

Drainage Philosophy

ISH Hub, Leconfield Industrial Estate,
Cleator Moor

ISH-BGP-19-XX-T-C-0001

REV P01



BGP

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Document Control

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	Project	ISH Hub
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Revision	Revision No.	Date	By	Check
Planning Issue	P01	11.04.2026	LF	JJH

1.0 Introduction

- 1.1 This Drainage Philosophy has been prepared to supplement the planning application for the proposed construction of a commercial amenity building on land off Leconfield Street, Leconfield Industrial Estate. See Appendix A for Site Location Plan.
- 1.2 The proposals include the construction of a commercial amenity building, car parking, external hard and soft landscaping. The site is to be accessed via the existing site circulation road. See Appendix B for reference.
- 1.3 United Utilities (UU) sewer records have been obtained and reviewed.
- 1.4 A hierarchy for the appropriate disposal of surface water is included within the National Standards for Sustainable Drainage Systems (SuDS) which states the following:

“(Surface Water) Runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

 - 1) *Collected for non-potable use*
 - 2) *Infiltrated to ground*
 - 3) *Discharged to an above ground surface water body (watercourse)*
 - 4) *Discharged to a surface water drain, or another piped surface water drainage system*
 - 5) *Discharged to 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 It is noted that the following Drainage Strategy is directly linked to the Plot 9 and 12 development adjacent under planning application reference 4/25/2411/0F1. Both surface and foul water flows are to connect into the Plot 9 and 12 development drainage networks as detailed within this report.
- 1.7 BGP have prepared this report based on the current information available. This report is subject to change should the information change or new information be presented.

2.0 Existing Site and Drainage

2.1 Site Location

- 2.1.1 Site Name: ISH Hub, Leconfield Industrial Estate
- 2.1.2 Site Address: Land off Leconfield Street, Cleator Moor
- 2.1.3 OS Grid Reference: E: 301716, N: 515558
- 2.1.4 National Grid Reference: NY017155

2.2 Site Description

- 2.2.1 Site Area : 1.316 Ha
- 2.2.2 Existing Land Use: Industrial Building (now demolished)
- 2.2.3 Proposed Land Use: Commercial Unit and Car Parking
- 2.2.4 Local Planning Authority: Cumberland Council
- 2.2.5 Sewer Undertaker: United Utilities (UU)
- 2.2.6 The approximately 1.316 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. See Appendix C for topographic survey.

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 existing site hardstanding area is relatively flat at an approximate level of between 83.1m and 82.9m AOD, falls existing within the existing access road to provide drainage falls to gullies. The existing greenfield area level varies between 83.1m AOD and 82.2m AOD.

2.4 Existing Watercourses

- 2.4.1 The nearest named watercourse is Nor Beck, which where open, is located 100m 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 The United Utilities (UU) sewer records have been reviewed, as shown in Appendix D.
- 2.5.2 There are several United Utilities combined drains and manholes located toward the 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 wider sites north western boundary, which drains southwest to the perimeter of the wider site.
- 2.5.4 An existing 150mm diameter private foul water sewer stub is located to the south-western boundary of the site. This drains through the previously developed Plot 9 and 12 scheme, this ultimately discharges to the aforementioned 675mm diameter UU combined sewer.
- 2.5.5 An existing 450mm diameter surface water drain stub is located to the south-western boundary of the site. This drains through the previously developed Plot 9 and 12 scheme, this ultimately discharges to the aforementioned Nor Beck culverted watercourse.
- 2.5.6 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 site specific Phase 1 Desk Study and Phase 2 Site Investigation are yet to be completed and therefore a review of the immediate adjacent site's site investigation has been conducted.
- 2.6.2 The Phase 2 Site Investigation reveals that ground conditions comprises:
- Made ground was generally encountered to depths of between 1.50mbgl and 9.00mbgl. In the northwest of the site, the made ground varied between just 0.32 and 0.54m.
 - Firm to stiff (locally soft) sandy gravelly medium to high strength clay was encountered (1.90-6.30m thick)
 - Locally, bands of dense to very dense granular material were encountered (0.30-5.60m thick).
 - Rockhead between 6.80 & 12.30mbgl, generally comprising sandstones and mudstones.
 - Groundwater was encountered locally, with shallow perched strikes within the made ground at 0.45-1.95mbgl, localised strikes within the drift between 5.00 and 9.10mbgl, and localised strikes at depth within the solid geology, between 22.00 and 35.50mbgl.

2.7 Flood Risk

- 2.7.1 A site-specific Flood Risk Assessment (ISH-BGP-19-XX-T-C-0002) has been carried out by Billingham George & Partners and is provided separately to support this planning application.
- 2.7.2 The report states that the site lies wholly within Flood Zone 1, and the proposed development is **LOW** from all sources of flooding as categorised in the Framework and the Technical Guidance.
- 2.7.3 See Appendix F for the EA Flood Maps for Planning.

3.0 Development Proposals

- 3.1 This Drainage Philosophy has been prepared to supplement the planning application for the proposed construction of a commercial amenity building on land off Leconfield Street, Leconfield Industrial Estate. See Appendix A for Site Location Plan.
- 3.2 The proposals include the construction of a commercial amenity building, car parking and external hard and soft landscaping. The site is to be accessed via the existing site circulated road. See Appendix B for reference.

4.0 Surface Water Drainage Hierarchy

4.1 Existing Drainage Regime

- 4.1.1 The United Utilities (UU) sewer records have been reviewed, as shown in Appendix D.
- 4.1.2 There are several United Utilities combined drains and manholes located toward the 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.
- 4.1.3 A United Utilities 675mm diameter combined sewer is located just beyond the wider sites north western boundary, which drains southwest to the perimeter of the wider site.
- 4.1.4 An existing 150mm diameter private foul water sewer stub is located to the south-western boundary of the site. This drains through the previously developed Plot 9 and 12 scheme, this ultimately discharges to the aforementioned 675mm diameter UU combined sewer.
- 4.1.5 An existing 450mm diameter surface water drain stub is located to the south-western boundary of the site. This drains through the previously developed Plot 9 and 12 scheme, this ultimately discharges to the aforementioned Nor Beck culverted watercourse.
- 4.1.6 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 Current guidelines include Building Regulations, NPPF, National Standards for Sustainable Drainage Systems (SuDS), Ciria C753 SuDS Manual, Cumberland Council SuDS Guidance and Local Development Plan.
- 4.2.2 The National Standards for Sustainable Drainage Systems (SuDS) have recently been updated (June 2025), with the remainder of current guidelines requiring updates to follow.
- 4.2.3 In accordance with the National Standards for Sustainable Drainage Systems (SuDS), the disposal of surface water has been considered in the following order of priority; collected for non-potable use, where not reasonably practicable, discharge to ground, where not reasonably practicable, a watercourse, or where not reasonably practicable a sewer.

4.3 Collected for non-potable use

4.3.1 Collection of surface water for non-potable use is particular suited to sites where there are large roof catchments, limited water supply and urban area with available open space to locate below ground storage tank, and agricultural/horticultural.

4.3.2 The collection for non-potable use has been reviewed by the designer and wider design team. It has been discounted due to the below:

Health and Safety Risks: It may contain pathogenic microorganisms or toxic chemicals that make it dangerous for drinking, cooking, or personal hygiene.

Cross-Contamination Concerns: In buildings, the risk of accidental cross-connection between potable and non-potable pipes can lead to widespread illness.

Material Integrity: Non-potable water with high levels of heavy metals or hydrocarbons may be unsuitable even for industrial use if it risks corroding equipment or affecting chemical processes like concrete mixing.

Environmental Impact: Reusing treated wastewater can sometimes reduce the flow needed to replenish local streams and rivers, leading to its exclusion in some drought-stricken areas.

Capital Cost / Maintenance Cost: The initial capital cost and ongoing maintenance cost combined jeopardise the viability of the scheme.

4.3.3 Hence, due to the above reasons it is confirmed that it would not be feasible to discharge the sites surface water to a non-potable storage element for re-use.

4.4 Discharge to Ground

4.4.1 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.

4.4.2 A site specific Phase 1 Desk Study and Phase 2 Site Investigation are yet to be completed and therefore a review of the immediate adjacent site's site investigation has been conducted.

4.4.3 The Phase 2 Site Investigation reveals that ground conditions comprises:

- Made ground was generally encountered to depths of between 1.50mbgl and 9.00mbgl. In the northwest of the site, the made ground varied between just 0.32 and 0.54m.
- Firm to stiff (locally soft) sandy gravelly medium to high strength clay was encountered (1.90-6.30m thick)
- Locally, bands of dense to very dense granular material were encountered (0.30-5.60m thick).
- Rockhead between 6.80 & 12.30mbgl, generally comprising sandstones and mudstones.

- Groundwater was encountered locally, with shallow perched strikes within the made ground at 0.45-1.95mbgl, localised strikes within the drift between 5.00 and 9.10mbgl, and localised strikes at depth within the solid geology, between 22.00 and 35.50mbgl.

4.4.4 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 due to unsuitable infiltration rates.

4.5 Discharge to an Above Ground Surface Water Body (Watercourse)

4.5.1 The nearest named watercourse is Nor Beck, which where open is located 100m 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.

4.5.2 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.

4.6 Discharge to a Surface Water Drain

4.6.1 Not required as discharging to a watercourse.

4.7 Discharge to a Combined Sewer

4.7.1 Not required as discharging to a watercourse.

5.0 Proposed Surface Water Drainage

- 5.1 It is expected that surface water discharge rates will be restricted to as close to Brownfield rates as per the Cumberland Council SuDS Adoption Guidance for Major Developments.
- 5.2 It is noted that this development forms part of a wider masterplan strategy for the re-development of Leconfield Industrial Estate. The brownfield surface water discharge rate figures and distribution for the development are agreed through Plots 9 and 12 planning consultation.
- 5.3 The brownfield discharge rate is derived from the hardstanding areas due for re-development. This particular development is within the eastern area of site as detailed on BGP drawing CMIQ-BGP-01-ZZ-DR-C-52-01901, with the eastern area of development allocated a total brownfield discharge rate of **87.0 l/s**. The brownfield surface water discharge rate noted serves **both** Plot 9 and 12 development (Planning Application reference 4/25/2411/0F1) and this specific commercial amenity building development.
- 5.4 The development has been designed in accordance with current best practice of 1 in 100-year return period and includes the current 50% allowance for climate change. Additionally, the coefficient of runoff for summer and winter events has been set at '1' in accordance with current recommendations.
- 5.5 See Appendix E for the Proposed Drainage Strategy drawings.
- 5.6 It is proposed to discharge surface water flows from the new commercial amenity building to the Nor Beck culverted watercourse. A surface water drain stub is to be utilised for discharge of surface water to provide an indirect connection, this is to be constructed as part of Plot 9 and 12 development. Flows are to then pass through the attenuated/restricted Plot 9 and 12 surface water drainage network and then through the wider Leconfield site via an existing connection to Nor Beck. Surface water flows are to be restricted to the agreed brownfield run off rate of 87.0 l/s.
- 5.7 Where the proposed commercial amenity building is restricted to 87.0 l/s a surface water storage volume of 576m³ is required. It is proposed that volumes will be stored within a 1.6m deep attenuation tank.
- 5.8 The proposed aforementioned attenuation feature is to be constructed as part of Plot 9 and 12 development. This allows for the inflows from both developments.
- 5.9 The surface water system consists of a network of pipes which are located throughout the car park, landscaped areas and to the perimeter of the new commercial amenity building. The network within the development will drain via gravity to the respective flow control manhole, surface water will back up and utilise the attenuation structure when storm events exceed the brownfield design discharge rate of 87.0l/s. The final connection to Nor Beck watercourse will be made indirectly through existing surface water sewers via gravity.
- 5.10 The Microdrainage Calculations for the attenuation volumes are included within Appendix G.

- 5.11 SuDS features are included as part of the surface water drainage proposals, these are:
- **Permeable Block Parking Bays** – The bays typically consists of permeable / porous block surfacing with a reduced fines aggregate subbase that is collected by a perforated drain that outfalls to a silt trap prior to connection to the main surface water network.
 - **Filter Drains** – Typically a perforated pipe backfilled and surrounded with clean 4-20mm coarse graded aggregate wrapped in a geotextile liner.
- 5.12 It is noted that the permeable sub-base to the car park (min. 375mm depth) provides an element of storage aswell as treatment. The car park sub-base attenuation is restricted with a 75mm diameter orifice plate ensuring that the storage provided is utilised.
- 5.13 A Downstream Defender Select Advanced Vortex is located downstream of the final flow control manhole to provide a form of surface water treatment.
- 5.14 The proposed surface water system has been designed in line with good practice which ensures is separate from the foul.
- 5.15 The above surface water discharge rate is agreed with the Lead Local Flood Authority and the Environment Agency through Plot 9 and 12.
- 5.16 A review of the proposed drainage system has been carried out in line with the simple index matrix found in the CIRCA C737 SUDS manual. This can be seen in Table 1. As per the SUDS manual where two components are used in series a factor of 0.5 will be used for the second component to account for the reduced performance of secondary or tertiary components associated with already reduced inflow pollutant concentrations.
- 5.17 A review of the SuDS has been carried out in line with the simple index matrix found in the CIRCA C737 manual. As per the SUDS manual where two components are used in series a factor of 0.5 will be used for the second component to account for the reduced performance of secondary or tertiary components associated with already reduced inflow pollutant concentrations. The results can be found in Table 1 (over page), this shows that the proposed SuDS mitigation measures adequately remove the pollutants from the proposed development.

Table 1: Summary of SuDS Mitigation Indices

Land Use	Total Pollutants	SuDs Component and Mitigation Indices	Aggregated Mitigation Index	+ or - Total
Commercial/Industrial roofing: Low potential for metal leaching	Total Suspended Pollutants - 0.3 Metals - 0.2 <u>Hydro-Carbons</u> - 0.05 Total = - 0.55	<u>Hydro International Downstream Defender Select (Advanced Vortex)</u> Total Suspended Pollutants + 0.5 Metals + 0.4 <u>Hydro-Carbons + 0.5</u> Total = + 1.4		Total Suspended Pollutants = + 0.2 Metals = + 0.2 <u>Hydro-Carbons = + 0.45</u> Total = + 0.85
Low traffic roads (e.g. residential roads and general access roads, <300 traffic movements a day)	Total Suspended Pollutants - 0.5 Metals - 0.4 <u>Hydro-Carbons</u> - 0.4 Total = - 1.3	<u>Permeable Paving</u> Total Suspended Pollutants + 0.7 Metals + 0.6 <u>Hydro-Carbons + 0.7</u> Total = + 2.0	<u>Hydro International Downstream Defender Select (Advanced Vortex)</u> Total Suspended Pollutants + 0.5 (0.25) Metals + 0.4 (0.2) <u>Hydro-Carbons + 0.5 (0.25)</u> Total = + 0.7	Total Suspended Pollutants = + 0.45 Metals = + 0.4 <u>Hydro-Carbons = + 0.55</u> Total = + 1.4

5.18 Controlling Site Runoff and Rainwater:

- 5.18.1 The following measures should be considered for implementation by the contractor where required as part of the construction phase plan and surface water management plan to control the site run off and rainwater during construction.
- 5.18.2 Temporary use of steel manhole covers to all manholes to ensure that no surface runoff or debris will enter the proposed drainage system. If implemented these should remain in place until the external surfacing works are being carried out in the area.
- 5.18.3 The management of groundwater and surface water should include sump pumping out of excavations and should be managed through the installation of temporary silt trap manholes and ditches. Any settlement features should be located at strategic points across the site with the bases cleared of sediment at regular intervals to prevent possible contaminants entering the surface water system.
- 5.18.4 Filters should be implemented within existing gullies or linear drains to separate any suspended solids from the water to ensure any water that enters the surface water system has been treated at the entry point. A Terram geotextile may be installed in the outlet pipe of any existing road gullies to capture sediment/suspended solids as the water passed through the filter.
- 5.18.5 A silt trap catch pit should be installed to the proposed surface water system upstream of the attenuation features and should be monitored, cleaned or emptied when required. This will ensure that should any silt or debris be present this is caught before entering the attenuation system and flow control device chamber.
- 5.18.6 Prior to final connections being made the full drainage network should be jetted, cleaned and a full CCTV survey carried out documented within the Operation and Maintenance Manual.

6.0 Proposed Foul Water Drainage

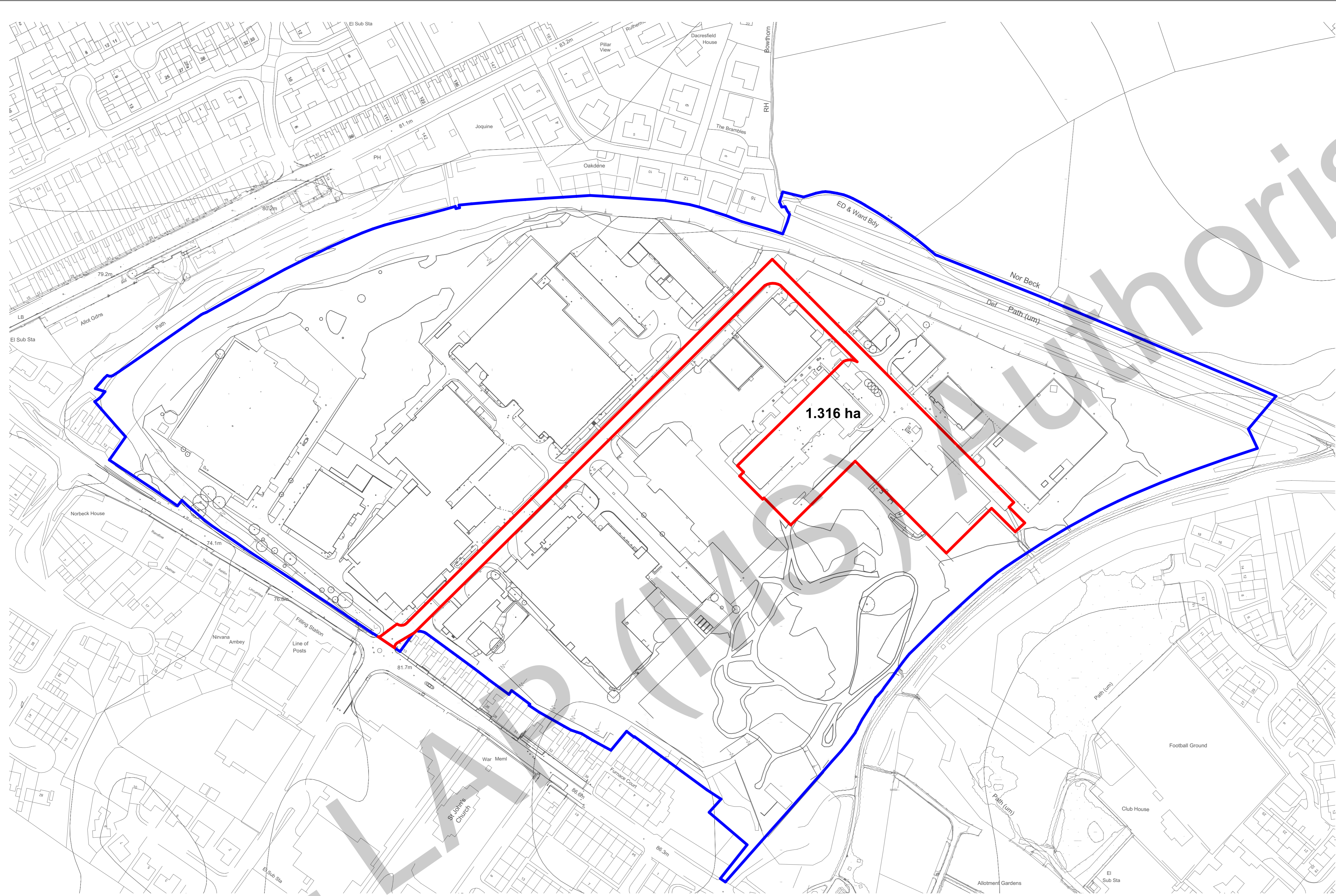
- 6.1 See Appendix E for the Proposed Drainage Strategy drawings.
- 6.2 The proposed foul drainage will remain private within site. The foul sewers are to drain via gravity to existing Plot 9 and 12 foul sewers within the adjacent existing landscaped area. The flows thereafter will pass through the private network ultimately discharging to the existing United Utilities 675mm diameter combined sewer to the northwest of site.
- 6.3 The British Water Flows and Loads tables for 'Office / Factory without canteen' advise a flow rate of 50 litres per person, per day.
- 6.4 The peak foul flow rate has been calculated and determined based on a total occupancy number of 238. This equates to 0.137 l/s. $(238 \text{ (p)} \times 50 \text{ l/d} = 11,900 \text{ l/d}$ therefore $11,900 / 24 / 60 / 60 = 0.137 \text{ l/s}$.
- 6.5 A Pre-planning enquiry is to be submitted to UU and the response showing acceptance of unrestricted foul water flows will be provided within Appendix K once obtained.

7.0 Conclusion

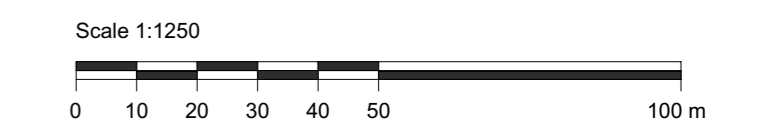
- 7.1 The proposals include the construction of a commercial amenity building, car parking and external hard and soft landscaping. The site is to be accessed via the existing site circulated road.
- 7.2 It is not possible or practicable to discharge the surface water to the ground via infiltration. Therefore, as per the hierarchy within Building Regulations Part H3, it is deemed necessary to discharge the surface water to a watercourse.
- 7.3 A proposed drainage scheme has been recommended within Section 5 and Section 6 with a General Arrangement drawing included within Appendix E.
- 7.4 The proposed drainage strategy restricts surface water flows to brownfield runoff rates, whilst also incorporating several SuDS features across the site. The proposed surface water drainage strategy is designed to accommodate the 1 in 100 year flood event, with an additional 50% allowance for climate change.
- 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.

Appendix A – Site Location Plan

ISO A1 - 594mmx841mm



- APPLICATION BOUNDARY
- ADDITIONAL LAND UNDER COUNCIL OWNERSHIP



SITE LOCATION PLAN
SCALE: 1 : 1250

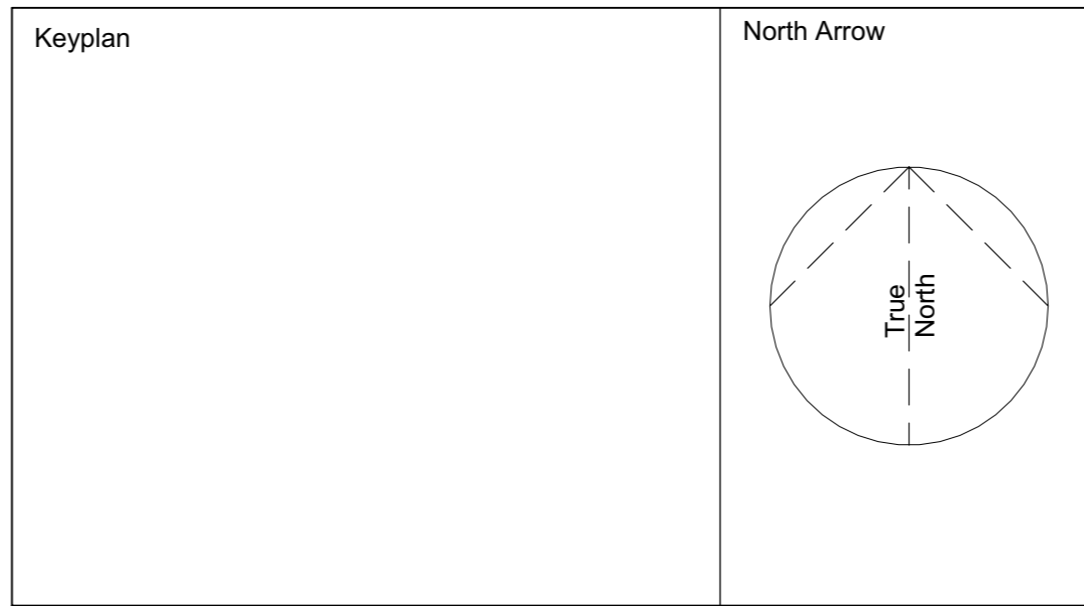
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DATE	REVISION	REV	DR	CH
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Cumberland Council

Project CUMBERLAND COUNCIL		Drawing Title SITE LOCATION PLAN	
Project CLEATOR MOOR INNOVATION QUARTER LECONFIELD SITE - HUB		Sheet Status PL - PLANNING	
Drawn JS	Date 29.01.26	Project No. SR3025-0139	
Checked PB	Date 29.01.26	Drawing No. ISH-NOR-19- ZZ-D-A-90000 P	
Scale As indicated @ A1		Rev. P01	

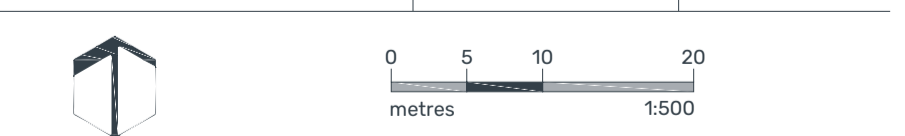
Appendix B – Proposed Site Plan

NOTES

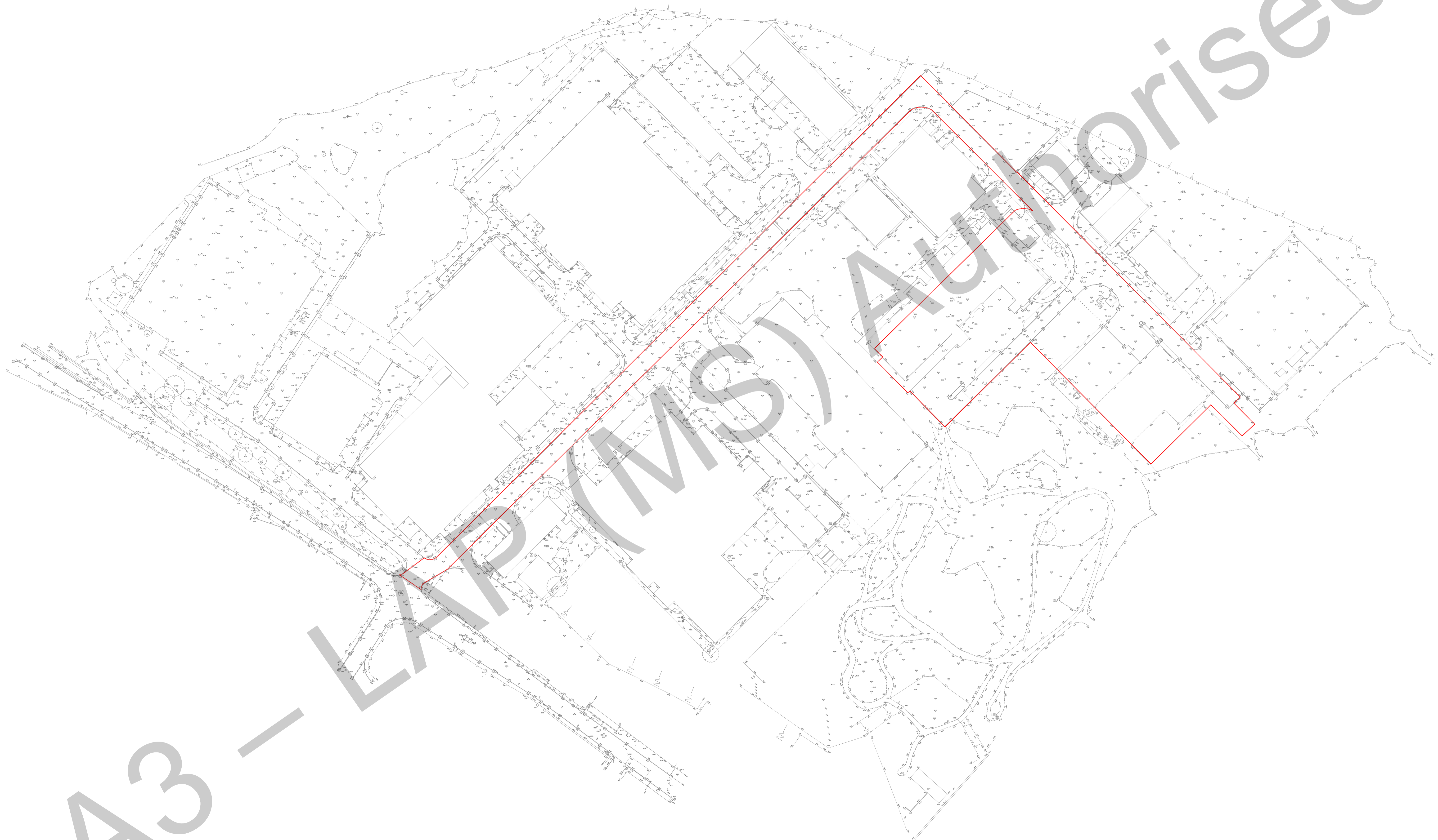
-  Redline Boundary
-  Ornamental Shrub Planting
-  Ornamental Hedgerow
-  Amenity Turf
-  Proposed Trees
-  Open Calcareous Grassland
-  Species Rich Neutral Grassland
-  Heathland Mix



REVISION P05	DATE 31.03.26	BY GS	CHECKED PA
General update to comments			
REVISION P04	DATE 20.03.26	BY GS	CHECKED PA
Updated to Site Plan			
REVISION P03	DATE 10.03.26	BY GS	CHECKED PA
Plan revised to include EV ducts near carpark and MEP plant room			
REVISION P02	DATE 24.02.26	BY GS	CHECKED PA
Updated to site plan			
REVISION P01	DATE 17.02.26	BY GS	CHECKED PA
First issue			
CLIENT	Cumberland County Council		
PROJECT	CMIQ Hub		
TITLE	Soft Landscape GA		
DWG No.	ISH-ONE-ZZ-D-L-0003	REV	P05
STATUS	PRELIMINARY		
SCALE	1:500 @ A1	DATE	17.02.26 DRN BY GS

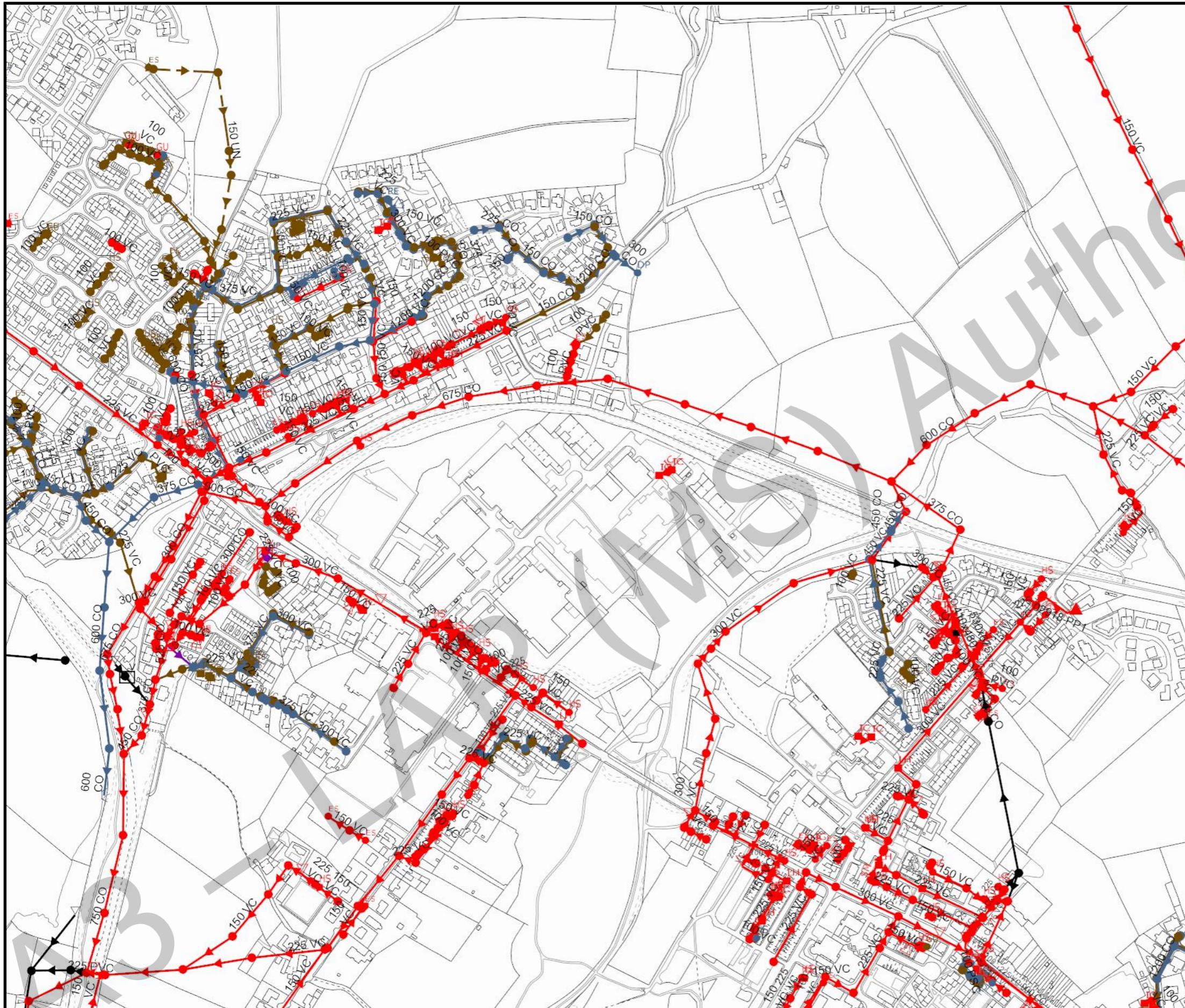


Appendix C – Topographic Survey



A3 - LAP (MS) Authorised

Appendix D – United Utilities Sewer Records



SEWER RECORDS

Address or Site Reference

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

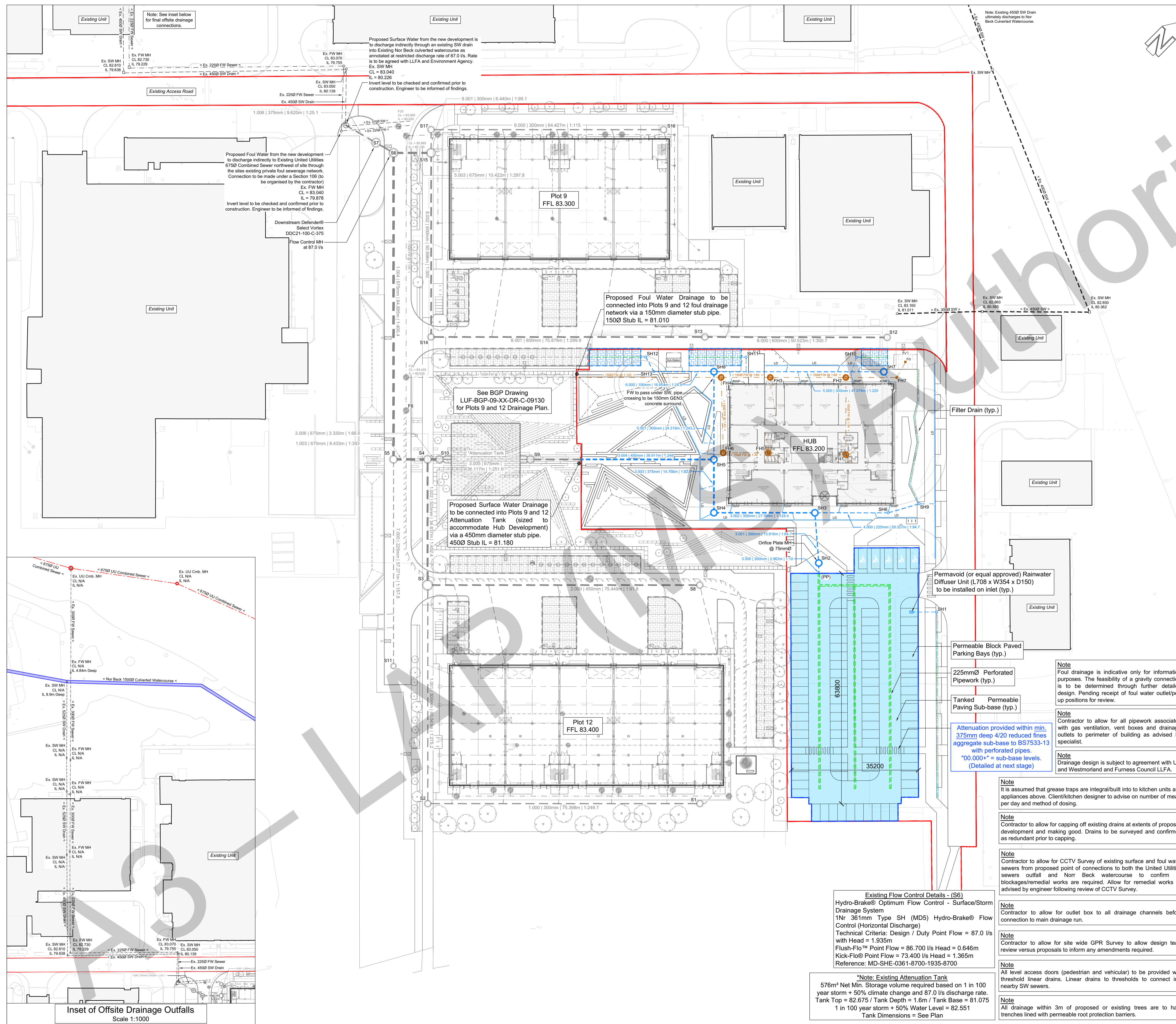
Scale: 1:5000
Date: 21/09/2021

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 – Proposed Drainage Drawings



- ### Notes
- All works to be carried out in accordance with:
 - 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 (SfA) for all new developments)
 - BS EN 752 - 'Drain and Sewer Systems Outside Buildings'
 - Current applicable Building Regulations
 - BGP Specifications
 - Manufacturer installation guidance and requirements
 - All levels shown are in metres and are relative to Ordnance datum (m AOD).
 - Connection to United Utilities sewers are only to be carried out under an S106 agreement by UU approved term contractors unless agreed otherwise between both parties. (organised by main contractor)
 - Invert levels of all existing chambers and connection points are to be confirmed and engineer advised prior to commencement of any Drainage Works.
 - Where proposed sewers connect into existing sewers, the existing sewers must be checked for line, level and condition preferably by a CCTV survey
 - Concrete bed and surround is required to all gully leads and to all pipes in highways/hardstanding where cover to pipe <1200mm
 - All pipes to be either extra strength V.C. to BS 65 or PVC certified to WIS 4-35-01 and BS/EN13476 or concrete pipes Class 120 to BS/EN 1916/BS5911-1:2002.
 - All RWP and slab penetration (PU) locations are indicative and accurate positions should be taken from the Architects drawings. All slab penetrations to be roddable above ground level via access pipe.
 - Existing sewer positions are indicative and are not to be used in conjunction with design. Contractor to confirm location.
 - All existing drainage to be cleaned and jatted as part of the contract
 - All RWP connections to be 1000 and Surface water sewers to be 1500 unless noted otherwise.
 - All FW drains to be 1500 between inspection chambers/manholes and 1000 unless noted otherwise elsewhere.
 - Contractor is responsible for positioning MHS so they do not compromise line or level of kerbing or other delineation at the junction of two surface materials.
 - Cover levels shown are indicative and may vary on site. The contractor should adjust levels to suit site conditions
 - All internal manholes to be Type 'PPIC' with double seal covers u.n.o
 - All drainage beneath foundations / slab and building footprint is to be 150mm GEN3 concrete surround.
 - 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.

- ### Legend
- Proposed SW Drain: Blue dashed line
 - Proposed FW Sewer: Red dashed line
 - Nor Beck (Culverted): Blue solid line
 - Existing SW Drain: Green dashed line
 - Existing FW Sewer: Red solid line
 - Existing UU Combined Sewer: Red dashed line
 - Site Boundary: Red solid line
 - Linear Drain w/ Silt Trap: Blue dotted line
 - Existing Attenuation Tank: Hatched pattern
 - Permeable Paved Paving with Perf. Pipe (Tanked): Blue grid pattern
 - Extent of 4/20 Sub-base Attenuation (Car Parking): Light blue shaded area

NOT FOR PRICING

NOT FOR CONSTRUCTION

Stage 3 Issue	JN	P03	JJH	11.04.2026
Stage 3 Issue	JN	P02	JJH	17.03.2026
Issued for Information	JN	P01	JJH	30.01.2026
AMENDMENT	BY	REV	CHK	DATE

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Client Cumberland Council
Project ISH Hub
BGP Project No. 21T2034
Drawing Title Drainage Plan

Drawn	Date	Checked	Date	Size	Scale	Rev.
JN	JAN '26	JJH	JAN '26	A1	1:500	P03

Location Originator Volume Level Form Role Unique No.
ISH BGP 19 XX D C 19130

File Reference ISH-BGP-19-XX-D-C-19130

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



- Existing Flow Control Details - (S6)**
Hydro-Brake® Optimum Flow Control - Surface/Storm Drainage System
1Nr 361mm Type SH (MD5) Hydro-Brake® Flow Control (Horizontal Discharge)
Technical Criteria: Design / Duty Point Flow = 87.0 l/s with Head = 1.935m
Flush-Flo™ Point Flow = 86.700 l/s Head = 0.646m
Kick-Flo® Point Flow = 73.400 l/s Head = 1.365m
Reference: MD-SHE-0361-8700-1935-8700
- *Note:** Existing Attenuation Tank
576m³ Net Min. Storage volume required based on 1 in 100 year storm + 50% climate change and 87.0 l/s discharge rate.
Tank Top = 82.675 / Tank Depth = 1.6m / Tank Base = 81.075
1 in 100 year storm + 50% Water Level = 82.551
Tank Dimensions = See Plan
- Note:** Foul drainage is indicative only for information purposes. The feasibility of a gravity connection is to be determined through further detailed design. Pending receipt of foul water outlet/pop up positions for review.
- Note:** Contractor to allow for all pipework associated with gas ventilation, vent boxes and drainage outlets to perimeter of building as advised by specialist.
- Note:** Drainage design is subject to agreement with UU and Westmorland and Furness Council LLFA.
- Note:** Contractor to allow for capping off existing drains at extents of proposed development and making good. Drains to be surveyed and confirmed as redundant prior to capping.
- Note:** Contractor to allow for CCTV Survey of existing surface and foul water sewers from proposed point of connections to both the United Utilities sewers outfall and Nor Beck watercourse to confirm no blockages/remedial works are required. Allow for remedial works as advised by engineer following review of CCTV Survey.
- Note:** Contractor to allow for outlet box to all drainage channels before connection to main drainage run.
- Note:** Contractor to allow for site wide GPR Survey to allow design team review versus proposals to inform any amendments required.
- Note:** All level access doors (pedestrian and vehicular) to be provided with threshold linear drains. Linear drains to thresholds to connect into nearby SW sewers.
- Note:** All drainage within 3m of proposed or existing trees are to have trenches lined with permeable root protection barriers.

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 junction 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
SH2	83.300	82.100	Conc.	1.200	B125	13.916	1.200	0.300	0.900	1:64.7	75mmØ Orifice Plate on outlet with 300mm Sump Silt Trap
SH3	83.125	81.885	Conc.	1.350	B125	27.984	1.240	0.300	0.940	1:124.4	
SH4	83.125	81.585	Conc.	1.350	B125	14.756	1.540	0.375	1.165	1:82.4	
SH5	83.075	81.331	Conc.	1.500	B125	50.834	1.744	0.450	1.294	1:248	
SH6	83.125	82.200	PPIC	0.600	B125	20.327	0.925	0.225	0.700	1:84.7	
SH7	83.150	81.795	Conc.	1.200	B125	47.078	1.355	0.300	1.055	1:220	
SH8	83.275	81.581	Conc.	1.200	B125	24.319	1.694	0.300	1.394	1:243.2	
SH13	83.350	82.400	PPIC	0.600	B125	16.654	0.950	0.150	0.800	1:24.9	

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 junction 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 Silt Trap Manhole Schedule - Hub						
MH Ref.	Cover Level	Inlet Invert Level	MH Type	MH Dia. (m)	Cover Type	Comments
SH1	83.175	82.575	PPIC	0.600	B125	300mm Silt Trap
SH9	83.050	82.450	PPIC	0.600	B125	300mm Silt Trap
SH10	83.200	82.600	PPIC	0.600	B125	300mm Silt Trap
SH11	83.450	82.850	PPIC	0.600	B125	300mm Silt Trap
SH12	83.550	82.950	PPIC	0.600	B125	300mm Silt Trap

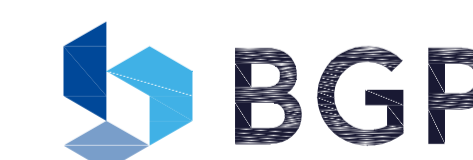
1. Cover levels are approximate only and may vary on site. Covers to suit finished levels.
2. Contractor is responsible for positioning MHs so they do not compromise line or level of kerbing or other delineation at the junction of two surface materials.
3. PPIC manhole diameters may vary and are dependant 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.

Foul 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	Comments
FH1	83.200	82.300	Conc.	1.200	B125	21.100	0.900	0.150	0.750	Stainless Steel (Grade 316), double sealed, lockable internal recessed cover. EJ 4500 series medium duty cover or similar approved.
FH2	83.150	81.910	Conc.	1.200	B125	21.000	1.240	0.150	1.090	
FH3	83.150	81.560	Conc.	1.200	B125	13.600	1.590	0.150	1.440	
FH4	83.200	81.335	Conc.	1.200	B125	87.300	1.865	0.150	1.715	
FH5	83.200	82.300	Conc.	1.200	B125	13.000	0.900	0.150	0.750	Stainless Steel (Grade 316), double sealed, lockable internal recessed cover. EJ 4500 series medium duty cover or similar approved.
FH6	83.150	81.865	Conc.	1.200	B125	20.900	1.285	0.150	1.135	
FH7	83.150	82.550	PPIC	0.600	B125	14.100	0.600	0.150	0.450	

NOT FOR PRICING

NOT FOR CONSTRUCTION

Stage 3 Issue	JN	P02	JJH	11.04.2026
Stage 3 Issue	JN	P01	JJH	17.03.2026
AMENDMENT	BY	REV	CHK	DATE



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Client Cumberland Council
Project ISH Hub
BGP Project No. 21T2034

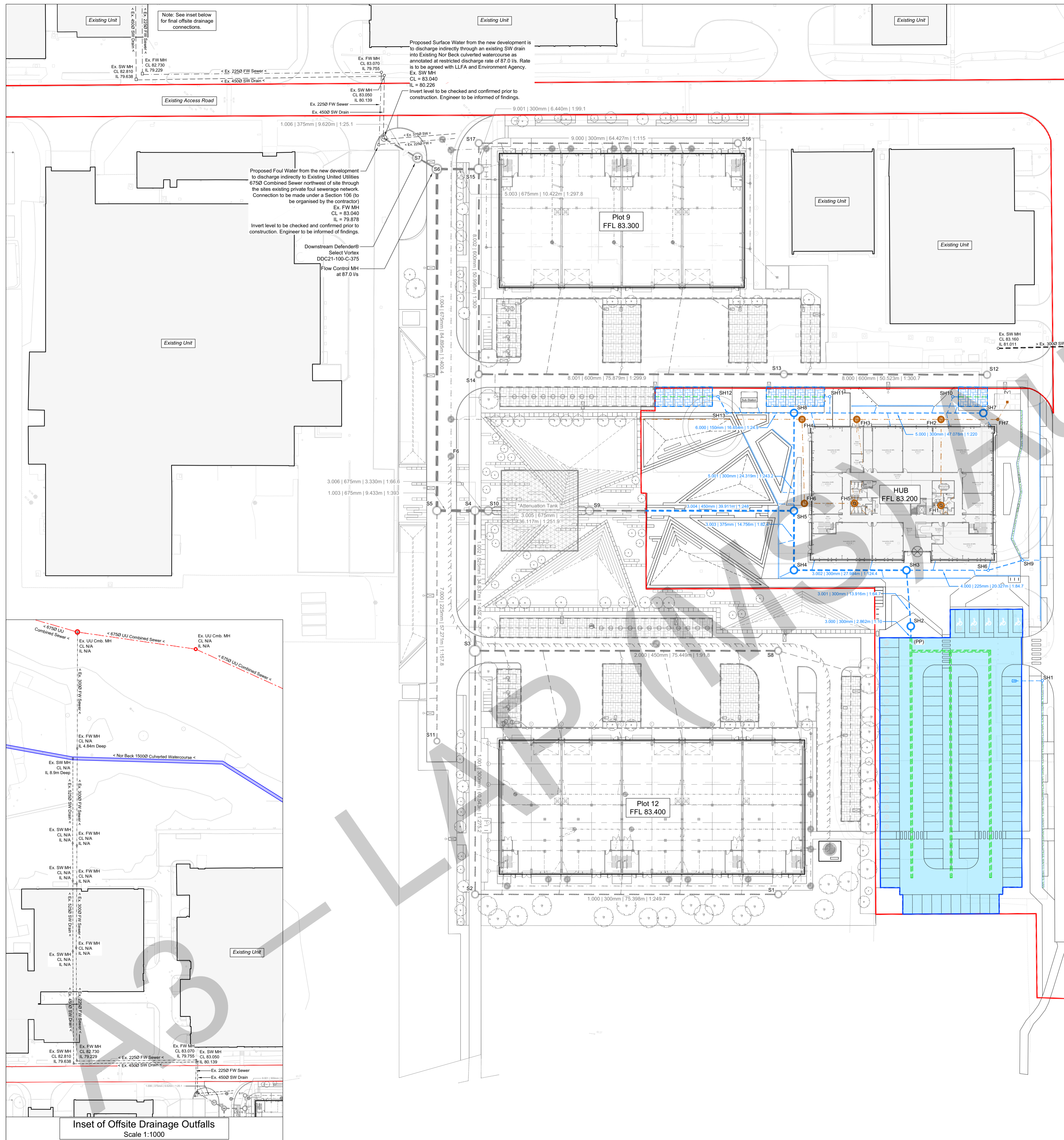
Drawing Title Manhole Schedule

Drawn	Date	Checked	Date	Size	Scale	Rev.
JN	MAR '26	JJH	MAR '26	A1	N/A	P02
Location	Originator	Volume	Level	Form	Role	Unique No.
ISH	BGP	19	XX	D	C	19131

File Reference ISH-BGP-19-XX-DR-C-19131

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

- DO NOT SCALE -



Legend

- Proposed SW Drain
- Proposed FW Sewer
- Nor Beck (Culverted)
- Existing SW Drain
- Existing FW Sewer
- Existing UU Combined Sewer
- Site Boundary
- Linear Drain w/ Silt Trap
- Existing Attenuation Tank
- Permeable Paved Paving with perf. pipe (Tanked)
- Extent of 4/20 Sub-base Attenuation (Car Parking)

Note
 This drawing is to be read in conjunction with BGP SuDS Management and Maintenance document reference: ISH-BGP-19-XX-T-C-0003 current revision for Management and Maintenance requirements of elements not included within tables on the drawing.

Maintenance Requirements

FW Sewers and Manholes To be managed by the contractor until end of defect period. Client appointed private management company to maintain thereafter

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required take remedial action.	Monthly for 3 months then annually.
Occasional Maintenance	Survey inside of outlet pipes to check for sediment build up and remove if necessary.	Every 5 years or as required.
Remedial Actions	Repair physical damage if necessary.	As Required.

SW Drains and Manholes To be managed by the contractor until end of defect period. Client appointed private management company to maintain thereafter

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required take remedial action.	Monthly for 3 months then annually.
Occasional Maintenance	Survey inside of outlet pipes to check for sediment build up and remove if necessary.	Every 5 years or as required.
Remedial Actions	Repair physical damage if necessary.	As Required.

Gullies / Linear Drains To be managed by the contractor until end of defect period. Client appointed private management company to maintain thereafter

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspect for ponding on road channel, may be caused by obstruction within gully. Remove by rodding/setting from access point.	Monthly for 3 months then annually.
Occasional Maintenance	Survey inside of outlet pipes to check for sediment build up and remove if necessary.	Annually or as required.
Remedial Actions	Repair physical damage if necessary.	Every 5 years or as required.
Remedial Actions	Repair physical damage if necessary.	As Required.

Permeable Car Parking To be managed by the contractor until end of defect period. Client appointed private management company to maintain thereafter

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Brushing and Vacuuming (standard cosmetic sweep over whole surface).	Yearly, ideally after autumn leaf fall.
Occasional Maintenance	Stabilize and mow contributing and adjacent areas.	As required.
Occasional Maintenance	Removal/management of weeds using glyphosate applied directly into the weeds by an applicator rather than spraying.	As required, once per year on infrequently used pavements.
Remedial Actions	Remediate any landscaping which has been raised to within 50mm of the level of the paving.	As Required.
Remedial Actions	Remedial work to any depressions, rutting and cracked/broken blocks considered detrimental to the structural performance or a hazard to users and replace lost jointing material.	As Required.
Remedial Actions	Rehabilitation of surface and upper substructure by remedial sweeping.	Every 10-15 years or as required.

NOT FOR PRICING

NOT FOR CONSTRUCTION

Stage 3 Issue	JN	P02	JJH	11.04.2026
Stage 3 Issue	JN	P01	JJH	17.03.2026
AMENDMENT	BY	REV	CHK	DATE



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Client	Cumberland Council			
Project	ISH Hub			
BGP Project No.	21T2034			
Drawing Title	SuDS Maintenance Plan			
Drawn	Date	Checked	Date	Size
JN	MAR '26	JJH	MAR '26	A1
Scale	Rev.	Location	Originator	Volume
1:500	P02	ISH	BGP	XX
Form	Level	Role	Unique No.	
D	C	C	19150	
File Reference	ISH-BGP-19-XX-D-C-19150			

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

Inset of Offsite Drainage Outfalls
 Scale 1:1000

Appendix F – Flood Maps for Planning



Flood map for planning

Your reference
Unspecified

Location (easting/northing)
301700/515539

Created
1 April 2026 17:03

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

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

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 2026 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

Unspecified

Location (easting/northing)

301700/515539

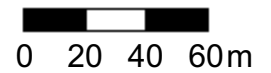
Scale

1:2,500

Created

1 Apr 2026 17:03

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



Appendix G – Surface Water Calculations

Wellington House, Wellington Court
 Preston Farm Business Park
 Stockton on Tees TS18 3TA

ISH HUB
 Surface Water Model



Date 11/04/2026 14:51

Designed by JD

File 2026.03.12 - SW MODEL.MDX

Checked by JJH

Innovyze

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 (%)	45
Ratio R	0.260	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	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.	1.000	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.756	4-8	1.107	8-12	0.007

Total Area Contributing (ha) = 1.871

Total Pipe Volume (m³) = 154.996

Network Design Table for Storm

<< - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	75.398	0.302	249.7	0.152	4.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	60.543	0.220	275.2	0.031	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.000	75.449	0.822	91.8	0.408	4.00	0.0	0.600	o	450	Pipe/Conduit	
S1.002	34.837	0.077	452.4	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S3.000	2.862	0.285	10.0	0.249	4.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	13.916	0.215	64.7	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.27	81.950	0.152	0.0	0.0	12.3	0.99	70.0	39.8
S1.001	50.00	6.34	81.648	0.183	0.0	0.0	14.9	0.94	66.6	47.9
S2.000	50.00	4.59	82.100	0.408	0.0	0.0	33.1	2.12	337.6	106.8
S1.002	50.00	6.89	81.203	0.591	0.0	0.0	48.0	1.05	226.5	154.7
S3.000	50.00	4.01	82.825	0.249	0.0	0.0	20.2	4.99	352.7	65.2
S3.001	50.00	4.13	82.100	0.249	0.0	0.0	20.2	1.96	138.4	65.2

Wellington House, Wellington Court
 Preston Farm Business Park
 Stockton on Tees TS18 3TA

ISH HUB
 Surface Water Model



Date 11/04/2026 14:51

Designed by JD

File 2026.03.12 - SW MODEL.MDX

Checked by JJH

Innovyze

Network 2020.1.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S4.000	20.327	0.240	84.7	0.077	4.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S3.002	27.984	0.225	124.4	0.077	0.00	0.0	0.600	o	300	Pipe/Conduit	🔒
S3.003	14.756	0.179	82.4	0.018	0.00	0.0	0.600	o	375	Pipe/Conduit	🔒
S5.000	47.078	0.214	220.0	0.128	4.00	0.0	0.600	o	300	Pipe/Conduit	🔒
S6.000	16.654	0.669	24.9	0.012	4.00	0.0	0.600	o	150	Pipe/Conduit	🔒
S5.001	24.319	0.100	243.2	0.019	0.00	0.0	0.600	o	300	Pipe/Conduit	🔒
S3.004	50.834	0.205	248.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	🔒
S3.005	25.194	0.100	251.9	0.000	0.00	0.0	0.600	o	675	Pipe/Conduit	🔒
S3.006	3.330	0.050	66.6	0.000	0.00	0.0	0.600	o	675	Pipe/Conduit	🔒
S1.003	9.433	0.024	393.0	0.015	0.00	0.0	0.600	o	675	Pipe/Conduit	🔒
S7.000	57.271	0.363	157.8	0.053	4.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S1.004	84.895	0.212	400.4	0.097	0.00	0.0	0.600	o	675	Pipe/Conduit	🔒
S8.000	50.523	0.168	300.7	0.047	4.00	0.0	0.600	o	600	Pipe/Conduit	🔒
S8.001	75.879	0.253	299.9	0.319	0.00	0.0	0.600	o	600	Pipe/Conduit	🔒
S8.002	50.998	0.170	300.0	0.019	0.00	0.0	0.600	o	600	Pipe/Conduit	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S4.000	50.00	4.24	82.200	0.077	0.0	0.0	6.3	1.42	56.5	20.2
S3.002	50.00	4.57	81.885	0.403	0.0	0.0	32.7	1.41	99.6	105.5
S3.003	50.00	4.69	81.585	0.421	0.0	0.0	34.2	2.00	220.6	110.2
S5.000	50.00	4.74	81.795	0.128	0.0	0.0	10.4	1.06	74.6	33.5
S6.000	50.00	4.14	82.400	0.012	0.0	0.0	1.0	2.03	35.8	3.1
S5.001	50.00	5.15	81.581	0.159	0.0	0.0	12.9	1.00	71.0	41.6
S3.004	50.00	5.81	81.331	0.580	0.0	0.0	47.1	1.29	204.6	151.8
S3.005	50.00	6.06	81.126	0.580	0.0	0.0	47.1	1.65	589.2	151.8
S3.006	50.00	6.08	81.026	0.580	0.0	0.0	47.1	3.21	1150.4	151.8
S1.003	50.00	7.01	80.976	1.186	0.0	0.0	96.4	1.32	470.9	310.5
S7.000	50.00	4.92	81.765	0.053	0.0	0.0	4.3	1.04	41.3	13.9
S1.004	50.00	8.10	80.952	1.336	0.0	0.0	108.5	1.30	466.5	349.8
S8.000	50.00	4.60	81.516	0.047	0.0	0.0	3.8	1.40	395.6	12.3
S8.001	50.00	5.50	81.348	0.366	0.0	0.0	29.7	1.40	396.1	95.8
S8.002	50.00	6.11	81.095	0.385	0.0	0.0	31.3	1.40	396.0	100.8

Wellington House, Wellington Court
 Preston Farm Business Park
 Stockton on Tees TS18 3TA

ISH HUB
 Surface Water Model



Date 11/04/2026 14:51

Designed by JD

File 2026.03.12 - SW MODEL.MDX

Checked by JJH

Innovyze

Network 2020.1.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S9.000	64.427	0.560	115.0	0.150	4.00	0.0	0.600	o	300	Pipe/Conduit	🔒
S9.001	6.440	0.065	99.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔒
S8.003	10.422	0.035	297.8	0.000	0.00	0.0	0.600	o	675	Pipe/Conduit	🔒
S1.005	5.605	0.056	100.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	🔒
S1.006	9.620	0.383	25.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S9.000	50.00	4.73	81.850	0.150	0.0	0.0	12.2	1.46	103.6	39.3
S9.001	50.00	4.80	81.290	0.150	0.0	0.0	12.2	1.58	111.7	39.3
S8.003	50.00	6.23	80.850	0.535	0.0	0.0	43.5	1.51	541.6	140.1
S1.005	50.00	8.15	80.740	1.871	0.0	0.0	152.0	1.81	200.0<	489.8
S1.006	50.00	8.19	80.684	1.871	0.0	0.0	152.0	3.63	400.7<	489.8

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SS1	83.150	1.200	Open Manhole	1200	S1.000	81.950	300				
SS2	83.180	1.532	Open Manhole	1200	S1.001	81.648	300	S1.000	81.648	300	
SS8	83.750	1.650	Open Manhole	1500	S2.000	82.100	450				
SS3	83.680	2.477	Open Manhole	1800	S1.002	81.203	525	S1.001	81.428	300	
								S2.000	81.278	450	
SPP	83.300	0.475	Open Manhole	1200	S3.000	82.825	300				
SSH2	83.300	1.200	Open Manhole	1200	S3.001	82.100	300	S3.000	82.540	300	440
SSH6	83.125	0.925	Open Manhole	600	S4.000	82.200	225				
SSH3	83.125	1.240	Open Manhole	1350	S3.002	81.885	300	S3.001	81.885	300	
								S4.000	81.960	225	
SSH4	83.125	1.540	Open Manhole	1350	S3.003	81.585	375	S3.002	81.660	300	
SSH7	83.150	1.355	Open Manhole	1200	S5.000	81.795	300				
SSH13	83.350	0.950	Open Manhole	600	S6.000	82.400	150				
SSH8	83.275	1.694	Open Manhole	1200	S5.001	81.581	300	S5.000	81.581	300	
								S6.000	81.731	150	
SSH5	83.075	1.744	Open Manhole	1500	S3.004	81.331	450	S3.003	81.406	375	
								S5.001	81.481	300	
SS9	83.680	2.554	Open Manhole	1800	S3.005	81.126	675	S3.004	81.126	450	
SS10	83.680	2.654	Open Manhole	1800	S3.006	81.026	675	S3.005	81.026	675	
SS4	83.680	2.704	Open Manhole	2100	S1.003	80.976	675	S1.002	81.126	525	
								S3.006	80.976	675	
SS11	83.190	1.425	Open Manhole	1200	S7.000	81.765	225				
SS5	83.520	2.568	Open Manhole	1800	S1.004	80.952	675	S1.003	80.952	675	
								S7.000	81.402	225	
SS12	83.020	1.504	Open Manhole	1500	S8.000	81.516	600				
SS13	83.420	2.072	Open Manhole	1500	S8.001	81.348	600	S8.000	81.348	600	
SS14	83.350	2.255	Open Manhole	1500	S8.002	81.095	600	S8.001	81.095	600	
SS16	83.200	1.350	Open Manhole	1200	S9.000	81.850	300				
SS17	83.100	1.810	Open Manhole	1200	S9.001	81.290	300	S9.000	81.290	300	
SS15	83.150	2.300	Open Manhole	2100	S8.003	80.850	675	S8.002	80.925	600	
								S9.001	81.225	300	
SS6	83.100	2.360	Open Manhole	2100	S1.005	80.740	375	S1.004	80.740	675	
								S8.003	80.815	675	375
SS7	83.100	2.416	Open Manhole	2100	S1.006	80.684	375	S1.005	80.684	375	
SOutfall	83.040	2.739	Open Manhole	0		OUTFALL		S1.006	80.301	375	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SS1	301763.353	515452.576	301763.353	515452.576	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SS2	301709.613	515399.691	301709.613	515399.691	Required	
SS8	301720.901	515495.717	301720.901	515495.717	Required	
SS3	301667.112	515442.808	301667.112	515442.808	Required	
SPP	301742.136	515521.165	301742.136	515521.165	Required	
SSH2	301740.117	515523.201	301740.117	515523.201	Required	
SSH6	301744.086	515546.601	301744.086	515546.601	Required	
SSH3	301729.587	515532.355	301729.587	515532.355	Required	
SSH4	301709.625	515512.743	301709.625	515512.743	Required	
SSH7	301715.821	515573.610	301715.821	515573.610	Required	
SSH13	301670.360	515528.944	301670.360	515528.944	Required	
SSH8	301682.239	515540.616	301682.239	515540.616	Required	
SSH5	301699.283	515523.269	301699.283	515523.269	Required	
SS9	301663.027	515487.638	301663.027	515487.638	Required	
SS10	301645.057	515469.979	301645.057	515469.979	Required	
SS4	301642.683	515467.644	301642.683	515467.644	Required	
SS11	301676.119	515420.200	301676.119	515420.200	Required	
SS5	301635.958	515461.029	301635.958	515461.029	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SS12	301709.813	515581.056	301709.813	515581.056	Required	
SS13	301673.712	515545.711	301673.712	515545.711	Required	
SS14	301619.617	515492.501	301619.617	515492.501	Required	
SS16	301625.270	515578.630	301625.270	515578.630	Required	
SS17	301579.339	515533.450	301579.339	515533.450	Required	
SS15	301583.855	515528.859	301583.855	515528.859	Required	
SS6	301576.425	515521.551	301576.425	515521.551	Required	
SS7	301570.994	515520.164	301570.994	515520.164	Required	
SOutfall	301561.672	515517.787			No Entry	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	300	SS1	83.150	81.950	0.900	Open Manhole	1200
S1.001	o	300	SS2	83.180	81.648	1.232	Open Manhole	1200
S2.000	o	450	SS8	83.750	82.100	1.200	Open Manhole	1500
S1.002	o	525	SS3	83.680	81.203	1.952	Open Manhole	1800
S3.000	o	300	SPP	83.300	82.825	0.175	Open Manhole	1200
S3.001	o	300	SSH2	83.300	82.100	0.900	Open Manhole	1200
S4.000	o	225	SSH6	83.125	82.200	0.700	Open Manhole	600
S3.002	o	300	SSH3	83.125	81.885	0.940	Open Manhole	1350
S3.003	o	375	SSH4	83.125	81.585	1.165	Open Manhole	1350
S5.000	o	300	SSH7	83.150	81.795	1.055	Open Manhole	1200
S6.000	o	150	SSH13	83.350	82.400	0.800	Open Manhole	600
S5.001	o	300	SSH8	83.275	81.581	1.394	Open Manhole	1200
S3.004	o	450	SSH5	83.075	81.331	1.294	Open Manhole	1500
S3.005	o	675	SS9	83.680	81.126	1.879	Open Manhole	1800
S3.006	o	675	SS10	83.680	81.026	1.979	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	75.398	249.7	SS2	83.180	81.648	1.232	Open Manhole	1200
S1.001	60.543	275.2	SS3	83.680	81.428	1.952	Open Manhole	1800
S2.000	75.449	91.8	SS3	83.680	81.278	1.952	Open Manhole	1800
S1.002	34.837	452.4	SS4	83.680	81.126	2.029	Open Manhole	2100
S3.000	2.862	10.0	SSH2	83.300	82.540	0.460	Open Manhole	1200
S3.001	13.916	64.7	SSH3	83.125	81.885	0.940	Open Manhole	1350
S4.000	20.327	84.7	SSH3	83.125	81.960	0.940	Open Manhole	1350
S3.002	27.984	124.4	SSH4	83.125	81.660	1.165	Open Manhole	1350
S3.003	14.756	82.4	SSH5	83.075	81.406	1.294	Open Manhole	1500
S5.000	47.078	220.0	SSH8	83.275	81.581	1.394	Open Manhole	1200
S6.000	16.654	24.9	SSH8	83.275	81.731	1.394	Open Manhole	1200
S5.001	24.319	243.2	SSH5	83.075	81.481	1.294	Open Manhole	1500
S3.004	50.834	248.0	SS9	83.680	81.126	2.104	Open Manhole	1800
S3.005	25.194	251.9	SS10	83.680	81.026	1.979	Open Manhole	1800
S3.006	3.330	66.6	SS4	83.680	80.976	2.029	Open Manhole	2100

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.003	o	675	SS4	83.680	80.976	2.029	Open Manhole	2100
S7.000	o	225	SS11	83.190	81.765	1.200	Open Manhole	1200
S1.004	o	675	SS5	83.520	80.952	1.893	Open Manhole	1800
S8.000	o	600	SS12	83.020	81.516	0.904	Open Manhole	1500
S8.001	o	600	SS13	83.420	81.348	1.472	Open Manhole	1500
S8.002	o	600	SS14	83.350	81.095	1.655	Open Manhole	1500
S9.000	o	300	SS16	83.200	81.850	1.050	Open Manhole	1200
S9.001	o	300	SS17	83.100	81.290	1.510	Open Manhole	1200
S8.003	o	675	SS15	83.150	80.850	1.625	Open Manhole	2100
S1.005	o	375	SS6	83.100	80.740	1.985	Open Manhole	2100
S1.006	o	375	SS7	83.100	80.684	2.041	Open Manhole	2100

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.003	9.433	393.0	SS5	83.520	80.952	1.893	Open Manhole	1800
S7.000	57.271	157.8	SS5	83.520	81.402	1.893	Open Manhole	1800
S1.004	84.895	400.4	SS6	83.100	80.740	1.685	Open Manhole	2100
S8.000	50.523	300.7	SS13	83.420	81.348	1.472	Open Manhole	1500
S8.001	75.879	299.9	SS14	83.350	81.095	1.655	Open Manhole	1500
S8.002	50.998	300.0	SS15	83.150	80.925	1.625	Open Manhole	2100
S9.000	64.427	115.0	SS17	83.100	81.290	1.510	Open Manhole	1200
S9.001	6.440	99.1	SS15	83.150	81.225	1.625	Open Manhole	2100
S8.003	10.422	297.8	SS6	83.100	80.815	1.610	Open Manhole	2100
S1.005	5.605	100.1	SS7	83.100	80.684	2.041	Open Manhole	2100
S1.006	9.620	25.1	SOutfall	83.040	80.301	2.364	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.152	0.152	0.152
1.001	-	-	100	0.031	0.031	0.031
2.000	-	-	100	0.408	0.408	0.408
1.002	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.249	0.249	0.249
3.001	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.077	0.077	0.077
3.002	-	-	100	0.077	0.077	0.077
3.003	-	-	100	0.018	0.018	0.018
5.000	-	-	100	0.128	0.128	0.128
6.000	-	-	100	0.012	0.012	0.012
5.001	-	-	100	0.019	0.019	0.019
3.004	-	-	100	0.000	0.000	0.000
3.005	-	-	100	0.000	0.000	0.000
3.006	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.015	0.015	0.015
7.000	-	-	100	0.053	0.053	0.053
1.004	-	-	100	0.097	0.097	0.097
8.000	-	-	100	0.047	0.047	0.047
8.001	-	-	100	0.319	0.319	0.319
8.002	-	-	100	0.019	0.019	0.019
9.000	-	-	100	0.150	0.150	0.150
9.001	-	-	100	0.000	0.000	0.000
8.003	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.871	1.871	1.871

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.006	SOutfall	83.040	80.301	80.301	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	0.000
Hot Start (mins)	0	Inlet Coefficient	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 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
Return Period (years)	100	Summer Storms	Yes
FEH Rainfall Version	2013	Winter Storms	No
Site Location	GB 301616 515503 NY 01616 15503	Cv (Summer)	1.000

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Synthetic Rainfall Details

Cv (Winter) 1.000 Storm Duration (mins) 30

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Online Controls for Storm

Orifice Manhole: SSH2, DS/PN: S3.001, Volume (m³): 1.5

Diameter (m) 0.075 Discharge Coefficient 0.600 Invert Level (m) 82.100

Hydro-Brake® Optimum Manhole: SS6, DS/PN: S1.005, Volume (m³): 40.8

Unit Reference MD-SHE-0361-8700-1935-8700
 Design Head (m) 1.935
 Design Flow (l/s) 87.0
 Flush-Flo™ Calculated
 Objective Minimise upstream storage
 Application Surface
 Sump Available Yes
 Diameter (mm) 361
 Invert Level (m) 80.740
 Minimum Outlet Pipe Diameter (mm) 375
 Suggested Manhole Diameter (mm) Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.935	86.9	Kick-Flo®	1.365	73.4
Flush-Flo™	0.646	86.7	Mean Flow over Head Range	-	73.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.3	0.800	86.1	2.000	88.3	4.000	123.7	7.000	162.6
0.200	36.3	1.000	84.1	2.200	92.5	4.500	131.1	7.500	168.2
0.300	67.6	1.200	80.4	2.400	96.5	5.000	138.0	8.000	173.6
0.400	83.4	1.400	74.3	2.600	100.3	5.500	144.5	8.500	178.8
0.500	85.7	1.600	79.3	3.000	107.6	6.000	150.8	9.000	183.9
0.600	86.6	1.800	83.9	3.500	115.9	6.500	156.8	9.500	188.9

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Storage Structures for Storm

Porous Car Park Manhole: SPP, DS/PN: S3.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	35.2
Membrane Percolation (mm/hr)	1000	Length (m)	63.8
Max Percolation (l/s)	623.8	Slope (1:X)	200.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	82.825	Membrane Depth (mm)	100

Tank or Pond Manhole: SS10, DS/PN: S3.006

Invert Level (m) 81.075

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	360.0	1.600	360.0	1.601	0.0

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2 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 Coefficient 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 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 301616 515503 NY 01616 15503 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status ON
 Inertia Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 50

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	SS1	15 Summer	2	+0%	100/15 Summer	100/15 Summer			82.089	-0.161	0.000
S1.001	SS2	15 Summer	2	+0%	100/15 Summer				81.795	-0.153	0.000
S2.000	SS8	15 Summer	2	+0%	100/15 Summer				82.253	-0.297	0.000
S1.002	SS3	15 Summer	2	+0%	100/15 Summer				81.477	-0.251	0.000
S3.000	SPP	120 Summer	2	+0%	100/60 Summer				82.931	-0.194	0.000
S3.001	SSH2	120 Summer	2	+0%	2/15 Summer				82.953	0.553	0.000
S4.000	SSH6	15 Summer	2	+0%	100/15 Summer				82.283	-0.142	0.000
S3.002	SSH3	30 Summer	2	+0%	100/15 Summer				82.004	-0.181	0.000
S3.003	SSH4	30 Summer	2	+0%	100/15 Summer				81.695	-0.265	0.000
S5.000	SSH7	15 Summer	2	+0%	100/15 Summer				81.919	-0.176	0.000
S6.000	SSH13	15 Summer	2	+0%	100/60 Summer				82.426	-0.124	0.000
S5.001	SSH8	15 Summer	2	+0%	100/15 Summer				81.724	-0.157	0.000
S3.004	SSH5	30 Summer	2	+0%	100/15 Summer				81.502	-0.279	0.000
S3.005	SS9	30 Summer	2	+0%	100/15 Summer				81.283	-0.518	0.000
S3.006	SS10	120 Summer	2	+0%	100/15 Summer				81.250	-0.451	0.000
S1.003	SS4	30 Summer	2	+0%	100/15 Summer				81.322	-0.329	0.000
S7.000	SS11	15 Summer	2	+0%	100/15 Summer				81.843	-0.147	0.000
S1.004	SS5	30 Summer	2	+0%	100/15 Summer				81.321	-0.306	0.000
S8.000	SS12	15 Summer	2	+0%	100/15 Summer				81.587	-0.529	0.000
S8.001	SS13	15 Summer	2	+0%	100/15 Summer				81.505	-0.443	0.000
S8.002	SS14	30 Summer	2	+0%	30/30 Summer				81.327	-0.368	0.000
S9.000	SS16	15 Summer	2	+0%	100/15 Summer	100/30 Summer			81.961	-0.189	0.000
S9.001	SS17	15 Summer	2	+0%	30/15 Summer				81.431	-0.159	0.000
S8.003	SS15	30 Summer	2	+0%	30/15 Summer				81.292	-0.233	0.000
S1.005	SS6	30 Summer	2	+0%	2/15 Summer				81.280	0.165	0.000
S1.006	SS7	30 Summer	2	+0%					80.836	-0.223	0.000

Wellington House, Wellington Court
 Preston Farm Business Park
 Stockton on Tees TS18 3TA

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File 2026.03.12 - SW MODEL.MDX

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Network 2020.1.3

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

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status	Level Exceeded
				Time (mins)	Flow (l/s)		
S1.000	SS1	0.40			26.7	OK	3
S1.001	SS2	0.46			29.4	OK	
S2.000	SS8	0.25			78.2	OK	
S1.002	SS3	0.52			100.1	OK	
S3.000	SPP	0.09		23	11.8	OK	
S3.001	SSH2	0.09			10.5	SURCHARGED	
S4.000	SSH6	0.29			15.1	OK	
S3.002	SSH3	0.33			29.2	OK	
S3.003	SSH4	0.19			31.6	OK	
S5.000	SSH7	0.34			24.0	OK	
S6.000	SSH13	0.07			2.4	OK	
S5.001	SSH8	0.46			28.9	OK	
S3.004	SSH5	0.30			56.7	OK	
S3.005	SS9	0.12			56.1	OK	
S3.006	SS10	0.09			41.5	OK	
S1.003	SS4	0.27			65.7	OK	
S7.000	SS11	0.26			10.4	OK	
S1.004	SS5	0.19			81.7	OK	
S8.000	SS12	0.03			8.9	OK	
S8.001	SS13	0.14			52.2	OK	
S8.002	SS14	0.14			47.8	OK	
S9.000	SS16	0.29			28.3	OK	1
S9.001	SS17	0.44			28.1	OK	
S8.003	SS15	0.15			47.9	OK	
S1.005	SS6	0.78			83.8	SURCHARGED	
S1.006	SS7	0.35			83.8	OK	

Wellington House, Wellington Court
 Preston Farm Business Park
 Stockton on Tees TS18 3TA

ISH HUB
 Surface Water Model



Date 11/04/2026 14:51

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File 2026.03.12 - SW MODEL.MDX

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Network 2020.1.3

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 Coefficient 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 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 301616 515503 NY 01616 15503 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status ON
 Inertia Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 50

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	SS1	15 Summer	30	+0%	100/15 Summer	100/15 Summer			82.174	-0.076	0.000
S1.001	SS2	15 Summer	30	+0%	100/15 Summer				81.894	-0.054	0.000
S2.000	SS8	15 Summer	30	+0%	100/15 Summer				82.330	-0.220	0.000
S1.002	SS3	15 Summer	30	+0%	100/15 Summer				81.665	-0.063	0.000
S3.000	SPP	120 Summer	30	+0%	100/60 Summer				83.018	-0.107	0.000
S3.001	SSH2	120 Summer	30	+0%	2/15 Summer				83.054	0.654	0.000
S4.000	SSH6	15 Summer	30	+0%	100/15 Summer				82.326	-0.099	0.000
S3.002	SSH3	15 Summer	30	+0%	100/15 Summer				82.089	-0.096	0.000
S3.003	SSH4	15 Summer	30	+0%	100/15 Summer				81.766	-0.194	0.000
S5.000	SSH7	15 Summer	30	+0%	100/15 Summer				81.987	-0.108	0.000
S6.000	SSH13	15 Summer	30	+0%	100/60 Summer				82.438	-0.112	0.000
S5.001	SSH8	15 Summer	30	+0%	100/15 Summer				81.813	-0.068	0.000
S3.004	SSH5	120 Summer	30	+0%	100/15 Summer				81.667	-0.114	0.000
S3.005	SS9	120 Summer	30	+0%	100/15 Summer				81.607	-0.194	0.000
S3.006	SS10	120 Summer	30	+0%	100/15 Summer				81.579	-0.122	0.000
S1.003	SS4	120 Summer	30	+0%	100/15 Summer				81.576	-0.075	0.000
S7.000	SS11	15 Summer	30	+0%	100/15 Summer				81.882	-0.108	0.000
S1.004	SS5	30 Summer	30	+0%	100/15 Summer				81.584	-0.043	0.000
S8.000	SS12	30 Summer	30	+0%	100/15 Summer				81.761	-0.355	0.000
S8.001	SS13	30 Summer	30	+0%	100/15 Summer				81.760	-0.188	0.000
S8.002	SS14	30 Summer	30	+0%	30/30 Summer				81.698	0.003	0.000
S9.000	SS16	15 Summer	30	+0%	100/15 Summer	100/30 Summer			82.020	-0.130	0.000
S9.001	SS17	30 Summer	30	+0%	30/15 Summer				81.674	0.084	0.000
S8.003	SS15	30 Summer	30	+0%	30/15 Summer				81.620	0.095	0.000
S1.005	SS6	30 Summer	30	+0%	2/15 Summer				81.613	0.498	0.000
S1.006	SS7	30 Summer	30	+0%					80.839	-0.220	0.000

Wellington House, Wellington Court
 Preston Farm Business Park
 Stockton on Tees TS18 3TA

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 Surface Water Model



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Network 2020.1.3

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

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status	Level
				Time (mins)	Flow (l/s)		Exceeded
S1.000	SS1	0.82			55.0	OK	3
S1.001	SS2	0.95			60.3	OK	
S2.000	SS8	0.51			160.7	OK	
S1.002	SS3	0.98			190.4	OK	
S3.000	SPP	0.09		55	11.8	FLOOD RISK	
S3.001	SSH2	0.10			11.0	FLOOD RISK	
S4.000	SSH6	0.61			31.0	OK	
S3.002	SSH3	0.75			67.7	OK	
S3.003	SSH4	0.45			74.8	OK	
S5.000	SSH7	0.70			49.3	OK	
S6.000	SSH13	0.15			4.8	OK	
S5.001	SSH8	0.94			59.5	OK	
S3.004	SSH5	0.40			73.6	OK	
S3.005	SS9	0.15			66.4	OK	
S3.006	SS10	0.15			66.3	OK	
S1.003	SS4	0.31			75.6	OK	
S7.000	SS11	0.53			21.2	OK	
S1.004	SS5	0.25			105.7	OK	
S8.000	SS12	0.05			17.0	OK	
S8.001	SS13	0.35			125.7	OK	
S8.002	SS14	0.22			77.6	SURCHARGED	
S9.000	SS16	0.59			58.2	OK	1
S9.001	SS17	0.85			54.0	SURCHARGED	
S8.003	SS15	0.25			83.6	SURCHARGED	
S1.005	SS6	0.81			86.6	SURCHARGED	
S1.006	SS7	0.36			86.6	OK	

Wellington House, Wellington Court
 Preston Farm Business Park
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 Surface Water Model



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Network 2020.1.3

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 Coefficient 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 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 301616 515503 NY 01616 15503 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status ON
 Inertia Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 50

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	SS1	30 Summer	100	+50%	100/15 Summer	100/15 Summer			83.153	0.903	3.412
S1.001	SS2	15 Summer	100	+50%	100/15 Summer				82.922	0.974	0.000
S2.000	SS8	30 Summer	100	+50%	100/15 Summer				82.985	0.435	0.000
S1.002	SS3	120 Summer	100	+50%	100/15 Summer				82.558	0.830	0.000
S3.000	SPP	120 Winter	100	+50%	100/60 Summer				83.155	0.030	0.000
S3.001	SSH2	120 Summer	100	+50%	2/15 Summer				83.180	0.780	0.000
S4.000	SSH6	15 Summer	100	+50%	100/15 Summer				82.755	0.330	0.000
S3.002	SSH3	120 Summer	100	+50%	100/15 Summer				82.682	0.497	0.000
S3.003	SSH4	120 Summer	100	+50%	100/15 Summer				82.646	0.686	0.000
S5.000	SSH7	120 Summer	100	+50%	100/15 Summer				82.659	0.564	0.000
S6.000	SSH13	120 Summer	100	+50%	100/60 Summer				82.650	0.100	0.000
S5.001	SSH8	120 Summer	100	+50%	100/15 Summer				82.647	0.766	0.000
S3.004	SSH5	120 Summer	100	+50%	100/15 Summer				82.636	0.855	0.000
S3.005	SS9	120 Summer	100	+50%	100/15 Summer				82.555	0.754	0.000
S3.006	SS10	120 Summer	100	+50%	100/15 Summer				82.551	0.850	0.000
S1.003	SS4	120 Summer	100	+50%	100/15 Summer				82.549	0.898	0.000
S7.000	SS11	15 Summer	100	+50%	100/15 Summer				82.560	0.570	0.000
S1.004	SS5	120 Summer	100	+50%	100/15 Summer				82.545	0.918	0.000
S8.000	SS12	15 Summer	100	+50%	100/15 Summer				82.848	0.732	0.000
S8.001	SS13	15 Summer	100	+50%	100/15 Summer				82.836	0.888	0.000
S8.002	SS14	15 Summer	100	+50%	30/30 Summer				82.727	1.032	0.000
S9.000	SS16	30 Summer	100	+50%	100/15 Summer	100/30 Summer			83.200	1.050	0.064
S9.001	SS17	15 Summer	100	+50%	30/15 Summer				82.764	1.174	0.000
S8.003	SS15	15 Summer	100	+50%	30/15 Summer				82.630	1.105	0.000
S1.005	SS6	15 Summer	100	+50%	2/15 Summer				82.578	1.463	0.000
S1.006	SS7	360 Winter	100	+50%					80.839	-0.220	0.000

Wellington House, Wellington Court
 Preston Farm Business Park
 Stockton on Tees TS18 3TA

ISH HUB
 Surface Water Model



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File 2026.03.12 - SW MODEL.MDX

Checked by JJH

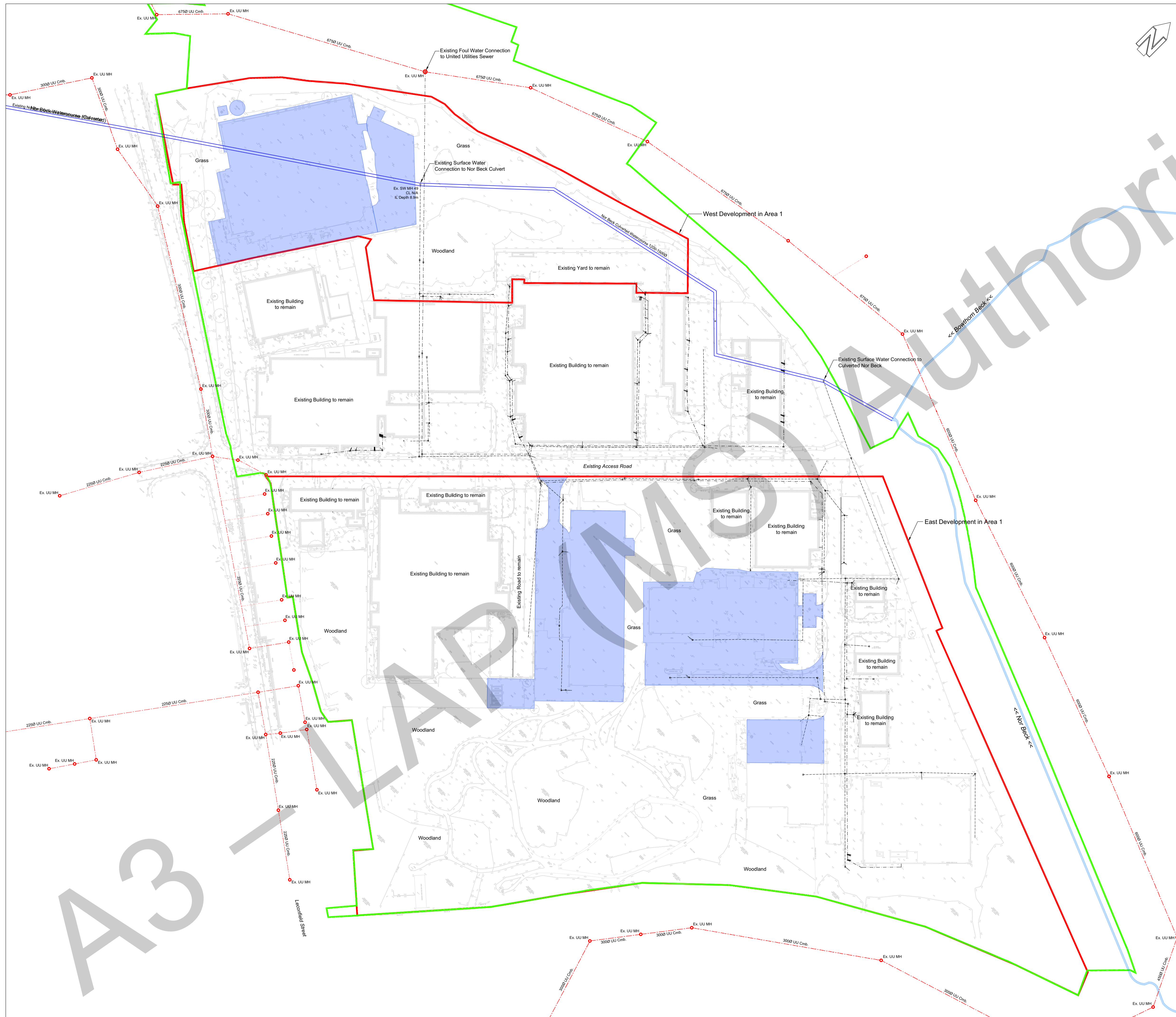
Innovyze

Network 2020.1.3

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

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS1	1.32			88.9	FLOOD	3
S1.001	SS2	1.49			94.3	FLOOD RISK	
S2.000	SS8	0.90			283.1	SURCHARGED	
S1.002	SS3	0.98			188.9	SURCHARGED	
S3.000	SPP	0.09		96	12.0	FLOOD RISK	
S3.001	SSH2	0.10			11.5	FLOOD RISK	
S4.000	SSH6	1.17			60.0	SURCHARGED	
S3.002	SSH3	0.77			69.3	SURCHARGED	
S3.003	SSH4	0.43			70.8	SURCHARGED	
S5.000	SSH7	0.68			47.6	SURCHARGED	
S6.000	SSH13	0.14			4.6	SURCHARGED	
S5.001	SSH8	0.86			54.5	SURCHARGED	
S3.004	SSH5	0.61			113.4	SURCHARGED	
S3.005	SS9	0.24			109.1	SURCHARGED	
S3.006	SS10	0.15			68.0	SURCHARGED	
S1.003	SS4	0.31			75.8	SURCHARGED	
S7.000	SS11	0.97			38.5	SURCHARGED	
S1.004	SS5	0.18			76.7	SURCHARGED	
S8.000	SS12	0.09			32.5	FLOOD RISK	
S8.001	SS13	0.61			219.0	SURCHARGED	
S8.002	SS14	0.52			180.3	SURCHARGED	
S9.000	SS16	0.98			96.5	FLOOD	1
S9.001	SS17	1.44			91.9	SURCHARGED	
S8.003	SS15	0.92			301.9	SURCHARGED	
S1.005	SS6	0.81			86.6	SURCHARGED	
S1.006	SS7	0.36			86.6	OK	

Appendix H – Brownfield Rate Calculation



Notes:

- Drawing is based on topographical survey prepared by White Young Green dated 28/11/2019 and CCTV drain survey prepared by EDS.
- Brownfield discharge rates have been based on current Cumbria LLFA standards (50% reduction on existing discharge rate).

Legend:

- Existing FW Sewer
 - Existing SW Drain
 - Development Zones within Area 1
 - Area 1 Site Boundary
- West Development**
- Existing Drained Roof Impermeable Area
Area = 0m² = (0.0ha)
 - Existing Drained Road/Paving Impermeable Area
Area = 7865m² = (0.7865ha)

Establishing Discharge Rate: West Development

Area highlighted is the hardstanding area which is proposed to be redeveloped as part of Area 1 West, Cleator Moor Industrial Estate. Based on Cumbria standard, any brownfield site must be limited to 140l/s/ha with a 50% reduction. Therefore based on this principal;

140l/s x 0.7865Ha = 110.11 l/s

Reduce 110.11 l/s by 50% to provide proposed discharge rate for West = **55.0 l/s**

East Development

- Existing Drained Roof Impermeable Area
Area = 0m² = (0.0ha)
- Existing Drained Road/Paving Impermeable Area
Area = 12430m² = (1.2430ha)

Establishing Discharge Rate: East Development

Area highlighted is the hardstanding area which is proposed to be redeveloped as part of Area 1 East, Cleator Moor Industrial Estate. Based on Cumbria standard, any brownfield site must be limited to 140l/s/ha with a 50% reduction. Therefore based on this principal;

140l/s x 1.2430Ha = 174.0 l/s

Reduce 174.0 l/s by 50% to provide proposed discharge rate for East = **87.0 l/s**

Issued for Planning	JJH	P03	JC	07.11.2025
Issued for Planning	JJH	P02	JC	23.03.2022
Issued for Information	JJH	P01	JC	05.11.2021
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, Billinghurst 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.



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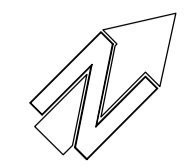
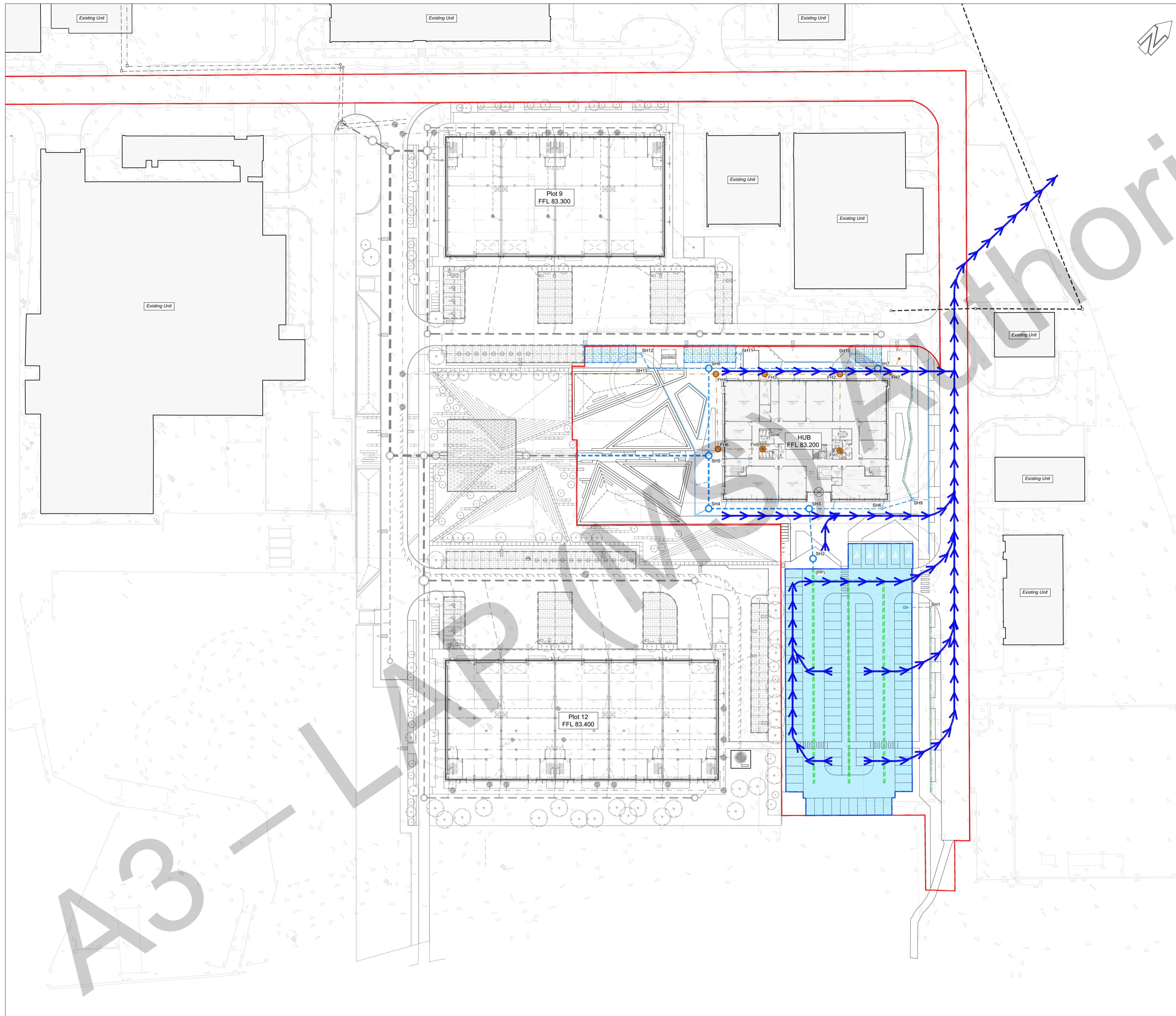
Client	Copeland Borough Council		
Project	Leconfield Industrial Estate	Project No.	21T2034

Drawing Title							
Area 1 - Brownfield Discharge Rate							
Drawn	Date	Checked	Date	Size	Scale	Class.	Rev.
JJH	Nov 2021	JC	Nov 2021	A1	1:1000	52	P03
Location	Originator	Volume	Level	Type	Role	Unique No.	
CMIQ	BGP	01	XX	DR	C	01901	

File Reference	CMIQ-BGP-01-ZZ-DR-C-52-01901
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A3

Appendix I - Flood Exceedance Plan



- Notes**
- Routes shown are based on White Young Green topographic survey.
 - Overland flood exceedance flow routes indicate the proposed route of surface water when a rainfall event exceeds the designed capacity of the proposed drainage network or when blockages occur. It is intended that where flow paths are located falls are designed to direct surface water away from property. Final routes and proposal subject to agreement with the LLFA at Cumbria County Council.

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 Redline Boundary
- Proposed Attenuation Tank
- Tanked Permeable Paved Parking Bays with perf. pipe
- Flood Exceedance Flow Path (Based on a Complete Drainage System Failure)

NOT FOR PRICING

NOT FOR CONSTRUCTION

Stage 3 Issue	JN	P02	JJH	11.04.2026
Stage 3 Issue	JN	P01	JJH	17.03.2026
AMENDMENT	BY	REV	CHK	DATE



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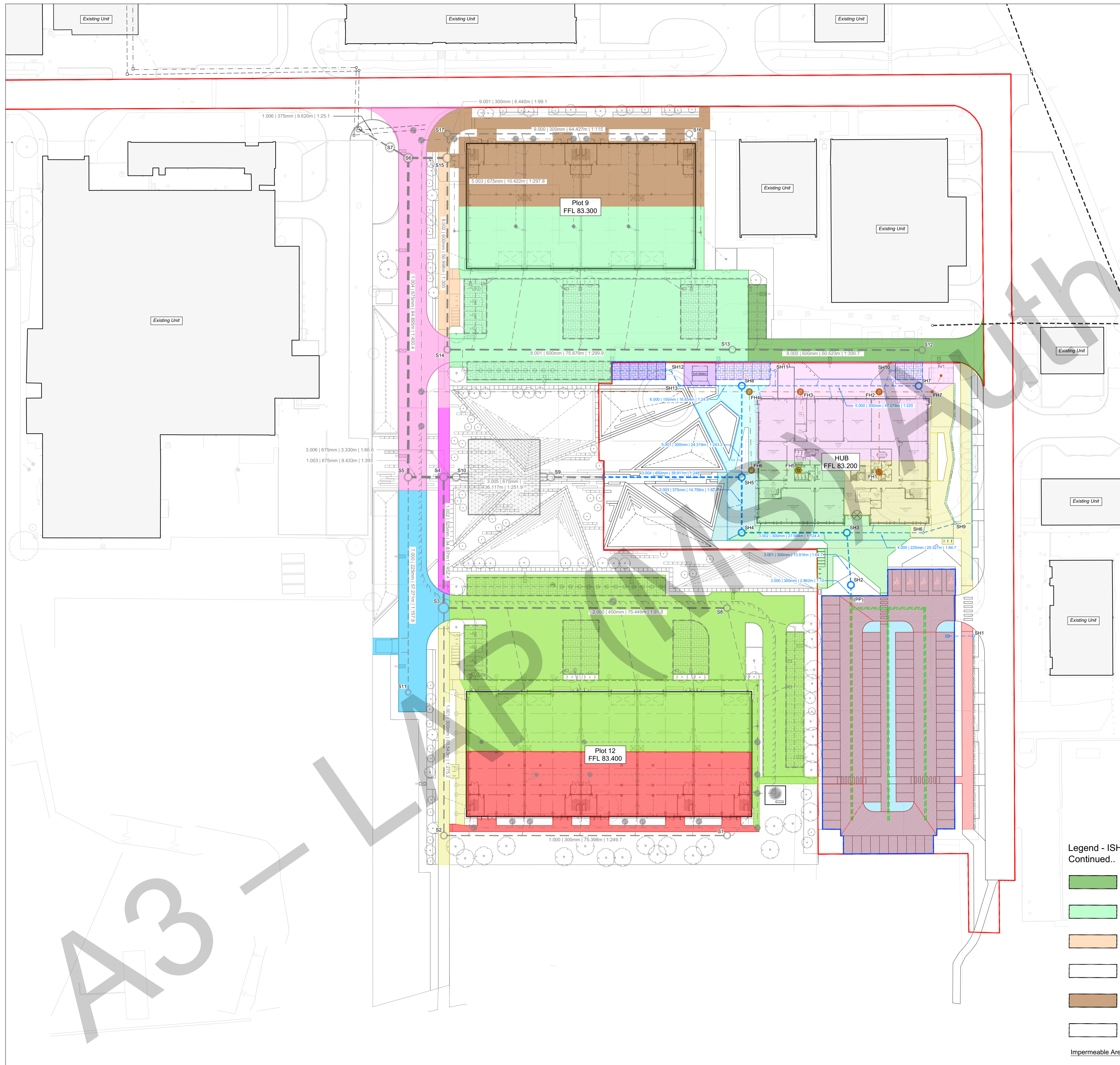
TEESSIDE: T: 01642 876470 | TYNESIDE: T: 0191 495 4100

Client	Cumberland Council					
Project	ISH Hub					
BGP Project No.	21T2034					
Drawing Title	Flood Exceedance Plan					
Drawn	Date	Checked	Date	Size	Scale	Rev.
JN	MAR '26	JJH	MAR '26	A1	1:500	P02
Location	Originator	Volume	Level	Form	Role	Unique No.
ISH	BGP	19	XX	D	C	19102
File Reference	ISH-BGP-19-XX-D-C-19102					

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

A3-1

Appendix J – Contributing Impermeable Areas Plan



Legend - ISH Hub Impermeable Areas

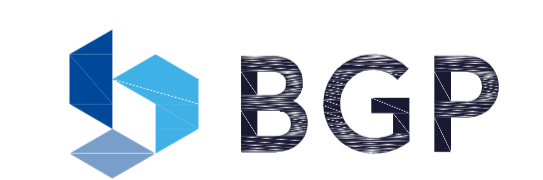
- Pipe 1.000
Area = 1520m² = (0.152ha)
Fall = 0.302m / Length = 75.398m
- Pipe 1.001
Area = 310m² = (0.031ha)
Fall = 0.220m / Length = 60.543m
- Pipe 1.002
Area = 0m² = (0.0ha)
Fall = 0.077m / Length = 34.837m
- Pipe 1.003
Area = 160m² = (0.015ha)
Fall = 0.024m / Length = 9.433m
- Pipe 1.004
Area = 970m² = (0.097ha)
Fall = 0.212m / Length = 84.895m
- Pipe 1.005
Area = 0m² = (0.0ha)
Fall = 0.056m / Length = 5.605m
- Pipe 1.006
Area = 0m² = (0.0ha)
Fall = 0.383m / Length = 9.620m
- Pipe 2.000
Area = 4080m² = (0.408ha)
Fall = 0.822m / Length = 75.449m
- Pipe 3.000
Area = 2490m² = (0.2490ha)
Fall = 0.285m / Length = 2.862m
- Pipe 3.001
Area = 0m² = (0.0ha)
Fall = 0.215m / Length = 13.916m
- Pipe 3.002
Area = 770m² = (0.0770ha)
Fall = 0.225m / Length = 27.984m
- Pipe 3.003
Area = 180m² = (0.0180ha)
Fall = 0.179m / Length = 14.756m
- Pipe 3.004
Area = 0m² = (0.0ha)
Fall = 0.205m / Length = 50.834m
- Pipe 3.005
Area = 0m² = (0.0ha)
Fall = 0.100m / Length = 25.194m
- Pipe 3.006
Area = 0m² = (0.0ha)
Fall = 0.050m / Length = 3.330m
- Pipe 4.000
Area = 770m² = (0.0770ha)
Fall = 0.240m / Length = 20.327m
- Pipe 5.000
Area = 1280m² = (0.1280ha)
Fall = 0.214m / Length = 47.078m
- Pipe 5.001
Area = 190m² = (0.019ha)
Fall = 0.100m / Length = 24.319m
- Pipe 6.000
Area = 120m² = (0.012ha)
Fall = 0.669m / Length = 16.654m
- Pipe 7.000
Area = 530m² = (0.053ha)
Fall = 0.363m / Length = 57.271m

NEW ISH HUB

NOT FOR PRICING

NOT FOR CONSTRUCTION

Stage 3 Issue	JN	P02	JJH	11.04.2026
Stage 3 Issue	JN	P01	JJH	17.03.2026
AMENDMENT	BY	REV	CHK	DATE



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TEESSIDE: T: 01642 876470 | TYNESIDE: T: 0191 495 4100

Client	Cumberland Council
Project	ISH Hub
BGP Project No.	21T2034
Drawing Title	Impermeable Areas Plan
Drawn	JN
Date	MAR '26
Checked	JJH
Date	MAR '26
Size	A1
Scale	1:500
Rev.	P02
Location	ISH
Originator	BGP
Volume	19
Level	XX
Form	D
Role	C
Unique No.	19101

File Reference ISH-BGP-19-XX-D-C-19101
In instances where this drawing completes or partly completes a contract, BGP Consulting Limited will consider that its product has been validated, unless in a period not exceeding 90 working days, the client advises to the contrary.

Legend - ISH Hub Impermeable Areas Continued..

- Pipe 8.000
Area = 470m² = (0.047ha)
Fall = 0.168m / Length = 50.523m
- Pipe 8.001
Area = 3190m² = (0.319ha)
Fall = 0.253m / Length = 75.879m
- Pipe 8.002
Area = 190m² = (0.019ha)
Fall = 0.170m / Length = 50.998m
- Pipe 8.003
Area = 0m² = (0.0ha)
Fall = 0.035m / Length = 10.422m
- Pipe 9.000
Area = 1500m² = (0.150ha)
Fall = 0.560m / Length = 64.427m
- Pipe 9.001
Area = 0m² = (0.0ha)
Fall = 0.065m / Length = 6.440m

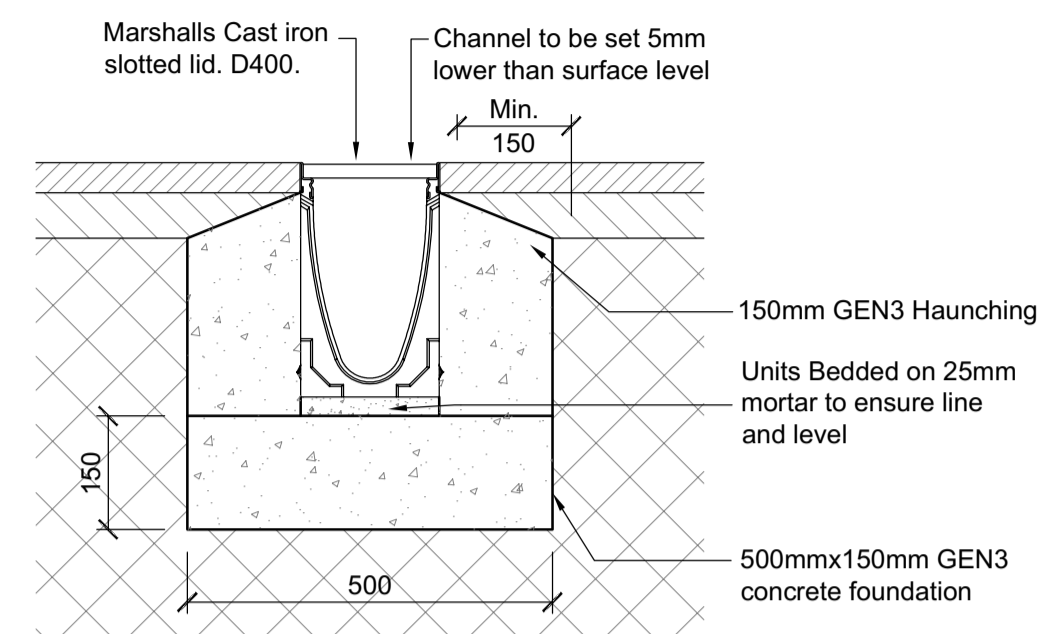
Impermeable Areas Total = 18,650m² = (1.865ha)

A3

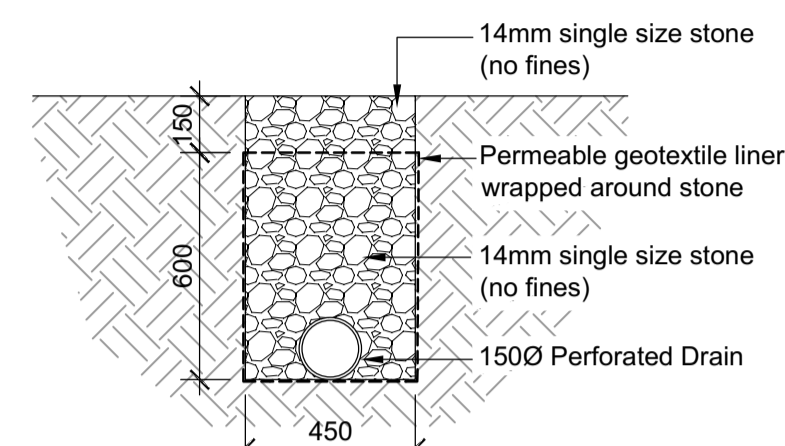
Appendix K – UU Pre Planning Enquiry Response

(To be provided upon receipt)

Appendix L – SuDS Construction Details



Typical ACO MultiDrain MD with M200D 20.0 Channel (or similar approved) "LD" Scale 1:10



Typical Section Through Filter Drain Scale 1:20

Permeable Paving (4/20 coarse aggregate) Sub-base, Laying and Jointing Material Specification

Tables Reproduced from BS 7533-13:2009. Contractor to confirm below recommendations meet block paving manufacturers requirements.

A.1 Grading recommendations for sub-base material
Aggregates should conform to Table A.1.

Table A.1 Sub-base grading

Sieve size mm	Percentage passing	
	Coarse aggregate, 4/40	Coarse aggregate, 4/20
80	100	—
63	98-100	—
40	90-99	100
31.5	—	98-100
20	25-70	90-99
10	—	25-70
4	0-15	0-15
2	0-5	0-5
1	—	—

NOTE: The gradings for 4/20 are typical and advice should be sought from the block manufacturer on specific gradings suitable for their productsystem.

Note: The surface course should be inspected soon after completion and at regular intervals thereafter. Additional jointing material should be brushed in where necessary and inspected 6 months after installation to refill as required to ensure joints are fully reinstated as per the original construction.

A.2 Grading for laying and jointing material
Aggregates for laying and jointing material should conform to Table A.2.

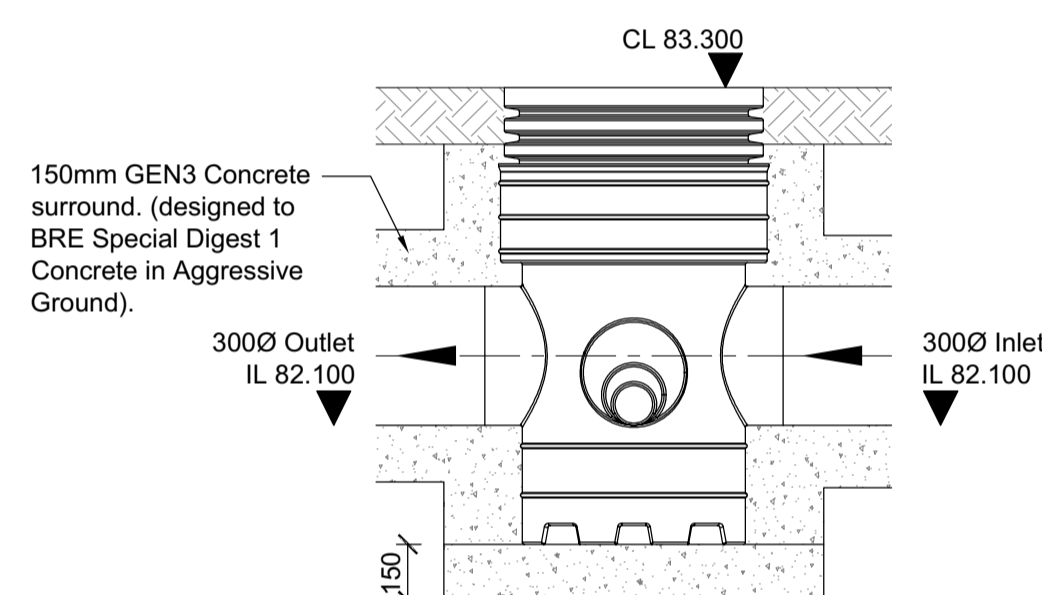
Table A.2 Laying course and jointing material grading

BS sieve size (BS EN 993-1) mm	Percentage passing
14	100
10	98-100
6.3	80-99
2.0	0-20
1.0	0-5

NOTE: These gradings are typical, advice should be sought from the block manufacturer on specific gradings suitable for their productsystem.

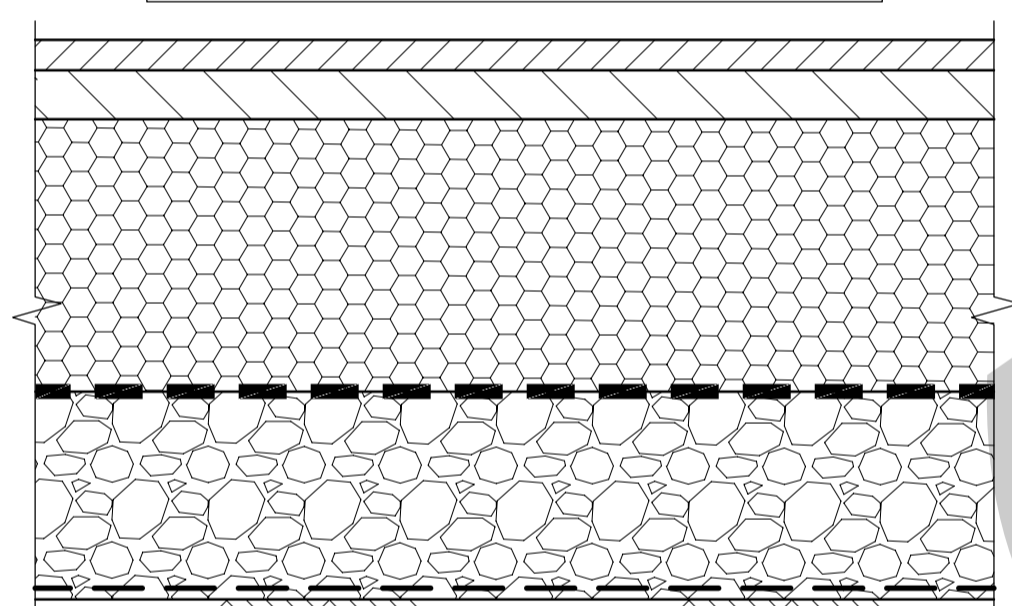
Note: ALL 4/20mm coarse graded aggregate material must not be contaminated and must be protected during construction works from trafficking in accordance with Interpave Guidance

Note: Advice should be sought from the paving unit manufacturer about exactly what material is suitable for the laying course for that particular paving unit.



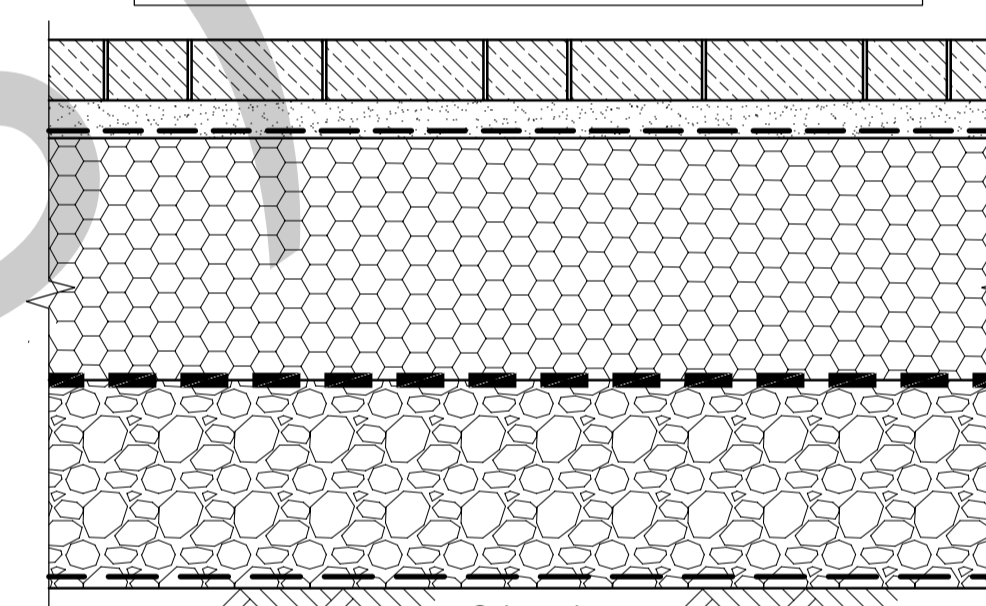
Section A - A on TurtleEnviro Orifice Chamber "SH2" Scale NTS

Note: Surface Water to be dish off asphalt surface to permeable block paved parking bays. Main Car Park ONLY.

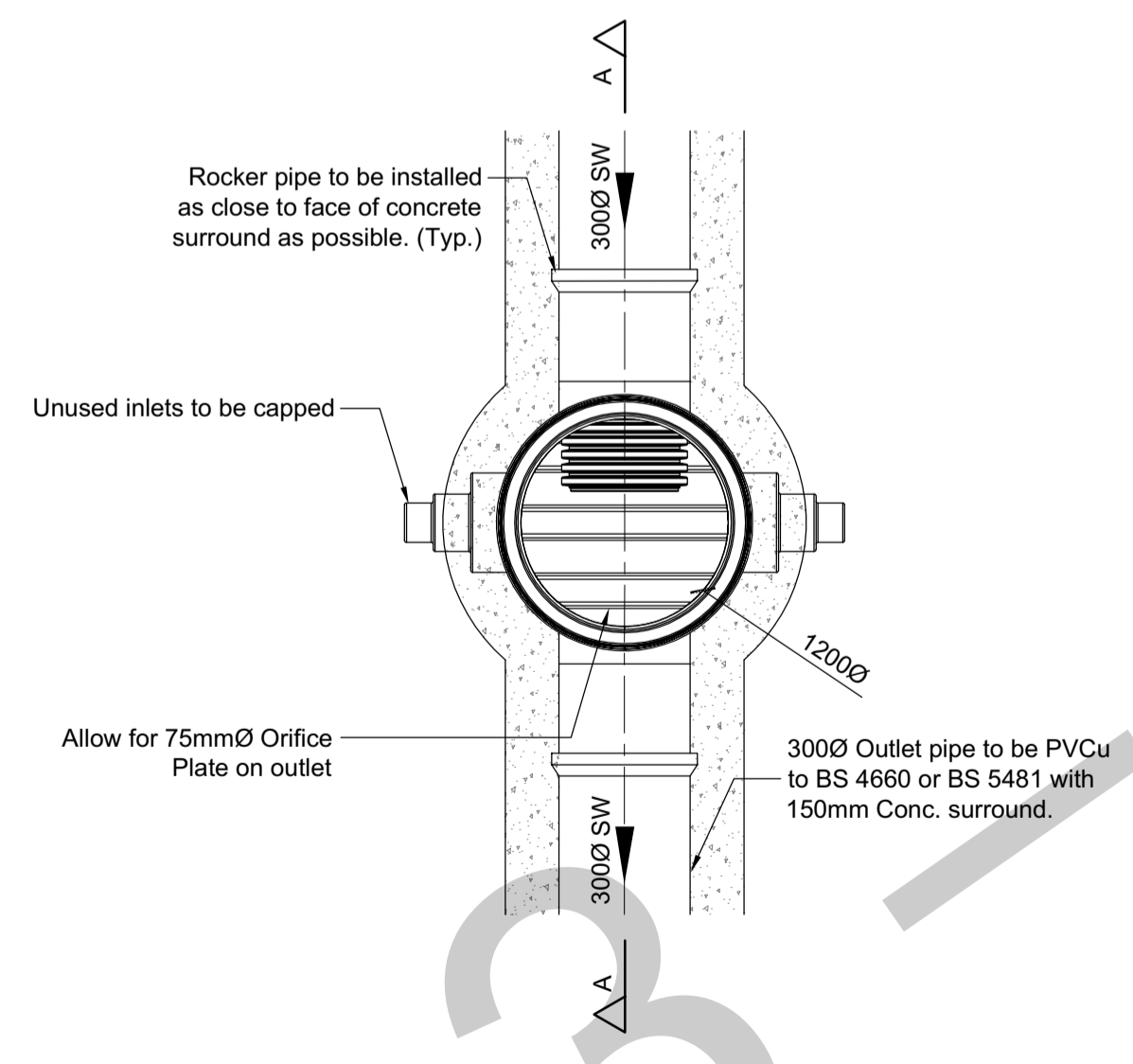


Asphalt Concrete Access Road (MPA (1) Heavier Usage) Scale 1:10

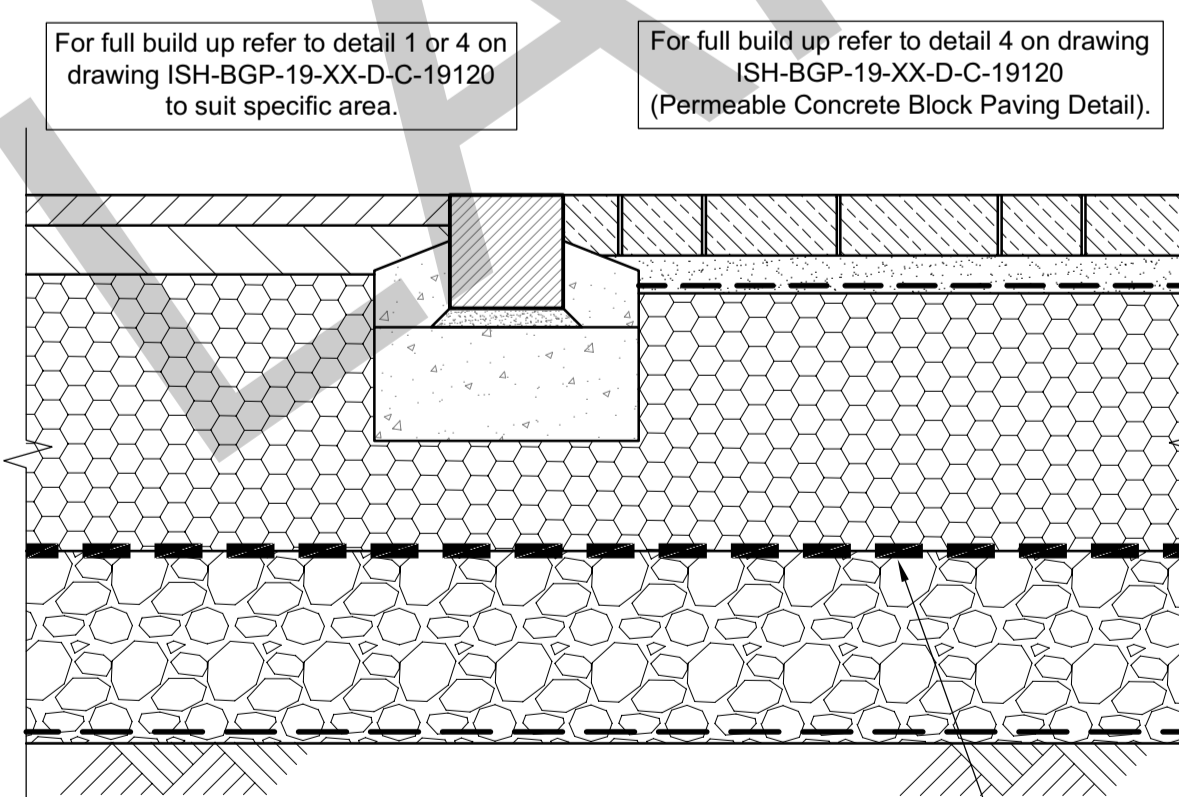
Suitable for Car loading only. If heavy construction traffic over-run is to occur during construction the contractor is to advise, if so a 70mm AC32 dense 40/60 base course is required. (Following construction and prior to installation of blocks and bedding layer. Tarmac base to be cleaned of dirt build-up with 75mm Ø holes punched through tarmac surface on a 750mm orthogonal grid and filled with compacted free draining laying course material.)



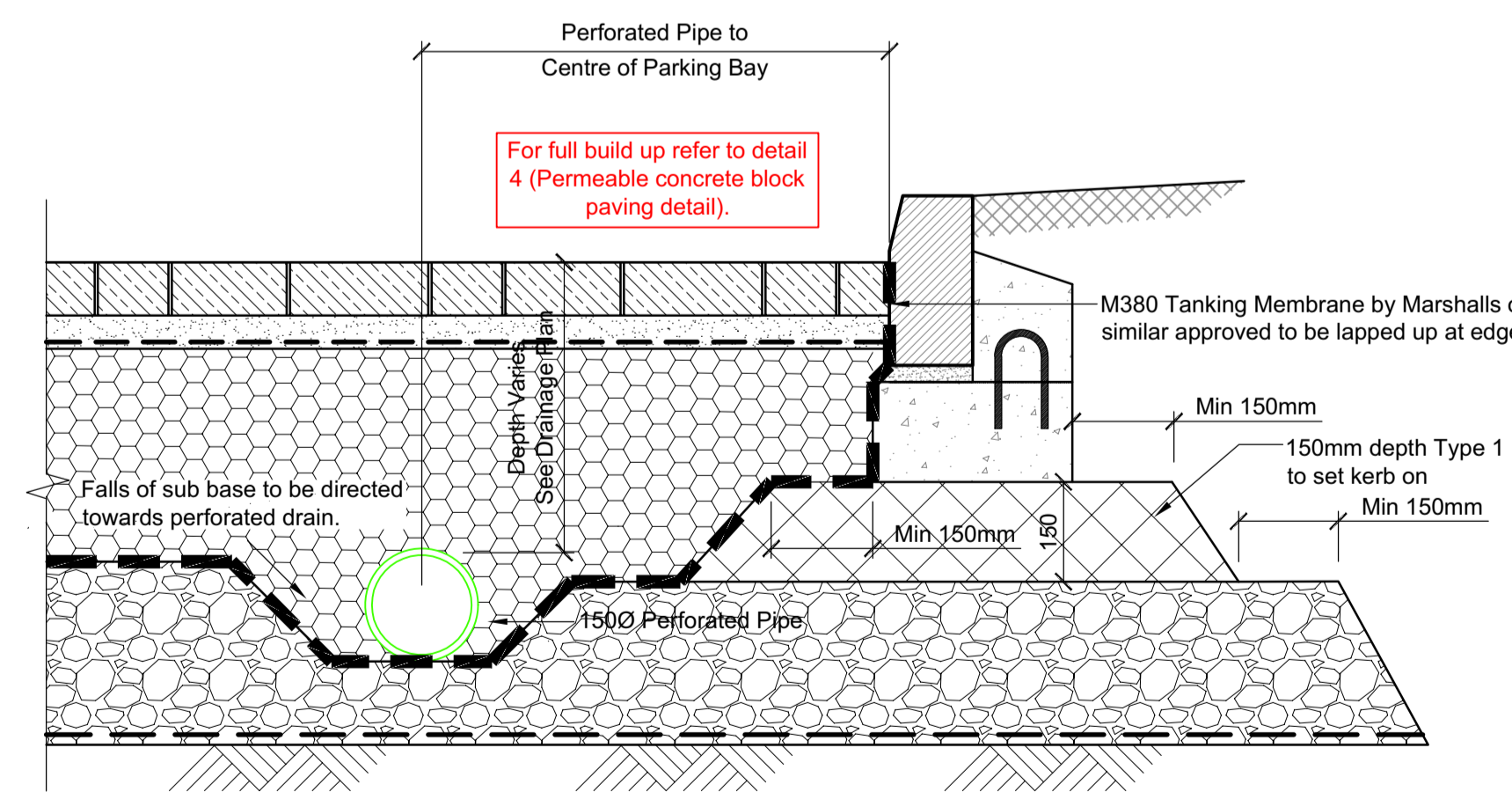
Permeable Block Paving Parking Bays (Interpave Traffic Category 3) Scale 1:10



Plan View of "SH2" TurtleEnviro Orifice Control Chamber Scale NTS



Section Through Permeable Parking Bay Adjacent to Tarmac Access Way Scale 1:10



Typical Section Through Permeable Paving and Perforated Drain Scale 1:10

50mm Ø holes on a 2m orthogonal grid is to be provided within the tarmac base layer beneath the bedding to enable surface water to pass into the subbase. A geotextile is to be provided over the holes to prevent the bed migrating

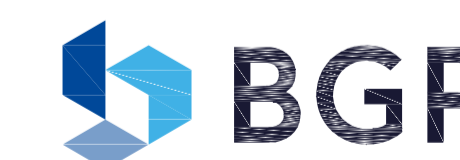
Notes

- All works to be carried out in accordance with:
 - 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 (SfA) for all new developments)
 - BS EN 752 - 'Drain and Sewer Systems Outside Buildings'
 - Current applicable Building Regulations
 - BGP Specifications
 - Manufacturer installation guidance and requirements
- For clauses refer to 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 (SfA) for all new developments)
- The developer should take all necessary precautions to avoid causing any damage to, or interference with flow in existing sewers and shall ensure that debris, silt, mud etc. do not enter the sewer.
- Where works are to be carried out on sewers, the contractor must carry out their works in accordance with "The classification and management of confined spaces" published by Water UK. they must also comply with all other relevant health and safety legislation/ documentation.
- All materials are to be stored in such a manner as to preserve their quality as to the standard specified in the specification.
- All concrete to be produced on site must be mixed with only potable water, to ensure that it is clean from dirt and contaminants.
- Aggregates for concretes shall comply with the relevant provisions of BS EN 12620 and PD 6682-1.
- Sands for mortar and grouts shall be washed sand, complying with BS EN 13139 and PD 6682-3. All other sands are to comply with BS EN 12620 and PD 6682-1 or BS EN 13139 and PD 6682-3.
- Pulverised-fuel ash (PFA) for use as a component material in emmentitious grout or non structural concrete shall comply with BS 3892-2 & 3.
- Vertified clay pipes and fittings for sewers shall have flexible mechanical joints. Pipes for foul sewers and surface water sewers shall comply with the relevant requirements of BS EN295 and BS665 (Surface water pipes only).
- Pre-cast concrete manhole units of circular cross section for manholes, chambers and wet wells shall comply with the relevant provisions of BS EN 1917 and BS 5911-3.
- Ladders for manholes in a vertical plane are to be mild steel and comply with BS4211, Class A and PD 970.
- GRP ladders shall be manufactured in accordance with BS EN 131, and from glass-reinforced polyester using an appropriate resin for the ladder location. Unidirection reinforcement shall be provided in the GRP matrix to maximise strength.
- Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and DMRB guidance document CD 534. They shall be of a non-rocking design which do not rely on the use of cushion inserts.
- Clay bricks to be used within manholes are to be solid, Class B Engineering bricks complying to BS 3921.
- All bricks shall be frost resistant category F.
- Standard concrete mixes should be in accordance with BS EN 206-1 and BS 8500 and shall be used with a 20mm nominal maximum size of aggregate and a slump class of S2 for a target of 70mm.
- GEN1 concrete to be used for; fillings, blindings, soft spots and drainage slumps. GEN3 concrete to be used for; all other applications. U.N.O.
- Admixtures (including calcium chloride and pigments) shall not be used in the production of concrete.
- High strength concrete topping shall be produced, laid and finished in accordance with the relevant provisions of BS 8204: part 2 and the following approximate mix proportions shall be used: 1part cement, 1part natural sand and 2parts single-sized coarse aggregate.
- All mortar mixes shall be in accordance with BS 5628-1:2005.
- All pipes to be either extra strength VC to BS 65 or PVC to BS 4660 or BS 5481 "UPONOR ULTRARIB" or Concrete pipes to class 120. The contractor should use the same material and manufacturer throughout (where feasible).

NOT FOR PRICING

NOT FOR CONSTRUCTION

Stage 3 Issue JN P01 JJH 11.04.2026
AMENDMENT BY REV CHK DATE



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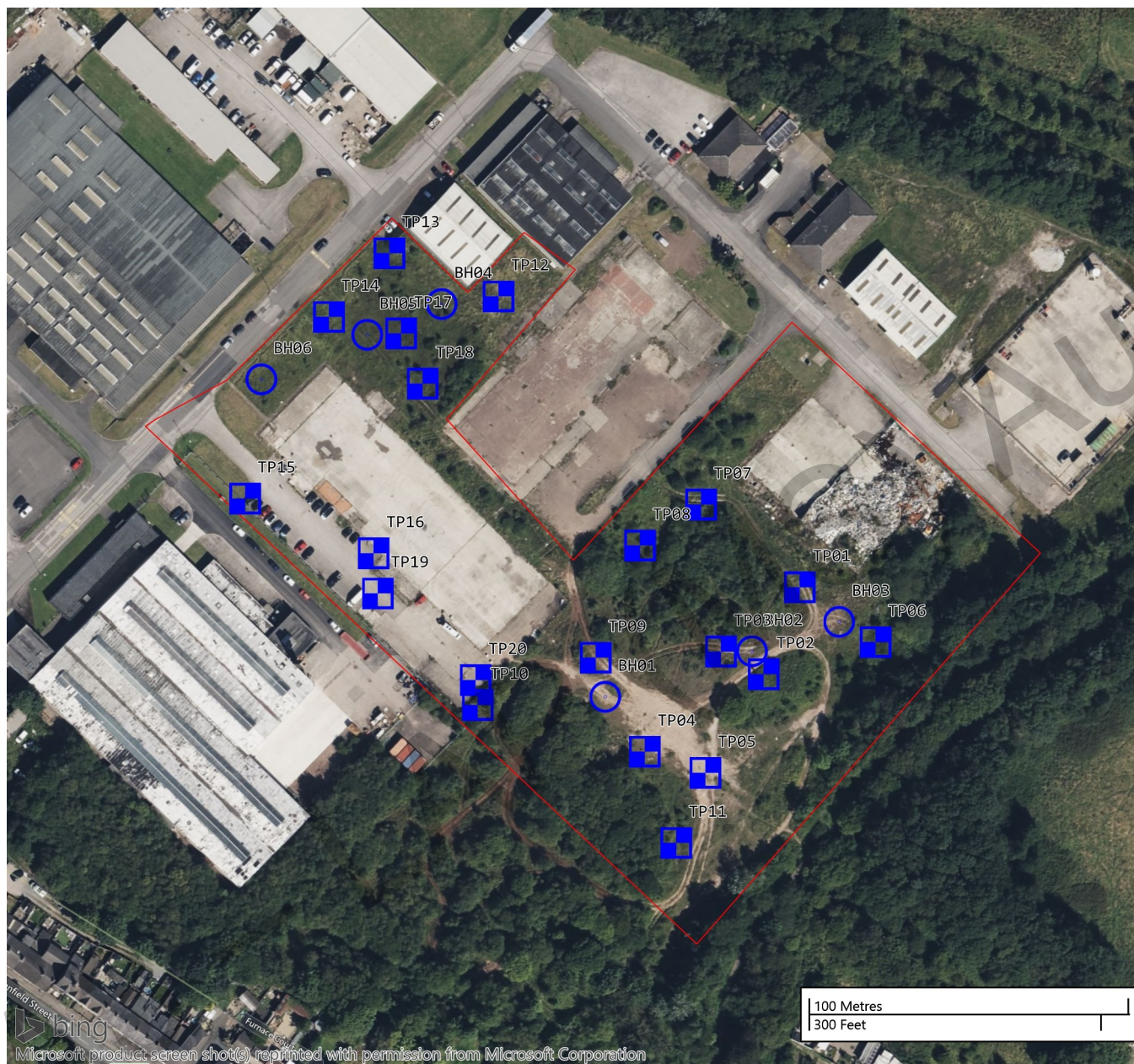
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Client	Cumberland Council				
Project	ISH Hub				
BGP Project No.	21T2034				
Drawing Title	SuDS Construction Details				
Drawn	Date	Checked	Date	Size	Rev.
JN	APR '26	JJH	APR '26	A1	Noted P01
Location	Originator	Volume	Level	Form	Role
ISH	BGP	19	XX	D	C
File Reference	ISH-BGP-19-XX-D-C-19137				

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

Appendix M – Borehole Logs



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

Figure Title

Exploratory Hole Location Plan

Project Number

S240720

Project Name

Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria

Client

Morgan Sindall

Date

September 2024

DRG Number



Figure 2

Scale

1:2000 @ A4 [DO NOT SCALE]

Legend Key

- Locations By Type - RO
- Locations By Type - TP
- ▭ Project Bounds - Project Bounds

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h1 style="margin: 0;">Trial Pit Log</h1>			TrialPit No TP01 Sheet 1 of 1		
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301758E - 515473N Level:		Date 12/08/2024	
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 3.20		Scale 1:26 Logged SM	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.00 - 0.10 0.10 - 0.60	B+ES B+ES		0.10			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz. MADE GROUND: Soft to firm dark reddish brown slightly sandy, slightly gravelly Clay, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, sandstone, mudstone, siltstone and quartz. Cobbles are sub-angular to sub-rounded of slag like material, sandstone and siltstone.
	0.60 - 1.00	B+ES		0.60			MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation.
	1.00 - 1.50	B+ES					
	2.00	B					
	3.00	B					
	3.20	B		3.20			
End of Pit at 3.200m							
Remarks: No groundwater encountered.							
Stability: Pit open and stable on completion.							



SOLMEK

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

Trial Pit Log

TrialPit No
TP02
 Sheet 1 of 1

Project Name:	Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No.	S240720	Co-ords:	301746E - 515446N	Date	12/08/2024
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Plant Used:	JCB 3CX	Dimensions (m):		Scale	1:26
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Client:	Morgan Sindall	Depth	4.10	Logged	SM
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Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.00 - 0.10	B+ES		0.10			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	0.10 - 0.60	B+ES					MADE GROUND: Firm dark reddish brown slightly sandy, slightly gravelly Clay, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, sandstone, mudstone, siltstone and quartz. Cobbles are sub-angular to sub-rounded of slag like material, sandstone and siltstone.
	1.80 - 2.00	B		1.80			MADE GROUND: Black, dark grey slightly clayey, gravelly Sand with a low-medium cobble content. Sand is fine to coarse grained of ash. Gravel is angular to sub-rounded, fine to coarse of slag like material, mudstone and sandstone. Cobbles are angular to sub-angular of slag like material.
	2.10	B		2.10			Stiff dark reddish brown, slightly sandy, slightly gravelly medium to high strength CLAY of low plasticity, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone. Thin silt lenses noted from 3.00mbgl.
	2.20	B					
	2.50	HV	65kPa				
3.00	HV	80kPa					
4.00	B		4.10			End of Pit at 4.100m	

Remarks: Groundwater encountered at 0.60m.

Stability: Pit open with instability from 3.00m.

SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com	<h2 style="margin: 0;">Trial Pit Log</h2>	TrialPit No TP04 Sheet 1 of 1
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Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No. S240720	Co-ords: 301708E - 515423N Level:	Date 12/08/2024
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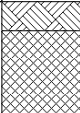
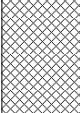
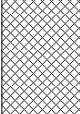
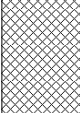

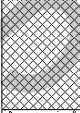
Plant Used: JCB 3CX	Dimensions (m): <div style="display: inline-block; border: 1px solid black; padding: 5px; margin-left: 10px;"> 2.00 1.00 </div>	Scale 1:26
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Client: Morgan Sindall	Depth 4.00	Logged SM
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Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.00 - 0.10	B+ES		0.10			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.	
	0.10 - 0.60	B+ES						
	1.00	B+ES		1.85			MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation.	1
	1.85 - 2.30	B+ES						
	2.30	B+ES						
	3.00	B		2.30			MADE GROUND: Black, dark grey slightly clayey, gravelly Sand with a low-medium cobble content. Sand is fine to coarse grained of ash. Gravel is angular to sub-rounded, fine to coarse of slag like material, mudstone and sandstone. Cobbles are angular to sub-angular of slag like material.	2
3.00	HV	70kPa						
4.00	B		4.00			Stiff dark reddish brown, slightly sandy, slightly gravelly medium to high strength CLAY of low plasticity, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone.	3	
4.00	HV	80kPa						
						End of Pit at 4.000m	4	
								5

Remarks: Groundwater seepage from 0.55m.

Stability: Pit open and stable on completion.

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h1>Trial Pit Log</h1>			TrialPit No TP05 Sheet 1 of 1		
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301727E - 515415N Level:		Date 12/08/2024	
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 4.00		Scale 1:26 Logged SM	
Water Strike 	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.00 - 0.10 0.10 - 0.60	B+ES B+ES		0.10			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	1.00	B+ES					MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation.
	2.00	B					
	2.30	B+ES		2.30			Stiff dark reddish brown, slightly sandy, slightly gravelly medium to high strength CLAY of low plasticity, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone.
	3.00	HV	68kPa				
	4.00 4.00	B HV	85kPa	4.00			
							End of Pit at 4.000m
Remarks: Groundwater encountered at 1.30m.							
Stability: Pit open and stable on completion.							

SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com	<h2 style="margin: 0;">Trial Pit Log</h2>	TrialPit No TP06 Sheet 1 of 1
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Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No. S240720	Co-ords: 301781E - 515455N Level:	Date: 12/08/2024
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Plant Used: JCB 3CX	Dimensions (m): <div style="display: flex; align-items: center; justify-content: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">1.20</div> <div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 10px; display: flex; align-items: center; justify-content: center;"> 2.90 </div> </div>	Scale: 1:26
---------------------	--	-------------


Client: Morgan Sindall	Depth: 3.20 Logged: SM
------------------------	---------------------------


Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.00 - 0.10	B+ES					MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	0.10 - 0.60	B+ES		0.60			
	1.00	B+ES		1.45			
	2.00	B		1.85			
	2.30	B+ES		2.05			
	3.00	HV	85kPa	3.20			



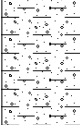
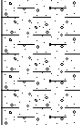
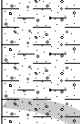
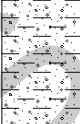
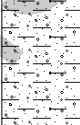
Remarks: Groundwater encountered at 1.30m.

Stability: Pit open and stable on completion.

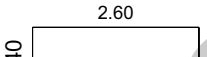
SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h2 style="margin: 0;">Trial Pit Log</h2>			TrialPit No TP07 Sheet 1 of 1		
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301727E - 515500N Level:		Date 13/08/2024	
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 3.20		Scale 1:26 Logged SM	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 0.20	B+ES		0.15			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	0.60	B+ES					MADE GROUND: Dark reddish brown, slightly sandy, gravelly Clay, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, red-brick, dolomite, breeze block, mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone and slag like material.
	1.00	B+ES		0.95			MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation.
	2.00	B					
				2.75			
	3.00	B		3.05			MADE GROUND: Reddish brown and grey very sandy Gravel with a low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material and dolomite.
	3.10	B		3.20			MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation.
							End of Pit at 3.200m
Remarks: No groundwater encountered.							
Stability: Pit open and stable on completion.							

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h1 style="margin: 0;">Trial Pit Log</h1>			TrialPit No TP08 Sheet 1 of 1		
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301708E - 515487N Level:		Date 14/08/2024	
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 3.20		Scale 1:26 Logged SM	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 0.20	B+ES		0.10			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz. MADE GROUND: Firm dark reddish brown, slightly sandy, gravelly Clay, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, red-brick, dolomite, breeze block, mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone and slag like material.
	0.60	B+ES					
	1.00	B+ES					
	2.00	B		2.00			MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation. Material here appears more intact, rate of penetration with pecker much reduced.
	3.00	B		3.20			
							End of Pit at 3.200m
Remarks: No groundwater encountered.							
Stability: Pit open and stable on completion.							

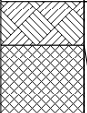
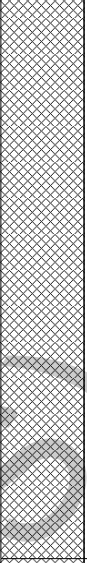
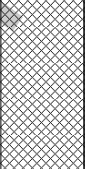
 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h2 style="margin: 0;">Trial Pit Log</h2>			Trial Pit No TP09 Sheet 1 of 1		
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301693E - 515452N Level:		Date 14/08/2024	
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 3.20		Scale 1:26 Logged SM	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 0.20	B+ES		0.10			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	0.60	B+ES		0.60			MADE GROUND: Soft to firm dark reddish brown, slightly sandy, gravelly Clay, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, red-brick, dolomite, breeze block, mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone and slag like material.
				3.20			MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation.
End of Pit at 3.200m							1 2 3 4 5
Remarks: Groundwater ingress due to weather conditions, wider site area saturated.							
Stability: Pit open and stable on completion.							

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h2 style="margin: 0;">Trial Pit Log</h2>		Trial Pit No TP10 Sheet 1 of 1				
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301655E - 515438N Level:		Date 20/08/2024		
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): 		Scale 1:26 Logged SM		
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.00	B+ES		0.10			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.	
	0.50	B+ES		0.80			Firm to stiff brown slightly sandy, slightly gravelly CLAY, with a low-cobble content. Sand is fine to coarse grained. Gravel is subangular to sub-rounded, fine to coarse of mudstone and sandstone. Cobbles are subangular of sandstone.	
	1.00	B+ES					Very stiff reddish brown, slightly sandy, gravelly CLAY, with a medium cobble content. Sand is fine to coarse grained. Gravel is subangular to sub-rounded, fine to coarse of mudstone and sandstone. Cobbles are angular of sandstone	1
	1.50	HV	95kPa					
	2.00	B						2
	3.00	B		3.00				3
End of Pit at 3.000m								4
								5
Remarks: Groundwater ingress due to weather conditions, wider site area saturated.								
Stability:								

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com	<h1>Trial Pit Log</h1>		TrialPit No TP11 Sheet 1 of 1
	Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No. S240720	Co-ords: 301717E - 515394N Level:

Plant Used: JCB 3CX	Dimensions (m): Depth 3.60		Scale 1:26 Logged SM
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Client: Morgan Sindall

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
▼	0.10	B+ES		0.15			MADE GROUND: Reddish brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.	
	0.20 - 0.30	B+ES						
	1.00	B+ES		2.30			MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation.	1
	2.00	B						
	2.80	ES						
	3.00	B		2.90			MADE GROUND (RE-WORKED): Soft to firm dark greyish black, slightly sandy, gravelly, low strength silty Clay, with a strong hydrocarbon odour noted and reflective sheen coating gravels. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material.	
3.30	HV	90kPa						
			3.60				End of Pit at 3.600m	3
								4
								5

Remarks: Groundwater encountered at 0.45m.

Stability: Pit open and stable on completion.

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com	<h2 style="margin: 0;">Trial Pit Log</h2>	Trial Pit No TP12 Sheet 1 of 1
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Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No. S240720	Co-ords: 301665E - 515567N Level:	Date: 20/08/2024
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Plant Used: JCB 3CX	Dimensions (m): 	Scale: 1:26 Logged: DL
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Client: Morgan Sindall

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	B+ES		0.15			MADE GROUND: Dark brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with frequent rootl. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.	
	0.40	B+ES		0.45			MADE GROUND: Brown sandy gravel with occasional angular cobble of slag. Gravel is angular to subrounded, fine to coarse of slag and red brick.	
	0.90	B+ES		0.96			MADE GROUND: Grey very sandy gravel with frequent subangular cobbles of slag.	
	1.40	B		1.80			MADE GROUND: Stiff to firm brown mottled sandy slightly gravel clay. Gravel is angular to subrounded, fine of sandstone, slag and red brick.	1
				1.80			End of Pit at 1.800m	2
								3
								4
								5

Remarks: No groundwater encountered.

Stability: Pit open and stable on completion.

SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h2 style="margin: 0;">Trial Pit Log</h2>			Trial Pit No TP13 Sheet 1 of 1		
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301630E - 515581N Level:		Date 22/08/2024	
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 3.00		Scale 1:26 Logged DL	
Water Strike 	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				Stratum Description
	0.20	B+ES		0.30			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	0.50	B+ES		0.60			MADE GROUND: Soft brown, sandy, slightly gravelly clay, with a low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mudstone, sandstone and slag like material. Cobbles are angular of sandstone.
	1.00	B+ES					MADE GROUND: Brown slightly clayey sandy Gravel with a medium cobble and low boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material.
	1.50	B		1.50			Stiff dark reddish brown, slightly sandy, slightly gravelly medium to high strength CLAY of low plasticity, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone.
	2.00	HV	70kPa				
	2.50	B					
	3.00	HV	90kPa	3.00			End of Pit at 3.000m
Remarks: Groundwater encountered at 1.53m.							
Stability: Pit open and stable on completion.							



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

Trial Pit Log

Trial Pit No
TP14
Sheet 1 of 1

Project Name:	Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No.	S240720	Co-ords:	301611E - 515562N	Date	22/08/2024
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Plant Used:	JCB 3CX	Dimensions (m):	2.90	Scale	1:26
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
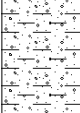
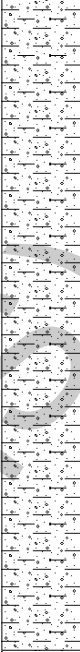
Client:	Morgan Sindall	Depth	4.00	Logged	DL
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Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	B+ES		0.20			MADE GROUND: Dark grey sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	0.60	B+ES		0.80			MADE GROUND (RE-WORKED): Brown gravelly sandy, silty Clay, Sand is fine to coarse grained. Gravel is angular to subrounded fine to coarse of sandstone, slag like material and mudstone.
	1.10	B+ES		1.50			MADE GROUND: Brown and grey gravelly ashy Sand with a low cobble and low boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material, sandstone and redbrick. Cobbles are angular of slag like material and redbrick. Boulders are angular of slag like material.
	1.60	B+ES		2.70			MADE GROUND: Grey gravelly ashy Sand with a medium cobble and low boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material.
	2.10	B					
	2.60	B					
	3.10	B+ES					MADE GROUND: Blue and brown sandy Gravel with a high cobble and high boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation
	3.60	B					
				4.00			End of Pit at 4.000m

Remarks: No groundwater encountered.

Stability: Pit open and stable on completion.

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h2 style="margin: 0;">Trial Pit Log</h2>			Trial Pit No TP15 Sheet 1 of 1			
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301583E - 515505N Level:		Date 19/08/2024		
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 2.50		Scale 1:26 Logged DL		
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	B+ES		0.15			MADE GROUND: Black Tarmac.	
	0.50	B+ES		0.54			MADE GROUND: Brown slightly silty sandy Gravel with a low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material and dolomite. Cobbles are angular of slag like material and dolomite.	
	1.00 1.00	B+ES HV	70kPa				Stiff reddish brown, slightly sandy, slightly gravelly medium to high strength CLAY of low plasticity, with a low cobble content. Sand is fine to coarse grained. Gravel is subangular to sub-rounded, fine to coarse of mudstone and sandstone. Cobbles are subangular of sandstone.	
	2.00 2.10	B HV	85kPa					
				2.50			End of Pit at 2.500m	
Remarks: No groundwater encountered.								
Stability: Pit open and stable on completion.								







 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h2 style="margin: 0;">Trial Pit Log</h2>		Trial Pit No TP16 Sheet 1 of 1			
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301624E - 515487N Level:		Date 19/08/2024	
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 3.00		Scale 1:26 Logged DL	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.11			MADE GROUND: Black Tarmac.
	0.30	B+ES		0.32			MADE GROUND: Brown slightly silty very sandy Gravel with a low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material and red brick. Cobbles are angular of slag like material.
	0.80	B+ES					Stiff reddish brown, slightly sandy, slightly gravelly medium to high strength CLAY of low plasticity, with a low cobble content. Sand is fine to coarse grained. Gravel is subangular to sub-rounded, fine to coarse of mudstone and sandstone. Cobbles are subangular of sandstone.
	1.00	HV	55kPa				
	1.80	B					
	2.00	HV	86kPa				
	2.80	B					
	3.00	HV	95kPa	3.00			End of Pit at 3.000m
Remarks: No groundwater encountered.							
Stability: Pit open and stable on completion.							

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com	<h2 style="margin: 0;">Trial Pit Log</h2>	Trial Pit No TP17 Sheet 1 of 1
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Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No. S240720	Co-ords: 301634E - 515556N Level:	Date: 22/08/2024
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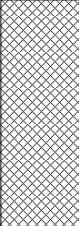

Plant Used: JCB 3CX	Dimensions (m): 	Scale: 1:26 Logged: DL
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Client: Morgan Sindall	
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Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	B+ES		0.15			MADE GROUND: Brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	0.30	B+ES		0.35			MADE GROUND: Brown grey very gravelly Sand with a medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material.
	0.80	B+ES		0.91			MADE GROUND: Firm brown, sandy, gravelly Clay, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, red-brick, mudstone and sandstone. Cobbles are angular of sandstone and slag like material.
	1.30	B+ES					MADE GROUND: White and grey slightly sandy Gravel with a high cobble and high boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. Fused slag like material. Soil description based on methodology of excavation.
	1.80	B+ES					
	2.30	B+ES		2.30			End of Pit at 2.300m

Remarks: No groundwater encountered.

Stability: Pit open and stable on completion.

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com		<h2 style="margin: 0;">Trial Pit Log</h2>			Trial Pit No TP18 Sheet 1 of 1		
Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Project No. S240720		Co-ords: 301640E - 515540N Level:		Date 20/08/2024	
Plant Used: JCB 3CX		Client: Morgan Sindall		Dimensions (m): Depth 3.40		Scale 1:26 Logged DL	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.00	B+ES		0.30			MADE GROUND: Dark brown, locally dark brown slightly sandy, slightly gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite, mudstone and quartz.
	0.20	B+ES					
	0.70	B+ES		1.10			MADE GROUND (RE-WORKED): Firm reddish brown sandy, gravelly Clay. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, sandstone, mudstone.
	1.20	B+ES					
	2.20	B+ES		3.40			MADE GROUND: White and grey slightly sandy Gravel with a high cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material. (Fused slag like material). Soil description based on methodology of excavation.
End of Pit at 3.400m							
Remarks: No groundwater encountered. Stability: Pit open and stable on completion.							

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com	Trial Pit Log	Trial Pit No TP19 Sheet 1 of 1
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Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No. S240720	Co-ords: 301625E - 515474N Level:	Date 19/08/2024
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Plant Used: JCB 3CX	Dimensions (m): <div style="display: flex; align-items: center; justify-content: center;"> <div style="text-align: center; margin-right: 5px;">1.00</div> <div style="border: 1px solid black; width: 100px; height: 40px; position: relative;"> <div style="position: absolute; top: -10px; left: 50%; transform: translate(-50%, -50%); font-size: 8px;">2.00</div> </div> </div>	Scale 1:26
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Client: Morgan Sindall	Depth 3.00	Logged DL
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Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.11			MADE GROUND: Black Tarmac.	
	0.30	B+ES		0.32			MADE GROUND: Bluish grey slightly sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material.	
	0.80	B+ES					Stiff reddish brown, slightly sandy, slightly gravelly medium to high strength CLAY of low plasticity, with a low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone.	
	1.00	HV	90kPa					1
	1.80	B						
	2.00	HV	70kPa					2
	2.80	B						
	3.00	HV	100kPa	3.00			End of Pit at 3.000m	3
								4
								5

Remarks: No groundwater encountered.

Stability: Pit open and stable on completion.

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com	<h2 style="margin:0;">Trial Pit Log</h2>	TrialPit No TP20 Sheet 1 of 1
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Project Name: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria	Project No. S240720	Co-ords: 301655E - 515446N Level:	Date 20/08/2024
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Plant Used: JCB 3CX	Dimensions (m): <div style="display: flex; align-items: center; justify-content: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">1.20</div> <div style="border: 1px solid black; width: 40px; height: 20px; margin-right: 5px;"></div> <div style="margin-right: 5px;">2.90</div> </div>	Scale 1:26
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Client: Morgan Sindall	Depth 3.00	Logged DL
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Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.15			MADE GROUND: Concrete Slab.	
	0.50	B+ES		0.63			MADE GROUND: Brown slightly clayey sandy Gravel with a medium cobble and medium boulder content. Sand is fine to coarse grained. Gravel is angular to sub-angular of slag like material. Cobbles are angular of slag like material. Boulders are angular of slag like material.	
	1.00 1.00	B+ES HV	70kPa				Stiff dark reddish brown, slightly sandy, slightly gravelly medium to high strength CLAY of intermediate plasticity, with a low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mudstone, siltstone and sandstone. Cobbles are angular of siltstone and sandstone.	1
	2.00 2.00	B HV	85kPa					2
	3.00 3.00	B HV	90kPa	3.00			End of Pit at 3.000m	3
								4
								5


Remarks: No groundwater encountered.


Stability: Pit open and stable on completion.

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>				Scale 1:50 Sheet 1 of 4 <h3 style="margin: 0;">RBH01</h3>							
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 06/08/2024 Ended: 08/08/2024 Backfilled: 08/08/2024		GL (AOD): Easting: 301695.64 Northing: 515440.04 Logged: SM Status: FINAL							
Client: Morgan Sindall													
Method: Rotary Core with Rotary open Hole													
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		MADE GROUND: Brown sandy, gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite and sandstone. MADE GROUND: Bluish grey sandy Gravel. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material. (Recovered as due to drilling methodology)	0.05 - 0.10	B+ES							
		1.70		MADE GROUND: Black gravelly Sand. Sand is fine to coarse grained of ash. Gravel is angular to sub-rounded, fine to medium of slag like material and red-brick.	1.20 - 1.65 1.20 - 1.65	SPT (S) D	N=50+ (11,13/17,22,11)						
		2.30		Firm to stiff dark reddish brown slightly sandy, gravelly medium to high strength CLAY of low plasticity, with an inferred low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded fine to coarse of mudstone, siltstone and sandstone.	2.70 - 3.15 2.70 - 3.15	SPT (S) D	N=19 (11,7/4,4,6,5)						
					4.20 - 4.65 4.20 - 4.65	SPT (S) D	N=22 (3,4/5,5,6,6)						
					5.70 - 6.15 5.70 - 6.15	SPT (S) D	N=40 (1,3/8,9,13,10)						
					7.20 - 7.65 7.20 - 7.65	SPT (S) D	N=50+ (11,14/20,30)						
		8.50		Very dense light organish brown very gravelly SAND, with an inferred low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mixed lithologies.	8.70 - 9.15 8.70 - 9.15	SPT (S) D	N=50+ (25/50)						
		9.70		Stiff dark reddish brown slightly sandy, gravelly medium to high									
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)
15.00 40.00	152 100	15.00	152		1.2m Hand excavated inspection pit dug. Groundwater encountered at 1.95m, 29.50m, 30.20m & 35.50m.	18.50 22.00 23.00 24.30 27.45 30.00 36.70	22.00 23.00 24.30 27.45 30.00 36.70 40.00	Water Water Water Water Water Water Water	100 100 100 100 100 100 100	1.95 29.50 30.20 35.50	1.90 15.00	4.20	20


SOLMEK		12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com				Rotary Open Hole Log				Scale 1:50 Sheet 2 of 4				
Contract no:		S240720				Site:				Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				
Client:		Morgan Sindall				Driller:				L&A Drilling Ltd				
Method:		Rotary Core with Rotary open Hole				Plant used:				Beretta T46				
Method:		Rotary Core with Rotary open Hole				Started:				06/08/2024				
Method:		Rotary Core with Rotary open Hole				Ended:				08/08/2024				
Method:		Rotary Core with Rotary open Hole				Backfilled:				08/08/2024				
Method:		Rotary Core with Rotary open Hole				GL (AOD):				301695.64				
Method:		Rotary Core with Rotary open Hole				Easting:				515440.04				
Method:		Rotary Core with Rotary open Hole				Northing:				515440.04				
Method:		Rotary Core with Rotary open Hole				Logged:				SM				
Method:		Rotary Core with Rotary open Hole				Status:				FINAL				
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
				Stiff dark reddish brown slightly sandy, gravelly medium to high strength CLAY. Sand is fine to coarse grained. Gravel is sub-angular to sub-rounded, fine to coarse of mixed lithologies.	10.20 - 10.65 10.20 - 10.65	SPT (S) D	N=28 (4,6/6,7,7,8)							
				Light organish brown very gravelly SAND, with an inferred low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mixed lithologies.	11.70 - 12.15 11.70 - 12.00	SPT (S) B	N=45 (4,7/9,10,12,14)							
					11.70 - 12.15 12.00 - 12.30	D D								
				Extremely weak dark greyish brown argillaceous MUDSTONE (WHITEHAVEN SANDSTONE FORMATION).	12.30 - 12.50 12.50 - 12.95	B SPT (S)	N=50+ (8,12/14,17,19)							
					12.50 - 12.95 12.50 - 12.95	D D								
				Extremely weak dark greyish brown argillaceous MUDSTONE (WHITEHAVEN SANDSTONE FORMATION). Weathering: Distinctly weathered - residual Fractures: Fractures are very closely spaced, planar smooth, open, with occasional orange brown staining on fracture surfaces.	14.00 - 14.45 14.00 - 14.45	SPT (S) D	N=50+ (6,8/11,15,15,9)							
					15.50 - 15.95 15.50 - 15.95	SPT (S) D		N=50+ (6,10/13,16,21)						
				Extremely weak dark greyish brown argillaceous MUDSTONE (WHITEHAVEN SANDSTONE FORMATION). Weathering: Distinctly weathered - residual Fractures: Fractures are very closely spaced, planar smooth, open, with occasional orange brown staining on fracture surfaces.	15.50 - 15.95 15.50 - 15.95	SPT (S) D	N=50+ (6,10/13,16,21)		35	35	35	NI 120 400		
				Dark greyish brown MUDSTONE.	17.00 - 17.45 17.00 - 17.45	SPT (S) D	N=40 (5,9/9,10,11,10)							
					18.50 - 18.95 18.50 - 18.95	SPT (S) D	N=50+ (10,15/23,27)							
Hole Diameter		Casing Depths		General Remarks		Flush Returns				Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 1.95m, 29.50m, 30.20m & 35.50m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
15.00	152	15.00	152			18.50	22.00	Water	100	1.95	1.90	4.20	20	1.55
40.00	100					22.00	23.00	Water	100	29.50	15.00			
						23.00	24.30	Water	100	30.20				
						24.30	27.45	Water	100	35.50				
						27.45	30.00	Water	100					
						30.00	36.70	Water	100					
						36.70	40.00	Water	100					


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 3 of 4 <h3 style="margin: 0;">RBH01</h3>					
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 06/08/2024 Ended: 08/08/2024 Backfilled: 08/08/2024		GL (AOD): Easting: 301695.64 Northing: 515440.04 Logged: SM Status: FINAL					
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole											
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures					
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture		
				Dark greyish brown MUDSTONE.									
		22.00		Dark purplish MUDSTONE/SILTSTONE.									
		23.00		Light grey MUDSTONE.									
		24.30		Dark grey interbedded MUDSTONE AND SILTSTONE.									
		27.45		Light grey MUDSTONE.									
		30.00											
Hole Diameter		Casing Depths		General Remarks 1.2m Hand excavated inspection pit dug. Groundwater encountered at 1.95m, 29.50m, 30.20m & 35.50m.				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)
15.00	152	15.00	152	18.50	22.00	Water	100	1.95	1.90	4.20	20	1.55	
40.00	100			22.00	23.00	Water	100	29.50	15.00				
				23.00	24.30	Water	100	30.20					
				24.30	27.45	Water	100	35.50					
				27.45	30.00	Water	100						
				30.00	36.70	Water	100						
				36.70	40.00	Water	100						

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com				<h2 style="text-align: center;">Rotary Open Hole Log</h2>							Scale 1:50 Sheet 4 of 4 <h3 style="text-align: center;">RBH01</h3>		
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria			Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 06/08/2024 Ended: 08/08/2024 Backfilled: 08/08/2024			GL (AOD): Easting: 301695.64 Northing: 515440.04 Logged: SM Status: FINAL					
Client: Morgan Sindall				Method: Rotary Core with Rotary open Hole									
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures					
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture		
			▼	Light greyish white SANDSTONE.									
		36.70	▼	Dark grey MUDSTONE.									
		40.00		End of Borehole at 40.000m									
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)
15.00	152	15.00	152		1.2m Hand excavated inspection pit dug. Groundwater encountered at 1.95m, 29.50m, 30.20m & 35.50m.	18.50	22.00	Water	100	1.95	1.90	4.20	20
40.00	100				22.00	23.00	Water	100	29.50	15.00			
					23.00	24.30	Water	100	30.20				
					24.30	27.45	Water	100	35.50				
					27.45	30.00	Water	100					
					30.00	36.70	Water	100					
					36.70	40.00	Water	100					


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="text-align: center;">Rotary Open Hole Log</h2>					Scale 1:50 Sheet 1 of 4 <h3 style="text-align: right;">RBH02</h3>							
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria			Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 13/08/2024 Ended: 14/08/2024 Backfilled: 14/08/2024		GL (AOD): Easting: 301742.16 Northing: 515453.39 Logged: SM Status: FINAL							
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole												
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
		0.20		MADE GROUND: Brown sandy, gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite and sandstone. MADE GROUND: Bluish grey sandy Gravel. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material. (Recovered as due to drilling methodology)	1.20 - 1.65 1.20 - 1.65	SPT (S) D	N=36 (4,5/8,8,10,10)							
		3.70 4.00		Soft to firm dark greyish black, slightly sandy, slightly gravelly low strength silty CLAY. Sand is fine to coarse grained. Gravel is sub-angular to sub-rounded, fine to medium of mudstone and sandstone. Firm to stiff dark reddish brown slightly sandy, gravelly medium to high strength CLAY, with an inferred low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded fine to coarse of mudstone, siltstone and sandstone.	4.30 - 4.75 4.30 - 4.75	SPT (S) D	N=14 (1,2/3,3,4,4)							
		5.60		Light organish brown very gravelly SAND, with an inferred low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mixed lithologies.	5.70 - 6.15 5.70 - 6.15	SPT (S) D	N=36 (5,6/6,6,10,14)							
		7.70		Dense reddish brown, slightly clayey, gravelly SAND, with an inferred low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mixed lithologies.	7.20 - 7.65 7.20 - 7.65	SPT (S) D	N=49 (18,7/14,18,10,7)							
					8.70 - 9.15 8.70 - 9.15	SPT (S) D	N=31 (5,7/7,8,7,9)							
Hole Diameter		Casing Depths		General Remarks		Flush Returns		Ground Water						
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 5.60m, 9.10m and 29.50m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
11.70	152	11.70	152			18.20	22.80	Water	100	5.60			20	5.20
40.00	100					22.80	30.20	Water	100	9.10			20	8.65
						30.20	34.40	Water	100	29.50				
						34.40	40.00	Water	100					


Backfill / Installation		Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
						Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
			11.20		Dense reddish brown, slightly clayey, gravelly SAND, with an inferred low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mixed lithologies.	10.20 - 10.65 10.20 - 10.65	SPT (S) D	N=38 (6,7/10,9,10,9)							
					Extremely weak dark greyish brown argillaceous MUDSTONE. (WHITEHAVEN SANDSTONE FORMATION).	11.70 - 12.15 11.70 - 12.15	SPT (S) D	N=50+ (8,12/21,29)							
						13.20 - 13.65	SPT (C)	N=50+ (17,8/44,6)							
						14.70 - 15.15	SPT (C)	N=50+ (20,5/33,17)							
						16.20 - 16.65	SPT (C)	N=50+ (25/50)							
			18.20		Light grey MUDSTONE.										
Hole Diameter		Casing Depths		General Remarks		Flush Returns				Ground Water					
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 5.60m, 9.10m and 29.50m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)	
11.70	152	11.70	152			18.20	22.80	Water	100	5.60			20	5.20	
40.00	100					22.80	30.20	Water	100	9.10				20	8.65
						30.20	34.40	Water	100	29.50					
						34.40	40.00	Water	100						


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h1 style="margin: 0;">Rotary Open Hole Log</h1>						Scale 1:50 Sheet 3 of 4 <h2 style="margin: 0;">RBH02</h2>							
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 13/08/2024 Ended: 14/08/2024 Backfilled: 14/08/2024		GL (AOD): Easting: 301742.16 Northing: 515453.39 Logged: SM Status: FINAL							
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole													
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures							
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture				
				Light grey MUDSTONE.											
		22.80		Light greyish white SANDSTONE.											
Hole Diameter		Casing Depths		General Remarks 1.2m Hand excavated inspection pit dug. Groundwater encountered at 5.60m, 9.10m and 29.50m.				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)
11.70	152	11.70	152	18.20	22.80	Water	100	5.60			20	5.20			
40.00	100			22.80	30.20	Water	100	9.10			20	8.65			
				30.20	34.40	Water	100	29.50							
				34.40	40.00	Water	100								


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 4 of 4 <h3 style="margin: 0;">RBH02</h3>							
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 13/08/2024 Ended: 14/08/2024 Backfilled: 14/08/2024		GL (AOD): Easting: 301742.16 Northing: 515453.39 Logged: SM Status: FINAL							
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole													
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures							
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture				
		30.20		Light greyish white SANDSTONE.											
				Dark grey thinly interbedded MUDSTONE AND SILTSTONE.											
		34.40		Light greyish white SANDSTONE.											
		40.00		End of Borehole at 40.000m											
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)	
11.70	152	11.70	152	1.2m Hand excavated inspection pit dug. Groundwater encountered at 5.60m, 9.10m and 29.50m.		18.20	22.80	Water	100	5.60			20	5.20	
40.00	100					22.80	30.20	Water	100	9.10			20	8.65	
						30.20	34.40	Water	100	29.50					
						34.40	40.00	Water	100						


SOLMEK 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Rotary Open Hole Log						Scale 1:50 Sheet 1 of 4						
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd		GL (AOD): RBH03						
Client: Morgan Sindall						Plant used: Beretta T46		Easting: 301769.92						
Method: Rotary Core with Rotary open Hole						Started: 08/08/2024		Northing: 515462.03						
						Ended: 12/08/2024		Logged: SM						
						Backfilled: 12/08/2024		Status: FINAL						
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		MADE GROUND: Brown sandy, gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite and sandstone.										
		0.70		MADE GROUND: Dark reddish brown slightly sandy, gravelly Clay with some fine to medium plant rootlets, a low-medium cobble content and a low boulder content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, sandstone and mudstone. Cobbles are sub-angular of slag like material. Boulders are sub-angular of slag like material.	1.20 - 1.65	SPT (S)	N=45 (4,5/8,8,12,17)							
				MADE GROUND: Bluish grey sandy Gravel. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material. (Recovered as due to drilling methodology)	1.20 - 1.65	D								
					2.70 - 3.15	SPT (S)	N=20 (7,14/7,6,4,3)							
					2.70 - 3.15	D								
		3.10		Soft to firm dark greyish black, slightly sandy, slightly gravelly low strength silty CLAY. Sand is fine to coarse grained. Gravel is sub-angular to sub-rounded, fine to medium of mudstone and sandstone.										
		3.70		Firm to stiff dark reddish brown slightly sandy, gravelly medium to high strength CLAY, with an inferred low-medium cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded fine to coarse of mudstone, siltstone and sandstone.	4.20 - 4.65	SPT (S)	N=26 (3,4/6,7,7,6)							
					4.20 - 4.65	D								
		4.50		Light brown very gravelly SAND, with an inferred low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mixed lithologies.										
		4.80		Firm dark reddish brown very sandy, slightly gravelly medium strength CLAY. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of sandstone, mudstone and quartz.	5.70 - 6.15	SPT (S)	N=30 (5,4/6,7,8,9)							
					5.70 - 6.15	D								
		7.20		Extremely weak Light greyish brown arenaceous SANDSTONE. (WHITEHAVEN SANDSTONE FORMATION). Weathering: Residual/destructured.	7.20 - 7.65	SPT (S)	N=50+ (7,16/50)							
					7.20 - 7.65	D								
		8.00		Medium strong greyish white very thinly bedded, fine to medium grained micaceous SANDSTONE (WHITEHAVEN SANDSTONE FORMATION) with 2-5mm haematite veins noted throughout. Weathering: Distinctly weathered becoming partially unweathered at 13.20m Fractures: Fracture sub-set 1: Fractures are closely spaced parallel to bedding (sub-horizontal) planar, rough, open, with occasional haematite deposition noted on fracture surfaces. Fracture sub-set 2: Fractures are closely spaced perpendicular to bedding (sub-vertical) stepped, rough, open, with haematite deposition noted on fracture surfaces.	8.70 - 9.15	SPT (S)	N=50+ (25/50)							
					8.70 - 9.15	D								
Hole Diameter		Casing Depths		General Remarks		Flush Returns				Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 3.05m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
11.70	152	11.70	152			14.70	30.30	Water	100	3.05	3.00			
15.00	152	15.00	152			30.30	33.70	Water	100					
40.00	100					33.70	40.00	Water	100					


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 2 of 4 <h3 style="margin: 0;">RBH03</h3>							
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 08/08/2024 Ended: 12/08/2024 Backfilled: 12/08/2024		GL (AOD): Easting: 301769.92 Northing: 515462.03 Logged: SM Status: FINAL							
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole													
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures							
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture				
				Medium strong greyish white very thin bedded, fine to medium grained micaceous SANDSTONE (WHITEHAVEN SANDSTONE FORMATION) with 2-5mm haematite veins noted throughout. Weathering: Distinctly weathered becoming partially unweathered at 13.20m Fractures: Fracture sub-set 1: Fractures are closely spaced parallel to bedding (sub-horizontal) planar, rough, open, with occasional haematite deposition noted on fracture surfaces. Fracture sub-set 2: Fractures are closely spaced perpendicular to bedding (sub-vertical) stepped, rough, open, with haematite deposition noted on fracture surfaces.	10.20 - 10.65 10.20 - 10.65	SPT (S) D	N=50+ (25/50)								
			14.70	Light greyish white SANDSTONE.	11.70 - 12.15 11.70 - 12.15	SPT (S) D	N=50+ (25/50)								
Hole Diameter		Casing Depths		General Remarks		Flush Returns		Ground Water							
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 3.05m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)	
11.70	152	11.70	152			14.70	30.30	Water	100	3.05	3.00				
15.00	152	15.00	152			30.30	33.70	Water	100						
40.00	100					40.00	40.00	Water	100						

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 3 of 4 <h3 style="margin: 0;">RBH03</h3>						
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 08/08/2024 Ended: 12/08/2024 Backfilled: 12/08/2024		GL (AOD): Easting: 301769.92 Northing: 515462.03 Logged: SM Status: FINAL						
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole												
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
				Light greyish white SANDSTONE.										
Hole Diameter		Casing Depths		General Remarks 1.2m Hand excavated inspection pit dug. Groundwater encountered at 3.05m.		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)
11.70	152	11.70	152			14.70	30.30	Water	100	3.05	3.00			
15.00	152	15.00	152			30.30	33.70	Water	100					
40.00	100				40.00	Water	100							

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 4 of 4 <h3 style="margin: 0;">RBH03</h3>						
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 08/08/2024 Ended: 12/08/2024 Backfilled: 12/08/2024		GL (AOD): Easting: 301769.92 Northing: 515462.03 Logged: SM Status: FINAL						
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole												
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
		30.30		Light greyish white SANDSTONE.										
				Dark grey interbedded MUDSTONE AND SILTSTONE.										
		33.70		Light greyish white SANDSTONE.										
		40.00		End of Borehole at 40.000m										
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)
11.70	152	11.70	152	1.2m Hand excavated inspection pit dug. Groundwater encountered at 3.05m.		14.70	30.30	Water	100	3.05	3.00			
15.00	152	15.00	152			30.30	33.70	Water	100					
40.00	100					33.70	40.00	Water	100					


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="text-align: center;">Rotary Open Hole Log</h2>					Scale 1:50 Sheet 1 of 4 <h3 style="text-align: right;">RBH04</h3>								
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria			Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 15/08/2024 Ended: 15/08/2024 Backfilled: 15/08/2024		GL (AOD): Easting: 301646.67 Northing: 515564.77 Logged: SM Status: FINAL								
Client: Morgan Sindall															
Method: Rotary Core with Rotary open hole															
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures							
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture				
		0.20		MADE GROUND: Dark brown sandy, slightly gravelly Clay Topsoil, with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, sandstone, mudstone and dolomite. MADE GROUND: Dark orangish brown, very gravelly Sand, with a low cobble content. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of mixed lithologies. MADE GROUND: Bluish grey sandy Gravel. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material. (Recovered as due to drilling methodology) <i>Rate of penetration increased, indicating potentially looser material</i>											
		0.50													
					1.20 - 1.65	SPT (S)	N=50+ (25/50)								
					2.70 - 3.15	SPT (S)	N=50+ (3,5/5,12,33)								
					4.20 - 4.65	SPT (S)	N=50+ (5,8/10,13,14,13)								
				5.70 - 6.15	SPT (S)	N=50+ (9,15/16,16,18)									
				7.20 - 7.65	SPT (S)	N=50+ (25/50)									
				8.70 - 9.15	SPT (S)	N=50+ (7,13/18,32)									
		9.00		Extremely weak reddish purple micaceous SILTSTONE. (WHITEHAVEN SANDSTONE FORMATION). (Assumed bedrock)											
Hole Diameter		Casing Depths		General Remarks		Flush Returns		Ground Water							
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 6.20m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)	
16.20	152	10.20	152			16.65	27.20	Water	100	6.20	6.10				
36.00	100					27.20	30.60	Water	100						
						30.60	36.00	Water	100						


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 2 of 4 <h3 style="margin: 0;">RBH04</h3>							
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 15/08/2024 Ended: 15/08/2024 Backfilled: 15/08/2024		GL (AOD): Easting: 301646.67 Northing: 515564.77 Logged: SM Status: FINAL							
Client: Morgan Sindall		Method: Rotary Core with Rotary open hole													
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures							
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture				
				Extremely weak reddish purple micaceous SILTSTONE. (WHITEHAVEN SANDSTONE FORMATION). (Assumed bedrock)	10.20 - 10.65	SPT (S)	N=50+ (20,5/47,3)								
				Weak dark grey thinly laminated MUDSTONE (WHITEHAVEN SANDSTONE FORMATION). Recovered as fine to coarse sub-angular to sub-rounded, Gravel of MUDSTONE.	11.70 - 12.15	SPT (C)	N=50+ (7,13/12,15,20,3)								
		13.20		Weak dark grey thinly laminated MUDSTONE (WHITEHAVEN SANDSTONE FORMATION). Recovered as fine to coarse sub-angular to sub-rounded, Gravel of MUDSTONE.	13.20 - 13.65	SPT (C)	N=50+ (9,13/17,22,11)								
					14.70 - 15.15	SPT (C)	N=50+ (14,11/27,23)								
					16.20 - 16.65	SPT (C)	N=50+ (11,11/15,20,15)								
		16.65		Light grey MUDSTONE											
Hole Diameter		Casing Depths		General Remarks		Flush Returns		Ground Water							
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 6.20m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)	
16.20	152	10.20	152			16.65	27.20	Water	100	6.20	6.10				
36.00	100					27.20	30.60	Water	100						
						30.60	36.00	Water	100						


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 3 of 4 <h3 style="margin: 0;">RBH04</h3>								
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 15/08/2024 Ended: 15/08/2024 Backfilled: 15/08/2024		GL (AOD): Easting: 301646.67 Northing: 515564.77 Logged: SM Status: FINAL								
Client: Morgan Sindall		Method: Rotary Core with Rotary open hole														
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures								
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture					
				Light grey MUDSTONE												
		27.20		White/ light grey SANDSTONE.												
Hole Diameter		Casing Depths		General Remarks 1.2m Hand excavated inspection pit dug. Groundwater encountered at 6.20m.				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)
16.20 36.00	152 100	10.20	152					16.65 27.20 30.60	27.20 30.60 36.00	Water Water Water	100 100 100	6.20	6.10			

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 4 of 4 <h3 style="margin: 0;">RBH04</h3>							
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 15/08/2024 Ended: 15/08/2024 Backfilled: 15/08/2024		GL (AOD): Easting: 301646.67 Northing: 515564.77 Logged: SM Status: FINAL							
Client: Morgan Sindall		Method: Rotary Core with Rotary open hole													
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures							
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture				
		30.60		White/ light grey SANDSTONE.											
				Interbedded dark grey siltstone and reddish brown MUDSTONE.											
		36.00		End of Borehole at 36.000m											
Hole Diameter		Casing Depths		General Remarks		Flush Returns				Ground Water					
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 6.20m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)	
16.20	152	10.20	152			16.65	27.20	Water	100	6.20	6.10				
36.00	100					27.20	30.60	Water	100						
						30.60	36.00	Water	100						


SOLMEK		Rotary Open Hole Log				Scale 1:50 Sheet 1 of 4								
12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com						RBH05								
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria		Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 21/08/2024 Ended: 22/08/2024 Backfilled: 20/08/2024		GL (AOD): Easting: 301622.90 Northing: 515555.59 Logged: DL Status: FINAL								
Client: Morgan Sindall														
Method: Rotary Core with Rotary open hole														
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		MADE GROUND: Brown sandy, gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material, dolomite and sandstone.										
				MADE GROUND: Bluish grey sandy Gravel. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag like material. (Recovered as due to drilling methodology)	0.50 - 0.60	B+ES								
					1.20 - 1.22	SPT (S)	N=50+ (25 for 10mm/50 for 10mm)							
					1.20 - 1.65	B + D								
					2.70 - 2.73	SPT (S)	N=50+ (25 for 10mm/50 for 20mm)							
					2.70 - 3.15	B + D								
		3.10		Firm dark reddish brown very sandy, slightly gravelly medium strength CLAY of low to intermediate plasticity. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of sandstone, mudstone and quartz.	3.10 - 3.50	B								
					4.20 - 4.65	SPT (S)	N=18 (3,3/4,4,5,5)							
					4.20 - 4.65	B + D								
					4.20 - 5.70	C								
					5.70 - 6.15	SPT (S)	N=18 (3,4/4,5,4,5)							
					5.70 - 6.15	B								
					5.70 - 6.25	C								
					5.70 - 7.20	D								
		6.80		Extremely weak dark greyish brown argillaceous MUDSTONE (WHITEHAVEN SANDSTONE FORMATION).	7.20 - 7.52	SPT (S)	N=50+ (12,13 for 60mm/15,17,18 for 40mm)							
					7.20 - 7.65	B + D					48	28	11	NI 0 160
					8.70 - 8.98	SPT (S)	N=50+ (14,11 for 40mm/17,17,16 for 20mm)							
					8.70 - 9.15	D					73	25	15	NI 0 120
Hole Diameter		Casing Depths		General Remarks		Flush Returns			Ground Water					
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 5.00m & 22.00m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
40.00	152									5.00 22.00	5.00 7.20	5.70	20	4.50


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 2 of 4 <h3 style="margin: 0;">RBH05</h3>					
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 21/08/2024 Ended: 22/08/2024 Backfilled: 20/08/2024		GL (AOD): Easting: 301622.90 Northing: 515555.59 Logged: DL Status: FINAL					
Client: Morgan Sindall		Method: Rotary Core with Rotary open hole											
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures					
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture		
				Extremely weak dark greyish brown argillaceous MUDSTONE (WHITEHAVEN SANDSTONE FORMATION).	10.20 - 10.38	SPT (S)	N=50+ (12,13 for 20mm/41,9 for 5mm)	73	31	0	NI 0 90		
			10.20 - 10.65		D								
					11.70 - 11.82	SPT (S)	N=50+ (20,5 for 0mm/50 for 40mm)	73	66	0	NI 0 85		
				11.70 - 12.15	D								
					13.20 - 13.27	SPT (S)	N=50+ (25 for 30mm/50 for 40mm)						
					13.20 - 13.65	D							
Hole Diameter		Casing Depths		General Remarks 1.2m Hand excavated inspection pit dug. Groundwater encountered at 5.00m & 22.00m.		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)
40.00	152							5.00 22.00	5.00 7.20	5.70	20	4.50	


 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>					Scale 1:50 Sheet 3 of 4 <h3 style="margin: 0;">RBH05</h3>						
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria			Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 21/08/2024 Ended: 22/08/2024 Backfilled: 20/08/2024		GL (AOD): Easting: 301622.90 Northing: 515555.59 Logged: DL Status: FINAL						
Client: Morgan Sindall		Method: Rotary Core with Rotary open hole											
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures					
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture		
				Extremely weak dark greyish brown argillaceous MUDSTONE (WHITEHAVEN SANDSTONE FORMATION).									
		22.00	▼	COAL									
		22.70		MUDSTONE									
		26.40		SANDSTONE									
		29.60		MUDSTONE									
Hole Diameter Depth Base (m) Diameter (mm)		Casing Depths Depth Base (m) Diameter (mm)		General Remarks 1.2m Hand excavated inspection pit dug. Groundwater encountered at 5.00m & 22.00m.		Flush Returns				Ground Water			
40.00 152						From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)
								5.00 22.00	5.00 7.20	5.70	20	4.50	

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 4 of 4 <h3 style="margin: 0;">RBH05</h3>						
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 21/08/2024 Ended: 22/08/2024 Backfilled: 20/08/2024		GL (AOD): Easting: 301622.90 Northing: 515555.59 Logged: DL Status: FINAL						
Client: Morgan Sindall		Method: Rotary Core with Rotary open hole												
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
				MUDSTONE										
		40.00		End of Borehole at 40.000m										
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)
40.00	152			1.2m Hand excavated inspection pit dug. Groundwater encountered at 5.00m & 22.00m.						5.00 22.00	5.00 7.20	5.70	20	4.50

SOLMEK 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Rotary Open Hole Log						Scale 1:50 Sheet 1 of 4						
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd		GL (AOD): RBH06						
Client: Morgan Sindall						Plant used: Beretta T46		Easting: 301589.21						
Method: Rotary Core with Rotary open Hole						Started: 21/08/2024		Northing: 515542.30						
						Ended: 22/08/2024		Logged: DL						
						Backfilled: 22/08/2024		Status: FINAL						
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
		0.25		MADE GROUND: Brown sandy, gravelly Clay (Topsoil) with some fine to medium plant rootlets. Sand is fine to coarse of slag like material dolomite and sandstone.	0.10 - 0.20	B+ES								
				MADE GROUND: Blueish grey sandy gravel. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse of slag-like material.	0.50 - 0.60	B+ES								
					1.20 - 1.24 1.20 - 1.65	SPT (S) B + D	N=50+ (25 for 20mm/50 for 20mm)							
		2.20		Firm dark reddish brown very sandy, slightly gravelly medium strength CLAY of low to intermediate plasticity. Sand is fine to coarse. Gravel is angular to sub-rounded, fine to coarse of sandstone, mudstone and quartz.	2.40 - 2.70	B								
					2.70 - 3.15 2.70 - 3.15 2.70 - 3.15 2.70 - 4.20	SPT (S) B C D	N=18 (7,5/4,5,5,4)							
					4.20 - 4.65 4.20 - 4.65 4.20 - 5.70	SPT (S) C D	N=17 (4,4/4,5,4,4)							
					5.70 - 6.15 5.70 - 6.15 5.70 - 6.15 5.70 - 6.70	SPT (S) B C D	N=43 (10,7/10,12,9,12)							
		6.70		Weak light greyish brown arenaceous SANDSTONE (WHITEHAVEN SANDSTONE FORMATION)	7.20 - 7.29 7.20 - 7.65	SPT (S) D	N=50+ (25 for 50mm/50 for 40mm)	100	89	71	NI 100 330			
		8.53		Extremely weak dark greyish brown argillaceous MUDSTONE (WHITEHAVEN SANDSTONE FORMATION)				80	56	7	NI 40 100			
	Hole Diameter					Flush Returns					Ground Water			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	General Remarks	From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)	
36.00	152			1.2m Hand excavated inspection pit dug. Groundwater encountered at 6.20m.					6.20					

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 2 of 4 <h3 style="margin: 0;">RBH06</h3>						
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 21/08/2024 Ended: 22/08/2024 Backfilled: 22/08/2024		GL (AOD): Easting: 301589.21 Northing: 515542.30 Logged: DL Status: FINAL						
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole												
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
		10.20		Extremely weak dark greyish brown argellacious MUDSTONE (WHITEHAVEN SANDSTONE FORMATION) Extremely weak reddish brown argellacious MUDSTONE (WHITEHAVEN SANDSTONE FORMATION)				81	61	27	NI 50 200			
								100	91	59	NI 90 220			
Hole Diameter		Casing Depths		General Remarks		Flush Returns		Ground Water						
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. Groundwater encountered at 6.20m.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
36.00	152										6.20			

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 3 of 4 <h3 style="margin: 0;">RBH06</h3>					
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 21/08/2024 Ended: 22/08/2024 Backfilled: 22/08/2024		GL (AOD): Easting: 301589.21 Northing: 515542.30 Logged: DL Status: FINAL					
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole											
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures					
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture		
		22.20		Extremely weak reddish brown argillaceous MUDSTONE (WHITEHAVEN SANDSTONE FORMATION)									
				MUDSTONE									
Hole Diameter		Casing Depths		General Remarks 1.2m Hand excavated inspection pit dug. Groundwater encountered at 6.20m.		Flush Returns				Ground Water			
Depth Base (m) 36.00	Diameter (mm) 152	Depth Base (m)	Diameter (mm)			From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m) 6.20	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		<h2 style="margin: 0;">Rotary Open Hole Log</h2>						Scale 1:50 Sheet 4 of 4 <h3 style="margin: 0;">RBH06</h3>					
Contract no: S240720		Site: Plots 9 & 12 Leconfield Ind Est, Cleator Moor, Cumbria				Driller: L&A Drilling Ltd Plant used: Beretta T46 Started: 21/08/2024 Ended: 22/08/2024 Backfilled: 22/08/2024		GL (AOD): Easting: 301589.21 Northing: 515542.30 Logged: DL Status: FINAL					
Client: Morgan Sindall		Method: Rotary Core with Rotary open Hole											
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures					
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture		
		36.00		MUDSTONE									
				End of Borehole at 36.000m									
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)
36.00	152			1.2m Hand excavated inspection pit dug. Groundwater encountered at 6.20m.						6.20			



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