Engineer : Quantum Geotechnic Ltd |  | Ground Level : 133.28 m A.O.D.<br><i>Level to Ordnance Datum</i><br>Coordinates: 280969.14 E<br>207696.57 N<br><i>Co-ordinates to National Grid</i> |  |                                     |  |

| m B.G.L. | Samples     |          | Tests |              | Strata            |                                                                                                                                                                                                                                                                    |        |                   | WATER |
|----------|-------------|----------|-------|--------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------|-------|
|          | Depth       | Type No. | Depth | Test Results | Depth (Thickness) | Description                                                                                                                                                                                                                                                        | Legend | Red. Level A.O.D. |       |
| 1        | 0.10 - 0.30 | B1       |       |              | 0.30              | MADE GROUND: Soft brown slightly sandy gravelly CLAY/ SILT. Sand is fine to medium. Gravel is fine to coarse angular to sub-angular mudstone siltstone brick concrete. [RE-WORKED GROUND]                                                                          |        |                   |       |
|          |             |          |       |              | 0.30              | Soft to locally firm orange brown mottled grey slightly silty slightly sandy gravelly CLAY with high angular to sub-angular sandstone ironstone cobble. Sand is fine to coarse angular to sub-rounded mudstone siltstone sandstone coal. [GLACIAL TILL - COHESIVE] |        | 132.98            |       |
| 2        | 1.20 - 1.50 | B2       |       |              | 1.40              |                                                                                                                                                                                                                                                                    |        |                   |       |
|          |             |          |       |              | 1.70              | Grey slightly clayey slightly silty sandy fine to coarse sub-angular to well-rounded mudstone siltstone sandstone GRAVEL with high angular to su-angular mudstone siltstone cobble content. Sand is fine to medium. [GLACIAL TILL - GRANULAR]                      |        | 131.58            |       |
|          | 2.50 - 2.70 | B3       |       |              | 2.70              | Trial Pit Terminated at 2.70mbgl Upon Dificult Digging Conditions                                                                                                                                                                                                  |        | 130.58            |       |

|                 |  |                                                                            |           |
|-----------------|--|----------------------------------------------------------------------------|-----------|
| <b>PLAN</b><br> |  | Groundwater: Groundwater Seepage<br><br>Stability: N/A<br><br>Shoring: N/A | Remarks : |
|-----------------|--|----------------------------------------------------------------------------|-----------|

Equipment Used: 8t Tracked Excavator

|  |                                                                                       |                  |                          |                     |                 |                                                    |  |
|--|---------------------------------------------------------------------------------------|------------------|--------------------------|---------------------|-----------------|----------------------------------------------------|--|
|  | Plas Newydd, Llanedi, Pontarddulais<br>SA4 0FO<br>Tel: 01554 744880<br>Fax:<br>email: | Operator:<br>QGL | Logged By:<br>L. Simlett | Sheet No.<br>1 Of 3 | m Per Page<br>4 | All measurements in metres unless otherwise stated |  |
|--|---------------------------------------------------------------------------------------|------------------|--------------------------|---------------------|-----------------|----------------------------------------------------|--|

**Contract : Nant Y Cafn, Seven Sisters**

**Client : iPlan Architecture**

**Trial Pit No.**

**SA04**

Date : 7/21/22

Job Number : Q0867

Ground Level : 133.28 m A.O.D.  
Level to Ordnance Datum

Location : Land Adjacent to Nant Y Cafn

Engineer : Quantum Geotechnic Ltd

Coordinates: 280969.14 E  
207696.57 N  
Co-ordinates to National Grid



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email:

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Sheet No.  
2 Of 3

m Per  
Page

All measurements in  
metres unless  
otherwise stated



**Contract : Nant Y Cafn, Seven Sisters**

**Client : iPlan Architecture**

**Trial Pit No.**

**SA04**

Date : 7/21/22

Job Number : Q0867

Ground Level : 133.28 m A.O.D.  
*Level to Ordnance Datum*

Location : Land Adjacent to Nant Y Cafn

Engineer : Quantum Geotechnic Ltd

Coordinates: 280969.14 E  
207696.57 N  
*Co-ordinates to National Grid*



Plas Newydd, Llanedi, Pontarddulais  
SA4 0FQ  
Tel: 01554 744880  
Fax:  
email:

**Operator:**  
QGL

**Logged By:**  
L. Simlett

**Sheet No.**  
3 Of 3

**m Per**  
**Page**

All measurements in  
metres unless  
otherwise stated



| <b>Contract : Nant Y Cafn, Seven Sisters</b><br><b>Client : iPlan Architecture</b> |             |          |                                                                                       |              |                                                                                                                                                     |                                                                                                                                                                                                                                                                           | <b>Trial Pit No.</b><br><b>SA05</b> |                                  |                                                        |
|------------------------------------------------------------------------------------|-------------|----------|---------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|--------------------------------------------------------|
| Date : 7/21/22<br>Location : Land Adjacent to Nant Y Cafn                          |             |          | Job Number : Q0867<br>Engineer : Quantum Geotechnic Ltd                               |              | Ground Level : 135.26 m A.O.D.<br><i>Level to Ordnance Datum</i><br>Coordinates: 281004.08 E<br>207689.49 N<br><i>Co-ordinates to National Grid</i> |                                                                                                                                                                                                                                                                           |                                     |                                  |                                                        |
| m B.G.L.                                                                           | Samples     |          | Tests                                                                                 |              | Strata                                                                                                                                              |                                                                                                                                                                                                                                                                           |                                     |                                  | WATER                                                  |
|                                                                                    | Depth       | Type No. | Depth                                                                                 | Test Results | Depth (Thickness)                                                                                                                                   | Description                                                                                                                                                                                                                                                               | Legend                              | Red. Level A.O.D.                |                                                        |
| 1                                                                                  | 0.10 - 0.30 | B1       |                                                                                       |              | 0.40                                                                                                                                                | MADE GROUND: Soft brown slightly sandy gravelly CLAY/ SILT. Sand is fine to medium. Gravel is fine to coarse angular to sub-angular mudstone siltstone brick concrete. [RE-WORKED GROUND]                                                                                 |                                     |                                  |                                                        |
|                                                                                    | 0.60 - 1.00 | B2       |                                                                                       |              | 0.40                                                                                                                                                | MADE GROUND: ASPHALTIC CONCRETE. [RELIC ROAD SURFACE]                                                                                                                                                                                                                     |                                     | 134.86                           |                                                        |
|                                                                                    |             |          |                                                                                       |              | 0.10                                                                                                                                                |                                                                                                                                                                                                                                                                           |                                     |                                  |                                                        |
|                                                                                    |             |          |                                                                                       |              | 0.50                                                                                                                                                | MADE GROUND: Brown grey black slightly clayey silty slightly sandy fine to coarse angular mudstone sandstone brick concrete ash GRAVEL with glass ceramic plastic inclusions. Sand is fine to coarse. [RE-WORKED GROUND]                                                  |                                     | 134.76                           |                                                        |
|                                                                                    |             |          |                                                                                       |              | 0.50                                                                                                                                                |                                                                                                                                                                                                                                                                           |                                     |                                  |                                                        |
|                                                                                    | 1.20 - 1.50 | B3       |                                                                                       |              | 1.00                                                                                                                                                | Stiff orange brown mottled grey slightly silty slightly sandy gravelly CLAY with low sub-rounded siltstone sandstone cobble content. Sand is fine to medium. Gravel is fine to coarse angular to sub-angular mudstone siltstone sandstone coal. [GLACIAL TILL - COHESIVE] |                                     | 134.26                           |                                                        |
| 2                                                                                  |             |          |                                                                                       |              | 1.10                                                                                                                                                | - At 2.00mbgl fine gravel protrusion from the side of the pit exposing existing 10" Land Drain.                                                                                                                                                                           |                                     |                                  |                                                        |
|                                                                                    |             |          |                                                                                       |              | 2.10                                                                                                                                                | Trial Pit Terminated at 2.10mbgl Upon Existing Land Drain                                                                                                                                                                                                                 | 133.16                              |                                  |                                                        |
| <b>PLAN</b><br>                                                                    |             |          | Groundwater: No Groundwater Strike<br><br>Stability: N/A<br><br>Shoring: N/A          |              |                                                                                                                                                     | Remarks :                                                                                                                                                                                                                                                                 |                                     |                                  |                                                        |
| Equipment Used: 8t Tracked Excavator                                               |             |          |                                                                                       |              |                                                                                                                                                     |                                                                                                                                                                                                                                                                           |                                     |                                  |                                                        |
|                                                                                    |             |          | Plas Newydd, Llanedi, Pontarddulais<br>SA4 0FO<br>Tel: 01554 744880<br>Fax:<br>email: |              |                                                                                                                                                     | Operator: QGL<br>Logged By: L. Simlett                                                                                                                                                                                                                                    |                                     | Sheet No. 1 Of 3<br>m Per Page 4 | All measurements in metres unless otherwise stated<br> |

|                                                                                    |                                                         |                                                                  |                                                                                 |
|------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <b>Contract : Nant Y Cafn, Seven Sisters</b><br><b>Client : iPlan Architecture</b> |                                                         | <b>Trial Pit No.</b><br><b>SA05</b>                              |                                                                                 |
| Date : 7/21/22<br>Location : Land Adjacent to Nant Y Cafn                          | Job Number : Q0867<br>Engineer : Quantum Geotechnic Ltd | Ground Level : 135.26 m A.O.D.<br><i>Level to Ordnance Datum</i> | Coordinates: 281004.08 E<br>207689.49 N<br><i>Co-ordinates to National Grid</i> |



|                                                                                    |                                                                                        |                         |                                 |                            |                   |                                                    |                                                                                       |
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|  | Plas Newydd, Llaneddi, Pontarddulais<br>SA4 0FO<br>Tel: 01554 744880<br>Fax:<br>email: | <b>Operator:</b><br>QGL | <b>Logged By:</b><br>L. Simlett | <b>Sheet No.</b><br>2 Of 3 | <b>m Per Page</b> | All measurements in metres unless otherwise stated |  |
|                                                                                    |                                                                                        |                         |                                 |                            |                   |                                                    |                                                                                       |

**Contract : Nant Y Cafn, Seven Sisters**

**Client : iPlan Architecture**

**Trial Pit No.**

**SA05**

Date : 7/21/22

Job Number : Q0867

Ground Level : 135.26 m A.O.D.  
*Level to Ordnance Datum*

Location : Land Adjacent to Nant Y Cafn

Engineer : Quantum Geotechnic Ltd

Coordinates: 281004.08 E  
207689.49 N  
*Co-ordinates to National Grid*



Plas Newydd, Llanedi, Pontarddulais  
SA4 0FQ  
Tel: 01554 744880  
Fax:  
email:

Operator:  
QGL

Logged By:  
L. Simlett

Sheet No.  
3 Of 3

m Per  
Page

All measurements in  
metres unless  
otherwise stated



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## APPENDIX III – SOAKAWAY TEST RESULTS

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## APPENDIX IV – GEOTECHNICAL TESTING RESULTS

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# Laboratory Report



## Contract Number: 60698

Client Ref: **Q0867**

Client PO:

Date Received: **03-08-2022**

Date Completed: **19-08-2022**

Report Date: **19-08-2022**

Client: **Quantum Geotechnic Ltd**  
**13A Bishops Court Gardens**  
**Bishops Court Lane**  
**Clyst St Mary**  
**Exeter**  
**EX5 1DH**

Contract Title: **Nant Y Cafn, Seven Sisters**

For the attention of: **Arwel Jones**

| Test Description                                                                        | Qty |
|-----------------------------------------------------------------------------------------|-----|
| <b>Samples Received</b><br>- @ Non Accredited Test                                      | 15  |
| <b>Moisture Content of Soil</b><br>BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS         | 8   |
| <b>4 Point Liquid &amp; Plastic Limit</b><br>BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS | 8   |
| <b>Water Soluble Sulphate 2:1 extract</b><br>Sub-contracted Test                        | 8   |
| <b>pH value of soil</b><br>Sub-contracted Test                                          | 8   |
| <b>Disposal of samples for job</b>                                                      | 1   |

Notes: **Observations and Interpretations are outside the UKAS Accreditation**

\* - denotes test included in laboratory scope of accreditation

# - denotes test carried out by approved contractor

@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

#### Approved Signatories:

Brendan Evans (Office Administrator) - Emma Sharp (Business Support Manager) - Paul Evans (Director)

Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)

Wayne Honey (Human Resources/ Health and Safety Coordinator)

GEO Site & Testing Services Ltd

Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN

Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

[illegible]



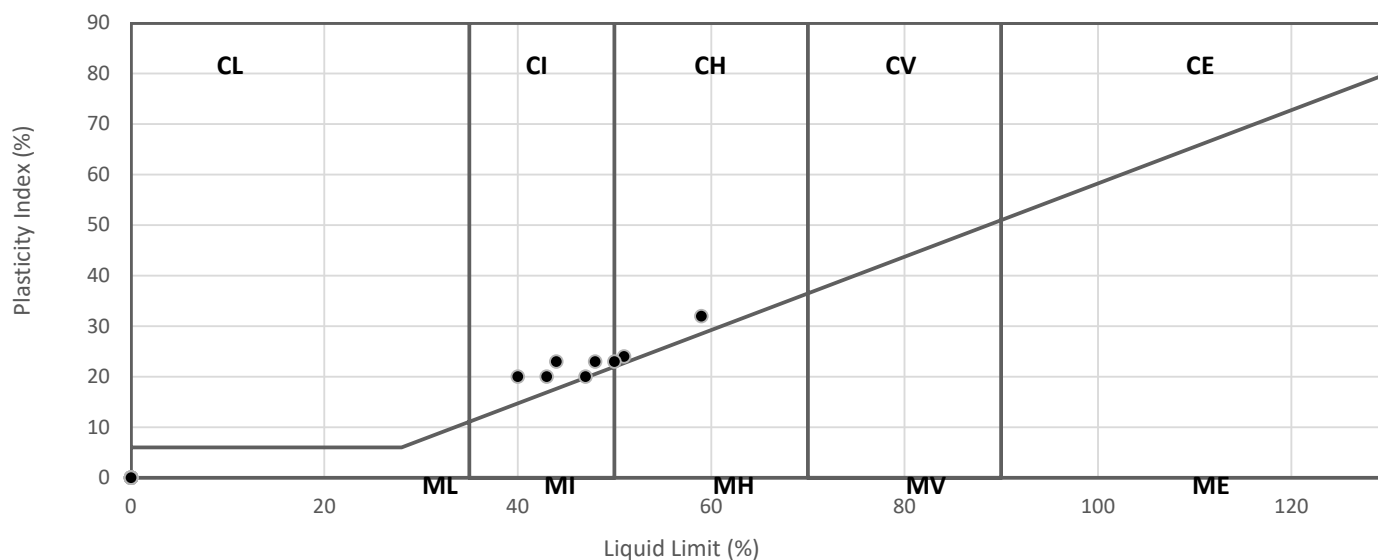
**NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND  
PLASTICITY INDEX  
( BS 1377:1990 - Part 2 : 4.3 & 5.3 )**

|                  |                            |  |
|------------------|----------------------------|--|
| Contract Number  | 60698                      |  |
| Project Location | Nant Y Cafn, Seven Sisters |  |
| Date Tested      | 17/08/2022                 |  |
|                  |                            |  |

[illegible]

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

### PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION BS 5930:1999+A2:2010



|                 |
|-----------------|
| Operators       |
| Darcy Etheridge |



## ANALYTICAL TEST REPORT

Contract no: 112279

Contract name: Nant Y Cafn, Seven Sisters

Client reference: Q0867

Clients name: Geo Site & Testing Services

Clients address: Unit 3 and 4 Heol Aur  
Dafen Industrial Estate, Dafen  
Llanelli, Carmarthenshire  
SA14 8QN

Samples received: 05 August 2022

Analysis started: 05 August 2022

Analysis completed: 10 August 2022

Report issued: 10 August 2022

Key

|     |                                               |
|-----|-----------------------------------------------|
| U   | UKAS accredited test                          |
| M   | MCERTS & UKAS accredited test                 |
| \$  | Test carried out by an approved subcontractor |
| I/S | Insufficient sample to carry out test         |
| N/S | Sample not suitable for testing               |

Approved by:

Rachael Burton

Reporting Team Lead

# Chemtech Environmental Limited

## SOILS

|                              |                    |                      |           |           |           |           |           |           |
|------------------------------|--------------------|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Lab number                   |                    |                      | 112279-1  | 112279-2  | 112279-3  | 112279-4  | 112279-5  | 112279-6  |
| Sample id                    |                    |                      | SA01      | SA01      | SA02      | SA03      | SA04      | SA05      |
| Depth (m)                    |                    |                      | 0.20-0.50 | 1.00-1.50 | 1.00-1.50 | 0.10-0.30 | 0.10-0.30 | 0.10-0.30 |
| Sample Type                  |                    |                      | B1        | B2        | B2        | B2        | B2        | B1        |
| Date sampled                 |                    |                      | -         | -         | -         | -         | -         | -         |
| Test                         | Method             | Units                |           |           |           |           |           |           |
| pH                           | CE004 <sup>u</sup> | units                | 8.0       | 5.7       | 5.8       | 6.4       | 5.6       | 6.6       |
| Sulphate (2:1 water soluble) | CE061 <sup>u</sup> | mg/l SO <sub>4</sub> | 120       | 35        | 14        | 15        | 23        | 22        |

# Chemtech Environmental Limited

## SOILS

|                              |                    |                      |           |           |
|------------------------------|--------------------|----------------------|-----------|-----------|
| Lab number                   |                    |                      | 112279-7  | 112279-8  |
| Sample id                    |                    |                      | SA05      | SA05      |
| Depth (m)                    |                    |                      | 0.60-1.00 | 1.20-1.50 |
| Sample Type                  |                    |                      | B2        | B3        |
| Date sampled                 |                    |                      | -         | -         |
| Test                         | Method             | Units                |           |           |
| pH                           | CE004 <sup>U</sup> | units                | 6.8       | 6.2       |
| Sulphate (2:1 water soluble) | CE061 <sup>U</sup> | mg/l SO <sub>4</sub> | 100       | 32        |

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## METHOD DETAILS

| METHOD | SOILS                        | METHOD SUMMARY              | SAMPLE      | STATUS | LOD | UNITS                |
|--------|------------------------------|-----------------------------|-------------|--------|-----|----------------------|
| CE004  | pH                           | Based on BS 1377, pH Meter  | As received | U      | -   | units                |
| CE061  | Sulphate (2:1 water soluble) | Aqueous extraction, ICP-OES | Dry         | U      | 10  | mg/l SO <sub>4</sub> |

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

|     |                                                 |
|-----|-------------------------------------------------|
| N   | No (not deviating sample)                       |
| Y   | Yes (deviating sample)                          |
| NSD | Sampling date not provided                      |
| NST | Sampling time not provided (waters only)        |
| EHT | Sample exceeded holding time(s)                 |
| IC  | Sample not received in appropriate containers   |
| HP  | Headspace present in sample container           |
| NCF | Sample not chemically fixed (where appropriate) |
| OR  | Other (specify)                                 |

| Lab ref  | Sample id | Depth (m) | Deviating | Tests (Reason for deviation) |
|----------|-----------|-----------|-----------|------------------------------|
| 112279-1 | SA01      | 0.20-0.50 | Y         | All (NSD)                    |
| 112279-2 | SA01      | 1.00-1.50 | Y         | All (NSD)                    |
| 112279-3 | SA02      | 1.00-1.50 | Y         | All (NSD)                    |
| 112279-4 | SA03      | 0.10-0.30 | Y         | All (NSD)                    |
| 112279-5 | SA04      | 0.10-0.30 | Y         | All (NSD)                    |
| 112279-6 | SA05      | 0.10-0.30 | Y         | All (NSD)                    |
| 112279-7 | SA05      | 0.60-1.00 | Y         | All (NSD)                    |
| 112279-8 | SA05      | 1.20-1.50 | Y         | All (NSD)                    |

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## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.