



# Drainage Philosophy

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21T2034 – Cleator Moor Innovation Quarter – Hub Building  
CMIQ-BGP-05-XX-RP-C-DP005

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## Drainage Philosophy

Project: Cleator Moor Innovation Quarter – Hub Building

Client: Copeland Borough Council

LLFA: Cumbria County Council

BGP Job No: 21T2034

### Document Checking:

Prepared By: J Herbert – Design Engineer

Checked By: J Conway – Director

| Issue | Date       | Status   | Checked for Issue |
|-------|------------|----------|-------------------|
| 001   | 23/03/2022 | Planning | JC                |

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## 1. Executive Summary / Project Background

- 1.1. This Drainage Philosophy has been prepared to supplement the Proposed Drainage Scheme for planning for the proposed development on land off Leconfield Street, Cleator Moor. See Appendix A for the site location plan.
- 1.2. The proposals are to construct a new hub building with associated car parking on the brownfield site that was previously used as a storage yard. The Hub will be a community space that brings together different uses to create natural meeting opportunities for people across the wider site. Uses may potentially include café-bar, lecture theatre, offices and development workshop spaces.
- 1.3. United Utilities (UU) records have been obtained and the Cumbria SuDS Design Guidance has been followed.
- 1.4. A hierarchy for the appropriate disposal of surface water is included within Building Regulations Part H3 which states the following:

*"Rainwater from a system provided ... shall discharge to one of the following, listed in order of priority:*

- 1) *An adequate soakaway or some other adequate infiltration system; or, where this is not reasonably practicable,*
  - 2) *A watercourse; or, where that is not reasonably practicable,*
  - 3) *A surface water sewer.*
  - 4) *A combined sewer.*
- 1.5. The following Drainage Philosophy addresses each element of the above hierarchy and details how the surface water and foul water will be discharged from site.
  - 1.6. BGP have prepared this report based on the current information available. This report is subject to change should new information be presented.



## 2. Existing Site & Drainage

### 2.1. Site Location

- 2.1.1 Site Name: Leconfield Industrial Estate
- 2.1.2 Site Address: Land off Leconfield Street, Cleator Moor
- 2.1.3 OS Grid Reference: E: 301842, N: 515530
- 2.1.4 National Grid Reference: NY018155

### 2.2. Site Description

- 2.2.1 Site Area: 1.785 Ha
- 2.2.2 Site Area to be developed: 1.2125 Ha
- 2.2.3 Existing Land Use: Storage Yard
- 2.2.4 Proposed Land Use: Hub Building and Car parking
- 2.2.5 Local Planning Authority: Copeland Borough Council
- 2.2.6 Sewer Undertaker: United Utilities (UU)
- 2.2.7 At approximately 1.785 Ha in size the Brownfield site is located approximately 5.15km southeast of Whitehaven and approximately 18km southwest of Cockermouth. The site currently comprises existing service yards, old building footprints and part soft landscaping. The site is bound by woodland and grass to the northern, eastern and southern boundary, existing industrial buildings and demolished building footprints to the west.

### 2.3. Site Levels

- 2.3.1 A topographical survey was carried out by White Young Green in November 2019. This can be viewed in Appendix C.
- 2.3.2 The site is relatively flat at an approximate level of between 83.1m and 82.9m AOD, falls existing within the existing adjacent storage yard to provide drainage falls to gullies.

### 2.4. Existing Watercourses

- 2.4.1 The nearest named watercourse is Nor Beck, which where open is located 50m north of the site. Through CCTV investigation it is evident that it is culverted at a point northeast of site and runs southeast into Leconfield Industrial Estate and through to Leconfield Street. Nor Beck culvert continues southeast through Norbeck Park and adjacent fields ultimately converging with the River Keekle.
- 2.4.2 There are no other named or unnamed watercourses within close proximity to site.

## **2.5. Existing Public and Private Drainage**

- 2.5.1 See Appendix D for locations of existing United Utilities public drains.
- 2.5.2 Several United Utilities combined drains and manholes are located toward to primary access of Leconfield Industrial Estate. The 225-300mm diameter combined sewers drain from southeast to northwest along Leconfield Street in keeping with the topography of the highway.
- 2.5.3 A United Utilities 675mm diameter combined sewer is located just beyond the north western boundary, which drains southwest.
- 2.5.4 The site is currently served by wastewater systems through an existing network of separate private sewers. The surface water run off from the site currently discharges to the culverted Nor Beck watercourse as mentioned previously. The foul water flows from the site currently discharge to the existing 675mm diameter United Utilities sewer located to the northwest of site.

## **2.6. Existing Ground Conditions**

- 2.6.1 A 'Phase 2 Site Investigation' have been carried out by Solmek dated March 2022. (Report No. S220141).
- 2.6.2 The Phase 2 Site Investigation reveals that made ground was relatively uniform across the site and was only penetrated within the boreholes, proven to a minimum depth of 1.30mbgl (BH06) and a maximum depth of 10.20mbgl (BH03). The made ground consisted of a variable surface covering generally of topsoil but locally comprising concrete or tarmac. This was then generally underlain by slag, initially in a granular form locally mixed with other granular materials (ash, brick, sandstone, clinker). This was in turn underlain by a fused slag which the excavator was unable to excavate through. Standard Penetration Tests within the slag each yielded N values of 50+ (refusal).
- 2.6.3 Perched groundwater was noted within TP06 at 0.40mbgl with groundwater strikes noted within the boreholes between 4.70 and 17.10mbgl.

## **2.7. Existing Flood Risk Assessment**

- 2.6.1 A site-specific 'Flood Risk Assessment' (21T2034 – Flood Risk Assessment 005 March 2022) has been carried out by Billinghurst George & Partners and is to be provided separately to support this planning application.
- 2.6.2 The report states that the site is within Flood Zone 1 and is at low risk of flooding from all sources of flood risk post development. Therefore, the proposed site is suitable for 'Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in "more vulnerable", and assembly and leisure' in accordance with the National Planning Policy Framework.
- 2.6.3 See Appendix H for Flood Maps for planning.

### 3. Proposed Site Description

#### 3.1. Development Proposals

- 3.1.1. The proposals are to construct a new hub building with associated car parking on the brownfield site that was previously used as a storage yard. The Hub will be a community space that brings together different uses to create natural meeting opportunities for people across the wider site. Uses may potentially include café-bar, lecture theatre, offices and development workshop spaces.
- 3.1.2. The proposed site layout within Appendix B shows the extents of the building and car parking. The car parking and building will be accessible via existing Leconfield Industrial Estate access road.

## 4. Review of Surface Water Discharge Hierarchy

### 4.1. Existing Drainage Regime

- 4.1.1. Several United Utilities combined drains and manholes are located toward to primary access of Leconfield Industrial Estate. The 225-300mm diameter combined sewers drain from southeast to northwest along Leconfield Street in keeping with the topography of the highway.
- 4.1.2. A United Utilities 600mm diameter combined sewer is located just beyond the north western boundary, which drains southwest.
- 4.1.3. The site is currently served by wastewater systems through an existing network of separate private sewers. The surface water run off from the site currently discharges to the culverted Nor Beck watercourse as mentioned previously. The foul water flows from the site currently discharge to the existing 675mm diameter United Utilities sewer located to the northwest of site.

### 4.2. Current Guidelines

- 4.2.1. In accordance with Building Regulations and NPPF the disposal of surface water has been considered in the following order of priority; discharge to ground, where not reasonably practicable, a watercourse, or where not reasonably practicable a sewer.

### 4.3. Discharge to Ground

- 4.3.1. Discharge of the surface water to ground via infiltration is suited to sites which have ground conditions made up of gravel, sand or a mixture of the two. Sands and gravels permit rapid dispersion and infiltration of surface water which is necessary to ensure that overland flooding does not occur during intense rainfall periods.
- 4.3.2. A 'Phase 2 Site Investigation' have been carried out by Solmek dated March 2022. (Report No. S220141).
- 4.3.3. The Phase 2 Site Investigation reveals that made ground was relatively uniform across the site and was only penetrated within the boreholes, proven to a minimum depth of 1.30mbgl (BH06) and a maximum depth of 10.20mbgl (BH03). The made ground consisted of a variable surface covering generally of topsoil but locally comprising concrete or tarmac. This was then generally underlain by slag, initially in a granular form locally mixed with other granular materials (ash, brick, sandstone, clinker). This was in turn underlain by a fused slag which the excavator was unable to excavate through. Standard Penetration Tests within the slag each yielded N values of 50+ (refusal).
- 4.3.4. Perched groundwater was noted within TP06 at 0.40mbgl with groundwater strikes noted within the boreholes between 4.70 and 17.10mbgl.
- 4.3.5. Infiltration testing was carried out within TP01 and TP03, the results of which are unavailable. In terms of the new hub development area it is anticipated that given the ground conditions infiltration rates returned would be poor.
- 4.3.6. It is anticipated that given the ground conditions infiltration rates returned would be poor.
- 4.3.7. Due to the above findings it is confirmed that it would not be feasible to discharge the sites surface water to the ground via infiltration.

#### **4.4. Discharge to a Watercourse**

- 4.4.1. The nearest named watercourse is Nor Beck, which where open is located 50m north of the site. Through CCTV investigation it is evident that it is culverted at a point northwest of site and runs southwest into Leconfield Industrial Estate and through to Leconfield Street. Nor Beck culvert continues southwest through Norbeck Park and adjacent fields ultimately converging with the River Keekle.
- 4.4.2. The watercourse is within close proximity to the site and accessible via an existing connection therefore, as per the hierarchy within Building Regulations Part H3, it is deemed necessary to discharge the surface water to a nearby watercourse.

#### **4.5. Discharge to a Surface Water Sewer**

- 4.5.1. Not required as discharging to watercourse.

#### **4.6. Discharge to a Combined Sewer**

- 4.6.1. Not required as discharging to watercourse.

## 5. Proposed Surface Water Drainage Strategy

- 5.1.1. It is expected that surface water discharge rates will be restricted to as close to Brownfield rates as per the Cumbria County Council SuDS Adoption Guidance for Major Developments.
- 5.1.2. The proposed Hub building and car parking forms part of a wider plan to re-develop the Leconfield Industrial Estate. A Brownfield discharge rate has been calculated for the re-developed area the new hub and car parking is within and is determined as 127.4 l/s. The Brownfield run off rate allocated for the proposed hub and car parking is **42.4 l/s**, this leaves 85.0 l/s for the next phase of works which is covered under a separate planning application.
- 5.1.3. See Appendix F for the Proposed Drainage Philosophy Plans and Impermeable areas.
- 5.1.4. The new hub building proposes to discharge surface water flows to the Nor Beck culverted watercourse via an existing connection which passes through the wider Leconfield site. Surface water flows are to be restricted to a brownfield run off rate of 42.4 l/s, this rate is to be agreed with the Lead Local Flood Authority and Environment Agency.
- 5.1.5. The attenuation is to provide storage for approximately 165m<sup>3</sup>, this volume is based on the total impermeable surface area and restricted discharge rate of 42.4 l/s. It is proposed that volumes will be stored within a 1.5m deep attenuation tank.
- 5.1.6. The proposed site (within Appendix B) has no available space to incorporate open SuDS features such as basins or ponds.
- 5.1.7. Due to the absence of green open available space onsite it is deemed a suitable solution to provide the attenuation volume to retain the 1 in 100 year + 40% climate change flood event below ground within an attenuation tank.
- 5.1.8. The surface water system consists of a network of pipes which are located throughout the service yard. The network will drain via gravity to the pumping station located adjacent the new car park, surface water will back up and utilise the attenuation structure when storm events exceeds the 42.4 l/s discharge rate noted above. The final connection to Nor Beck watercourse will be made indirectly through existing surface water sewers via gravity.
- 5.1.9. The Microdrainage Calculations for the attenuation volumes are included within Appendix E.
- 5.1.10. It is recommended that permeable paving be utilised within the car parking to treat all surface water flows from this area.
- 5.1.11. The proposed surface water system has been designed in line with good practice which ensures each are separate from the foul.
- 5.1.12. The above surface water discharge rate is to be agreed with the Lead Local Flood Authority and the Environment Agency.

## 6. Proposed Foul Water Drainage Strategy

- 6.1. See Appendix F for the 'Proposed Drainage Philosophy Drawings'.
- 6.2. The proposed foul drainage will remain private within site. The foul sewers are to drain via gravity to the foul water pumping station adjacent the car park. The pumped rising main beyond is to connect into an existing private foul water sewer. Thereafter the existing private sewer drains northwest ultimately discharging into the existing United Utilities 675mm diameter combined sewer.
- 6.3. The foul water connection location has been agreed with United Utilities through return of a pre-development enquiry, see Appendix I for details. The foul water discharge rate of the pumping station is to be determined through detailed design stage.

## 7. Conclusion

- 7.1. It is not possible or practicable to discharge the surface water to the ground via infiltration. Therefore, as per the hierarchy within Building Regulations Part H3, it is deemed necessary to discharge the surface water to a watercourse.
- 7.2. The proposals are to construct a hub building with associated car parking on the brownfield site that was previously used for industrial purposes.
- 7.3. Underground attenuation volume is sufficient to provide storage for rainfall events up to and including the 1 in 100 year + 40% climate change.
- 7.4. A proposed drainage scheme has been included within Appendix F, with supporting calculations provided within Appendix E.
- 7.5. This statement has been prepared with reference to the information available at the time of writing. The details of the report may be revised upon receipt of additional or further information.

Report No: CMIQ-BGP-05-XX-RP-C-DP005

Report Title: Drainage Philosophy – Cleator Moor Innovation Quarter – Hub Building

James Herbert – Design Engineer

Date: 23/03/2022

Jim Conway – Director

Date: 23/03/2022

For and on behalf of Billinghurst George & Partners





## Appendix A

### Site Location Plan





- DO NOT SCALE -



|                                                                                                                                                                                                                                                  |     |     |     |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|------------|
| Issued for Planning                                                                                                                                                                                                                              | JJH | P01 | JC  | 23.03.2022 |
| AMENDMENT                                                                                                                                                                                                                                        | BY  | REV | CHK | DATE       |
| Rev P = Preliminary T = Tender C = Construction LCI = Last Construction Issue                                                                                                                                                                    |     |     |     |            |
| In instances where this drawing completes or partly completes a contract, Billingham George & Partners will consider that it's product has been validated, unless in a period not exceeding 90 working days, the client advises to the contrary. |     |     |     |            |

|                                                         |                               |                                                         |                           |                      |                           |                   |                        |                            |                    |
|---------------------------------------------------------|-------------------------------|---------------------------------------------------------|---------------------------|----------------------|---------------------------|-------------------|------------------------|----------------------------|--------------------|
| <b>Client</b><br>Copeland Borough Council               |                               | <b>Drawn</b><br>JJH                                     | <b>Date</b><br>March 2022 | <b>Checked</b><br>JC | <b>Date</b><br>March 2022 | <b>Size</b><br>A3 | <b>Scale</b><br>1:5000 | <b>Class.</b><br>90.4      | <b>Rev.</b><br>P01 |
| <b>Project</b><br>Cleator Moor Innovation Quarter - Hub | <b>Project No.</b><br>21T2034 | <b>Location</b><br>CMIQ                                 | <b>Originator</b><br>BGP  | <b>Volume</b><br>05  | <b>Level</b><br>XX        | <b>Type</b><br>DR | <b>Role</b><br>C       | <b>Unique No.</b><br>05100 |                    |
| <b>Drawing Title</b><br>Site Location Plan              |                               | <b>File Reference</b><br>CMIQ-BGP-05-XX-DR-C-90.4-05100 |                           |                      |                           |                   |                        |                            |                    |



## Billingham George & Partners

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## Appendix B

### Proposed Site Layout









## Appendix C

### Topographical Survey





## Appendix D

### United Utilities Sewer Records





Water for the North West

## SEWER RECORDS

### Address or Site Reference

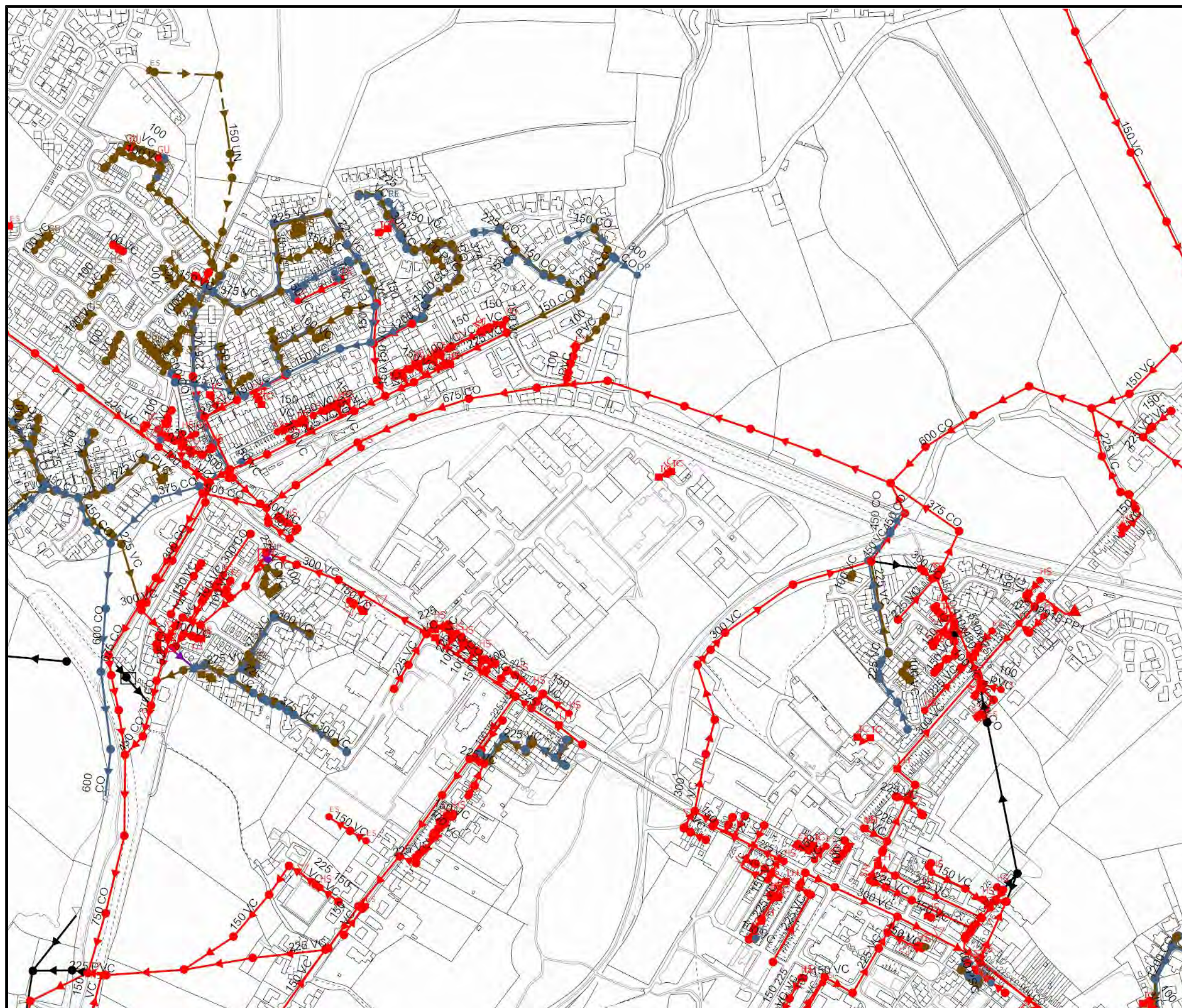
CAPITAL ALUMINIUM  
EXTRUSIONS LTD LECONFIELD  
INDUSTRIAL ESTATE,  
CLEATOR MOOR,  
CA25 5QB

**Scale:** 1:5000  
**Date:** 21/09/2021

**Printed by:** Property Searches

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

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## Appendix E

### Microdrainage Calculations



|                                                                                  |                                               |                                                                                     |
|----------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|
| BGP                                                                              |                                               | Page 1                                                                              |
| Wellington House, Wellington Court<br>Preston Farm<br>Stockton on Tees, TS18 3TA | Cumbria Innovation Quarter<br>SW Model<br>Hub |  |
| Date 17/03/2022 08:25<br>File 2022.03.15 - SW MODEL - HUB.MDX                    | Designed by JJH<br>Checked by JC              |                                                                                     |
| XP Solutions                                                                     | Network 2020.1.3                              |                                                                                     |

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

|                                        |        |                                       |       |
|----------------------------------------|--------|---------------------------------------|-------|
| FSR Rainfall Model - England and Wales |        |                                       |       |
| Return Period (years)                  | 100    | PIMP (%)                              | 100   |
| M5-60 (mm)                             | 16.000 | Add Flow / Climate Change (%)         | 0     |
| Ratio R                                | 0.258  | Minimum Backdrop Height (m)           | 0.200 |
| Maximum Rainfall (mm/hr)               | 150    | Maximum Backdrop Height (m)           | 1.500 |
| Maximum Time of Concentration (mins)   | 30     | Min Design Depth for Optimisation (m) | 1.200 |
| Foul Sewage (l/s/ha)                   | 0.000  | Min Vel for Auto Design only (m/s)    | 1.00  |
| Volumetric Runoff Coeff.               | 0.750  | Min Slope for Optimisation (1:X)      | 500   |

Designed with Level Soffits

Time Area Diagram for Storm

| Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) |
|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|
| 0-4            | 0.000        | 4-8            | 0.000        | 8-12           | 0.000        | 12-16          | 0.073        | 16-20          | 0.613        | 20-24          | 0.031        |

Total Area Contributing (ha) = 0.718

Total Pipe Volume (m³) = 31.641

Network Design Table for Storm

« - Indicates pipe capacity < flow

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 1.000 | 67.326        | 0.960       | 70.1           | 0.139          | 4.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| 1.001 | 28.067        | 0.280       | 100.2          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| 1.002 | 38.579        | 0.385       | 100.2          | 0.069          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |  |
| 1.003 | 54.162        | 0.915       | 59.2           | 0.169          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.004 | 27.039        | 0.180       | 150.2          | 0.031          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |  |

Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 1.000 | 102.92          | 4.72           | 81.625       | 0.139            | 0.0                  | 0.0           | 0.0               | 1.56         | 62.2         | 38.7          |
| 1.001 | 100.55          | 5.08           | 80.665       | 0.139            | 0.0                  | 0.0           | 0.0               | 1.31         | 51.9         | 38.7          |
| 1.002 | 98.01           | 5.49           | 80.310       | 0.208            | 0.0                  | 0.0           | 0.0               | 1.57         | 111.0        | 55.2          |
| 1.003 | 95.79           | 5.87           | 79.850       | 0.377            | 0.0                  | 0.0           | 0.0               | 2.36         | 260.5        | 97.8          |
| 1.004 | 94.43           | 6.11           | 78.785       | 0.408            | 0.0                  | 0.0           | 0.0               | 1.83         | 395.1        | 104.3         |

|                                                                                  |                                               |                                                                                     |
|----------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|
| BGP                                                                              |                                               | Page 2                                                                              |
| Wellington House, Wellington Court<br>Preston Farm<br>Stockton on Tees, TS18 3TA | Cumbria Innovation Quarter<br>SW Model<br>Hub |  |
| Date 17/03/2022 08:25                                                            | Designed by JJH                               |                                                                                     |
| File 2022.03.15 - SW MODEL - HUB.MDX                                             | Checked by JC                                 |                                                                                     |
| XP Solutions                                                                     | Network 2020.1.3                              |                                                                                     |

Network Design Table for Storm

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                      |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|-------------------------------------------------------------------------------------|
| 2.000 | 58.192        | 0.970       | 60.0           | 0.130          | 4.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| 2.001 | 56.798        | 0.455       | 124.8          | 0.113          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |  |
| 3.000 | 19.234        | 0.225       | 85.5           | 0.027          | 4.00           | 0.0                | 0.600     | o           | 150         | Pipe/Conduit |  |
| 2.002 | 20.183        | 0.160       | 126.1          | 0.040          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |  |
| 2.003 | 17.117        | 1.135       | 15.1           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |  |
| 1.005 | 11.798        | 0.080       | 147.5          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |  |
| 1.006 | 80.727        | -2.090      | -38.6          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 150         | Pipe/Conduit |  |

Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 2.000 | 103.92          | 4.57           | 81.625       | 0.130            | 0.0                  | 0.0           | 0.0               | 1.69         | 67.3         | 36.6          |
| 2.001 | 99.47           | 5.25           | 80.580       | 0.243            | 0.0                  | 0.0           | 0.0               | 1.41         | 99.4         | 65.5          |
| 3.000 | 105.94          | 4.29           | 81.550       | 0.027            | 0.0                  | 0.0           | 0.0               | 1.09         | 19.2         | 7.7           |
| 2.002 | 98.00           | 5.49           | 80.125       | 0.310            | 0.0                  | 0.0           | 0.0               | 1.40         | 98.9         | 82.3          |
| 2.003 | 97.58           | 5.56           | 79.965       | 0.310            | 0.0                  | 0.0           | 0.0               | 4.07         | 287.6        | 82.3          |
| 1.005 | 93.86           | 6.22           | 78.605       | 0.718            | 0.0                  | 0.0           | 0.0               | 1.84         | 398.8        | 182.5         |
| 1.006 | 56.72           | 20.74          | 78.525       | 0.718            | 0.0                  | 0.0           | 0.0               | 0.09         | 1.6«         | 182.5         |



Manhole Schedules for Storm

| MH Name | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | Pipe Out PN | Pipe Out Invert Level (m) | Pipe Out Diameter (mm) | Pipes In PN | Pipes In Invert Level (m) | Pipes In Diameter (mm) | Backdrop (mm) |
|---------|-----------|--------------|---------------|--------------------|-------------|---------------------------|------------------------|-------------|---------------------------|------------------------|---------------|
| S1      | 83.050    | 1.425        | Open Manhole  | 1200               | 1.000       | 81.625                    | 225                    |             |                           |                        |               |
| S2      | 83.050    | 2.385        | Open Manhole  | 1200               | 1.001       | 80.665                    | 225                    | 1.000       | 80.665                    | 225                    |               |
| S3      | 83.050    | 2.740        | Open Manhole  | 1200               | 1.002       | 80.310                    | 300                    | 1.001       | 80.385                    | 225                    |               |
| S4      | 83.050    | 3.200        | Open Manhole  | 1350               | 1.003       | 79.850                    | 375                    | 1.002       | 79.925                    | 300                    |               |
| S5      | 83.050    | 4.265        | Open Manhole  | 1500               | 1.004       | 78.785                    | 525                    | 1.003       | 78.935                    | 375                    |               |
| S9      | 83.050    | 1.425        | Open Manhole  | 1500               | 2.000       | 81.625                    | 225                    |             |                           |                        |               |
| S10     | 83.050    | 2.470        | Open Manhole  | 1200               | 2.001       | 80.580                    | 300                    | 2.000       | 80.655                    | 225                    |               |
| S13     | 83.050    | 1.500        | Open Manhole  | 1200               | 3.000       | 81.550                    | 150                    |             |                           |                        |               |
| S11     | 83.050    | 2.925        | Open Manhole  | 1200               | 2.002       | 80.125                    | 300                    | 2.001       | 80.125                    | 300                    |               |
|         |           |              |               |                    |             |                           |                        | 3.000       | 81.325                    | 150                    | 1050          |
| S12     | 83.050    | 3.085        | Open Manhole  | 1200               | 2.003       | 79.965                    | 300                    | 2.002       | 79.965                    | 300                    |               |
| S6      | 83.050    | 4.445        | Open Manhole  | 1500               | 1.005       | 78.605                    | 525                    | 1.004       | 78.605                    | 525                    |               |
|         |           |              |               |                    |             |                           |                        | 2.003       | 78.830                    | 300                    |               |
| S7      | 82.850    | 4.325        | Open Manhole  | 2100               | 1.006       | 78.525                    | 150                    | 1.005       | 78.525                    | 525                    |               |
| S8      | 83.050    | 2.435        | Open Manhole  | 2100               |             | OUTFALL                   |                        | 1.006       | 80.615                    | 150                    |               |

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North) |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|----------------|
| S1      | 301881.792          | 515520.351           | 301881.792               | 515520.351                | Required       |                |
| S2      | 301826.308          | 515482.215           | 301826.308               | 515482.215                | Required       |                |
| S3      | 301806.473          | 515502.073           | 301806.473               | 515502.073                | Required       |                |
| S4      | 301778.889          | 515475.102           | 301778.889               | 515475.102                | Required       |                |
| S5      | 301741.025          | 515513.830           | 301741.025               | 515513.830                | Required       |                |
| S9      | 301879.337          | 515545.295           | 301879.337               | 515545.295                | Required       |                |
| S10     | 301826.840          | 515570.402           | 301826.840               | 515570.402                | Required       |                |

## Manhole Schedules for Storm

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                        |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|---------------------------------------------------------------------------------------|
| S13     | 301797.692          | 515514.472           | 301797.692               | 515514.472                | Required       |    |
| S11     | 301786.678          | 515530.240           | 301786.678               | 515530.240                | Required       |    |
| S12     | 301772.597          | 515544.700           | 301772.597               | 515544.700                | Required       |    |
| S6      | 301760.358          | 515532.733           | 301760.358               | 515532.733                | Required       |    |
| S7      | 301752.110          | 515541.169           | 301752.110               | 515541.169                | Required       |    |
| S8      | 301748.373          | 515621.809           |                          |                           | No Entry       |  |

### Free Flowing Outfall Details for Storm

| Outfall<br>Pipe Number | Outfall<br>Name | C. Level<br>(m) | I. Level<br>(m) | Min<br>I. Level<br>(m) | D,L<br>(mm) | W<br>(mm) |
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|

|       |    |        |        |       |      |   |
|-------|----|--------|--------|-------|------|---|
| 1.006 | S8 | 83.050 | 80.615 | 0.000 | 2100 | 0 |
|-------|----|--------|--------|-------|------|---|

## Simulation Criteria for Storm

|                                 |       |                                     |       |
|---------------------------------|-------|-------------------------------------|-------|
| Volumetric Runoff Coeff         | 1.000 | Additional Flow - % of Total Flow   | 0.000 |
| Areal Reduction Factor          | 1.000 | MADD Factor * 10m³/ha Storage       | 0.000 |
| Hot Start (mins)                | 0     | Inlet Coeffiecient                  | 0.800 |
| Hot Start Level (mm)            | 0     | Flow per Person per Day (l/per/day) | 0.000 |
| Manhole Headloss Coeff (Global) | 0.500 | Run Time (mins)                     | 60    |
| Foul Sewage per hectare (l/s)   | 0.000 | Output Interval (mins)              | 1     |

|                             |   |                              |   |                              |   |
|-----------------------------|---|------------------------------|---|------------------------------|---|
| Number of Input Hydrographs | 0 | Number of Offline Controls   | 0 | Number of Time/Area Diagrams | 0 |
| Number of Online Controls   | 1 | Number of Storage Structures | 1 | Number of Real Time Controls | 0 |

## Synthetic Rainfall Details

|                       |                   |                       |        |
|-----------------------|-------------------|-----------------------|--------|
| Rainfall Model        | FSR               | Profile Type          | Winter |
| Return Period (years) | 100               | Cv (Summer)           | 1.000  |
| Region                | England and Wales | Cv (Winter)           | 1.000  |
| M5-60 (mm)            | 16.600            | Storm Duration (mins) | 30     |
| Ratio R               | 0.264             |                       |        |



|                                                                                  |                                               |                                                                                     |
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| XP Solutions                                                                     | Network 2020.1.3                              |                                                                                     |

Online Controls for Storm

Pump Manhole: S7, DS/PN: 1.006, Volume (m³): 17.1

Invert Level (m) 78.525

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.200     | 42.4000    | 1.400     | 42.4000    | 2.600     | 42.4000    | 3.800     | 42.4000    | 5.000     | 42.4000    |
| 0.400     | 42.4000    | 1.600     | 42.4000    | 2.800     | 42.4000    | 4.000     | 42.4000    | 5.200     | 42.4000    |
| 0.600     | 42.4000    | 1.800     | 42.4000    | 3.000     | 42.4000    | 4.200     | 42.4000    | 5.400     | 42.4000    |
| 0.800     | 42.4000    | 2.000     | 42.4000    | 3.200     | 42.4000    | 4.400     | 42.4000    | 5.600     | 42.4000    |
| 1.000     | 42.4000    | 2.200     | 42.4000    | 3.400     | 42.4000    | 4.600     | 42.4000    | 5.800     | 42.4000    |
| 1.200     | 42.4000    | 2.400     | 42.4000    | 3.600     | 42.4000    | 4.800     | 42.4000    | 6.000     | 42.4000    |

|                                                                                  |                                               |                                                                                     |
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| XP Solutions                                                                     | Network 2020.1.3                              |                                                                                     |

Storage Structures for Storm

Tank or Pond Manhole: S4, DS/PN: 1.003

Invert Level (m) 80.000

| Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) |
|-----------|-----------|-----------|-----------|-----------|-----------|
| 0.000     | 110.0     | 1.500     | 110.0     | 1.501     | 0.0       |



1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000      Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0      MADD Factor \* 10m³/ha Storage 0.000  
 Hot Start Level (mm) 0      Inlet Coeffiecient 0.800  
 Manhole Headloss Coeff (Global) 0.500      Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0      Number of Offline Controls 0      Number of Time/Area Diagrams 0  
 Number of Online Controls 1      Number of Storage Structures 1      Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model      FSR M5-60 (mm) 16.600      Cv (Summer) 1.000  
 Region England and Wales      Ratio R 0.264      Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0      DVD Status OFF  
 Analysis Timestep      Fine Inertia Status OFF  
 DTS Status      ON

Profile(s)      Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
 Return Period(s) (years) 1, 30, 100  
 Climate Change (%) 0, 0, 40

|       |               |           |                  |                   |                        |                    |                       |                  | Water        | Surcharged   | Flooded        |
|-------|---------------|-----------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|--------------|--------------|----------------|
| PN    | US/MH<br>Name | Storm     | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 1.000 | S1            | 15 Summer | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 81.714       | -0.136       | 0.000          |
| 1.001 | S2            | 15 Summer | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 80.764       | -0.126       | 0.000          |
| 1.002 | S3            | 15 Summer | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 80.413       | -0.197       | 0.000          |
| 1.003 | S4            | 15 Summer | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 79.958       | -0.267       | 0.000          |
| 1.004 | S5            | 30 Summer | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 79.275       | -0.035       | 0.000          |
| 2.000 | S9            | 15 Summer | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 81.707       | -0.143       | 0.000          |
| 2.001 | S10           | 15 Summer | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 80.698       | -0.182       | 0.000          |
| 3.000 | S13           | 15 Summer | 1                | +0%               | 100/120 Summer         |                    |                       |                  | 81.597       | -0.103       | 0.000          |
| 2.002 | S11           | 15 Summer | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 80.263       | -0.162       | 0.000          |
| 2.003 | S12           | 15 Summer | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 80.042       | -0.223       | 0.000          |
| 1.005 | S6            | 30 Summer | 1                | +0%               | 1/15 Summer            |                    |                       |                  | 79.268       | 0.138        | 0.000          |
| 1.006 | S7            | 30 Summer | 1                | +0%               | 1/15 Summer            |                    |                       |                  | 79.260       | 0.585        | 0.000          |

|       |            |           |                | Half Drain  | Pipe       |        |                |
|-------|------------|-----------|----------------|-------------|------------|--------|----------------|
| PN    | US/MH Name | Flow Cap. | Overflow (l/s) | Time (mins) | Flow (l/s) | Status | Level Exceeded |
| 1.000 | S1         | 0.32      |                |             | 19.2       | OK     |                |
| 1.001 | S2         | 0.40      |                |             | 19.1       | OK     |                |
| 1.002 | S3         | 0.26      |                |             | 26.3       | OK     |                |
| 1.003 | S4         | 0.18      |                |             | 44.0       | OK     |                |
| 1.004 | S5         | 0.13      |                |             | 42.7       | OK     |                |
| 2.000 | S9         | 0.28      |                |             | 18.4       | OK     |                |

|                                                                                  |                                               |                                                                                     |
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| XP Solutions                                                                     | Network 2020.1.3                              |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

| PN    | US/MH Name | Flow / Overflow |       | Half Drain Time | Pipe Flow | Status     | Level    |
|-------|------------|-----------------|-------|-----------------|-----------|------------|----------|
|       |            | Cap.            | (l/s) | (mins)          | (l/s)     |            | Exceeded |
| 2.001 | S10        | 0.32            |       |                 | 29.7      | OK         |          |
| 3.000 | S13        | 0.22            |       |                 | 3.9       | OK         |          |
| 2.002 | S11        | 0.44            |       |                 | 37.5      | OK         |          |
| 2.003 | S12        | 0.15            |       |                 | 37.4      | OK         |          |
| 1.005 | S6         | 0.22            |       |                 | 55.3      | SURCHARGED |          |
| 1.006 | S7         | 7.86            |       |                 | 42.4      | SURCHARGED |          |



30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m³/ha Storage 0.000  
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0  
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.600 Cv (Summer) 1.000  
Region England and Wales Ratio R 0.264 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF  
Analysis Timestep Fine Inertia Status OFF  
DTS Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
Return Period(s) (years) 1, 30, 100  
Climate Change (%) 0, 0, 40

| PN    | US/MH |            | Return Period | Climate Change | First (X) Surchage | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level | Surcharged Depth | Flooded Volume |
|-------|-------|------------|---------------|----------------|--------------------|-----------------|--------------------|---------------|-------------|------------------|----------------|
|       | Name  | Storm      |               |                |                    |                 |                    |               | (m)         | (m)              | (m³)           |
| 1.000 | S1    | 15 Summer  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 81.778      | -0.072           | 0.000          |
| 1.001 | S2    | 15 Summer  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 80.842      | -0.048           | 0.000          |
| 1.002 | S3    | 15 Summer  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 80.492      | -0.118           | 0.000          |
| 1.003 | S4    | 60 Summer  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 80.401      | 0.176            | 0.000          |
| 1.004 | S5    | 120 Summer | 30            | +0%            | 30/15 Summer       |                 |                    |               | 80.550      | 1.240            | 0.000          |
| 2.000 | S9    | 15 Summer  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 81.763      | -0.087           | 0.000          |
| 2.001 | S10   | 15 Summer  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 80.824      | -0.056           | 0.000          |
| 3.000 | S13   | 15 Summer  | 30            | +0%            | 100/120 Summer     |                 |                    |               | 81.627      | -0.073           | 0.000          |
| 2.002 | S11   | 15 Summer  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 80.605      | 0.180            | 0.000          |
| 2.003 | S12   | 15 Summer  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 80.489      | 0.224            | 0.000          |
| 1.005 | S6    | 120 Summer | 30            | +0%            | 1/15 Summer        |                 |                    |               | 80.527      | 1.397            | 0.000          |
| 1.006 | S7    | 120 Summer | 30            | +0%            | 1/15 Summer        |                 |                    |               | 80.527      | 1.852            | 0.000          |

|       |            | Half Drain      |       | Pipe        |            |            |                |
|-------|------------|-----------------|-------|-------------|------------|------------|----------------|
| PN    | US/MH Name | Flow / Overflow |       | Time (mins) | Flow (l/s) | Status     | Level Exceeded |
|       |            | Cap.            | (l/s) |             |            |            |                |
| 1.000 | S1         | 0.77            |       |             | 46.4       | OK         |                |
| 1.001 | S2         | 0.95            |       |             | 46.1       | OK         |                |
| 1.002 | S3         | 0.65            |       |             | 67.2       | OK         |                |
| 1.003 | S4         | 0.29            |       |             | 69.9       | SURCHARGED |                |
| 1.004 | S5         | 0.12            |       |             | 37.5       | SURCHARGED |                |
| 2.000 | S9         | 0.68            |       |             | 44.3       | OK         |                |

|                                                                                  |                                               |                                                                                     |
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| XP Solutions                                                                     | Network 2020.1.3                              |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

| PN    | US/MH Name | Flow / Overflow |       | Half Drain Time | Pipe Flow | Status     | Level    |
|-------|------------|-----------------|-------|-----------------|-----------|------------|----------|
|       |            | Cap.            | (l/s) | (mins)          | (l/s)     |            | Exceeded |
| 2.001 | S10        | 0.83            |       |                 | 78.6      | OK         |          |
| 3.000 | S13        | 0.52            |       |                 | 9.4       | OK         |          |
| 2.002 | S11        | 1.01            |       |                 | 87.4      | SURCHARGED |          |
| 2.003 | S12        | 0.34            |       |                 | 84.2      | SURCHARGED |          |
| 1.005 | S6         | 0.22            |       |                 | 53.8      | SURCHARGED |          |
| 1.006 | S7         | 7.86            |       |                 | 42.4      | SURCHARGED |          |



100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000      Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0      MADD Factor \* 10m³/ha Storage 0.000  
 Hot Start Level (mm) 0      Inlet Coeffiecient 0.800  
 Manhole Headloss Coeff (Global) 0.500      Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0      Number of Offline Controls 0      Number of Time/Area Diagrams 0  
 Number of Online Controls 1      Number of Storage Structures 1      Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model      FSR M5-60 (mm) 16.600      Cv (Summer) 1.000  
 Region England and Wales      Ratio R 0.264      Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0      DVD Status OFF  
 Analysis Timestep      Fine Inertia Status OFF  
 DTS Status      ON

Profile(s)      Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
 Return Period(s) (years) 1, 30, 100  
 Climate Change (%) 0, 0, 40

| PN    | US/MH |            | Return Period | Climate Change | First (X) Surge | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level | Surcharged Depth | Flooded Volume |
|-------|-------|------------|---------------|----------------|-----------------|-----------------|--------------------|---------------|-------------|------------------|----------------|
|       | Name  | Storm      |               |                |                 |                 |                    |               | (m)         | (m)              | (m³)           |
| 1.000 | S1    | 15 Summer  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 82.874      | 1.024            | 0.000          |
| 1.001 | S2    | 120 Summer | 100           | +40%           | 100/15 Summer   |                 |                    |               | 81.439      | 0.549            | 0.000          |
| 1.002 | S3    | 120 Summer | 100           | +40%           | 100/15 Summer   |                 |                    |               | 81.407      | 0.797            | 0.000          |
| 1.003 | S4    | 120 Summer | 100           | +40%           | 30/15 Summer    |                 |                    |               | 81.398      | 1.173            | 0.000          |
| 1.004 | S5    | 120 Winter | 100           | +40%           | 30/15 Summer    |                 |                    |               | 81.874      | 2.564            | 0.000          |
| 2.000 | S9    | 15 Summer  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 83.000      | 1.150            | 0.000          |
| 2.001 | S10   | 30 Summer  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 82.192      | 1.312            | 0.000          |
| 3.000 | S13   | 120 Summer | 100           | +40%           | 100/120 Summer  |                 |                    |               | 81.772      | 0.072            | 0.000          |
| 2.002 | S11   | 120 Summer | 100           | +40%           | 30/15 Summer    |                 |                    |               | 81.818      | 1.393            | 0.000          |
| 2.003 | S12   | 120 Summer | 100           | +40%           | 30/15 Summer    |                 |                    |               | 81.879      | 1.614            | 0.000          |
| 1.005 | S6    | 480 Summer | 100           | +40%           | 1/15 Summer     |                 |                    |               | 81.970      | 2.840            | 0.000          |
| 1.006 | S7    | 480 Summer | 100           | +40%           | 1/15 Summer     |                 |                    |               | 82.043      | 3.368            | 0.000          |

| PN    | US/MH<br>Name | Flow /<br>Cap. | Overflow<br>(l/s) | Half Drain     | Pipe          | Status     | Level<br>Exceeded |
|-------|---------------|----------------|-------------------|----------------|---------------|------------|-------------------|
|       |               |                |                   | Time<br>(mins) | Flow<br>(l/s) |            |                   |
| 1.000 | S1            | 1.28           |                   |                | 77.0          | FLOOD RISK |                   |
| 1.001 | S2            | 0.80           |                   |                | 38.4          | SURCHARGED |                   |
| 1.002 | S3            | 0.54           |                   |                | 55.5          | SURCHARGED |                   |
| 1.003 | S4            | 0.24           |                   |                | 57.2          | SURCHARGED |                   |
| 1.004 | S5            | 0.15           |                   |                | 49.2          | SURCHARGED |                   |
| 2.000 | S9            | 0.98           |                   |                | 63.5          | FLOOD RISK |                   |

|                                                                                  |                                               |                                                                                     |
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| XP Solutions                                                                     | Network 2020.1.3                              |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

|       |      | US/MH Flow / Overflow |       | Half Drain Time | Pipe Flow | Level      |          |
|-------|------|-----------------------|-------|-----------------|-----------|------------|----------|
| PN    | Name | Cap.                  | (l/s) | (mins)          | (l/s)     | Status     | Exceeded |
| 2.001 | S10  | 1.17                  |       |                 | 110.3     | SURCHARGED |          |
| 3.000 | S13  | 0.45                  |       |                 | 8.1       | SURCHARGED |          |
| 2.002 | S11  | 0.97                  |       |                 | 83.3      | SURCHARGED |          |
| 2.003 | S12  | 0.33                  |       |                 | 81.2      | SURCHARGED |          |
| 1.005 | S6   | 0.24                  |       |                 | 59.7      | SURCHARGED |          |
| 1.006 | S7   | 7.86                  |       |                 | 42.4      | SURCHARGED |          |

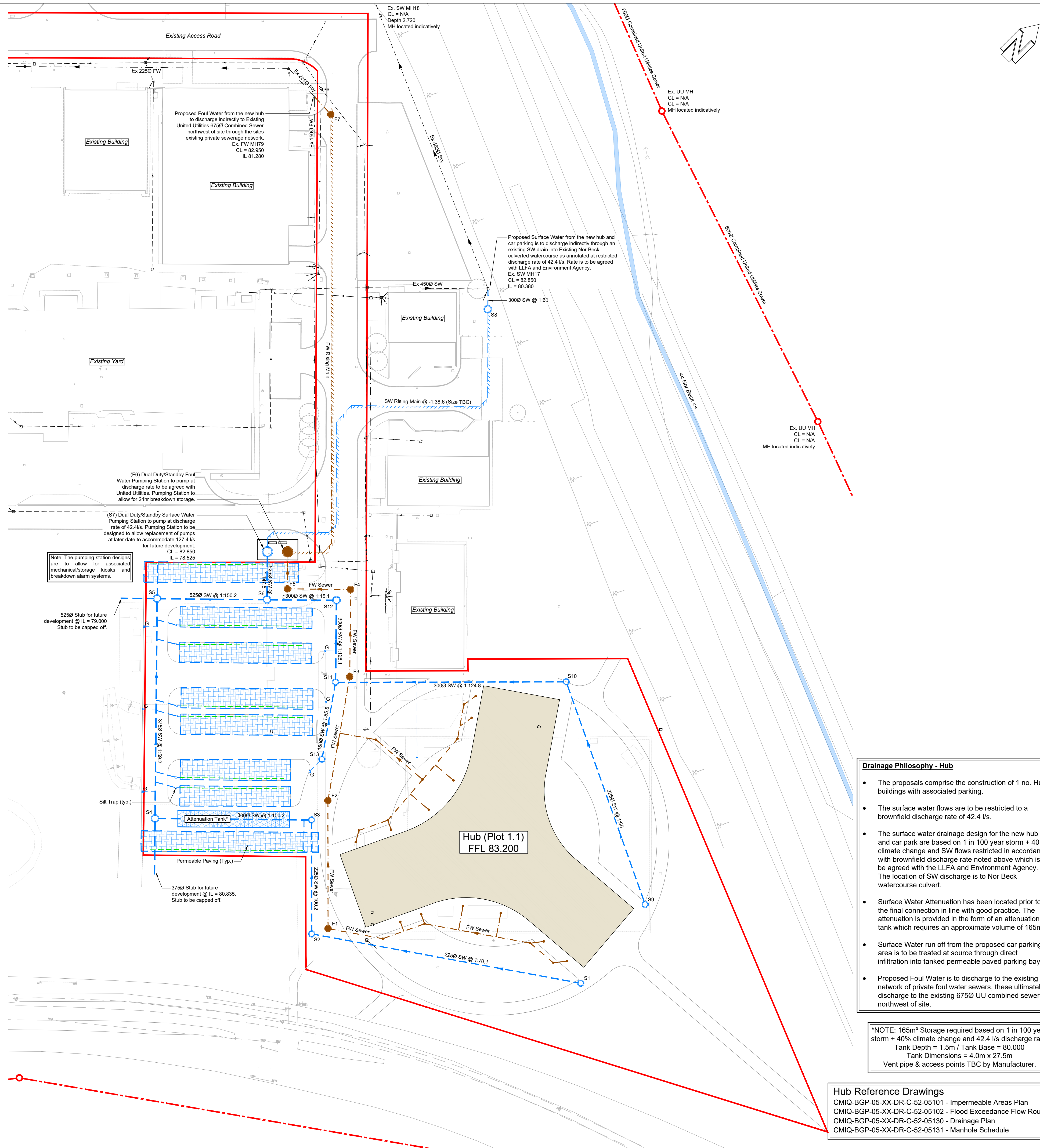
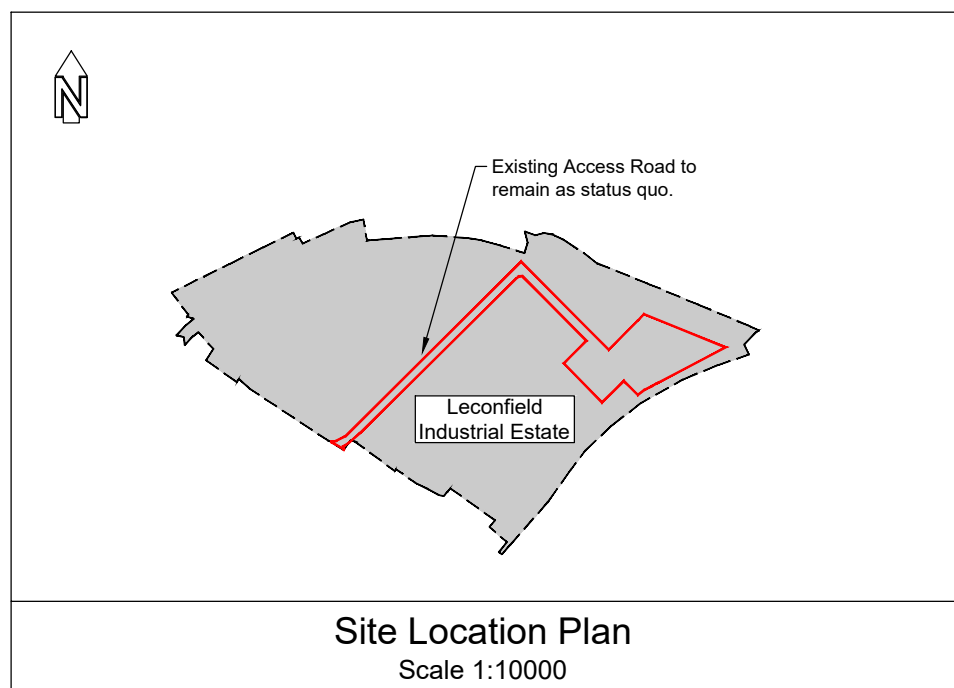
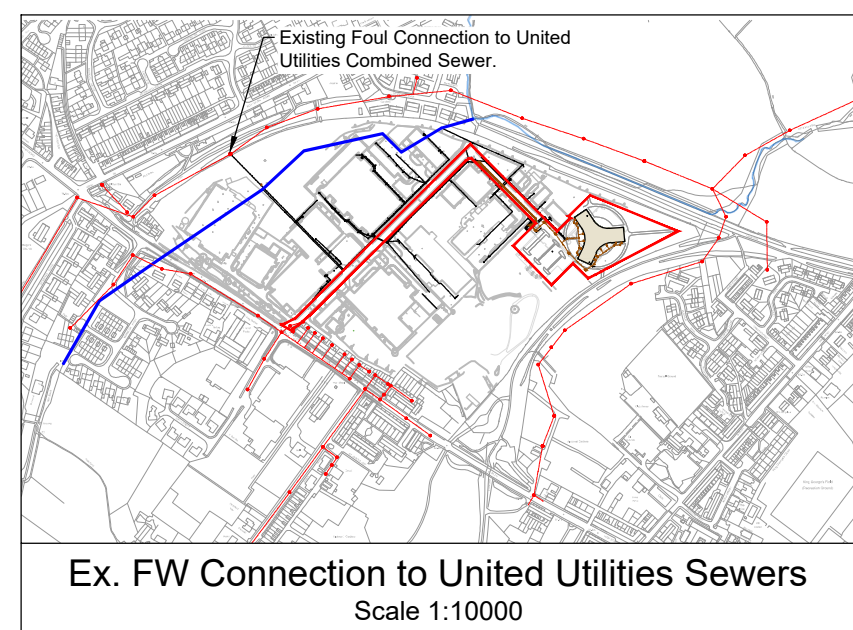
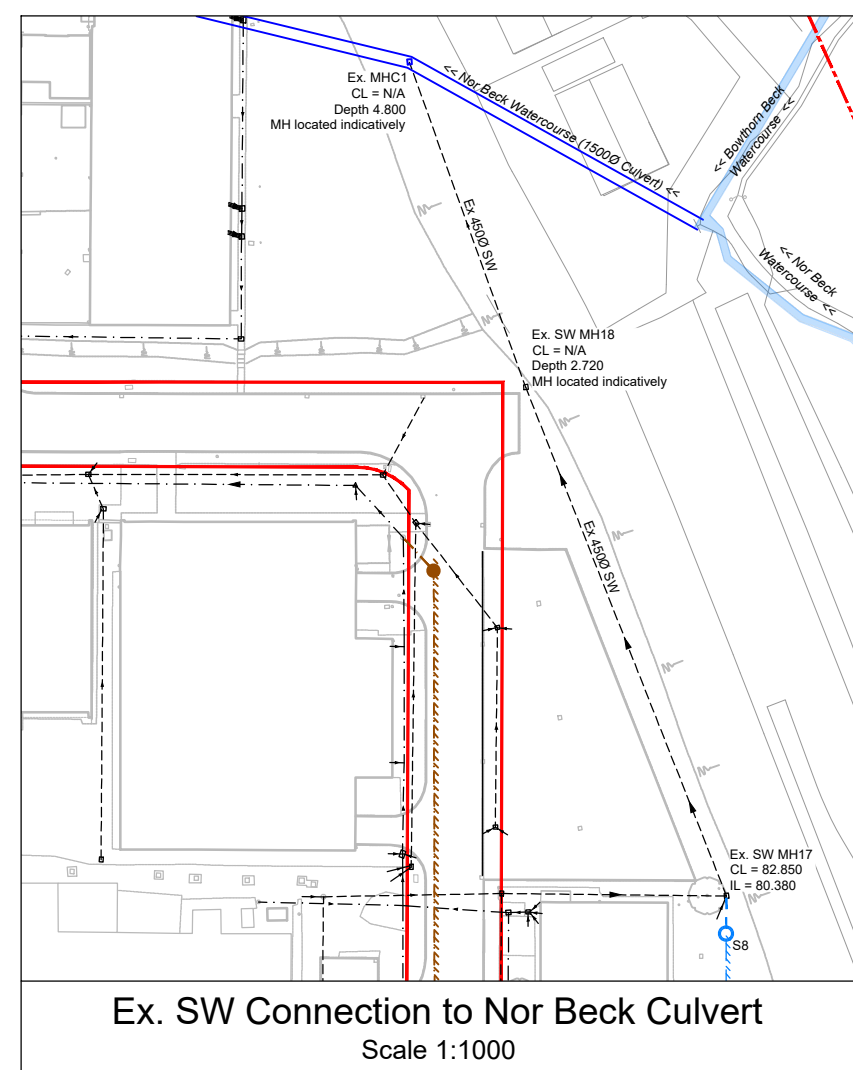




## Appendix F

### Proposed Drainage Philosophy Plans





DO NOT SCALE

Notes

1. All works to be carried out in accordance with:
  - 1.1 Design and Construction Guidance (DCG) and Sewerage Sector Guidance (SSG) for all sewers proposed to be offered for adoption. (note - the SSG replaces Sewers for Adoption (STA) for all new developments)
  - 1.2 BS EN 752 - 'Drain and Sewer Systems Outside Buildings'
  - 1.3 Current applicable Building Regulations
  - 1.4 BGP Specifications
  - 1.5 Manufacturer installation guidance and requirements
2. All levels shown are in metres and are relative to ordnance datum (m AOD).
3. Invert levels of all existing chambers and connection points are to be confirmed and engineer advised prior to commencement of any Drainage Works.
4. Where proposed sewers connect into existing sewers, the existing sewers must to be checked for line, level and condition preferably by a CCTV survey
5. Concrete bed and surround is required to all gully leads and to all pipes in highways/hardstanding where cover to pipe <1200mm
6. All pipes to be either extra strength V.C. to BS 65 or PVC certified to WIS 4-35-01 and BS EN 13476 'UPONOR ULTRARIB' or concrete pipes Class 120 to BS EN 1916/BS5911-2 2002.
7. Existing sewer positions are indicative and are not to be used in conjunction with design. Contractor to confirm location.
8. Contractor is responsible for positioning MHs so they do not compromise line or level of kerbing or other delineation at the juncture of two surface materials.
9. Cover levels shown are indicative and may vary on site. The contractor should adjust levels to suit site conditions
10. Other services are not shown on this drawing, however their presence must be anticipated. The contractor is to confirm prior to commencing any works, the location and depth of all services that may affect the works the manufacturers requirements and recommendations.
11. All Information provided is for planning purposes only and should not be relied upon for either costing or construction.
12. All drainage outfall levels are to be investigated and confirmed prior to detailed design. Engineer to be informed of findings. Current design shown is indicative.
13. All Surface water discharge rates and methods of discharge are to be agreed with the Lead Local Flood Authority and Environment Agency.

S.H.E.  
Do not excavate until all underground services have been identified and marked out. Refer to service providers drawings and to the utilities survey drawings. Unknown underground services may exist. Check for services by carrying out a scan with a cable avoidance tool.

### Legend

Proposed SW Sewer

Proposed FW Sewer

Nor Beck (Culverted) \_\_\_\_\_

Existing SW Sewer -----

Existing FW Sewer -----

Existing UU Combined Sewer 

Hub Site Boundary

Proposed Attenuation Tank

|                   |  |
|-------------------|--|
| Proposed Building |  |
|-------------------|--|

Tanked Permeable Paved 

### Additional Notes

|                           |   |                                |
|---------------------------|---|--------------------------------|
| Proposed Impermeable Area | = | 7175m <sup>2</sup> (0.7175Ha.) |
|---------------------------|---|--------------------------------|

Brownfield Discharge Rate = 42.4 l/s

|                  |   |                         |
|------------------|---|-------------------------|
| Storage Required | = | <u>165m<sup>3</sup></u> |
|------------------|---|-------------------------|

See Drawing CMIQ-BGP-01-XX-DR-C-52-01901 for Discharge Rate Calculations.

|                     |     |     |     |            |
|---------------------|-----|-----|-----|------------|
| Issued for Planning | JJH | P01 | JC  | 23.03.2022 |
| AMENDMENT           | BY  | REV | CHK | DATE       |

Rev P = Preliminary T = Tender C = Construction LCI = Last Construction Issue

In instances where this drawing completes or partly completes a contract, Billingham George & Partners will consider that its product has been validated, unless in a period not exceeding 90 working days, the client advises to the contrary.



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|        |  |
|--------|--|
| Client |  |
|--------|--|

Copeland Borough Council

|                |                                 |
|----------------|---------------------------------|
| <b>Project</b> | Cleator Moor Innovation Quarter |
|----------------|---------------------------------|

|             |         |
|-------------|---------|
| Project No. | 21T2034 |
|-------------|---------|

|                      |                     |
|----------------------|---------------------|
| <b>Drawing Title</b> | Hub - Drainage Plan |
|----------------------|---------------------|

|              |             |                |             |             |              |               |             |
|--------------|-------------|----------------|-------------|-------------|--------------|---------------|-------------|
| <b>Drawn</b> | <b>Date</b> | <b>Checked</b> | <b>Date</b> | <b>Size</b> | <b>Scale</b> | <b>Class.</b> | <b>Rev.</b> |
| JJH          | March 2022  | JC             | March 2022  | A1          | 1:500        | 52            | P01         |

|          |            |        |       |      |      |            |
|----------|------------|--------|-------|------|------|------------|
| Location | Originator | Volume | Level | Type | Role | Unique No. |
| CMIQ     | BGP        | 05     | XX    | DR   | C    | 05130      |

File Reference

CMIQ-BGP-05-XX-DR-C-52-05130



- 1. Cover levels are approximate only and may vary on site. Covers to suit finished levels.
- 2. Contractor is responsible for positioning MHs so they do not compromise line or level of kerbing or other delineation at the juncture of two surface materials.
- 3. PPIC manhole diameters may vary and are dependant on manufactures specification and diameter of incoming / outgoing pipes.
- 4. Concrete manhole diameters are dependant on nominal internal diameter of largest pipe in manhole. See Table A on Typical Manhole Details drawing.

| Surface Water Drainage Manhole Schedule - Hub |             |              |         |             |            |                                            |                 |                           |                 |          |                                    |
|-----------------------------------------------|-------------|--------------|---------|-------------|------------|--------------------------------------------|-----------------|---------------------------|-----------------|----------|------------------------------------|
| MH Ref.                                       | Cover Level | Invert Level | MH Type | MH Dia. (m) | Cover Type | D/S Pipe Length                            | Depth to Invert | Pipe Size (m)             | Depth to Soffit | Gradient | Comments                           |
| S1                                            | 83.050      | 81.625       | Conc.   | 1.200       | D400       | 67.326                                     | 1.425           | 0.225                     | 1.200           | 1:70.1   |                                    |
| S2                                            | 83.050      | 80.665       | Conc.   | 1.200       | D400       | 28.067                                     | 2.385           | 0.225                     | 2.160           | 1:100.2  |                                    |
| S3                                            | 83.050      | 80.310       | Conc.   | 1.200       | D400       | 38.579                                     | 2.740           | 0.300                     | 2.440           | 1:100.2  |                                    |
| S4                                            | 83.050      | 79.850       | Conc.   | 1.350       | D400       | 54.162                                     | 3.200           | 0.375                     | 2.825           | 1:59.2   |                                    |
| S5                                            | 83.050      | 78.785       | Conc.   | 1.500       | D400       | 27.039                                     | 4.265           | 0.525                     | 3.740           | 1:150.2  |                                    |
| S6                                            | 83.050      | 78.605       | Conc.   | 1.500       | D400       | 11.798                                     | 4.445           | 0.525                     | 3.920           | 1:147.5  |                                    |
| △ S7                                          | 82.850      | 78.525       | Conc.   | 2.100       | D400       | 80.727 (MicroDrainage)<br>107.163 (Actual) | 4.325           | 0.150 (TBC by Specialist) | N/A             | -1:38.6  | Pumping Station Chamber at 42.4l/s |
| S8                                            | 83.050      | 80.615       | Conc.   | 1.500       | D400       | 5.000                                      | 2.435           | 0.300                     | 2.135           | 1:60     |                                    |
| S9                                            | 83.050      | 81.625       | Conc.   | 1.500       | D400       | 58.192                                     | 1.425           | 0.225                     | 1.200           | 1:60     |                                    |
| S10                                           | 83.050      | 80.580       | Conc.   | 1.200       | D400       | 56.798                                     | 2.470           | 0.300                     | 2.170           | 1:124.8  |                                    |
| S11                                           | 83.050      | 80.125       | Conc.   | 1.200       | D400       | 20.183                                     | 2.925           | 0.300                     | 2.625           | 1:126.1  |                                    |
| S12                                           | 83.050      | 79.965       | Conc.   | 1.200       | D400       | 17.117                                     | 3.085           | 0.300                     | 2.785           | 1:15.1   |                                    |
| S13                                           | 83.050      | 81.550       | Conc.   | 1.200       | D400       | 19.234                                     | 1.500           | 0.150                     | 1.350           | 1:85.5   |                                    |

△ All Pumping Station information is subject to change upon detailed design stage. The pumping station is to be designed to accommodate a change of pump equipment and rate from 42.4 l/s to 127.4 l/s to allow for future development should this occur.

| Hub Reference Drawings                                     |  |  |  |  |  |  |  |
|------------------------------------------------------------|--|--|--|--|--|--|--|
| CMIQ-BGP-05-XX-DR-C-52-05101 - Impermeable Areas Plan      |  |  |  |  |  |  |  |
| CMIQ-BGP-05-XX-DR-C-52-05102 - Flood Exceedance Flow Route |  |  |  |  |  |  |  |
| CMIQ-BGP-05-XX-DR-C-52-05130 - Drainage Plan               |  |  |  |  |  |  |  |
| CMIQ-BGP-05-XX-DR-C-52-05131 - Manhole Schedule            |  |  |  |  |  |  |  |

Issued for Planning

JJH

P01

JC

23.03.2022

AMENDMENT

BY

REV

CHK

DATE

Rev P = Preliminary T = Tender C = Construction LCI = Last Construction Issue

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Client

Copeland Borough Council

Project

Cleator Moor Innovation Quarter

Project No.

21T2034

Drawing Title

Hub - Manhole Schedule

| Drawn | Date       | Checked | Date       | Size | Scale  | Class. | Rev. |
|-------|------------|---------|------------|------|--------|--------|------|
| JJH   | March 2021 | JC      | March 2021 | A1   | 1:1000 | 52     | P01  |

| Location | Originator | Volume | Level | Type | Role | Unique No. |
|----------|------------|--------|-------|------|------|------------|
| CMIQ     | BGP        | 05     | XX    | DR   | C    | 05131      |

File Reference

CMIQ-BGP-05-XX-DR-C-52-05131





### Legend - Hub

Impermeable Areas Total = 7175m<sup>2</sup> = (0.7175ha)

Rev P = Preliminary T = Tender C = Construction LCI = Last Construction Issue

In instances where this drawing completes or partly completes a contract, Billingham George & Partners will consider that its product has been validated, unless in a period not exceeding 90 working days, the client advises to the contrary.



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**Client**  
Copeland Borough Council

**Drawing Title**  
Hub - Impermeable Areas Plan

**File Reference**  
CMIQ-BGP-05-XX-DR-C-52-05101







## Appendix G

### Borehole Logs



## 1 EXECUTIVE SUMMARY

|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Site Address</b>                                           | Leconfield Industrial Estate, Cleator Moor                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Proposed Development</b>                                   | The site is outlined for development of a storage yard in the west and a new building in the east..                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Fieldwork</b>                                              | <ul style="list-style-type: none"> <li>• 9no rotary open-hole/cored boreholes (BH01 to RBH09 inclusive to a maximum depth of 40.00mbgl with 2no monitoring pipes in BHs 07 &amp; 08.</li> <li>• 2no days slit trenching, 1 day in the area of each shaft (301515-006 &amp; 301515-008) including anomaly A2.</li> <li>• 16no machine excavated trial pits (TP01 to TP16) were dug to a maximum depth of 1.10mbgl.</li> </ul>                                                                                         |
| <b>Ground Conditions</b>                                      | <ul style="list-style-type: none"> <li>• Made ground was encountered to depths of between 1.30mbgl and 10.20mbgl.</li> <li>• Firm to stiff consistency sandy gravelly medium to high strength encountered (0.90-5.00m thick).</li> <li>• Locally underlain by dense sands and gravels (1.60-10.90m thick).</li> <li>• Rockhead between 7.30 &amp; 18.00mbgl, generally comprising sandstones and mudstones with thin intact coal bands.</li> <li>• Groundwater was noted locally between 0.40 and 17.10m.</li> </ul> |
| <b>Contamination Testing Results</b>                          | <ul style="list-style-type: none"> <li>• 13no made ground samples tested.</li> <li>• Results will be added as an addendum to this report.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Contamination Analysis</b>                                 | <ul style="list-style-type: none"> <li>• Interim Conceptual Model provided based on encountered ground conditions and historic WYG works.</li> <li>• Updated Conceptual Model to be issued once outstanding contamination testing results are received.</li> </ul>                                                                                                                                                                                                                                                   |
| <b>Geotechnical Testing Results</b>                           | <ul style="list-style-type: none"> <li>• Cohesive deposits medium to high strength based on SPT N values.</li> <li>• Granular deposits locally loose generally medium dense to very dense based on SPT N values.</li> <li>• CBRs within made ground ranged from 3-15%.</li> <li>• Remaining geotechnical results to be provided within an updated report.</li> </ul>                                                                                                                                                 |
| <b>Mining Assessment</b>                                      | <ul style="list-style-type: none"> <li>• Similarly to the historic WYG report (12no boreholes), no voids/workings were recorded within the rotary drilling (additional 9no boreholes).</li> <li>• No evidence of the shafts based on historical geophysics and slit trenching.</li> <li>• Recommended to construct storage yard with structural precautions to mitigate against risks from the off-site shafts.</li> </ul>                                                                                           |
| <b>Geotechnical Analysis &amp; Foundation Recommendations</b> | <ul style="list-style-type: none"> <li>• Storage yard to be constructed 450mm thick (recommended reinforced) atop compacted granular fill atop the competent fused slag.</li> <li>• For the proposed building, piled foundations are recommended – this report should be made available to a competent piling contractor.</li> <li>• Settlements within 25mm.</li> <li>• Normal earthworks plant for excavations.</li> </ul>                                                                                         |



12-16 Yarm Road, Stockton on Tees, TS18 3NA  
Tel: 01642 607083 Email: info@solmek.com

Figure Title

Exploratory Hole Location Plan

Project Number

S220141

Project Name

Site A, Leconfield, Cleator Moor

Client

Copeland Borough Council

Date

March 2022

DRG Number

Figure 2

Scale

1:3000 @ A4 [DO NOT SCALE]

- Legend Key
- Locations By Type - Empty
  - ⊕ Locations By Type - CP+RC
  - Locations By Type - RO
  - ⚡ Locations By Type - SCP
  - ⊠ Locations By Type - TP
  - ▭ Project Bounds - Project Bounds





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|                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Title</b>                                                                                                                                                                                                                                                                                                                                                                                                |
| Development Location Plan                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Project</b>                                                                                                                                                                                                                                                                                                                                                                                              |
| Site A, Leconfield Industrial Estate, Cleator Moor                                                                                                                                                                                                                                                                                                                                                          |
| <b>Client</b>                                                                                                                                                                                                                                                                                                                                                                                               |
| Copeland Borough Council                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Date</b>                                                                                                                                                                                                                                                                                                                                                                                                 |
| March 2022                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Fig No.</b>                                                                                                                                                                                                                                                                                                                                                                                              |
| Figure 3                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Scale</b>                                                                                                                                                                                                                                                                                                                                                                                                |
| Do not Scale                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Key</b>                                                                                                                                                                                                                                                                                                                                                                                                  |
| <div style="display: flex; align-items: center;"> <div style="border: 2px solid red; width: 20px; height: 10px; margin-right: 5px;"></div> <div>Approx. Area of Proposed Yard</div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="border: 2px solid blue; width: 20px; height: 10px; margin-right: 5px;"></div> <div>Approx. Area of Proposed Building</div> </div> |
| <br><b>N</b>                                                                                                                                                                                                                                                                                                             |

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Figure 6: BH07 12.00-15.00m



Figure 7: BH07 15.00-18.00m

|                                                    |
|----------------------------------------------------|
| <b>Title</b>                                       |
| Core Photographs                                   |
| <b>Project</b>                                     |
| Site A, Leconfield Industrial Estate, Cleator Moor |
| <b>Client</b>                                      |
| Copeland Borough Council                           |
| <b>Date</b>                                        |
| March 2022                                         |
| <b>Fig No.</b>                                     |
| Figures 6 & 7                                      |
| <b>Scale</b>                                       |
|                                                    |
|                                                    |
|                                                    |

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[illegible]





Figure 10: Area of slit trenching around Shaft 006.



Figure 11: Area of slit trenching around Shaft 006.

| Title                                                 | Date       | <div data-bbox="1289 1722 1506 1854"> <b>Solmek Ltd.</b><br/> 12 Yarm Road<br/> Stockton-on-Tees<br/> TS18 3NA </div> <div data-bbox="1177 1897 1506 2029"> Tel: +44 (0) 1642 607083<br/> Fax: +44 (0) 1642 612355<br/> e-mail: <a href="mailto:south@solmek.com">south@solmek.com</a><br/> <a href="http://www.solmek.com">www.solmek.com</a> </div> <div data-bbox="1145 2056 1490 2152">  </div> |
|-------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Figures 10 & 11                                       | March 2022 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Project                                               |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Site A, Leconfield Industrial Estate,<br>Cleator Moor |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Client                                                |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Copeland Borough Council                              |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                       |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |





Figure 12: Area of slit trenching around Shaft 008.



Figure 13: Area of slit trenching around Shaft 008.

| Title                                                 | Date       |
|-------------------------------------------------------|------------|
| Figures 12 & 13                                       | March 2022 |
| Project                                               |            |
| Site A, Leconfield Industrial Estate,<br>Cleator Moor |            |
| Client                                                |            |
| Copeland Borough Council                              |            |

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[www.solmek.com](http://www.solmek.com)



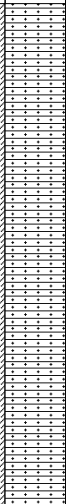


**APPENDIX B:**  
**Borehole Logs & Trial Pit Logs**

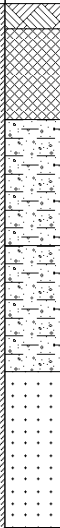
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------|---------|-----------------------------------|---------|--------------------------|----------|------|--|--|--|--|--|--|--|
| <div><div> SOLMEK</div><div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div></div> |        |                                        |               | Rotary Open Hole Log                                                                                                                                                                                                                                   |                            |                                  |         |                                   |         | Scale 1:150 Sheet 1 of 1 |          | BH01 |  |  |  |  |  |  |  |
| Contract no: S220141                                                                                                                                                                                          |        | Site: Site A, Leconfield, Cleator Moor |               |                                                                                                                                                                                                                                                        |                            | Driller: Bainbridge Brothers Ltd |         | Plant used: Beretta T59/Symmetrex |         | GL (AOD): 80.69m         |          |      |  |  |  |  |  |  |  |
| Client: Copeland Borough Council                                                                                                                                                                              |        |                                        |               |                                                                                                                                                                                                                                                        |                            | Started: 01/03/2022              |         | Ended: 01/03/2022                 |         | Easting: 301394.86       |          |      |  |  |  |  |  |  |  |
| Method: Rotary Openhole                                                                                                                                                                                       |        |                                        |               |                                                                                                                                                                                                                                                        |                            | Backfilled: 01/03/2022           |         |                                   |         | Northing: 515617.71      |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         | Logged: KW               |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         | Status: DRAFT            |          |      |  |  |  |  |  |  |  |
| Backfill / Installation                                                                                                                                                                                       | Legend | Depth (m)                              | Level (m AOD) | Stratum Description                                                                                                                                                                                                                                    | Samples and Insitu Testing |                                  |         | Coring / Fractures                |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        | Depth (m)                  | Type                             | Results | TCR (%)                           | SCR (%) | RQD (%)                  | Fracture |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        | 0.30                                   | 80.39         | MADE GROUND: Grass over dark brown slightly clayey very gravelly topsoil. Gravel is fine to medium subrounded to angular of sandstone, brick and slag.<br>MADE GROUND: Bluish grey slag.<br>MADE GROUND: Reddish brown sandy gravelly clay (reworked). |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        | 1.00                                   | 79.69         |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        | 3.20                                   | 77.49         |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               | MADE GROUND: Bluish grey slag.                                                                                                                                                                                                                         |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        | 9.70                                   | 70.99         | MUDSTONE.                                                                                                                                                                                                                                              |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        | 10.20                                  | 70.49         | COAL Intact.                                                                                                                                                                                                                                           |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        | 11.70                                  | 68.99         | MUDSTONE.                                                                                                                                                                                                                                              |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |        |                                        |               |                                                                                                                                                                                                                                                        |                            |                                  |         |                                   |         |                          |          |      |  |  |  |  |  |  |  |

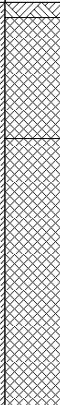
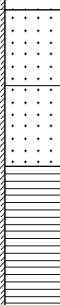


| <div> SOLMEK</div> <div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div> |                                                                                     |                |               | Rotary Open Hole Log                                                                                                                                   |                                                                                     |        |            |                                                                                       |                                                                                       | Scale 1:150 Sheet 1 of 2                                                              |                                                                                       |                     |                 |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------|-----------------|--|--|--|--|
|                                                                                                                                                                                                     |                                                                                     |                |               | BH02                                                                                                                                                   |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
| Contract no: S220141                                                                                                                                                                                |                                                                                     |                |               | Site: Site A, Leconfield, Cleator Moor                                                                                                                 |                                                                                     |        |            | Driller: Bainbridge Brothers Ltd                                                      |                                                                                       |                                                                                       |                                                                                       | GL (AOD): 81.30m    |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            | Plant used: Beretta T59/Symmetrex                                                     |                                                                                       |                                                                                       |                                                                                       | Easting: 301371.93  |                 |  |  |  |  |
| Client: Copeland Borough Council                                                                                                                                                                    |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            | Started: 01/03/2022                                                                   |                                                                                       |                                                                                       |                                                                                       | Northing: 515580.54 |                 |  |  |  |  |
| Method: Rotary Openhole                                                                                                                                                                             |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            | Ended: 01/03/2022                                                                     |                                                                                       |                                                                                       |                                                                                       | Logged: KW          |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            | Backfilled: 01/03/2022                                                                |                                                                                       |                                                                                       |                                                                                       | Status: DRAFT       |                 |  |  |  |  |
| Backfill / Installation                                                                                                                                                                             | Legend                                                                              | Depth (m)      | Level (m AOD) | Stratum Description                                                                                                                                    | Samples and Insitu Testing                                                          |        |            | Coring / Fractures                                                                    |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               |                                                                                                                                                        | Depth (m)                                                                           | Type   | Results    | TCR (%)                                                                               | SCR (%)                                                                               | RQD (%)                                                                               | Fracture                                                                              |                     |                 |  |  |  |  |
|                                                                                                                    |   | 0.40           | 80.90         | MADE GROUND: Grass over dark brown slightly clayey very gravelly topsoil. Gravel is fine to medium subrounded to angular of sandstone, brick and slag. |   |        |            |   |   |   |   |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     | 1.30           | 80.00         | MADE GROUND: Bluish grey slag.                                                                                                                         |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               | MADE GROUND: Reddish brown sandy gravelly clay (reworked).                                                                                             |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     | 4.60           | 76.70         | MADE GROUND: Bluish grey slag.                                                                                                                         |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     | 10.20          | 71.10         | Brown very sandy gravelly CLAY.                                                                                                                        |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     | 11.40          | 69.90         | Soft black silty CLAY.                                                                                                                                 |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     | 11.90          | 69.40         | MUDSTONE.                                                                                                                                              |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                  |  | 16.40          | 64.90         | COAL Intact.                                                                                                                                           |  |        |            |  |  |  |  |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     | 17.80          | 63.50         | MUDSTONE.                                                                                                                                              |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     | 19.40          | 61.90         | Solid drilling noted by driller, however no flush returns so unable to log rock.                                                                       |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
|                                                                                                                                                                                                     |                                                                                     |                |               |                                                                                                                                                        |                                                                                     |        |            |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
| Hole Diameter                                                                                                                                                                                       |                                                                                     | Casing Depths  |               | General Remarks                                                                                                                                        | Flush Returns                                                                       |        |            |                                                                                       | Ground Water                                                                          |                                                                                       |                                                                                       |                     |                 |  |  |  |  |
| Depth Base (m)                                                                                                                                                                                      | Diameter (mm)                                                                       | Depth Base (m) | Diameter (mm) |                                                                                                                                                        | From (m)                                                                            | To (m) | Flush Type | Flush (%)                                                                             | Depth Strike (m)                                                                      | Depth Casing (m)                                                                      | Depth Sealed (m)                                                                      | Time Elapsed (min)  | Water Level (m) |  |  |  |  |
| 12.00<br>40.00                                                                                                                                                                                      | 102<br>150                                                                          | 12.00          | 102           |                                                                                                                                                        |                                                                                     |        |            |                                                                                       | 9.60                                                                                  | 9.60                                                                                  |                                                                                       |                     |                 |  |  |  |  |

| <div><div> SOLMEK</div><div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div></div> |                                                                                   |           |               | Rotary Open Hole Log                                                             |                            |      |         |                                   |         |         | Scale 1:150 Sheet 2 of 2 |                     |  |  |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|---------------|----------------------------------------------------------------------------------|----------------------------|------|---------|-----------------------------------|---------|---------|--------------------------|---------------------|--|--|--|--|--|--|--|--|--|
|                                                                                                                                                                                                               |                                                                                   |           |               | BH02                                                                             |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
| Contract no: S220141                                                                                                                                                                                          |                                                                                   |           |               | Site: Site A, Leconfield, Cleator Moor                                           |                            |      |         | Driller: Bainbridge Brothers Ltd  |         |         |                          | GL (AOD): 81.30m    |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         | Plant used: Beretta T59/Symmetrex |         |         |                          | Easting: 301371.93  |  |  |  |  |  |  |  |  |  |
| Client: Copeland Borough Council                                                                                                                                                                              |                                                                                   |           |               |                                                                                  |                            |      |         | Started: 01/03/2022               |         |         |                          | Northing: 515580.54 |  |  |  |  |  |  |  |  |  |
| Method: Rotary Openhole                                                                                                                                                                                       |                                                                                   |           |               |                                                                                  |                            |      |         | Ended: 01/03/2022                 |         |         |                          | Logged: KW          |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         | Backfilled: 01/03/2022            |         |         |                          | Status: DRAFT       |  |  |  |  |  |  |  |  |  |
| Backfill / Installation                                                                                                                                                                                       | Legend                                                                            | Depth (m) | Level (m AOD) | Stratum Description                                                              | Samples and Insitu Testing |      |         | Coring / Fractures                |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  | Depth (m)                  | Type | Results | TCR (%)                           | SCR (%) | RQD (%) | Fracture                 |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                               |  | 40.00     | 41.30         | Solid drilling noted by driller, however no flush returns so unable to log rock. |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               | End of Borehole at 40.000m                                                       |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                               |                                                                                   |           |               |                                                                                  |                            |      |         |                                   |         |         |                          |                     |  |  |  |  |  |  |  |  |  |
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| <div><div></div><div><div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div></div></div> |                                                                                   | Rotary Open Hole Log                   |               |                                                                                                    |                            |                                    |         | Scale 1:150 Sheet 1 of 1 |           | BH03             |                  |                  |                    |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------|---------------|----------------------------------------------------------------------------------------------------|----------------------------|------------------------------------|---------|--------------------------|-----------|------------------|------------------|------------------|--------------------|-----------------|
| Contract no: S220141                                                                                                                                                                                              |                                                                                   | Site: Site A, Leconfield, Cleator Moor |               |                                                                                                    |                            | Driller: Bainbridge Brothers Ltd   |         | GL (AOD): 82.98m         |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   |                                        |               |                                                                                                    |                            | Plant used: Beretta T151/Symmetrex |         | Easting: 301632.92       |           |                  |                  |                  |                    |                 |
| Client: Copeland Borough Council                                                                                                                                                                                  |                                                                                   |                                        |               |                                                                                                    |                            | Started: 16/02/2022                |         | Northing: 515561.21      |           |                  |                  |                  |                    |                 |
| Method: Rotary Openhole                                                                                                                                                                                           |                                                                                   |                                        |               |                                                                                                    |                            | Ended: 16/02/2022                  |         | Logged: KW               |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   |                                        |               |                                                                                                    |                            | Backfilled: 16/02/2022             |         | Status: DRAFT            |           |                  |                  |                  |                    |                 |
| Backfill / Installation                                                                                                                                                                                           | Legend                                                                            | Depth (m)                              | Level (m AOD) | Stratum Description                                                                                | Samples and Insitu Testing |                                    |         | Coring / Fractures       |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   |                                        |               |                                                                                                    | Depth (m)                  | Type                               | Results | TCR (%)                  | SCR (%)   | RQD (%)          | Fracture         |                  |                    |                 |
|                                                                                                                                   |  | 0.50                                   | 82.48         | MADE GROUND: Grass over dark brown clayey topsoil with rootlets.<br>MADE GROUND: Bluish grey slag. |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 2.30                                   | 80.68         | Orangish brown very sandy gravelly CLAY.                                                           |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 4.80                                   | 78.18         | Reddish brown sandy gravelly CLAY.                                                                 |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 7.30                                   | 75.68         | Highly weathered SANDSTONE very fractured.                                                         |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 10.40                                  | 72.58         | COAL intact no loss of flush.                                                                      |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 10.50                                  | 72.48         | MUDSTONE.                                                                                          |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 17.10                                  | 65.88         | COAL intact no loss of flush.                                                                      |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 17.90                                  | 65.08         | MUDSTONE.                                                                                          |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 19.40                                  | 63.58         | COAL intact no loss of flush.                                                                      |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 20.00                                  | 62.98         | MUDSTONE.                                                                                          |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
|                                                                                                                                                                                                                   |                                                                                   | 30.00                                  | 52.98         | End of Borehole at 30.000m                                                                         |                            |                                    |         |                          |           |                  |                  |                  |                    |                 |
| Hole Diameter                                                                                                                                                                                                     |                                                                                   | Casing Depths                          |               | General Remarks                                                                                    |                            | Flush Returns                      |         |                          |           | Ground Water     |                  |                  |                    |                 |
| Depth Base (m)                                                                                                                                                                                                    | Diameter (mm)                                                                     | Depth Base (m)                         | Diameter (mm) |                                                                                                    |                            | From (m)                           | To (m)  | Flush Type               | Flush (%) | Depth Strike (m) | Depth Casing (m) | Depth Sealed (m) | Time Elapsed (min) | Water Level (m) |
| 10.50<br>30.00                                                                                                                                                                                                    | 102<br>150                                                                        | 10.50                                  | 102           |                                                                                                    |                            |                                    |         |                          |           | 5.90             | 5.90             | 7.50             |                    |                 |

| <div> SOLMEK</div> <div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div> |                                                                                     | <b>Cable Percussive with Rotary Core Follow-on Log</b> |               |                                                                                                                                                                                                                                      |                            |         |                                          |                                 |           |                         |                  | Scale 1:150 Sheet 1 of 2 |                    |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|------------------------------------------|---------------------------------|-----------|-------------------------|------------------|--------------------------|--------------------|-----------------|
| <b>Contract no:</b> S220141                                                                                                                                                                         |                                                                                     | <b>Site:</b> Site A, Leconfield, Cleator Moor          |               |                                                                                                                                                                                                                                      |                            |         | <b>Driller:</b> Bainbridge Brothers Ltd  |                                 |           | <b>GL (AOD):</b> 83.08m |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      |                            |         | <b>Plant used:</b> Beretta T59/Symmetrex |                                 |           | <b>Easting:</b> 301730  |                  |                          |                    |                 |
| <b>Client:</b> Copeland Borough Council                                                                                                                                                             |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      |                            |         | <b>Started:</b> 18/02/2022               |                                 |           | <b>Northing:</b> 515566 |                  |                          |                    |                 |
| <b>Method:</b> Rotary Openhole/Coring                                                                                                                                                               |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      |                            |         | <b>Ended:</b> 18/02/2022                 |                                 |           | <b>Logged:</b> KW       |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      |                            |         | <b>Backfilled:</b> 18/02/2022            |                                 |           | <b>Status:</b> DRAFT    |                  |                          |                    |                 |
| Backfill / Installation                                                                                                                                                                             | Legend                                                                              | Depth (m)                                              | Level (m AOD) | Stratum Description                                                                                                                                                                                                                  | Samples and Insitu Testing |         |                                          |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      | Depth (m)                  |         | Type                                     | Results                         |           |                         |                  |                          |                    |                 |
|                                                                                                                     |    | 0.30                                                   | 82.78         | MADE GROUND: Grass over brown gravelly topsoil. Gravel is fine to medium subrounded to subangular of sandstone.<br>MADE GROUND: Bluish grey slag.                                                                                    | 1.20 - 1.23                | SPT (S) |                                          | N=50+ (25 for 8mm/50 for 20mm)  |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      | 2.00 - 2.04                | SPT (S) |                                          | N=50+ (25 for 9mm/50 for 30mm)  |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 2.70                                                   | 80.38         | MADE GROUND: Sandy gravel. Gravel of slag, sandstone and mudstone.                                                                                                                                                                   | 3.00 - 3.03                | SPT (S) |                                          | N=50+ (25 for 7mm/50 for 25mm)  |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      | 4.00 - 4.04                | SPT (S) |                                          | N=50+ (25 for 10mm/50 for 35mm) |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      | 5.00 - 5.04                | SPT (S) |                                          | N=50+ (25 for 15mm/50 for 25mm) |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      | 6.50 - 6.55                | SPT (S) |                                          | N=50+ (25 for 12mm/50 for 35mm) |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 8.20                                                   | 74.88         | Firm consistency reddish brown very sandy gravelly CLAY.                                                                                                                                                                             | 8.00 - 8.45                | SPT (S) |                                          | N=15 (15,3/4,4,4,3)             |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 9.10                                                   | 73.98         | Dense brown sandy GRAVEL.                                                                                                                                                                                                            | 9.50 - 9.95                | SPT (S) |                                          | N=32 (7,8/8,7,8,9)              |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      | 11.00 - 11.45              | SPT (S) |                                          | N=36 (8,9/9,8,9,10)             |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 12.70                                                  | 70.38         | Weathered SANDSTONE.                                                                                                                                                                                                                 | 12.50 - 12.80              | SPT (S) |                                          | N=50+ (9,11/15,20,15 for 5mm)   |           |                         |                  |                          |                    |                 |
|                                                                                                                   |  | 13.50                                                  | 69.58         | Weak to medium strong light red/pink very thinly laminated partially weathered to distinctly weathered SANDSTONE. Fractures are inclined (45 degrees) to subvertical, planar and rough.<br><i>14.40-14.50m: Recovered as gravel.</i> | 13.50 - 14.50              | C       | 70 50 10 NI                              |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 15.00                                                  | 68.08         | Medium strong like red/pink very thinly laminated slightly weathered SANDSTONE. Fractures are sub horizontal to horizontal undulating and clean.                                                                                     | 14.50 - 15.50              | C       | 85 75 40 NI                              |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 16.60                                                  | 66.48         | Fractures are closely spaced sub horizontal to sub vertical (recovered as gravel 14.40-14.50m)                                                                                                                                       | 15.50 - 16.50              | C       | 85 75 45 NI                              |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               | Weak dark reddish brown very thinly laminated partially unweathered MUDSTONE. Fractures are inclined to subvertical undulating rough & clean.                                                                                        | 16.50 - 17.50              | C       | 75 60 15 NI                              |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      | 17.50 - 18.50              | C       | 60 40 10 NI                              |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      | 18.50 - 19.50              | C       | 55 40 30 NI                              |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 19.50                                                  | 63.58         | SANDSTONE with MUDSTONE bands.                                                                                                                                                                                                       |                            |         |                                          |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 24.70                                                  | 58.38         | COAL. No loss of flush.                                                                                                                                                                                                              |                            |         |                                          |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                   |  | 26.50                                                  | 56.58         | SANDSTONE with MUDSTONE bands.                                                                                                                                                                                                       |                            |         |                                          |                                 |           |                         |                  |                          |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |               |                                                                                                                                                                                                                                      |                            |         |                                          |                                 |           |                         |                  |                          |                    |                 |
| Hole Diameter                                                                                                                                                                                       |                                                                                     | Casing Depths                                          |               | General Remarks                                                                                                                                                                                                                      |                            |         | Chiselling                               |                                 |           | Ground Water            |                  |                          |                    |                 |
| Depth Base (m)                                                                                                                                                                                      | Diameter (mm)                                                                       | Depth Base (m)                                         | Diameter (mm) |                                                                                                                                                                                                                                      |                            |         | From (m)                                 | To (m)                          | Time (hr) | Depth Strike (m)        | Depth Casing (m) | Depth Sealed (m)         | Time Elapsed (min) | Water Level (m) |
| 13.50                                                                                                                                                                                               | 102                                                                                 | 13.50                                                  | 102           | 1.2m hand excavated inspection pit.                                                                                                                                                                                                  |                            |         |                                          |                                 |           | 9.10                    | 9.10             | 10.50                    |                    |                 |
| 19.50                                                                                                                                                                                               | 102                                                                                 |                                                        |               | Inferred groundwater encountered at 9.10m and 16.40m.                                                                                                                                                                                |                            |         |                                          |                                 |           | 16.40                   | 13.50            |                          |                    |                 |
| 30.00                                                                                                                                                                                               | 150                                                                                 |                                                        |               |                                                                                                                                                                                                                                      |                            |         |                                          |                                 |           |                         |                  |                          |                    |                 |



## Cable Percussive with Rotary Core Follow-on Log

Scale 1:150 Sheet 2 of 2

## BH04

Contract no: S220141

**Site:** Site A, Leconfield, Cleator Moor

|                 |                         |
|-----------------|-------------------------|
| <b>Driller:</b> | Bainbridge Brothers Ltd |
|-----------------|-------------------------|

Plant used: Beretta T59/Symmetrex

Started: 18/02/2022

**Ended:** 18/02/2022

|                    |            |
|--------------------|------------|
| <b>Backfilled:</b> | 18/02/2022 |
|--------------------|------------|

|           |        |
|-----------|--------|
| GL (AOD): | 83.08m |
|-----------|--------|

Easting: 301730

**Northing:** 515566

Logged: KW

**Status:** DRAFT

|                |                          |
|----------------|--------------------------|
| <b>Client:</b> | Copeland Borough Council |
|----------------|--------------------------|

|                |                        |
|----------------|------------------------|
| <b>Method:</b> | Rotary Openhole/Coring |
|----------------|------------------------|

[illegible]

| Hole Diameter  |               | Casing Depths  |               | General Remarks                                                                              | Flush Returns |        |            |           | Ground Water     |                  |                  |                    |                 |
|----------------|---------------|----------------|---------------|----------------------------------------------------------------------------------------------|---------------|--------|------------|-----------|------------------|------------------|------------------|--------------------|-----------------|
| Depth Base (m) | Diameter (mm) | Depth Base (m) | Diameter (mm) |                                                                                              | From (m)      | To (m) | Flush Type | Flush (%) | Depth Strike (m) | Depth Casing (m) | Depth Sealed (m) | Time Elapsed (min) | Water Level (m) |
| 18.00          | 102           | 18.00          | 102           | 1.2m hand excavated inspection pit.<br>Inferred groundwater encountered at 5.90m and 17.10m. |               |        |            |           | 5.90             | 5.90             |                  |                    |                 |
| 40.00          | 150           |                |               |                                                                                              |               |        |            |           | 17.10            | 17.10            |                  |                    |                 |



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| <div> SOLMEK</div> <div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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                                                               |        | Site: Site A, Leconfield, Cleator Moor |               |                     | Driller: Bainbridge Brothers Ltd<br>Plant used: Beretta T151/Symmetrex<br>Started: 17/02/2022<br>Ended: 17/02/2022<br>Backfilled: 17/02/2022 |      |         | GL (AOD): 83.04m<br>Easting: 301677.34<br>Northing: 515490.63<br>Logged: KW<br>Status: DRAFT |                          |         |          |
| Client: Copeland Borough Council                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| <div> SOLMEK</div> <div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div> |                                                                                    |           |               | Rotary Open Hole Log                   |                                                                                    |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      | Scale 1:150 Sheet 1 of 1                                                             |                     | BH06 |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------|---------------|----------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------|------|--|
| Contract no: S220141                                                                                                                                                                                |                                                                                    |           |               | Site: Site A, Leconfield, Cleator Moor |                                                                                    |                                                                                      |                                                                                      | Driller: Bainbridge Brothers Ltd                                                     |                                                                                      |                                                                                      |                                                                                      | GL (AOD): 82.91m    |      |  |
|                                                                                                                                                                                                     |                                                                                    |           |               |                                        |                                                                                    |                                                                                      |                                                                                      | Plant used: Beretta T59/Symmetrex                                                    |                                                                                      |                                                                                      |                                                                                      | Easting: 301732.72  |      |  |
| Client: Copeland Borough Council                                                                                                                                                                    |                                                                                    |           |               |                                        |                                                                                    |                                                                                      |                                                                                      | Started: 28/02/2022                                                                  |                                                                                      |                                                                                      |                                                                                      | Northing: 515444.99 |      |  |
| Method: Rotary Openhole                                                                                                                                                                             |                                                                                    |           |               |                                        |                                                                                    |                                                                                      |                                                                                      | Ended: 28/02/2022                                                                    |                                                                                      |                                                                                      |                                                                                      | Logged: KW          |      |  |
|                                                                                                                                                                                                     |                                                                                    |           |               |                                        |                                                                                    |                                                                                      |                                                                                      | Backfilled: 28/02/2022                                                               |                                                                                      |                                                                                      |                                                                                      | Status: DRAFT       |      |  |
| Backfill / Installation                                                                                                                                                                             | Legend                                                                             | Depth (m) | Level (m AOD) | Stratum Description                    | Samples and Insitu Testing                                                         |                                                                                      |                                                                                      | Coring / Fractures                                                                   |                                                                                      |                                                                                      |                                                                                      |                     |      |  |
|                                                                                                                                                                                                     |                                                                                    |           |               |                                        | Depth (m)                                                                          | Type                                                                                 | Results                                                                              | TCR (%)                                                                              | SCR (%)                                                                              | RQD (%)                                                                              | Fracture                                                                             |                     |      |  |
|                                                                                                                    |  | 0.40      | 82.51         | MADE GROUND: Bluish grey slag.         |  |  |  |  |  |  |  |                     |      |  |
|                                                                                                                                                                                                     |                                                                                    |           |               | MADE GROUND: Sandy gravel of slag.     |                                                                                    |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                     |      |  |
|                                                                                                                                                                                                     |                                                                                    | 1.30      | 81.61         | Reddish brown very sandy CLAY.         |                                                                                    |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                     |      |  |
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| <div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div> <div>SOLMEK</div> |                   | <div>Cable Percussive with Rotary Core Follow-on Log</div>                                                                                                                                                                  |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              |                                       | <div>Scale 1:150 Sheet 1 of 2</div> <div>BH07</div>                                                   |                        |                                            |                    |                              |  |
| <div>Contract no: S220141</div>                                                                                     |                   | <div>Site: Site A, Leconfield, Cleator Moor</div>                                                                                                                                                                           |                          |                                                                                                                                                                                                              |                     | <div>Driller: Bainbridge Brothers Ltd<br/>Beretta T151/Symmetrex/Beretta T59/Symmetrex<br/>Started: 23/02/2022<br/>Ended: 25/02/2022<br/>Backfilled: 25/02/2022</div> |              |                                       | <div>GL (AOD): 82.83m<br/>Easting: 301824<br/>Northing: 515557<br/>Logged: KW<br/>Status: DRAFT</div> |                        |                                            |                    |                              |  |
| <div>Client: Copeland Borough Council</div>                                                                         |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              |                                       |                                                                                                       |                        |                                            |                    |                              |  |
| <div>Method: Rotary Openhole/Coring</div>                                                                           |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              |                                       |                                                                                                       |                        |                                            |                    |                              |  |
| <div>Backfill / Installation</div>                                                                                  | <div>Legend</div> | <div>Depth (m)</div>                                                                                                                                                                                                        | <div>Level (m AOD)</div> | <div>Stratum Description</div>                                                                                                                                                                               |                     |                                                                                                                                                                       |              | <div>Samples and Insitu Testing</div> |                                                                                                       |                        |                                            |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>Depth (m)</div>                  |                                                                                                       | <div>Type</div>        | <div>Results</div>                         |                    |                              |  |
| <div></div>                                                                                                         | <div></div>       | <div>7.10</div>                                                                                                                                                                                                             | <div>75.73</div>         | <div>MADE GROUND: Very dense bluish grey slag.</div>                                                                                                                                                         |                     |                                                                                                                                                                       |              | <div>1.20 - 1.23</div>                |                                                                                                       | <div>SPT (S)</div>     | <div>N=50+ (25 for 10mm/50 for 15mm)</div> |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>1.20 - 1.65</div>                |                                                                                                       | <div>D</div>           |                                            |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>2.00 - 2.03</div>                |                                                                                                       | <div>SPT (S)</div>     | <div>N=50+ (25 for 10mm/50 for 20mm)</div> |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>2.00 - 2.45</div>                |                                                                                                       | <div>D</div>           |                                            |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>3.00 - 3.02</div>                |                                                                                                       | <div>SPT (S)</div>     | <div>N=50+ (25 for 15mm/50 for 10mm)</div> |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>3.00 - 3.45</div>                |                                                                                                       | <div>D</div>           |                                            |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>4.00 - 4.03</div>                |                                                                                                       | <div>SPT (S)</div>     | <div>N=50+ (25 for 20mm/50 for 10mm)</div> |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>4.00 - 4.45</div>                |                                                                                                       | <div>D</div>           |                                            |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>5.00 - 5.03</div>                |                                                                                                       | <div>SPT (S)</div>     | <div>N=50+ (25 for 10mm/50 for 15mm)</div> |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>5.00 - 5.45</div>                |                                                                                                       | <div>D</div>           |                                            |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>6.00 - 6.03</div>                |                                                                                                       | <div>SPT (S)</div>     | <div>N=50+ (25 for 10mm/50 for 20mm)</div> |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>6.00 - 6.45</div>                |                                                                                                       | <div>D</div>           |                                            |                    |                              |  |
|                                                                                                                     |                   | <div></div>                                                                                                                                                                                                                 | <div></div>              | <div>11.50</div>                                                                                                                                                                                             | <div>71.33</div>    | <div>SANDSTONE.</div>                                                                                                                                                 |              |                                       |                                                                                                       | <div>7.50 - 7.95</div> |                                            | <div>SPT (S)</div> | <div>N=8 (1,2/1,2,2,3)</div> |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              |                                       |                                                                                                       | <div>7.50 - 7.95</div> |                                            | <div>D</div>       |                              |  |
| <div>9.00 - 9.45</div>                                                                                              |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              |                                       |                                                                                                       | <div>SPT (S)</div>     | <div>N=9 (1,0/1,2,2,4)</div>               |                    |                              |  |
| <div>9.00 - 9.45</div>                                                                                              |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              |                                       |                                                                                                       | <div>D</div>           |                                            |                    |                              |  |
| <div></div>                                                                                                         | <div></div>       | <div>12.00</div>                                                                                                                                                                                                            | <div>70.83</div>         | <div>Very weak to weak light reddish brown thinly bedded to thinly laminated distinctly weathered MUDSTONE. Fractures are subhorizontal to subvertical medium to closely spaced planar rough to clean.</div> |                     |                                                                                                                                                                       |              | <div>12.00 - 13.00</div>              |                                                                                                       | <div>C</div>           | <div>757065NI</div>                        |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>13.00 - 14.00</div>              |                                                                                                       | <div>C</div>           |                                            |                    | <div>706040NI</div>          |  |
|                                                                                                                     |                   | <div>14.00 - 15.00</div>                                                                                                                                                                                                    |                          | <div>C</div>                                                                                                                                                                                                 | <div>603010NI</div> |                                                                                                                                                                       |              |                                       |                                                                                                       |                        |                                            |                    |                              |  |
|                                                                                                                     |                   | <div>14.60-15.00m: Recovered as gravel.</div>                                                                                                                                                                               |                          | <div>15.00 - 16.00</div>                                                                                                                                                                                     |                     |                                                                                                                                                                       | <div>C</div> | <div>805040NI</div>                   |                                                                                                       |                        |                                            |                    |                              |  |
|                                                                                                                     |                   | <div>Weak to medium strong reddish grey very thinly laminated moderately weathered micaceous SANDSTONE (coarse grained) Fractures are closely spaced planar rough clean subhorizontal (vertical 15-15.15m).</div>           |                          | <div>16.00 - 17.00</div>                                                                                                                                                                                     | <div>C</div>        | <div>756025NI</div>                                                                                                                                                   |              |                                       |                                                                                                       |                        |                                            |                    |                              |  |
|                                                                                                                     |                   | <div>16.40-16.60m: Recovered as gravel.</div>                                                                                                                                                                               |                          | <div>17.00 - 18.00</div>                                                                                                                                                                                     | <div>C</div>        |                                                                                                                                                                       |              | <div>705550NI</div>                   |                                                                                                       |                        |                                            |                    |                              |  |
|                                                                                                                     |                   | <div>Medium strong light grey thinly bedded to thickly laminated moderately weathered siliceous SANDSTONE (coarse grained) fractures are medium to closely spaced undulating rough clean subhorizontal to horizontal.</div> |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              |                                       |                                                                                                       |                        |                                            |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              | <div>SANDSTONE.</div>                 |                                                                                                       |                        |                                            |                    |                              |  |
|                                                                                                                     |                   |                                                                                                                                                                                                                             |                          |                                                                                                                                                                                                              |                     |                                                                                                                                                                       |              |                                       |                                                                                                       |                        |                                            |                    |                              |  |
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Scale 1:150 Sheet 2 of 2

BH07

Contract no: S220141

**Site:** Site A, Leconfield, Cleator Moor

|                    |                                                 |
|--------------------|-------------------------------------------------|
| <b>Driller:</b>    | Bainbridge Brothers Ltd                         |
| <b>Plant used:</b> | Beretta T151/Symmetrex/Beretta<br>T59/Symmetrex |
| <b>Started:</b>    | 23/02/2022                                      |
| <b>Ended:</b>      | 25/02/2022                                      |
| <b>Backfilled:</b> | 25/02/2022                                      |

|                  |           |
|------------------|-----------|
| <b>GL (AOD):</b> | 82.83m    |
| <b>Easting:</b>  | 301824.05 |
| <b>Northing:</b> | 515557.36 |
| <b>Logged:</b>   | KW        |
| <b>Status:</b>   | DRAFT     |

|                |                          |
|----------------|--------------------------|
| <b>Client:</b> | Copeland Borough Council |
|----------------|--------------------------|

|                |                        |
|----------------|------------------------|
| <b>Method:</b> | Rotary Openhole/Coring |
|----------------|------------------------|

[illegible]



## Rotary Open Hole Log

Scale 1:150 Sheet 1 of 2

**BH08**

Contract no: S220141

Site: Site A, Leconfield, Cleator Moor

|                 |                         |
|-----------------|-------------------------|
| <b>Driller:</b> | Bainbridge Brothers Ltd |
|-----------------|-------------------------|

Plant used: Beretta T59/Symmetrex

**Started:** 21/02/2022

|        |            |
|--------|------------|
| Ended: | 21/02/2022 |
|--------|------------|

**Backfilled:** 21/02/2022

GL (AOD): 82.92m

Easting: 301843.16

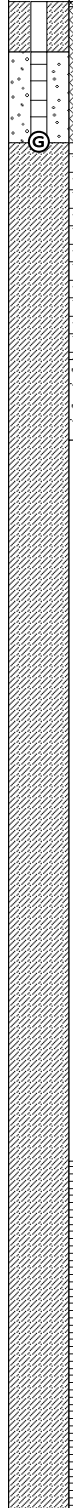
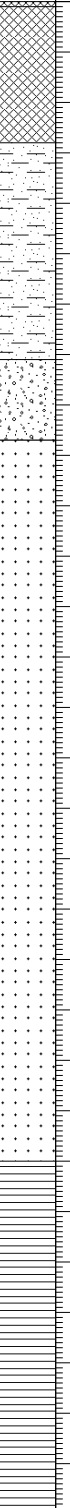
**Northing:** 515494.72

Logged: KW

**Status:** DRAFT

|                |                          |
|----------------|--------------------------|
| <b>Client:</b> | Copeland Borough Council |
|----------------|--------------------------|

|                |                 |
|----------------|-----------------|
| <b>Method:</b> | Rotary Openhole |
|----------------|-----------------|

| Backfill / Installation                                                           | Legend                                                                             | Depth (m) | Level (m AOD) | Stratum Description                                    | Samples and Insitu Testing |      |         | Coring / Fractures |         |         |          |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------|---------------|--------------------------------------------------------|----------------------------|------|---------|--------------------|---------|---------|----------|
|                                                                                   |                                                                                    |           |               |                                                        | Depth (m)                  | Type | Results | TCR (%)            | SCR (%) | RQD (%) | Fracture |
|  |  | 0.10      | 82.82         | MADE GROUND: Tarmac.<br>MADE GROUND: Bluish grey slag. |                            |      |         |                    |         |         |          |
|                                                                                   |                                                                                    | 2.80      | 80.12         | Reddish brown very sandy CLAY.                         |                            |      |         |                    |         |         |          |
|                                                                                   |                                                                                    | 7.10      | 75.82         | Brown SAND and GRAVELS.                                |                            |      |         |                    |         |         |          |
|                                                                                   |                                                                                    | 8.70      | 74.22         | SANDSTONE with thin beds of MUDSTONE.                  |                            |      |         |                    |         |         |          |
|                                                                                   |                                                                                    |           |               | MUDSTONE.                                              |                            |      |         |                    |         |         |          |
|                                                                                   |                                                                                    | 30.00     | 52.92         |                                                        |                            |      |         |                    |         |         |          |

| Hole Diameter  |               | Casing Depths  |               | General Remarks | Flush Returns                                                                      |        |            |           | Ground Water     |                  |                  |                    |                 |
|----------------|---------------|----------------|---------------|-----------------|------------------------------------------------------------------------------------|--------|------------|-----------|------------------|------------------|------------------|--------------------|-----------------|
| Depth Base (m) | Diameter (mm) | Depth Base (m) | Diameter (mm) |                 | From (m)                                                                           | To (m) | Flush Type | Flush (%) | Depth Strike (m) | Depth Casing (m) | Depth Sealed (m) | Time Elapsed (min) | Water Level (m) |
| 9.00<br>30.00  | 102<br>150    | 9.00           | 102           |                 | 1.2m hand excavated inspection pit.<br>Inferred groundwater encountered at 17.10m. |        |            |           |                  | 17.10            | 9.00             |                    |                 |
|                |               |                |               |                 |                                                                                    |        |            |           |                  |                  |                  |                    |                 |



12-16 Yarm Road  
Stockton on Tees  
TS18 3NA  
01642 607083  
info@solmek.com

## Rotary Open Hole Log

Scale 1:150 Sheet 2 of 2

**BH08**

**Contract no:** S220141

**Site:** Site A, Leconfield, Cleator Moor

|                    |                         |
|--------------------|-------------------------|
| <b>Driller:</b>    | Bainbridge Brothers Ltd |
| <b>Plant used:</b> | Beretta T59/Symmetrex   |
| <b>Started:</b>    | 21/02/2022              |
| <b>Ended:</b>      | 21/02/2022              |
| <b>Backfilled:</b> | 21/02/2022              |

|                  |           |
|------------------|-----------|
| <b>GL (AOD):</b> | 82.92m    |
| <b>Easting:</b>  | 301843.16 |
| <b>Northing:</b> | 515494.72 |
| <b>Logged:</b>   | KW        |
| <b>Status:</b>   | DRAFT     |

|                |                          |
|----------------|--------------------------|
| <b>Client:</b> | Copeland Borough Council |
|----------------|--------------------------|

|                |                 |
|----------------|-----------------|
| <b>Method:</b> | Rotary Openhole |
|----------------|-----------------|

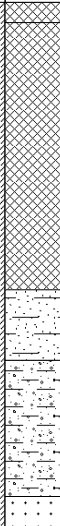
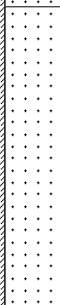
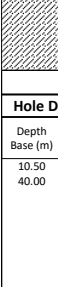
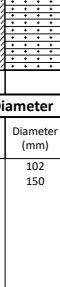
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### Samples and Insitu Testing

### Coring / Fractures

| Backfill /<br>Installation | Legend | Depth<br>(m) | Level<br>(m AOD) | Stratum Description        | Depth (m) | Type | Results | TCR (%) | SCR (%) | RQD (%) | Fracture |
|----------------------------|--------|--------------|------------------|----------------------------|-----------|------|---------|---------|---------|---------|----------|
|                            |        |              |                  |                            |           |      |         |         |         |         |          |
|                            |        | 30.00        | 52.92            | End of Borehole at 30.000m |           |      |         |         |         |         |          |

[illegible]

|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------|--------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|--------------------|-----------------|
| <div> SOLMEK</div> <div>12-16 Yarm Road<br/>Stockton on Tees<br/>TS18 3NA<br/>01642 607083<br/>info@solmek.com</div> |                                                                                     | <b>Cable Percussive with Rotary Core Follow-on Log</b> |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             | Scale 1:150 Sheet 1 of 2                                                                                                                                                                            |                  | <b>BH09</b>      |                    |                 |
| <b>Contract no:</b> S220141                                                                                                                                                                         |                                                                                     | <b>Site:</b> Site A, Leconfield, Cleator Moor          |                      |                                                                                                                                                                                                                               |  |  | <b>Driller:</b> Bainbridge Brothers Ltd<br><b>Plant used:</b> Beretta T59/Symmetrex<br><b>Started:</b> 21/02/2022<br><b>Ended:</b> 21/02/2022<br><b>Backfilled:</b> 21/02/2022 |   |                                   |        |             | <b>GL (AOD):</b> 83.11m<br><b>Easting:</b> 301873<br><b>Northing:</b> 515542<br><b>Logged:</b> KW<br><b>Status:</b> DRAFT                                                                           |                  |                  |                    |                 |
| <b>Client:</b> Copeland Borough Council                                                                                                                                                             |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
| <b>Method:</b> Rotary Openhole/Coring                                                                                                                                                               |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
| <b>Backfill / Installation</b>                                                                                                                                                                      | <b>Legend</b>                                                                       | <b>Depth (m)</b>                                       | <b>Level (m AOD)</b> | <b>Stratum Description</b>                                                                                                                                                                                                    |  |  |                                                                                                                                                                                |   | <b>Samples and Insitu Testing</b> |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | <b>Depth (m)</b>                  |        | <b>Type</b> | <b>Results</b>                                                                                                                                                                                      |                  |                  |                    |                 |
|                                                                                                                     |    | 0.40                                                   | 82.71                | MADE GROUND: Grass over reddish brown sandy clay.<br>MADE GROUND: Very dense bluish grey slag.                                                                                                                                |  |  |                                                                                                                                                                                |   | 1.20 - 1.52                       |        | SPT (S)     | N=50+<br>(10,12/15,21,14 for 25mm)<br>N=50+ (25 for 15mm/50 for 40mm)<br>N=50+ (25 for 10mm/50 for 20mm)<br>N=50+ (25 for 10mm/50 for 10mm)<br>N=50+ (25 for 25mm/50 for 10mm)<br>N=9 (1,2/2,2,2,3) |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 1.20 - 1.65                       |        | D           |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 2.00 - 2.28                       |        | SPT (S)     |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 2.00 - 2.45                       |        | D           |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 3.00 - 3.26                       |        | SPT (S)     |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 3.00 - 3.45                       |        | D           |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 4.00 - 4.24                       |        | SPT (S)     |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 4.00 - 4.45                       |        | D           |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 5.00 - 5.26                       |        | SPT (S)     |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 5.00 - 5.45                       |        | D           |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 5.70                                                   | 77.41                | Loose light brown slightly clayey SAND.                                                                                                                                                                                       |  |  |                                                                                                                                                                                |   | 6.00 - 6.45                       |        | SPT (S)     |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 6.00 - 6.45                       |        | D           |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 7.10                                                   | 76.01                | Stiff consistency reddish brown slightly sandy gravelly high strength CLAY.                                                                                                                                                   |  |  |                                                                                                                                                                                |   | 7.50 - 7.95                       |        | SPT (S)     | N=16 (2,2/3,4,4,5)                                                                                                                                                                                  |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 7.50 - 7.95                       |        | D           |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 9.80                                                   | 73.31                | SANDSTONE.                                                                                                                                                                                                                    |  |  |                                                                                                                                                                                |   | 9.00 - 9.45                       |        | SPT (S)     | N=24 (3,4/4,5,7,8)                                                                                                                                                                                  |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   | 9.00 - 9.45                       |        | D           |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                    |   | 10.50                                                  | 72.61                | Weak to medium strong dark reddish to greyish brown thinly bedded to thickly laminated partially unweathered to distinctly weathered accleceaus SANDSTONE. Fractures are subhorizontal closely spaced undulating rough clean. |  |  | 10.50 - 11.50                                                                                                                                                                  | C | 10.50 - 11.50                     |        | C           | 85                                                                                                                                                                                                  | 55               | 40               | NI                 |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  | 11.50 - 12.50                                                                                                                                                                  | C |                                   |        | 60          | 50                                                                                                                                                                                                  | 45               | NI               |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      | <u>11.00-11.10m: Recovered as gravel.</u>                                                                                                                                                                                     |  |  | 12.50 - 13.50                                                                                                                                                                  | C |                                   |        | 80          | 60                                                                                                                                                                                                  | 50               | NI               |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      | <u>11.80-12.00m: Recovered as gravel.</u>                                                                                                                                                                                     |  |  | 13.50 - 14.50                                                                                                                                                                  | C |                                   |        | 90          | 85                                                                                                                                                                                                  | 80               | NI               |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      | <u>12.30-12.80m: Recovered as gravel.</u>                                                                                                                                                                                     |  |  | 14.50 - 15.50                                                                                                                                                                  | C |                                   |        | 70          | 60                                                                                                                                                                                                  | 50               | NI               |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  | 15.50 - 16.50                                                                                                                                                                  | C |                                   |        | 70          | 55                                                                                                                                                                                                  | 10               | NI               |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                   |  | 16.50                                                  | 66.61                | <u>16.20-16.50m: Recovered as gravel.</u><br>SANDSTONE with thin beds of MUDSTONE.                                                                                                                                            |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                   |  | 22.10                                                  | 61.01                | COAL intact no loss of flush.                                                                                                                                                                                                 |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 22.40                                                  | 60.71                | SANDSTONE with thin beds of MUDSTONE.                                                                                                                                                                                         |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                   |  |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
|                                                                                                                                                                                                     |                                                                                     | 27.80                                                  | 55.31                | Solid drilling noted by driller, however no flush returns so unable to log rock.                                                                                                                                              |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |
| <b>Hole Diameter</b>                                                                                                                                                                                |                                                                                     | <b>Casing Depths</b>                                   |                      | <b>General Remarks</b>                                                                                                                                                                                                        |  |  |                                                                                                                                                                                |   | <b>Chiselling</b>                 |        |             | <b>Ground Water</b>                                                                                                                                                                                 |                  |                  |                    |                 |
| Depth Base (m)                                                                                                                                                                                      | Diameter (mm)                                                                       | Depth Base (m)                                         | Diameter (mm)        | 1.2m hand excavated inspection pit.<br>Inferred groundwater encountered at 15.20m.                                                                                                                                            |  |  |                                                                                                                                                                                |   | From (m)                          | To (m) | Time (hr)   | Depth Strike (m)                                                                                                                                                                                    | Depth Casing (m) | Depth Sealed (m) | Time Elapsed (min) | Water Level (m) |
| 10.50                                                                                                                                                                                               | 102                                                                                 | 10.50                                                  | 102                  |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             | 15.20                                                                                                                                                                                               | 10.50            |                  |                    |                 |
| 40.00                                                                                                                                                                                               | 150                                                                                 |                                                        |                      |                                                                                                                                                                                                                               |  |  |                                                                                                                                                                                |   |                                   |        |             |                                                                                                                                                                                                     |                  |                  |                    |                 |







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# Trial Pit Log

Trial Pit No  
**TP01**  
Sheet 1 of 1

|               |                                  |             |         |                 |                   |        |            |
|---------------|----------------------------------|-------------|---------|-----------------|-------------------|--------|------------|
| Project Name: | Site A, Leconfield, Cleator Moor | Project No. | S220141 | Co-ords:        | 301399E - 515582N | Date   | 16/02/2022 |
| Plant Used:   | JCB 3CX                          | Level:      |         | Dimensions (m): | 1.40              | Scale  | 1:26       |
| Client:       | Copeland Borough Council         | Depth       | 0.50    |                 | 1.20              | Logged | KW         |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                                                                   |   |
|--------------|---------------------------|------|---------|-----------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |           |           |        |                                                                                                                                                                                       |   |
|              | 0.10 - 0.20               | B+ES |         | 0.20      |           |        | MADE GROUND: Grass over dark brown slightly clayey very gravelly topsoil. Gravel is fine to medium subrounded to angular of sandstone, brick and slag.                                |   |
|              | 0.30 - 0.40               | B+ES |         | 0.40      |           |        | MADE GROUND: Brown slightly sandy gravel of low cobble content. Gravel is fine to coarse subangular to angular of brick, wood, slag and metal. Occasional cobbles of slag up to 30cm. |   |
|              | 0.50                      | CBR  | 15%     | 0.50      |           |        | MADE GROUND: Grey blue fused slag recovered as gravel. Gravel is medium to coarse angular of slag.<br>End of Pit at 0.500m                                                            |   |
|              |                           |      |         |           |           |        |                                                                                                                                                                                       | 1 |
|              |                           |      |         |           |           |        |                                                                                                                                                                                       | 2 |
|              |                           |      |         |           |           |        |                                                                                                                                                                                       | 3 |
|              |                           |      |         |           |           |        |                                                                                                                                                                                       | 4 |
|              |                           |      |         |           |           |        |                                                                                                                                                                                       | 5 |

Remarks: No groundwater encountered.  
Unable to excavate through slag.  
Sulphurous odour noted within slag.

Stability: Pit walls stable

|  <b>SOLMEK</b><br>Solmek Ltd<br>12-16 Yarm Road<br>Stockton on Tees<br>TS18 3NA<br>Tel: 01642 607083<br>Email: info@solmek.com |                           |      |         | <h1>Trial Pit Log</h1>                                                                                                                                                                                                                                                                                                                    |           |                                                                                   |                                                                                                                                                                                       | TrialPit No<br><b>TP02</b><br>Sheet 1 of 1  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--|
| Project Name: <b>Site A, Leconfield, Cleator Moor</b>                                                                                                                                                           |                           |      |         | Project No.<br><b>S220141</b>                                                                                                                                                                                                                                                                                                             |           | Co-ords: <b>301372E - 515606N</b><br>Level:                                       |                                                                                                                                                                                       | Date<br><b>16/02/2022</b>                   |  |
| Plant Used: <b>JCB 3CX</b>                                                                                                                                                                                      |                           |      |         | Dimensions (m): <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">Depth<br/>0.30</div> <div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"> <div style="position: absolute; top: 0; right: 0; width: 50%; height: 50%; border: 1px solid black;"></div> </div> </div> |           |                                                                                   |                                                                                                                                                                                       | Scale<br><b>1:26</b><br>Logged<br><b>KW</b> |  |
| Client: <b>Copeland Borough Council</b>                                                                                                                                                                         |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   |                                                                                                                                                                                       |                                             |  |
| Water Strike                                                                                                                                                                                                    | Samples & In Situ Testing |      |         | Depth (m)                                                                                                                                                                                                                                                                                                                                 | Level (m) | Legend                                                                            | Stratum Description                                                                                                                                                                   |                                             |  |
|                                                                                                                                                                                                                 | Depth                     | Type | Results |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   |                                                                                                                                                                                       |                                             |  |
|                                                                                                                                                                                                                 | 0.20 - 0.30               | B+ES |         | 0.10                                                                                                                                                                                                                                                                                                                                      |           |  | MADE GROUND: Grass over orangey brown slightly clayey very gravelly topsoil. Gravel is coarse angular of plastic, brick and sandstone.                                                |                                             |  |
|                                                                                                                                                                                                                 | 0.30                      | CBR  | 15%     | 0.30                                                                                                                                                                                                                                                                                                                                      |           |  | MADE GROUND: Brown slightly sandy gravel of low cobble content. Gravel is fine to coarse subangular to angular of brick, wood, slag and metal. Occasional cobbles of slag up to 30cm. |                                             |  |
|                                                                                                                                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   | Greyish blue fused slag obstruction - unable to excavate through.                                                                                                                     |                                             |  |
|                                                                                                                                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   | End of Pit at 0.300m                                                                                                                                                                  |                                             |  |
|                                                                                                                                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   | 1                                                                                                                                                                                     |                                             |  |
|                                                                                                                                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   | 2                                                                                                                                                                                     |                                             |  |
|                                                                                                                                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   | 3                                                                                                                                                                                     |                                             |  |
|                                                                                                                                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   | 4                                                                                                                                                                                     |                                             |  |
|                                                                                                                                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   | 5                                                                                                                                                                                     |                                             |  |
| Remarks: No groundwater encountered.<br>Unable to excavate through slag.<br>Sulphurous odour noted within slag.                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   |                                                                                                                                                                                       |                                             |  |
| Stability: Pit walls stable                                                                                                                                                                                     |                           |      |         |                                                                                                                                                                                                                                                                                                                                           |           |                                                                                   |                                                                                                                                                                                       |                                             |  |





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## Trial Pit Log

Trial Pit No  
**TP03**  
Sheet 1 of 1

|                                                                                                                                                        |                           |                                  |         |                                      |           |                            |                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------------|---------|--------------------------------------|-----------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project Name: Site A, Leconfield, Cleator Moor                                                                                                         |                           | Project No. S220141              |         | Co-ords: 301406E - 515607N<br>Level: |           | Date<br>16/02/2022         |                                                                                                                                                                                                                        |
| Plant Used: JCB 3CX                                                                                                                                    |                           | Client: Copeland Borough Council |         | Dimensions (m):<br>Depth 0.70        |           | Scale<br>1:26<br>Logged KW |                                                                                                                                                                                                                        |
|                                                                                                                                                        |                           |                                  |         |                                      |           |                            |                                                                                                                                                                                                                        |
| Water Strike                                                                                                                                           | Samples & In Situ Testing |                                  |         | Depth (m)                            | Level (m) | Legend                     | Stratum Description                                                                                                                                                                                                    |
|                                                                                                                                                        | Depth                     | Type                             | Results |                                      |           |                            |                                                                                                                                                                                                                        |
|                                                                                                                                                        | 0.10 - 0.20               | B+ES                             | 15%     | 0.20                                 |           |                            | MADE GROUND: Grass over dark brown slightly clayey very gravelly topsoil. Gravel is fine to medium subrounded to angular of sandstone, brick and slag.                                                                 |
|                                                                                                                                                        | 0.20 - 0.30               | B+ES                             |         |                                      |           |                            | MADE GROUND: Soft consistency brown black slightly sandy very gravelly clay of low cobble and boulder content. Gravel is fine to medium subangular to angular of slag. Cobbles/boulders of angular to subangular slag. |
|                                                                                                                                                        | 0.50 - 0.60               | B+ES                             |         |                                      |           |                            | MADE GROUND: Grey blue fused slag recovered as gravel. Gravel is medium to coarse angular of slag.                                                                                                                     |
|                                                                                                                                                        | 0.60                      | CBR                              |         |                                      |           |                            | End of Pit at 0.700m                                                                                                                                                                                                   |
| <p>Remarks: Surface water run off.<br/>Unable to excavate through slag.<br/>Sulphurous odour noted within slag.</p> <p>Stability: Pit walls stable</p> |                           |                                  |         |                                      |           |                            |                                                                                                                                                                                                                        |



TrialPit No  
TP04  
Sheet 1 of 1

Date  
16/02/2022

Scale  
1:26

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend                                                                            | Stratum Description                                                                                                                                    |  |
|-----------------|---------------------------|------|---------|--------------|--------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                 | Depth                     | Type | Results |              |              |                                                                                   |                                                                                                                                                        |  |
|                 | 0.00 - 0.20               | B+ES | 15%     | 0.20<br>0.30 |              |  | MADE GROUND: Grass over dark brown slightly clayey very gravelly topsoil. Gravel is fine to medium subrounded to angular of sandstone, brick and slag. |  |
|                 | 0.20 - 0.30               | B+ES |         |              |              |  | MADE GROUND: Grey blue fused slag recovered as gravel. Gravel is medium to coarse angular of slag.                                                     |  |
|                 | 0.30                      | CBR  |         |              |              |                                                                                   | End of Pit at 0.300m                                                                                                                                   |  |
|                 |                           |      |         |              |              |                                                                                   |                                                                                                                                                        |  |
|                 |                           |      |         |              |              |                                                                                   |                                                                                                                                                        |  |
|                 |                           |      |         |              |              |                                                                                   |                                                                                                                                                        |  |

Stability: Pit walls stable

# Trial Pit Log

TrialPit No  
TP05  
Sheet 1 of 1

Project Name: Site A, Leconfield, Cleator Moor

|             |
|-------------|
| Project No. |
| S220141     |

Co-ords: 301426E - 515613N  
Level:

Date  
16/02/2022

|             |         |
|-------------|---------|
| Plant Used: | JCB 3CX |
|-------------|---------|

Dimensions  
(m):

0.80

Scale  
1:26

Client: Copeland Borough Council

Depth  
0.10

0.60

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |             |         | Depth<br>(m) | Level<br>(m) | Legend                                                                                                                                                                                                                                                                                       | Stratum Description |
|-----------------|---------------------------|-------------|---------|--------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|                 | Depth                     | Type        | Results |              |              |                                                                                                                                                                                                                                                                                              |                     |
|                 | 0.00 - 0.10<br>0.10       | B+ES<br>CBR | 15%     | 0.10         |              | <div><div></div><div>MADE GROUND: Grass over dark brown slightly clayey very gravelly topsoil. Gravel is fine to medium subrounded to angular of sandstone, brick and slag.<br/>Greyish blue fused slag obstruction - unable to excavate through.</div><div>End of Pit at 0.100m</div></div> |                     |

|          |                                                                                                   |
|----------|---------------------------------------------------------------------------------------------------|
| Remarks: | Surface water run off.<br>Unable to excavate through slag.<br>Sulphurous odour noted within slag. |
|----------|---------------------------------------------------------------------------------------------------|

Stability: Pit walls stable



|  <b>SOLMEK</b><br>Solmek Ltd<br>12-16 Yarm Road<br>Stockton on Tees<br>TS18 3NA<br>Tel: 01642 607083<br>Email: info@solmek.com |                           |      |         | <h1 style="margin: 0;">Trial Pit Log</h1>                                                                                                                                                                                                                                                                                                                                                 |           |                                             |                                                                                                                                                        | TrialPit No<br><b>TP06</b><br>Sheet 1 of 1                                                                                                                                                                        |                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project Name: <b>Site A, Leconfield, Cleator Moor</b>                                                                                                                                                           |                           |      |         | Project No.<br><b>S220141</b>                                                                                                                                                                                                                                                                                                                                                             |           | Co-ords: <b>301633E - 515544N</b><br>Level: |                                                                                                                                                        | Date<br><b>15/02/2022</b>                                                                                                                                                                                         |                                                                                                                                                                                    |
| Plant Used: <b>JCB 3CX</b>                                                                                                                                                                                      |                           |      |         | Dimensions (m): <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;">Depth</div> <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">0.70</div> <div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div> </div> </div> |           | Scale<br><b>1:26</b>                        |                                                                                                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                    |
| Client: <b>Copeland Borough Council</b>                                                                                                                                                                         |                           |      |         | Depth<br><b>0.80</b>                                                                                                                                                                                                                                                                                                                                                                      |           | Logged<br><b>KW</b>                         |                                                                                                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                    |
| Water Strike                                                                                                                                                                                                    | Samples & In Situ Testing |      |         | Depth (m)                                                                                                                                                                                                                                                                                                                                                                                 | Level (m) | Legend                                      | Stratum Description                                                                                                                                    |                                                                                                                                                                                                                   |                                                                                                                                                                                    |
|                                                                                                                                                                                                                 | Depth                     | Type | Results |                                                                                                                                                                                                                                                                                                                                                                                           |           |                                             |                                                                                                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                    |
|                                                                                                                                | 0.10 - 0.20               | B+ES | 4.0%    | 0.20                                                                                                                                                                                                                                                                                                                                                                                      |           |                                             | MADE GROUND: Grass over dark brown slightly clayey very gravelly topsoil. Gravel is fine to medium subrounded to angular of sandstone, brick and slag. | <div style="margin-bottom: 10px;">1</div> <div style="margin-bottom: 10px;">2</div> <div style="margin-bottom: 10px;">3</div> <div style="margin-bottom: 10px;">4</div> <div style="margin-bottom: 10px;">5</div> |                                                                                                                                                                                    |
|                                                                                                                                                                                                                 | 0.30                      | CBR  |         |                                                                                                                                                                                                                                                                                                                                                                                           |           |                                             |                                                                                                                                                        |                                                                                                                                                                                                                   | MADE GROUND: Black/brown slightly sandy gravel. Sand is medium to coarse. Gravel is coarse and angular of brick, slag, ash, clinker and metal. Very strong sulphurous odour noted. |
|                                                                                                                                                                                                                 | 0.40 - 0.60               | B+ES |         |                                                                                                                                                                                                                                                                                                                                                                                           |           |                                             |                                                                                                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                    |
|                                                                                                                                                                                                                 | 0.60                      | CBR  | 6.0%    | 0.80                                                                                                                                                                                                                                                                                                                                                                                      |           |                                             |                                                                                                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                    |
|                                                                                                                                                                                                                 | 0.70 - 0.80               | B+ES |         |                                                                                                                                                                                                                                                                                                                                                                                           |           |                                             | Greyish blue fused slag obstruction - unable to excavate through.<br>End of Pit at 0.800m                                                              |                                                                                                                                                                                                                   |                                                                                                                                                                                    |
| Remarks: Groundwater seepage at 0.40m.<br>Unable to excavate through slag.<br>Sulphurous odour noted within slag.                                                                                               |                           |      |         |                                                                                                                                                                                                                                                                                                                                                                                           |           |                                             |                                                                                                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                    |
| Stability: Pit walls stable                                                                                                                                                                                     |                           |      |         |                                                                                                                                                                                                                                                                                                                                                                                           |           |                                             |                                                                                                                                                        |                                                                                                                                                                                                                   |                                                                                                                                                                                    |

|                                                                                                                                                                                                                 |  |  |  |                                                                                                                                                                                                                                                                                           |  |                                             |  |                                            |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------|--|--------------------------------------------|--|
|  <b>SOLMEK</b><br>Solmek Ltd<br>12-16 Yarm Road<br>Stockton on Tees<br>TS18 3NA<br>Tel: 01642 607083<br>Email: info@solmek.com |  |  |  | <h1>Trial Pit Log</h1>                                                                                                                                                                                                                                                                    |  |                                             |  | TrialPit No<br><b>TP07</b><br>Sheet 1 of 1 |  |
| Project Name: <b>Site A, Leconfield, Cleator Moor</b>                                                                                                                                                           |  |  |  | Project No.<br><b>S220141</b>                                                                                                                                                                                                                                                             |  | Co-ords: <b>301650E - 515511N</b><br>Level: |  | Date<br><b>15/02/2022</b>                  |  |
| Plant Used: <b>JCB 3CX</b>                                                                                                                                                                                      |  |  |  | Dimensions (m): <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">Depth</div> <div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <span>0.80</span> <span>1.00</span> </div> </div> </div> |  | Scale<br><b>1:26</b>                        |  | Logged<br><b>KW</b>                        |  |
| Client: <b>Copeland Borough Council</b>                                                                                                                                                                         |  |  |  | Depth<br><b>1.10</b>                                                                                                                                                                                                                                                                      |  |                                             |  |                                            |  |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                                                                                                                      |  |
|--------------|---------------------------|------|---------|-----------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|              | Depth                     | Type | Results |           |           |        |                                                                                                                                                                                                                                          |  |
|              |                           |      |         | 0.10      |           |        | MADE GROUND: Grass over dark brown slightly clayey very gravelly topsoil. Gravel is fine to medium subrounded to angular of sandstone, brick and slag.                                                                                   |  |
|              | 0.30                      | CBR  | 3.0%    |           |           |        | MADE GROUND: Firm consistency dark brown slightly sandy very gravelly clay of low cobble content. Gravel is medium to coarse subrounded to angular of brick, wood, slag and clinker. Occasional rounded cobbles of sandstone up to 30cm. |  |
|              | 0.50 - 0.60               | B+ES |         |           |           |        |                                                                                                                                                                                                                                          |  |
|              | 0.60                      | CBR  | 4.0%    |           |           |        |                                                                                                                                                                                                                                          |  |
|              |                           |      |         | 0.70      |           |        | MADE GROUND: Fused slag recovered as multicoloured gravel. Gravel is medium to coarse angular of slag, ash and clinker.                                                                                                                  |  |
|              | 0.80 - 0.90               | B+ES |         |           |           |        |                                                                                                                                                                                                                                          |  |
|              |                           |      |         | 1.10      |           |        | End of Pit at 1.100m                                                                                                                                                                                                                     |  |

Remarks: No groundwater encountered.  
 Unable to excavate through slag.  
 Sulphurous odour noted within slag.

Stability: Pit walls stable

# Trial Pit Log

TrialPit No  
TP08  
Sheet 1 of 1

Project Name: Site A, Leconfield, Cleator Moor

|             |
|-------------|
| Project No. |
| S220141     |

Co-ords: 301709E - 515523N  
Level:

Date  
16/02/2022

|             |         |
|-------------|---------|
| Plant Used: | JCB 3CX |
|-------------|---------|

Dimensions

120

Scale  
1:26

Client: Copeland Borough Council

Depth  
0.35

0.60

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m)                                                                                                    | Level<br>(m) | Legend               | Stratum Description                     |
|-----------------|---------------------------|------|---------|-----------------------------------------------------------------------------------------------------------------|--------------|----------------------|-----------------------------------------|
|                 | Depth                     | Type | Results |                                                                                                                 |              |                      |                                         |
|                 | 0.20                      | B+ES | 15%     | 0.05                                                                                                            |              |                      | MADE GROUND: Red brick.                 |
|                 | 0.20 - 0.30               | B+ES |         | 0.10                                                                                                            |              |                      | MADE GROUND: Orange coarse paving sand. |
|                 | 0.35                      | CBR  |         | MADE GROUND: Orange/pink very sandy gravel. Gravel is medium to coarse subangular to angular of brick and slag. |              |                      |                                         |
|                 |                           |      |         |                                                                                                                 |              | End of Pit at 0.350m |                                         |
|                 |                           |      |         |                                                                                                                 |              |                      |                                         |
|                 |                           |      |         |                                                                                                                 |              |                      |                                         |

|          |                                                                                                        |
|----------|--------------------------------------------------------------------------------------------------------|
| Remarks: | No groundwater encountered.<br>Unable to excavate through slag.<br>Sulphurous odour noted within slag. |
|----------|--------------------------------------------------------------------------------------------------------|

Stability: Pit walls stable





TrialPit No  
TP09  
Sheet 1 of 1

Date  
17/02/2022

|               |
|---------------|
| Scale<br>1:26 |
| Logged<br>KW  |

[illegible]

Stability: Pit walls stable



TrialPit No  
TP10  
Sheet 1 of 1

Date  
17/02/2022

Scale  
1:26

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend | Stratum Description                                                                                                      |
|-----------------|---------------------------|------|---------|--------------|--------------|--------|--------------------------------------------------------------------------------------------------------------------------|
|                 | Depth                     | Type | Results |              |              |        |                                                                                                                          |
|                 | 0.00 - 0.10               | B+ES | 15%     | 0.20         |              |        | MADE GROUND: Grass over light brown slightly sandy very gravelly topsoil. Gravel is fine angular of sandstone and shale. |
|                 | 0.20                      | CBR  |         |              |              |        | Greyish blue fused slag obstruction - unable to excavate through.                                                        |
|                 |                           |      |         |              |              |        | End of Pit at 0.200m                                                                                                     |
|                 |                           |      |         |              |              |        |                                                                                                                          |
|                 |                           |      |         |              |              |        |                                                                                                                          |
|                 |                           |      |         |              |              |        |                                                                                                                          |

Stability: Pit walls stable



TrialPit No  
TP11  
Sheet 1 of 1

Date  
17/02/2022

Scale  
1:26

Logged  
KW

4

Stability: Pit walls stable



# Trial Pit Log

TrialPit No  
TP12  
Sheet 1 of 1

Project Name: Site A, Leconfield, Cleator Moor

|             |         |
|-------------|---------|
| Project No. | S220141 |
|-------------|---------|

Co-ords: 301758E - 515480N  
Level:

Date  
17/02/2022

|             |         |
|-------------|---------|
| Plant Used: | JCB 3CX |
|-------------|---------|

Dimensions  
(m):

---

0.50

Scale  
1:26

Client: Copeland Borough Council

Depth  
0.20

0.60

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend                                                                            | Stratum Description                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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|                 | Depth                     | Type | Results |              |              |                                                                                   |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                 | 0.10                      | B+ES | 15%     | 0.20         |              |  | MADE GROUND: Grass over light brown slightly clayey very gravelly topsoil. Gravel is fine to medium subangular to angular of sandstone, slag and shale. | 1 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|          |                                                                                                        |
|----------|--------------------------------------------------------------------------------------------------------|
| Remarks: | No groundwater encountered.<br>Unable to excavate through slag.<br>Sulphurous odour noted within slag. |
|----------|--------------------------------------------------------------------------------------------------------|

Stability: Pit walls stable



TrialPit No  
TP13  
Sheet 1 of 1

Date  
17/02/2022

Scale  
1:26

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend | Stratum Description                                                                                                                        |
|-----------------|---------------------------|------|---------|--------------|--------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Depth                     | Type | Results |              |              |        |                                                                                                                                            |
|                 | 0.00 - 0.10               | B+ES | 15%     |              |              |        | MADE GROUND: Grass over dark brown slightly sandy very gravelly topsoil. Gravel is fine to coarse angular to subangular of brick and slag. |
|                 | 0.20                      | B+ES |         | 0.20         |              |        | MADE GROUND: Fused slag recovered as grey/blue medium to coarse subangular to angular gravel.                                              |
|                 | 0.30                      | CBR  |         | 0.30         |              |        | End of Pit at 0.300m                                                                                                                       |
|                 |                           |      |         |              |              |        |                                                                                                                                            |
|                 |                           |      |         |              |              |        |                                                                                                                                            |
|                 |                           |      |         |              |              |        |                                                                                                                                            |
|                 |                           |      |         |              |              |        |                                                                                                                                            |

Stability: Pit walls stable



TrialPit No  
TP14  
Sheet 1 of 1

Date  
17/02/2022

Scale  
1:26

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend                 | Stratum Description                                                                                                                                                                                                                                                      |  |
|-----------------|---------------------------|------|---------|--------------|--------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                 | Depth                     | Type | Results |              |              |                        |                                                                                                                                                                                                                                                                          |  |
|                 | 0.00 - 0.10               | B+ES | 15%     | 0.10         |              | <div><div></div></div> | <div><div>MADE GROUND: Grass over brown slightly sandy slightly gravelly topsoil. Gravel is fine to medium subrounded to subangular of sandstone.</div><div>Greyish blue fused slag obstruction - unable to excavate through.</div><div>End of Pit at 0.200m</div></div> |  |
|                 | 0.10                      | CBR  |         |              |              |                        |                                                                                                                                                                                                                                                                          |  |
|                 | 0.20                      | B+ES |         |              |              |                        |                                                                                                                                                                                                                                                                          |  |
|                 |                           |      |         |              |              |                        |                                                                                                                                                                                                                                                                          |  |
|                 |                           |      |         |              |              |                        |                                                                                                                                                                                                                                                                          |  |

Stability: Pit walls stable



|  <b>SOLMEK</b><br>Solmek Ltd<br>12-16 Yarm Road<br>Stockton on Tees<br>TS18 3NA<br>Tel: 01642 607083<br>Email: info@solmek.com |                           |      |         | <h1>Trial Pit Log</h1>                                                                                                                                                                                                                                                |           |                                             |                                                                                                                                                                                                                                            | TrialPit No<br><b>TP15</b><br>Sheet 1 of 1 |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--|
| Project Name: <b>Site A, Leconfield, Cleator Moor</b>                                                                                                                                                           |                           |      |         | Project No.<br><b>S220141</b>                                                                                                                                                                                                                                         |           | Co-ords: <b>301870E - 515564N</b><br>Level: |                                                                                                                                                                                                                                            | Date<br><b>18/02/2022</b>                  |  |
| Plant Used: <b>JCB 3CX</b>                                                                                                                                                                                      |                           |      |         | Dimensions (m): <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">0.60</div> <div style="border: 1px solid black; width: 100px; height: 30px; margin-left: 10px;"></div> </div> |           | Scale<br><b>1:26</b>                        |                                                                                                                                                                                                                                            | Logged<br><b>KW</b>                        |  |
| Client: <b>Copeland Borough Council</b>                                                                                                                                                                         |                           |      |         | Depth<br><b>0.60</b>                                                                                                                                                                                                                                                  |           |                                             |                                                                                                                                                                                                                                            |                                            |  |
| Water Strike                                                                                                                                                                                                    | Samples & In Situ Testing |      |         | Depth (m)                                                                                                                                                                                                                                                             | Level (m) | Legend                                      | Stratum Description                                                                                                                                                                                                                        |                                            |  |
|                                                                                                                                                                                                                 | Depth                     | Type | Results |                                                                                                                                                                                                                                                                       |           |                                             |                                                                                                                                                                                                                                            |                                            |  |
|                                                                                                                                                                                                                 | 0.10 - 0.20               | B+ES |         | 0.05                                                                                                                                                                                                                                                                  |           |                                             | <div style="border: 1px solid black; padding: 2px;">           MADE GROUND: Grass over brown very sandy topsoil.<br/>           MADE GROUND: Black slightly sandy gravel. Gravel is coarse and angular of clinker and slag.         </div> |                                            |  |
|                                                                                                                                                                                                                 | 0.30                      | CBR  | 4.0%    |                                                                                                                                                                                                                                                                       |           |                                             |                                                                                                                                                                                                                                            |                                            |  |
|                                                                                                                                                                                                                 | 0.40 - 0.50               | B+ES |         |                                                                                                                                                                                                                                                                       |           |                                             |                                                                                                                                                                                                                                            |                                            |  |
|                                                                                                                                                                                                                 | 0.60                      | CBR  | 15%     | 0.60                                                                                                                                                                                                                                                                  |           |                                             |                                                                                                                                                                                                                                            |                                            |  |
|                                                                                                                                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                       |           |                                             | <div style="border: 1px solid black; padding: 2px;">           Greyish blue fused slag obstruction - unable to excavate through.<br/>           End of Pit at 0.600m         </div>                                                        |                                            |  |
| <div style="display: flex; justify-content: space-between;"> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> </div>                                                                            |                           |      |         |                                                                                                                                                                                                                                                                       |           |                                             |                                                                                                                                                                                                                                            |                                            |  |
| Remarks: No groundwater encountered.<br>Unable to excavate through slag.<br>Sulphurous odour noted within slag.                                                                                                 |                           |      |         |                                                                                                                                                                                                                                                                       |           |                                             |                                                                                                                                                                                                                                            |                                            |  |
| Stability: Pit walls stable                                                                                                                                                                                     |                           |      |         |                                                                                                                                                                                                                                                                       |           |                                             |                                                                                                                                                                                                                                            |                                            |  |



**SOLMEK**

Solmek Ltd  
12-16 Yarm Road  
Stockton on Tees  
TS18 3NA  
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Email: info@solmek.com

# Trial Pit Log

Trial Pit No  
**TP16**  
Sheet 1 of 1

Project Name: Site A, Leconfield, Cleator Moor  
Project No. S220141  
Co-ords: 301862E - 515528N  
Level: 0.90  
Date: 18/02/2022

Plant Used: JCB 3CX  
Dimensions (m): 0.60  
Scale: 1:26

Client: Copeland Borough Council  
Depth: 0.70  
Logged: KW

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                                                                                       |
|--------------|---------------------------|------|---------|-----------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Depth                     | Type | Results |           |           |        |                                                                                                                                                                                                           |
|              |                           |      |         | 0.05      |           |        | MADE GROUND: Grass over dark brown slightly gravelly topsoil. Gravel is fine to medium subangular to angular of sandstone and shale.                                                                      |
|              | 0.30                      | B+ES |         |           |           |        | MADE GROUND: Firm consistency red/brown slightly sandy very gravelly clay of low cobble content. Gravel is fine to medium subrounded to angular of sandstone, shale and slag. Cobbles of full red bricks. |
|              | 0.30                      | CBR  | 3.0%    |           |           |        |                                                                                                                                                                                                           |
|              | 0.50                      | HV   | 62kPa   |           |           |        |                                                                                                                                                                                                           |
|              | 0.60                      | B+ES |         |           |           |        |                                                                                                                                                                                                           |
|              | 0.60                      | CBR  | 4.5%    | 0.70      |           |        | Greyish blue fused slag obstruction - unable to excavate through.                                                                                                                                         |
|              |                           |      |         |           |           |        | End of Pit at 0.700m                                                                                                                                                                                      |

Remarks: No groundwater encountered.  
Unable to excavate through slag.  
Sulphurous odour noted within slag.

Stability: Pit walls stable



TrialPit No  
SHAFT-006  
Sheet 1 of 1

Date  
15/02/2022

Scale  
1:26

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend                                                                            | Stratum Description                                                                                                                                   |
|-----------------|---------------------------|------|---------|--------------|--------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Depth                     | Type | Results |              |              |                                                                                   |                                                                                                                                                       |
|                 |                           |      |         | 0.30         |              |  | MADE GROUND: Grass over slightly gravelly slightly clayey topsoil. Gravel is subangular to subrounded fine to medium of sandstone, mudstone and slag. |
|                 |                           |      |         |              |              |                                                                                   | Greyish blue fused slag obstruction - unable to excavate through.<br>End of Pit at 0.300m                                                             |

|          |                             |
|----------|-----------------------------|
| Remarks: | No groundwater encountered. |
|----------|-----------------------------|

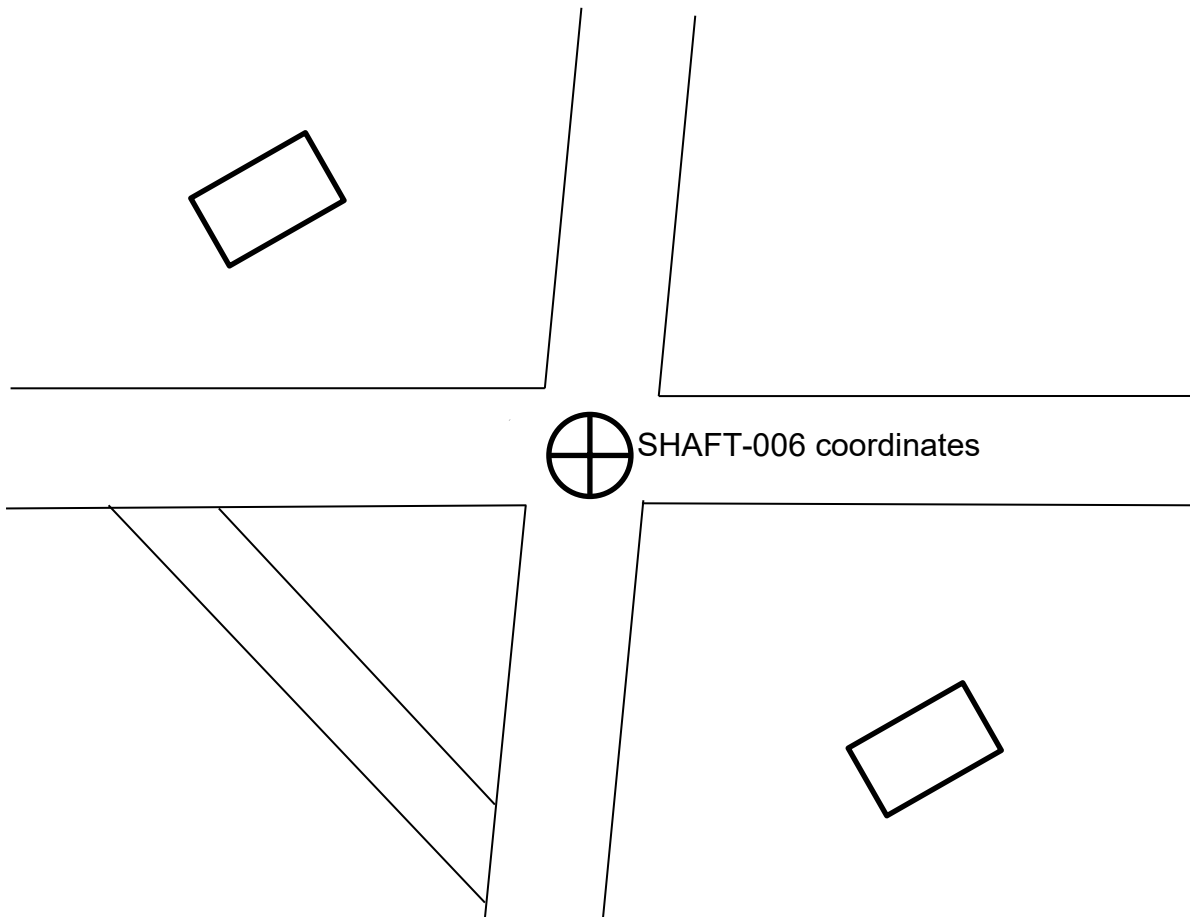
Stability: Pit walls stable



S220141

Site A, Leconfield, Cleator Moor

SHAFT-006



Pecked into slag from 0.30m-0.60m at  
centre of shaft marked ⊕

NTS



TrialPit No  
**SHAFT-008**  
**A**  
Sheet 1 of 1

Date  
15/02/2022

Scale  
1:26

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend                                                                                                                                                                                                                                                                                            | Stratum Description |
|-----------------|---------------------------|------|---------|--------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|                 | Depth                     | Type | Results |              |              |                                                                                                                                                                                                                                                                                                   |                     |
|                 |                           |      |         | 0.40         |              | <div><div></div><div>MADE GROUND: Grass over brown slightly clayey slightly gravelly topsoil. Gravel is fine to medium subangular to angular of sandstone, brick and slag.</div><div>Greyish blue fused slag obstruction - unable to excavate through.</div><div>End of Pit at 0.400m</div></div> |                     |

|          |                             |
|----------|-----------------------------|
| Remarks: | No groundwater encountered. |
|----------|-----------------------------|

Stability: Pit walls stable

# Trial Pit Log

TrialPit No  
SHAFT-008  
B  
Sheet 1 of 1

|               |                                  |
|---------------|----------------------------------|
| Project Name: | Site A, Leconfield, Cleator Moor |
|---------------|----------------------------------|

|             |
|-------------|
| Project No. |
| S220141     |

Co-ords: 301440E - 515606N  
Level:

Date  
15/02/2022

|             |         |
|-------------|---------|
| Plant Used: | JCB 3CX |
|-------------|---------|

Dimensions  
(m):

Scale  
1:26

Client: Copeland Borough Council

Depth  
0.50

Logged  
KW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend                                                                                                                                                | Stratum Description                                                                                                                                                      |
|-----------------|---------------------------|------|---------|--------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Depth                     | Type | Results |              |              |                                                                                                                                                       |                                                                                                                                                                          |
|                 |                           |      |         | 0.50         |              | MADE GROUND: Grass over brown slightly clayey slightly gravelly topsoil. Gravel is fine to medium subangular to angular of sandstone, brick and slag. | <div>MADE GROUND: Orange brown very gravelly clay. Gravel is fine to medium subangular to angular of sandstone, mudstone and slag.</div> <div>End of Pit at 0.500m</div> |
|                 |                           |      |         | 1.40         |              |                                                                                                                                                       |                                                                                                                                                                          |

|          |                             |
|----------|-----------------------------|
| Remarks: | No groundwater encountered. |
|----------|-----------------------------|

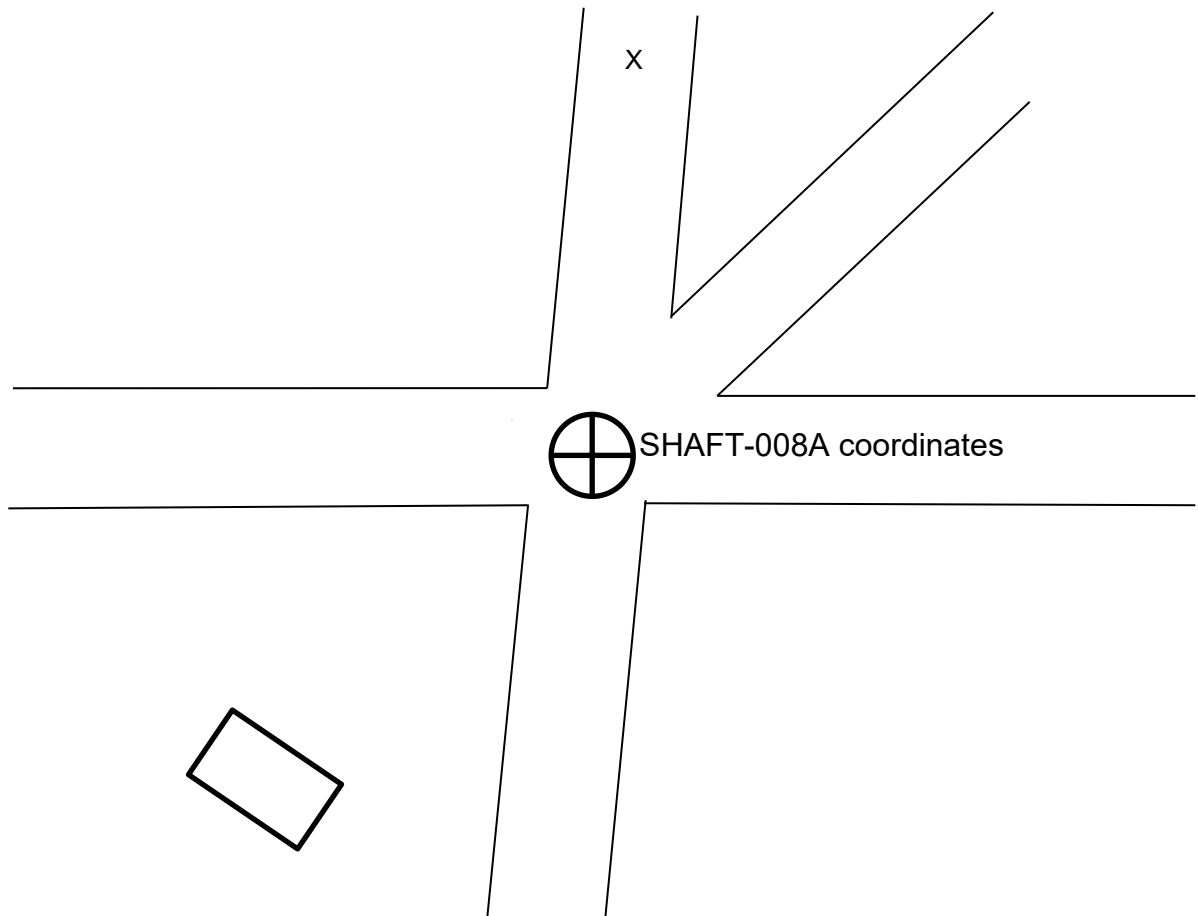
Stability: Pit walls stable



S220141

Site A, Leconfield, Cleator Moor

SHAFT-008A AND SHAFT-008B



X denotes area with slag absent until  
0.50mbgl

NTS



## Appendix H

### Flood Maps for Planning

# Flood map for planning

Your reference  
**LEC**

Location (easting/northing)  
**301600/515522**

Created  
**22 Jul 2021 10:10**

**Your selected location is in flood zone 1, an area with a low probability of flooding.**

## This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

## Notes

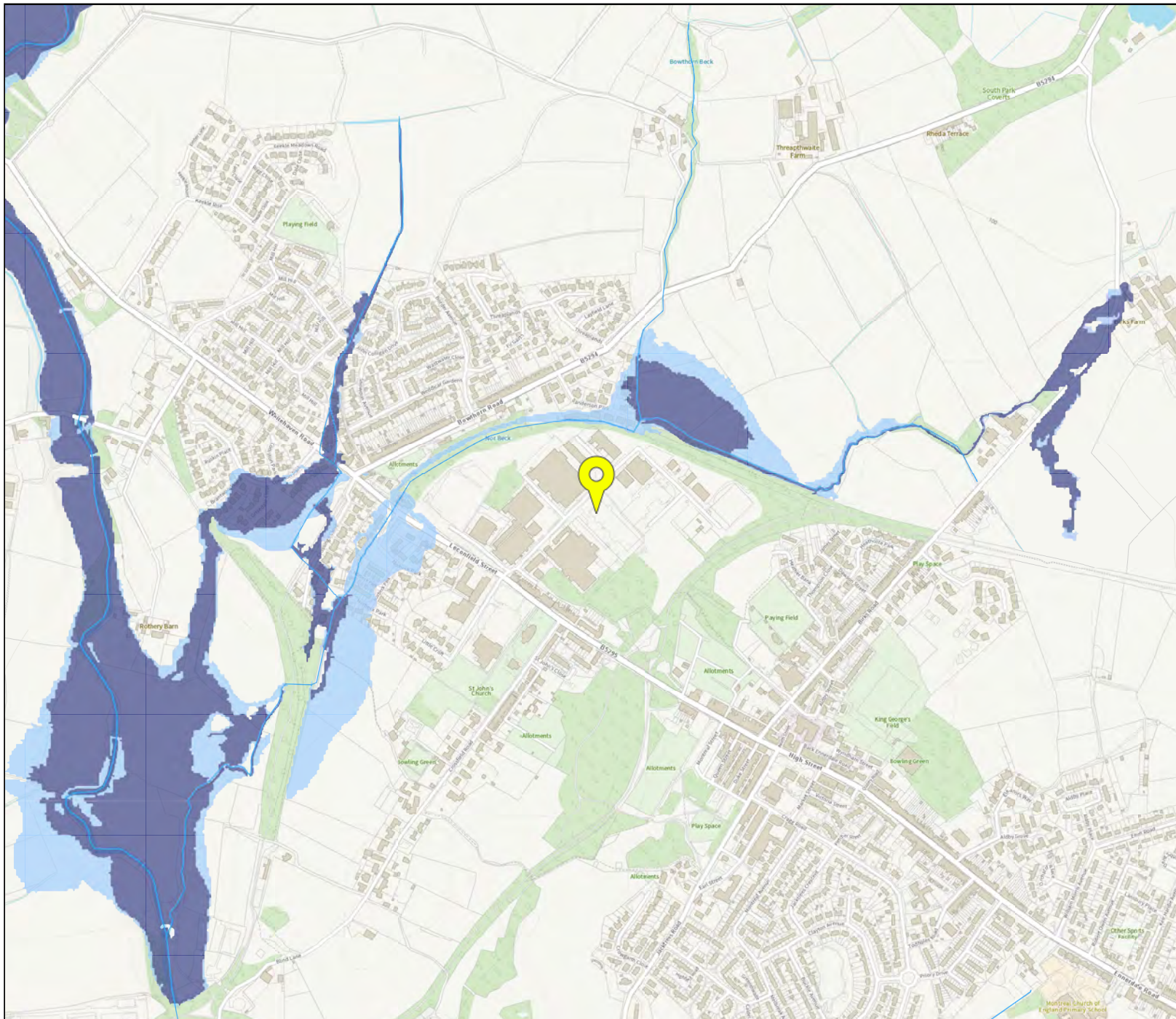
The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>





## Flood map for planning

Your reference

**LEC**

Location (easting/northing)

**301600/515522**

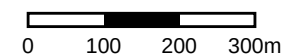
Scale

**1:10000**

Created

**22 Jul 2021 10:10**

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area





## Appendix I

### United Utilities, LLFA and EA Predevelopment Correspondence

## James Herbert

---

**From:** Wastewater Developer Services  
**Sent:** 28 October 2021 15:41  
**To:** James Herbert  
**Cc:** Wastewater Developer Services  
**Subject:** {Disarmed} Pre Development Enquiry for: Leconfield Industrial Estate      UU Reference Number : 4200044472

Good afternoon James,

### Pre Development Enquiry for: Leconfield Industrial Estate      UU Reference Number : 4200044472

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 3723223 or refer to the link below:

<https://www.unitedutilities.com/builders-developers/working-near-our-assets/>

### Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.

For Site A : Our preferred point of discharge would be to the 675mm diameter public combined sewer within the vicinity of the site located to the North of your proposed development at an unrestricted rate.

For Site B : Our preferred point of discharge would be to the 600mm diameter public combined sewer within the vicinity of the site located to the West of your proposed development at an unrestricted rate.

For Site C : Our preferred point of discharge would be to the 300mm diameter public combined sewer within the site boundary located to the North of your proposed development at an unrestricted rate.

**Please ensure all proposed manhole chambers cover levels and finished floor levels are higher than the receiving public sewer.**

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

In accordance with our infrastructure plans we may ask you to change your point of connection. Therefore please contact us when you are ready to formalise your drainage proposals, we would suggest before you submit for Full Planning.

### Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.

*Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.*

This is outlined as follows, in order of priority:

- 1. into the ground (infiltration);**
- 2. to a surface waterbody;**
- 3. to a surface water sewer or highway drain;**
- 4. to a combined sewer.**

For guidance, The **North West SuDS Pro-Forma** provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.

The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

### **Infiltration**

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.

A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:

<https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs>

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

<https://www.gov.uk/government/publications/groundwater-protection-position-statements>

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

### **Waterbody**

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you contact the Lead Local Flood Authority and/or Environment Agency to discuss a point of discharge to the open ordinary watercourse Norbeck (with onward flow) located in the site boundary of the proposed site.

We would encourage you to identify and engage with any third party landowner and riparian owner to agree access and discharge rights to the water body if this is not in your ownership.

### **Highway Drainage**



If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you investigate the possibility of draining surface water to the highway drain where this ultimately discharges to a watercourse, by contacting the relevant Highway Authority.

## **Public Sewer**

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, For site C, United Utilities will consider a connection to the 300mm diameter public combined sewer within the site boundary located North of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 5l/s.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

## **Levels**

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

## **Land drainage / Overland flows / track drainage**

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

## **SuDS**

If your development proposal incorporates any SuDS component(s) which interact with a sewer network you plan on offering for adoption to United Utilities; contact should be made with our technical team at your earliest convenience, please complete the 'Section 104 pre-application form : ' and include as much relevant detail as you can. These discussions can help prevent delays later in the development process.

## **Section 104 Pre application form (1b)**

As per the sewerage sector guidance, all SuDS should be designed in accordance with the standards within the Design & construction guidance & the CIRIA SuDS manual (C753)

## **Existing Wastewater Assets Crossing the Site**

According to our public sewer records there are public sewers located within your site boundary. We will require unrestricted access to the sewer for maintenance purposes, we would ask that you maintain a minimum clearance of 6m which is measured 3m from the centre line of the pipe unless there happens to be a formal easement agreement in place, in which case the specified easement width would apply. If you cannot achieve this then you may wish to consider diverting and or abandoning the public sewer.

Please refer to the link below to obtain full details of the processes involved with sewer diversions:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-diversions/>

### Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address:

**DeveloperServicesWater@uuplc.co.uk**. Further information for this service can be found on our website via the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/>

### Connection Application

Although we may discuss and agree discharge points and rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-connections/>

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

If we can be of any further assistance please don't hesitate to contact us further.

Kind regards,



**Mohammed Aljafarawi**  
Developer Engineer  
Developer Services & Metering  
Customer Services  
Email: [redacted]  
unitedutilities.com

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Barbara Vernon

For the attention of Barbara Vernon

Date: 22 September 2021  
Our reference: PPA/2021/2180

Dear Barbara Vernon

## **PRE-PLANNING APPLICATION ADVICE**

**Pre-App Reference No. PPA/2021/2180**

**Site Location: Leconfield Industrial Estate, Cleator Moor, Cleator Moor, CA25 5QB**

**Proposal: Site A (re-develop existing) = 6 New Buildings with associated parking/service yards.**

**Site B (Greenfield) = 5 New Buildings with associated parking/service yards.**

**Site C (Greenfield) = 4 New Buildings with associated parking**

Thank you once again for your request for pre-planning application advice in respect of the above proposed development. Cumbria County Council, in its capacity as the Lead Local Flood Authority (LLFA) has carefully reviewed your proposal and our advice and findings are detailed below.

## **Overview**

In principle the proposals are acceptable, i would note the following observations.

- In looking back through our records, Norbeck is a main river which is controlled by the Environment Agency so discharge rates will require confirming with them and i would advise contact be made with the EA prior to any submission.
- River flooding levels in regard to site B and confirmation of acceptability of 1.0% AEP undefended/defended +35% CC will be from the EA.
- For all proposed sites the drainage hierarchy must be considered.
- I would suggest early pre-application advice is obtained from the EA, United Utilities and Sustrans.

## **Lead Local Flood Authority Advice and Comments**

### **Existing Flood Risks:**

- Site A - Shows minor areas affected by 1in100 year events
- Site B - Shows a significant portion to be affected at a 1in30 & 100 year event this area is also within flood zone 3.



- Site C - Shows flooding two areas affected by 1in3 & 100 year events.

## Drainage Strategy/Design:

**Site A** - As this is an existing site which is to be expanded on, providing further new buildings the applicant is proposing a reduction in Brownfield of 50% if a existing outfall cannot be established to Norbeck in principle this is acceptable.

Should a discharge point be confirmed to Norbeck then the applicant needs to consider any new drainage in the northern area of the site being connected into the new drainage system at the southern end allowing it to out fall to Norbeck at a rate agreed with by the EA, the applicant needs to consider treatment of the surface water before out falling to main river.

**Site B** - The drainage hierarchy needs to be considered, infiltration testing to BRE365 should be undertaken to determine if land is suitable for infiltration. The proposed QBar discharge is acceptable to the LLFA however this should be agreed with the EA as the discharge point is main river.

**Site C** - As this land has previous use as allotment gardens it must be considered a greenfield site, again the drainage hierarchy must be considered, infiltration testing undertaken, there is local surface water drainage in the vicinity of the site in the form of the old railway drainage on the cyclepath to the north west boundary this should be explored further. Sustrans manage the cycle-way i would suggest contact be made with them.

Should investigations prove that the combined system in this area is the only available discharge point then it is likely that United Utilities would only accept the surface water into the combined system at a forward pass rate of 5L/s for all storm events.

## Opportunities:

- Should an outfall to Norbeck not exist the applicant needs to consider establishing a new outfall to Norbeck for surface water from Site A with the agreement of the EA
- There is opportunity if the outfall to Norbeck can be confirmed then the northern part of site A needs to be configured to connect to the southern area drainage allowing surface water to discharge to main river if agreement can be obtained from the EA.
- Can the pre-existing part of Site A be retro fitted allowing for full separation of foul and surface water within this site?
- There requires consideration for treatment of surface water before out falling to the main river, has there been consideration of above ground storage that could incorporate treatment? Has permeable surfaces been considered within car parking areas that would allow for attenuation and also treatment of surface water to remove pollutants?

## Information Necessary to Support a Planning Application

The following documents would be required to support a planning application:-

- Flood Risk Assessment
- Drainage Strategy
- CCTV survey information of existing drainage
- Management & Maintenance Plan for drainage that will remain private.

### Proviso

The views and/or opinions expressed in the above advice are given in good faith and to the best of ability. They are based on existing guidance, standards and planning policies; and are given without prejudice to the consideration of any future planning application. The County Council cannot guarantee that new issues will not be raised following submission and evaluation of a planning application. Consequently County Council officers cannot give guarantees in respect of the recommendation it will make to the Local Planning Authority upon any future planning application subsequently lodged. This pre-planning application advice will be referred back to and considered by the County Council in preparing its technical recommendation, but it is subject to the proviso that circumstances and information may change or come to light that could alter the advice and/or position set out above. If there has been a significant delay in submitting your planning application after the pre-application advice was given then there will be a greater chance that there will have been a material change in national, regional or local policy and guidance or local circumstances. As you are no doubt aware, the final decision on a planning application will be taken by the relevant local planning authority, and not by the county council in its capacity as a statutory consultee.

I trust that the above is of assistance. Should you have any queries in respect of any aspect of the above then please do not hesitate to contact me.

Yours sincerely

**Pieter Barnard**

Lead Officer - Flood & Development Management 01228221331

## James Herbert

---

**From:** NWNorthPlanning  
**Sent:** 18 October 2021 17:27  
**To:** James Herbert  
**Subject:** {Disarmed} RE: New Development : Leconfield Industrial Estate, Cleator-Moor (Site B)

Dear Sir,

Thank you for your email.

In order for us to provide comprehensive answers to your questions, I would normally suggest that you use our Charged Advice service. Following the preparation and acceptance of a quote setting out what we could provide, we would expect to provide advice from the relevant technical teams at a rate of £100/hour plus VAT. This service is provided to complement our statutory planning duty to provide comment on planning consultations.

However, due to staff shortages I regret that we are currently unable to provide any non-statutory support for planning applications, and hence unable to answer your questions in detail.

In the absence of more detailed advice I have sought some brief guidance from the relevant flood risk management team, and can provide the following comments – added in red text to your email below, that I hope will go some way in answering your questions.

Regards,

**Liz Locke**

Planning Advisor Sustainable Places, Cumbria and Lancashire.

**Environment Agency** | Ghyll Mount, Penrith 40 Business Park, Penrith, Cumbria, CA11 9BP

External: |  
Working days: Monday to Thursday



---

**From:** James Herber  
**Sent:** 05 October 2021 16:25  
**To:** NWNorthPlanning <  
**Subject:** New Development : Leconfield Industrial Estate, Cleator-Moor (Site B)

FAO Flood Risk Department

**SCHEME: Re-development of Leconfield Industrial Estate and new development of surrounding sites.**