



Drainage Philosophy

21T2034 – Cleator Moor Innovation Quarter – Area 2

CMIQ-BGP-03-XX-RP-C-DP003

Billingham George & Partners

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Drainage Philosophy

Project: Cleator Moor Innovation Quarter – Area 2

Client: Copeland Borough Council

LLFA: Cumbria County Council

BGP Job No: 21T2034

Document Checking:

Prepared By: J Herbert – Design Engineer

Checked By: J Conway – Director

Issue	Date	Status	Checked for Issue
001	05/11/2021	First Draft	JC
002	23/03/2022	First Draft	JC

This document has been prepared solely as a Drainage Strategy for Copeland Borough Council regarding the proposed scheme on land off Birks Road, Cleator Moor. Billinghurst George & Partners accepts no responsibility or liability for any use that is made of this document other than by the Client for which it was originally commissioned and prepared.

Contents

1. Executive Summary / Project Background
2. Existing Site and Drainage
3. Proposed Site Description
4. Review of Surface Water Discharge Hierarchy
5. Proposed Surface Water Drainage Strategy
6. Proposed Foul Water Drainage Strategy
7. Conclusion

Appendices

Appendix A	Site Location Plan
Appendix B	Proposed Site Layout
Appendix C	Topographic Survey
Appendix D	United Utilities Sewer Records
Appendix E	Microdrainage Calculations
Appendix F	Proposed Drainage Philosophy Plans
Appendix G	Borehole Records
Appendix H	Flood Maps for Planning
Appendix I	United Utilities, LLFA and EA Predevelopment Correspondence

1. Executive Summary / Project Background

- 1.1. This Drainage Philosophy has been prepared to supplement the Proposed Drainage Scheme for planning for the proposed industrial development on land off Birks Road, Cleator Moor, Cumbria. See Appendix A for the site location plan.
- 1.2. The proposals are to construct 2 no. buildings for hotel and student accommodation use with associated car parking on the greenfield site.
- 1.3. United Utilities (UU) records have been obtained and the Cumbria SuDS Design Guidance has been followed.
- 1.4. A hierarchy for the appropriate disposal of surface water is included within Building Regulations Part H3 which states the following:

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

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

2. Existing Site & Drainage

2.1. Site Location

- 2.1.1 Site Name: Leconfield Industrial Estate
- 2.1.2 Site Address: Land off Birks Road, Cleator Moor
- 2.1.3 OS Grid Reference: E: 301854, N: 515384
- 2.1.4 National Grid Reference: NY018153

2.2. Site Description

- 2.2.1 Site Area: 4.0 Ha
- 2.2.2 Developable Site Area: 2.306 Ha
- 2.2.3 Existing Land Use: Overgrown greenfield/Allotments
- 2.2.4 Proposed Land Use: Hotel and Student Accommodation
- 2.2.5 Local Planning Authority: Copeland Borough Council
- 2.2.6 Sewer Undertaker: United Utilities (UU)
- 2.2.7 At approximately 4.0 Ha in size the Greenfield site is located approximately 5.15km southeast of Whitehaven and approximately 18km southwest of Cockermouth. The site is currently an overgrown greenfield. The site is bound by Birks Road to the south east, Cleator Moor football club and residential properties to the east, a public footpath and tree line to the north and Leconfield Street to the west.

2.3. Site Levels

- 2.3.1 A topographical survey was carried out by Solid Point in October 2021. This can be viewed in Appendix C.
- 2.3.2 From the topographical survey it is identified that the site falls from southeast to northwest from 88.0m AOD to 84.0m, this equates to a gradient of approximately 1 in 40. The site is relatively level from northeast to southwest.

2.4. Existing Watercourses

- 2.3.3 The nearest named watercourse is Nor Beck, which is located approximately 150m north of the site proposals, running from east to west converging with Bowthorn Beck which runs west then south. From the point it converges it is culverted and drains from north to south ultimately converging with the River Keekle.
- 2.3.4 There are no other named or unnamed watercourses within close proximity to site.

2.5. Existing Public and Private Drainage

- 2.4.1 See Appendix D for locations of existing United Utilities public drains.
- 2.4.2 A 300mm diameter United Utilities combined sewer is located within the site following southwest to northeast along the route of the existing public footpath just north of the development proposal. This sewer continues into the Area 3 site beyond. Once within the adjacent site the sewer drains west parallel with Nor Beck and beneath Sanderson Park then south converging with another series of combined sewers in Leconfield Street.
- 2.4.3 The site is not currently served by wastewater systems.

2.6. Existing Ground Conditions

- 2.6.1. A 'Phase 2 Site Investigation' have been carried out by Solmek dated March 2022. (Report No. S220142).
- 2.6.2. The Phase 2 Site Investigation reveals that made ground was relatively uniform across the site, proven to a minimum depth of 0.4mbgl. The made ground consisted of a variable surface covering generally of clayey topsoil. This was then generally underlain by medium strength clay to 5.2mbgl. This was in turn underlain by a 10m band of siltstone then onto sandstone.
- 2.6.3. There was no groundwater noted within any of the exploratory locations.

2.7. Existing Flood Risk Assessment

- 2.6.1 A site-specific 'Flood Risk Assessment' (20T2034 – Flood Risk Assessment 003 March 2022) has been carried out by Billinghurst George & Partners and is to be provided separately to support this planning application.
- 2.6.2 The report states that the site is within Flood Zone 1 and is at low risk of flooding from all sources of flood risk. Therefore, the proposed site is suitable for 'Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in "more vulnerable", and assembly and leisure' in accordance with the National Planning Policy Framework.
- 2.6.3 See Appendix H for Flood Maps for planning.

3. Proposed Site Description

3.1. Development Proposals

- 3.1.1. The proposals are to construct 2 no. buildings for hotel and student accommodation use with associated car parking on the greenfield site. See Appendix A for the site location plan.
- 3.1.2. The proposed site layout within Appendix B shows the extents of access roads and building positions. The access roads will remain private and be maintained by a private management company. The buildings and car parking will be accessed directly off the new and existing roads.

4. Review of Surface Water Discharge Hierarchy

4.1. Existing Drainage Regime

- 4.1.1. A 300mm diameter United Utilities combined sewer is located within the site following southwest to northeast along the route of the existing public footpath just north of the development proposal. This sewer continues into the Area 3 site beyond. Once within the adjacent site the sewer drains west parallel with Nor Beck and beneath Sanderson Park then south converging with another series of combined sewers in Leconfield Street.
- 4.1.2. The site is not currently served by wastewater systems.

4.2. Current Guidelines

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

4.3. Discharge to Ground

- 4.3.1. Discharge of the surface water to ground via infiltration is suited to sites which have ground conditions made up of gravel, sand or a mixture of the two. Sands and gravels permit rapid dispersion and infiltration of surface water which is necessary to ensure that overland flooding does not occur during intense rainfall periods.
- 4.3.2. A 'Phase 2 Site Investigation' have been carried out by Solmek dated March 2022. (Report No. S220142).
- 4.3.3. The Phase 2 Site Investigation reveals that made ground was relatively uniform across the site, proven to a minimum depth of 0.4mbgl. The made ground consisted of a variable surface covering generally of clayey topsoil. This was then generally underlain by medium strength clay to 5.2mbgl. This was in turn underlain by a 10m band of siltstone then onto sandstone.
- 4.3.4. There was no groundwater noted within any of the exploratory locations.
- 4.3.5. The Envirocheck Report states that there is Limited Potential for Groundwater Flooding to Occur.
- 4.3.6. It is anticipated that given the underlying clays infiltration testing will return poor results and be unable to receive the expansive impermeable areas proposed.
- 4.3.7. Due to the above findings, it is confirmed that it would not be feasible to discharge the sites surface water to the ground via infiltration.

4.4. Discharge to a Watercourse

- 4.4.1. The nearest named watercourse is Nor Beck, which is located approximately 150m north of the site proposals, running from east to west converging with Bowthorn Beck which runs from north to south. From the point it converges it is culverted and drains west then south ultimately converging with the River Keekle.
- 4.4.2. The watercourse is within the site and accessible therefore, as per the hierarchy within Building Regulations Part H3, it is deemed necessary to discharge the surface water to a nearby watercourse.

4.5. Discharge to a Surface Water Sewer

- 4.5.1. Not required as discharging to watercourse.

4.6. Discharge to a Combined Sewer

- 4.6.1. Not required as discharging to watercourse.

5. Proposed Surface Water Drainage Strategy

- 5.1.1. It is expected that surface water discharge rates will be restricted to as close to Greenfield rates as per the Cumbria County Council SuDS Adoption Guidance for Major Developments.
- 5.1.2. See Appendix F for the Proposed Drainage Philosophy Plans and Impermeable areas.
- 5.1.3. See Appendix E for the Greenfield Runoff calculations which show that the rate for the site is 22.4 l/s based on the developable area.
- 5.1.4. The proposed site (within Appendix B) has limited available space to incorporate open SuDS features such as basins or ponds.
- 5.1.5. Due to the minimal amount of green open available space onsite it is deemed a suitable solution to provide the attenuation volume to retain the 1 in 100 year + 40% climate change flood event below ground within an attenuation tank. The attenuation is to provide storage for approximately 430m³, this volume is based on the total impermeable surface area and restricted discharge rate of 22.4 l/s.
- 5.1.6. It is proposed that the majority of the attenuation will be stored within a 2.0m deep attenuation tank. The remaining storm water will utilise the surface water sewers.
- 5.1.7. The surface water system consists of a network of pipes which are located throughout the car park and circulation road. The network will drain via gravity to the Flow Control Unit toward the north of the site. Surface water will back up and utilise the attenuation structure when storm events exceed the discharge rate of 22.4 l/s. The final connection to Nor Beck watercourse will be made via a gravity and a headwall.
- 5.1.8. The Microdrainage Calculations for the attenuation volumes are included within Appendix E.
- 5.1.9. No treatment is proposed for the roof drainage. However, it is recommended that a petrol interceptor is installed to treat all surface water flows from the service yard and also permeable paving as a method for treating surface water flows falling on the car park.
- 5.1.10. The proposed surface water system has been designed in line with good practice which ensures it is separate from the foul. The proposed surface water connection is to Nor Beck northeast of the development area.
- 5.1.11. The above surface water discharge rate is to be agreed with the Lead Local Flood Authority and the Environment Agency.

6. Proposed Foul Water Drainage Strategy

- 6.1. See Appendix F for the 'Proposed Drainage Philosophy Drawings'.
- 6.2. The foul drainage within site will remain private, the foul sewers will drain via gravity to the northern area of site where a final connection to the existing 300mm diameter combined United Utilities sewer will be made. This connection has been agreed with United Utilities through return of a pre-development enquiry. See Appendix I for details.
- 6.3. The foul water flow rates are currently unknown and are to be determined in the next stages of design development.

7. Conclusion

- 7.1. It is not possible or practicable to discharge the surface water to the ground via infiltration. Therefore, as per the hierarchy within Building Regulations Part H3, it is deemed necessary to discharge the surface water to a watercourse.
- 7.2. The proposals are to construct 2 no. buildings for hotel and student accommodation use with associated car parking on the greenfield site.
- 7.3. Underground attenuation volume is sufficient to provide storage for rainfall events up to and including the 1 in 100 year + 40% climate change.
- 7.4. A proposed drainage scheme has been included within Appendix F, with supporting calculations provided within Appendix E.
- 7.5. This statement has been prepared with reference to the information available at the time of writing. The details of the report may be revised upon receipt of additional or further information.

Report No: CMIQ-BGP-03-XX-RP-C-DP003

Report Title: Drainage Philosophy – Cleator Moor Innovation Quarter – Area 2

James Herbert – Design Engineer

Date: 23/03/2022

Jim Conway – Director

Date: 23/03/2022

For and on behalf of Billinghurst George & Partners



Appendix A

Site Location Plan



- DO NOT SCALE -



Issued for Planning	JJH	P01	JC	05.11.2021
AMENDMENT	BY	REV	CHK	DATE
Rev P = Preliminary T = Tender C = Construction LCI = Last Construction Issue				
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Client Copeland Borough Council		Drawn JJH	Date Nov 2021	Checked JC	Date Nov 2021	Size A3	Scale 1:5000	Class. 90.4	Rev. P01
Project Cleator Moor Innovation Quarter	Project No. 21T2034	Location CMIQ	Originator BGP	Volume 00	Level XX	Type DR	Role C	Unique No. 00100	
Drawing Title Overall Site Location Plan		File Reference CMIQ-BGP-00-XX-DR-C-90.4-00100							



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Appendix B

Proposed Site Layout

50.00 30.00m 1:500m

PROPOSED SITE
PLAN



SITE PLAN - PROPOSED
SCALE: 1 : 1250

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0 10 20 30 40 50 m

DATE	REVISION	REV	DR	CH
03/11/21	FIRST ISSUE FOR PLANNING REVIEW	P01	JS	DS
09/11/21	REVISION 2	P02	JS	DS
10/12/21	Amended to Tetra Tech Comments	P03	JS	DS
11/01/22	UPDATED GRAPHICS	P04	JS	DS
25/01/22	UPDATED SITE NAMES AND PLOTS	P05	JS	DS
16/02/22	UPDATED PLOT 1.4 to E1a	P06	JS	DK

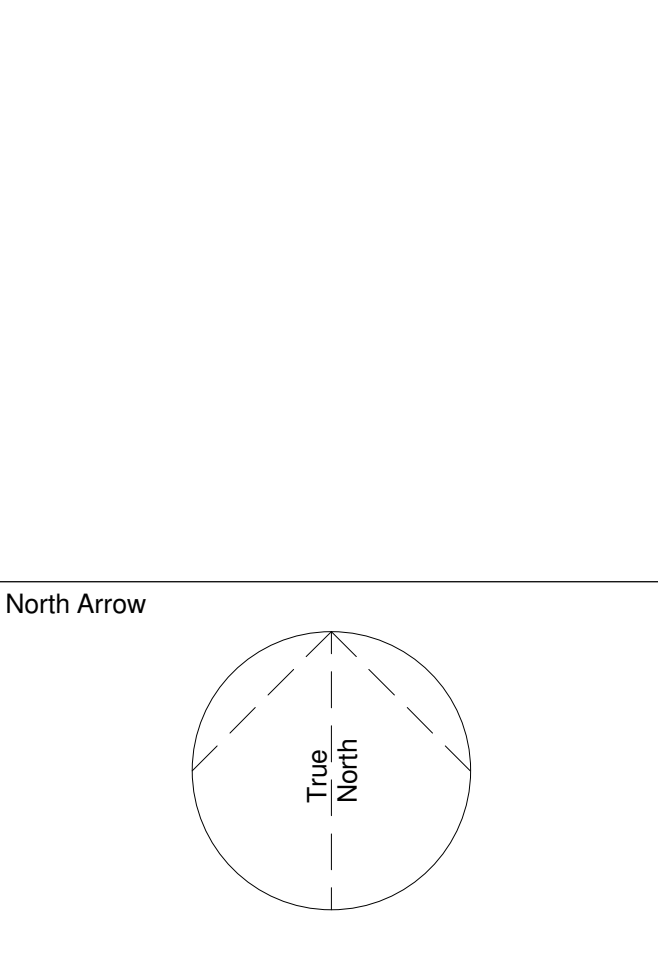
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Keyplan



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Drawn

Client
COPELAND BOROUGH COUNCIL

Project

Project
CLEATOR MOOR INNOVATION QUARTER

Drawing Title

Drawing Title
PROPOSED SITE PLAN

Sheet Status

Sheet Status
S3 - FOR REVIEW

Project No.

Project No.
JANC21-0043

Drawing No.

Drawing No.
CMW-NOR-MP-ZZ-DR-A-90002

Rev.

P06



Appendix C

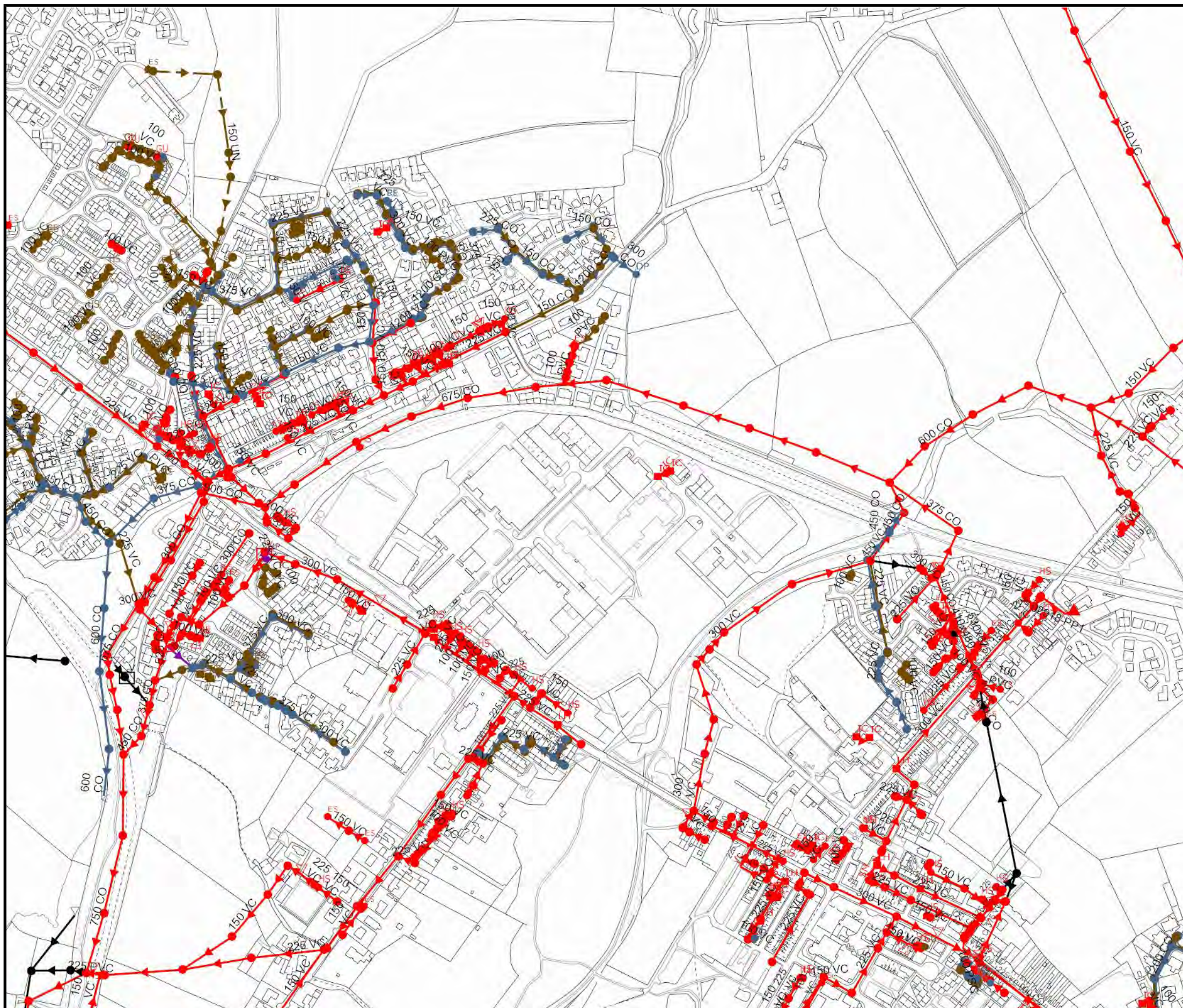
Topographical Survey





Appendix D

United Utilities Sewer Records



Water for the North West

SEWER RECORDS

Address or Site Reference

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

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

Printed by: Property Searches

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

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Appendix E

Microdrainage Calculations

BGP		Page 1
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
Date 18/03/2022 11:11	Designed by JJH	
File 2022.03.17 - SW MODEL - AREA 2.MDX	Checked by JC	
XP Solutions	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales			
Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	17.000	Add Flow / Climate Change (%)	0
Ratio R	0.257	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	0.266	4-8	0.617	8-12	0.004

Total Area Contributing (ha) = 0.887

Total Pipe Volume (m³) = 36.357

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	70.873	2.275	31.2	0.049	4.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	66.514	0.445	149.5	0.093	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.000	58.894	2.570	22.9	0.420	4.00	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	4.65	86.200	0.049	0.0	0.0	0.0	1.81	32.0	8.8
S1.001	50.00	5.69	83.850	0.142	0.0	0.0	0.0	1.07	42.4	25.6
S2.000	50.00	4.30	86.050	0.420	0.0	0.0	0.0	3.30	233.1	75.8

BGP		Page 2
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
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XP Solutions	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
S1.002	69.371	0.460	150.8	0.070	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.003	41.940	0.440	95.3	0.046	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.000	34.062	0.345	98.7	0.209	4.00	0.0	0.600	o	225	Pipe/Conduit	
S1.004	19.521	0.245	79.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.005	27.696	1.260	22.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.006	87.691	0.875	100.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.007	38.906	2.550	15.3	0.000	0.00	0.0	0.600	o	225	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)
S1.002	50.00	6.39	83.330	0.632	0.0	0.0	0.0	1.65	262.9	114.1
S1.003	50.00	6.73	82.870	0.678	0.0	0.0	0.0	2.08	331.3	122.4
S3.000	50.00	4.43	83.000	0.209	0.0	0.0	0.0	1.32	52.3	37.7
S1.004	50.00	6.87	82.430	0.887	0.0	0.0	0.0	2.28	362.5	160.1
S1.005	50.00	7.03	82.185	0.887	0.0	0.0	0.0	2.80	111.5«	160.1
S1.006	50.00	8.15	80.925	0.887	0.0	0.0	0.0	1.31	51.9«	160.1
S1.007	50.00	8.35	80.050	0.887	0.0	0.0	0.0	3.37	133.9«	160.1

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)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SS1	87.625	1.425	Open Manhole	1200	S1.000	86.200	150				
SS2	85.350	1.500	Open Manhole	1200	S1.001	83.850	225	S1.000	83.925	150	
SS11	88.050	2.000	Open Manhole	1200	S2.000	86.050	300				
SS3	86.785	3.455	Open Manhole	1350	S1.002	83.330	450	S1.001	83.405	225	
								S2.000	83.480	300	
SS4	85.350	2.480	Open Manhole	1350	S1.003	82.870	450	S1.002	82.870	450	
SS10	85.350	2.350	Open Manhole	1200	S3.000	83.000	225				
SS5	85.350	2.920	Open Manhole	2100	S1.004	82.430	450	S1.003	82.430	450	
								S3.000	82.655	225	
SS6	85.000	2.815	Open Manhole	1350	S1.005	82.185	225	S1.004	82.185	450	
SS7	82.350	1.425	Open Manhole	1200	S1.006	80.925	225	S1.005	80.925	225	
SS8	82.200	2.150	Open Manhole	1200	S1.007	80.050	225	S1.006	80.050	225	
SS9	79.000	1.500	Open Manhole	1200		OUTFALL		S1.007	77.500	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SS1	301860.793	515262.612	301860.793	515262.612	Required	
SS2	301809.073	515311.068	301809.073	515311.068	Required	
SS11	301898.386	515319.218	301898.386	515319.218	Required	
SS3	301855.067	515359.117	301855.067	515359.117	Required	
SS4	301904.148	515408.142	301904.148	515408.142	Required	
SS10	301873.582	515452.699	301873.582	515452.699	Required	
SS5	301907.532	515449.945	301907.532	515449.945	Required	
SS6	301909.100	515469.403	301909.100	515469.403	Required	

BGP		Page 4
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
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XP Solutions	Network 2020.1.3	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SS7	301907.277	515497.039	301907.277	515497.039	Required	
SS8	301991.467	515521.569	301991.467	515521.569	Required	
SS9	301996.891	515560.095			No Entry	

BGP		Page 5
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XP Solutions	Network 2020.1.3	

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	150	SS1	87.625	86.200	1.275	Open Manhole	1200
S1.001	o	225	SS2	85.350	83.850	1.275	Open Manhole	1200
S2.000	o	300	SS11	88.050	86.050	1.700	Open Manhole	1200
S1.002	o	450	SS3	86.785	83.330	3.005	Open Manhole	1350
S1.003	o	450	SS4	85.350	82.870	2.030	Open Manhole	1350
S3.000	o	225	SS10	85.350	83.000	2.125	Open Manhole	1200
S1.004	o	450	SS5	85.350	82.430	2.470	Open Manhole	2100
S1.005	o	225	SS6	85.000	82.185	2.590	Open Manhole	1350
S1.006	o	225	SS7	82.350	80.925	1.200	Open Manhole	1200
S1.007	o	225	SS8	82.200	80.050	1.925	Open Manhole	1200

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	70.873	31.2	SS2	85.350	83.925	1.275	Open Manhole	1200
S1.001	66.514	149.5	SS3	86.785	83.405	3.155	Open Manhole	1350
S2.000	58.894	22.9	SS3	86.785	83.480	3.005	Open Manhole	1350
S1.002	69.371	150.8	SS4	85.350	82.870	2.030	Open Manhole	1350
S1.003	41.940	95.3	SS5	85.350	82.430	2.470	Open Manhole	2100
S3.000	34.062	98.7	SS5	85.350	82.655	2.470	Open Manhole	2100
S1.004	19.521	79.7	SS6	85.000	82.185	2.365	Open Manhole	1350
S1.005	27.696	22.0	SS7	82.350	80.925	1.200	Open Manhole	1200
S1.006	87.691	100.2	SS8	82.200	80.050	1.925	Open Manhole	1200
S1.007	38.906	15.3	SS9	79.000	77.500	1.275	Open Manhole	1200

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)
S1.007	SS9	79.000	77.500	0.000	1200	0

BGP		Page 6
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
Date 18/03/2022 11:11 File 2022.03.17 - SW MODEL - AREA 2.MDX	Designed by JJH Checked by JC	
XP Solutions	Network 2020.1.3	

Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	0.000
Hot Start (mins)	0	Inlet 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	1	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	17.000	Storm Duration (mins)	30
Ratio R	0.257		

BGP		Page 7
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
Date 18/03/2022 11:11 File 2022.03.17 - SW MODEL - AREA 2.MDX	Designed by JJH Checked by JC	
XP Solutions	Network 2020.1.3	

Online Controls for Storm

Hydro-Brake® Optimum Manhole: SS6, DS/PN: S1.005, Volume (m³): 6.9

Unit Reference	MD-SHE-0192-2240-2170-2240
Design Head (m)	2.170
Design Flow (l/s)	22.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	192
Invert Level (m)	82.185
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.170	22.4	Kick-Flo®	1.330	17.7
Flush-Flo™	0.630	22.4	Mean Flow over Head Range	-	19.5

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	6.7	0.800	22.1	2.000	21.5	4.000	30.0	7.000	39.3
0.200	17.7	1.000	21.4	2.200	22.5	4.500	31.8	7.500	40.6
0.300	20.4	1.200	19.8	2.400	23.5	5.000	33.4	8.000	41.9
0.400	21.6	1.400	18.2	2.600	24.4	5.500	35.0	8.500	43.2
0.500	22.1	1.600	19.4	3.000	26.1	6.000	36.5	9.000	44.4
0.600	22.3	1.800	20.5	3.500	28.2	6.500	37.9	9.500	45.6

BGP		Page 8
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
Date 18/03/2022 11:11	Designed by JJH	
File 2022.03.17 - SW MODEL - AREA 2.MDX	Checked by JC	
XP Solutions	Network 2020.1.3	

Storage Structures for Storm

Tank or Pond Manhole: SS5, DS/PN: S1.004

Invert Level (m) 82.600

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	215.0	1.000	215.0	2.000	215.0	2.001	0.0

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

Simulation Criteria

Areal Reduction Factor 1.000

Additional Flow - % of Total Flow 0.000

Hot Start (mins) 0

MADD Factor * 10m³/ha Storage 0.000

Hot Start Level (mm) 0

Inlet Coeffiecient 0.800

Manhole Headloss Coeff (Global) 0.500

Flow per Person per Day (l/per/day) 0.000

Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0

Number of Offline Controls 0

Number of Time/Area Diagrams 0

Number of Online Controls 1

Number of Storage Structures 1

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 17.000

Cv (Summer) 1.000

Region England and Wales Ratio R 0.257

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) 1, 30, 100

Climate Change (%) 0, 0, 40

											Water	Surcharged	Flooded
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)		
S1.000	SS1	15 Summer	1	+0%	100/15 Summer				86.248	-0.102	0.000		
S1.001	SS2	15 Summer	1	+0%	30/15 Summer	100/15 Summer			83.952	-0.123	0.000		
S2.000	SS11	15 Summer	1	+0%	100/15 Summer				86.157	-0.193	0.000		
S1.002	SS3	15 Summer	1	+0%	100/15 Summer				83.512	-0.268	0.000		
S1.003	SS4	15 Summer	1	+0%	30/120 Summer				83.034	-0.286	0.000		
S3.000	SS10	15 Summer	1	+0%	30/15 Summer				83.128	-0.097	0.000		
S1.004	SS5	120 Summer	1	+0%	30/15 Summer				82.765	-0.115	0.000		
S1.005	SS6	120 Summer	1	+0%	1/15 Summer				82.748	0.338	0.000		
S1.006	SS7	120 Summer	1	+0%					81.026	-0.124	0.000		
S1.007	SS8	120 Summer	1	+0%					80.111	-0.164	0.000		

Half Drain Pipe							
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded
S1.000	SS1	0.22			7.0	OK	
S1.001	SS2	0.39			16.2	OK	3
S2.000	SS11	0.28			61.3	OK	
S1.002	SS3	0.33			81.0	OK	
S1.003	SS4	0.29			84.9	OK	
S3.000	SS10	0.62			30.5	OK	

BGP		Page 10
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
Date 18/03/2022 11:11	Designed by JJH	
File 2022.03.17 - SW MODEL - AREA 2.MDX	Checked by JC	
XP Solutions	Network 2020.1.3	

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

		Half Drain		Pipe			
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded
S1.004	SS5	0.09			26.5	OK	
S1.005	SS6	0.20			21.0	SURCHARGED	
S1.006	SS7	0.41			21.0	OK	
S1.007	SS8	0.17			21.0	OK	

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

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 17.000 Cv (Summer) 1.000
 Region England and Wales Ratio R 0.257 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) 1, 30, 100
 Climate Change (%) 0, 0, 40

									Water	Surcharged	Flooded	
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume
PN	Name	Storm	Period	Change		Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)
S1.000	SS1	15 Summer	30	+0%	100/15 Summer					86.279	-0.071	0.000
S1.001	SS2	15 Summer	30	+0%	30/15 Summer	100/15 Summer				84.270	0.195	0.000
S2.000	SS11	15 Summer	30	+0%	100/15 Summer					86.230	-0.120	0.000
S1.002	SS3	15 Summer	30	+0%	100/15 Summer					83.658	-0.122	0.000
S1.003	SS4	120 Summer	30	+0%	30/120 Summer					83.367	0.047	0.000
S3.000	SS10	15 Summer	30	+0%	30/15 Summer					83.638	0.413	0.000
S1.004	SS5	120 Summer	30	+0%	30/15 Summer					83.290	0.410	0.000
S1.005	SS6	240 Summer	30	+0%	1/15 Summer					83.300	0.890	0.000
S1.006	SS7	480 Summer	30	+0%						81.029	-0.121	0.000
S1.007	SS8	480 Winter	30	+0%						80.113	-0.162	0.000

Half Drain Pipe							
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded
S1.000	SS1	0.54			16.8	OK	
S1.001	SS2	1.09			44.9	SURCHARGED	3
S2.000	SS11	0.67			147.9	OK	
S1.002	SS3	0.84			205.3	OK	
S1.003	SS4	0.40			118.9	SURCHARGED	
S3.000	SS10	1.45			71.4	SURCHARGED	

BGP		Page 12
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
Date 18/03/2022 11:11	Designed by JJH	
File 2022.03.17 - SW MODEL - AREA 2.MDX	Checked by JC	
XP Solutions	Network 2020.1.3	

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

		Half Drain		Pipe			
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded
S1.004	SS5	0.09			25.5	SURCHARGED	
S1.005	SS6	0.21			22.1	SURCHARGED	
S1.006	SS7	0.44			22.1	OK	
S1.007	SS8	0.17			22.1	OK	

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

Simulation Criteria

Areal Reduction Factor 1.000

Additional Flow - % of Total Flow 0.000

Hot Start (mins) 0

MADD Factor * 10m³/ha Storage 0.000

Hot Start Level (mm) 0

Inlet Coeffiecient 0.800

Manhole Headloss Coeff (Global) 0.500

Flow per Person per Day (l/per/day) 0.000

Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0

Number of Offline Controls 0

Number of Time/Area Diagrams 0

Number of Online Controls 1

Number of Storage Structures 1

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 17.000

Cv (Summer) 1.000

Region England and Wales Ratio R 0.257

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) 1, 30, 100

Climate Change (%) 0, 0, 40

									Water	Surcharged	Flooded	
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume
PN	Name	Storm		Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)
S1.000	SS1	15 Summer		100	+40%	100/15 Summer				86.872	0.522	0.000
S1.001	SS2	15 Summer		100	+40%	30/15 Summer	100/15 Summer			85.352	1.277	1.537
S2.000	SS11	15 Summer		100	+40%	100/15 Summer				87.667	1.317	0.000
S1.002	SS3	240 Winter		100	+40%	100/15 Summer				84.550	0.770	0.000
S1.003	SS4	240 Winter		100	+40%	30/120 Summer				84.412	1.092	0.000
S3.000	SS10	15 Summer		100	+40%	30/15 Summer				85.247	2.022	0.000
S1.004	SS5	240 Winter		100	+40%	30/15 Summer				84.388	1.508	0.000
S1.005	SS6	240 Winter		100	+40%	1/15 Summer				84.395	1.985	0.000
S1.006	SS7	240 Winter		100	+40%					81.030	-0.120	0.000
S1.007	SS8	240 Winter		100	+40%					80.113	-0.162	0.000

Half Drain Pipe							
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded
S1.000	SS1	0.80			25.2	SURCHARGED	
S1.001	SS2	1.63			67.0	FLOOD	3
S2.000	SS11	1.11			246.0	SURCHARGED	
S1.002	SS3	0.35			84.8	SURCHARGED	
S1.003	SS4	0.30			87.9	SURCHARGED	
S3.000	SS10	2.51			123.6	FLOOD RISK	

BGP		Page 14
Wellington House, Wellington Court Preston Farm Stockton on Tees, TS18 3TA	Cumbria Innovation Quarter SW Model Area 2	
Date 18/03/2022 11:11	Designed by JJH	
File 2022.03.17 - SW MODEL - AREA 2.MDX	Checked by JC	
XP Solutions	Network 2020.1.3	

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

		Half Drain		Pipe			
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded
S1.004	SS5	0.09			24.3	SURCHARGED	
S1.005	SS6	0.22			22.4	SURCHARGED	
S1.006	SS7	0.44			22.4	OK	
S1.007	SS8	0.18			22.4	OK	

Calculated by:

Site name:

Site location:

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

Site Details

Latitude:

Longitude:

Reference:

Date:

Runoff estimation approach

Site characteristics

Total site area (ha):

Methodology

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics	Default	Edited
SAAR (mm):	1276	1276
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

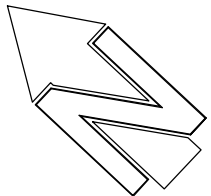
Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	22.47	22.47
1 in 1 year (l/s):	19.55	19.55
1 in 30 years (l/s):	38.21	38.21
1 in 100 year (l/s):	46.75	46.75
1 in 200 years (l/s):	53.27	53.27

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

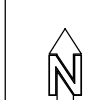


Appendix F

Proposed Drainage Philosophy Plans



Proposed Foul Water from Area 2 to discharge to Existing
United Utilities 3000 Combined Sewer as annotated via new
connection at unrestricted rate under a Section 106 (to be
organised by the contractor). UU approved contractor to make
connection.
Assumed Outfall MH CL = 84.000
Assumed Outfall Connection IL = 81.975
MH to be located and existing levels determined prior to further
development.



*NOTE: 430m² Storage required based on 1 in 100 year storm + 40% climate change and 40.0 l/s discharge rate.
Tank Depth = 2.0m / Tank Base = 82.600
Tank Dimensions = 10.0m x 22.0m x 2.0m
Vent pipe & access points TBC by Manufacturer.

- The proposals comprise the construction of 2 no. buildings, Plots 2.1 and 2.2.
- The surface water flows are to be restricted to a greenfield discharge rate of 22.4 l/s.
- Greenfield discharge rate based on developable greenfield boundary (approximately 2.3060 ha), this excludes the public right of way footpath.
- The surface water drainage design for the new plots and car park are based on 1 in 100 year storm + 40% climate change and SW flows restricted in accordance with greenfield discharge rate noted above which is to be agreed with the LLFA and Environment Agency. The location of SW discharge is to Nor Beck watercourse.
- Surface Water Attenuation has been located prior to the final connection in line with good practice. The attenuation is provided in the form of an attenuation tank which requires an approximate volume of 430m³.
- Surface Water run off from the proposed car parking area is to be treated through direct infiltration into tanked permeable paved parking bays.
- Surface Water run off from the service yard and circulation road are to be treated by a petrol interceptor.
- Proposed Foul Water is to discharge to the existing United Utilities 3000 combined sewer located northwest of the new development at an unrestricted rate. Foul Water connection point and discharge rate has been agreed with United Utilities.

Area 2 Reference Drawings
CMIQ-BGP-03-XX-DR-C-52-03101 - Impermeable Areas Plan
CMIQ-BGP-03-XX-DR-C-52-03102 - Flood Exceedance Flow Route
CMIQ-BGP-03-XX-DR-C-52-03130 - Drainage Plan
CMIQ-BGP-03-XX-DR-C-52-03131 - Manhole Schedule

DO NOT SCALE

1. All Information provided is for planning purposes only and should not be relied upon for either costing or construction.
2. Proposed finished floor levels are indicative and are based on existing topographic data.
3. All drainage outfall levels are to be investigated and confirmed prior to detailed design. Engineer to be informed of findings. Current design shown is indicative.
4. All Surface water discharge rates and methods of discharge are to be agreed with the Lead Local Flood Authority and Environment Agency.
5. All Foul water discharge rates are to be agreed with United Utilities through return of a predevelopment enquiry.

Proposed SW Sewer

Proposed FW Sewer

Nor Beck (Culverted)

Existing SW Sewer

Existing FW Sewer

Existing UU Combined Sewer

Area 2 Site Boundary

Proposed Attenuation Tank

Proposed Building

Tanked Permeable Paved Parking Bays with perf. pipe

Proposed Impermeable Area	=	8870m ² (0.8870Ha.)
Greenfield Discharge Rate	=	<u>22.4 l/s</u>
Storage Required	=	430m³

Issued for Planning	JJH	P02	JC	xx.03.2022
FIRST DRAFT	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, Billingham George & Partners will consider that its product has been validated, unless in a period not exceeding 90 working days, the client advises to the contrary.



Billinghurst George & Partners

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Client
Copeland Borough Council

Project	Cleator Moor Innovation Quarter
---------	---------------------------------

Project No.
21T2034

Drawing Title

Area 2 - Drainage Plan

Drawn JJH	Date Nov 2021	Checked JC	Date Nov 2021	Size A1	Scale 1:1000	Class. 52	Rev. P02
Location CMIQ	Originator BGP	Volume 03	Level XX	Type DR	Role C	Unique No. 03130	

File Reference

CMIQ-BGP-03-XX-DR-C-52-03130

DO NOT SCALE

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

Surface Water Drainage Manhole Schedule											
MH Ref.	Cover Level	Invert Level	MH Type	MH Dia. (m)	Cover Type	D/S Pipe Length	Depth to Invert	Pipe Size (m)	Depth to Soffit	Gradient	Comments
S1	87.625	86.200	Conc.	1.200	D400	70.873	1.425	0.150	1.275	1:31.2	
S2	85.350	83.850	Conc.	1.200	D400	66.514	1.500	0.225	1.275	1:149.5	
S3	86.785	83.330	Conc.	1.350	D400	69.371	3.455	0.450	3.005	1:150.8	
S4	85.350	82.870	Conc.	1.350	D400	41.940	2.480	0.450	2.030	1:95.3	
S5	85.350	82.430	Conc.	2.100	D400	19.521	2.920	0.450	2.470	1:79.7	
S6	85.000	82.185	Conc.	2.100	D400	27.696	2.815	0.225	2.590	1:22.0	Flow Control Chamber at 22.4 l/s
S7	82.350	80.925	Conc.	1.200	D400	87.691	1.425	0.225	1.200	1:100.2	
S8	82.200	80.050	Conc.	1.200	D400	38.906	2.150	0.225	1.925	1:15.3	
S9	79.000	77.500	Conc.	N/A	D400	N/A	1.500	0.225	1.275	N/A	Headwall
S10	85.350	83.000	Conc.	1.200	D400	34.062	2.350	0.225	2.125	1:98.7	
S11	88.050	86.050	Conc.	1.200	D400	58.894	2.000	0.300	1.700	1:22.9	

Issued for Planning	JJH	P02	JC	23.03.2022
FIRST DRAFT	JJH	P01	JC	05.11.2021
AMENDMENT	BY	REV	CHK	DATE

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

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Client

Copeland Borough Council

Project	Project No.
---------	-------------

Cleator Moor Innovation Quarter

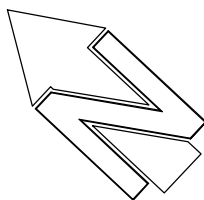
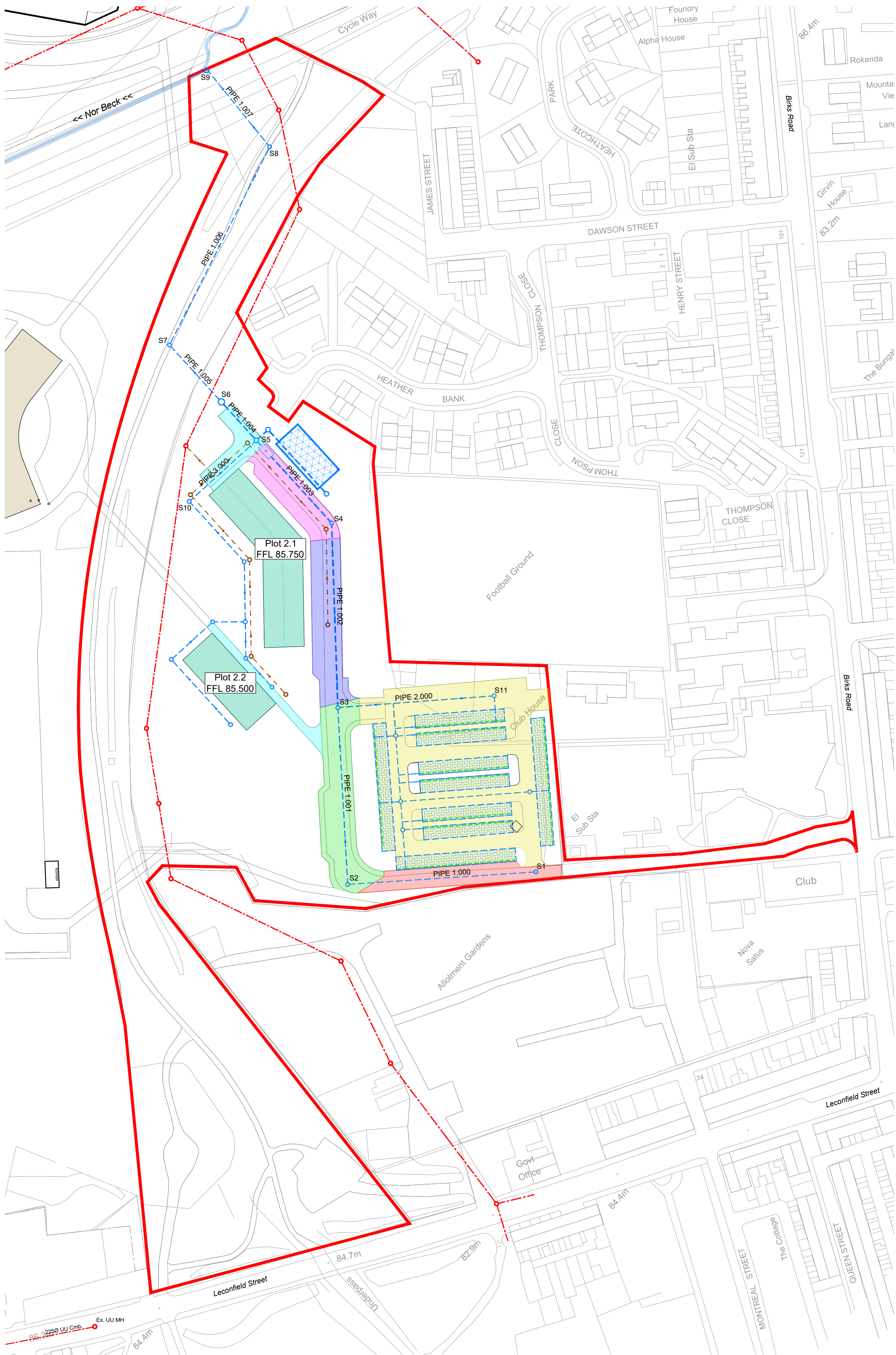
Drawn JJH	Date Nov 2021	Checked JC	Date Nov 2021	Size A1	Scale 1:1000	Class. 52	Rev. P02
Location CMIQ	Originator BGP	Volume 03	Level XX	Type DR	Role C	Unique No. 03131	

File Reference

CMIQ-BGP-03-XX-DR-C-52-03131

Area 2 Reference Drawings

CMIQ-BGP-03-XX-DR-C-52-03101 - Impermeable Areas Plan
 CMIQ-BGP-03-XX-DR-C-52-03102 - Flood Exceedance Flow Route
 CMIQ-BGP-03-XX-DR-C-52-03130 - Drainage Plan
 CMIQ-BGP-03-XX-DR-C-52-03131 - Manhole Schedule



DO NOT SCALE

Legend - Area 2

- Pipe 1.000
Area = 490m² = (0.0490ha)
Fall = 2.275m / Length = 70.873m
- Pipe 1.001
Area = 930m² = (0.0930ha)
Fall = 0.445m / Length = 66.514m
- Pipe 1.002
Area = 700m² = (0.0700ha)
Fall = 0.460m / Length = 69.371m
- Pipe 1.003
Area = 460m² = (0.046ha)
Fall = 0.440m / Length = 41.940m
- Pipe 1.004
Area = 0m² = (0.0ha)
Fall = 0.245m / Length = 19.521m
- Pipe 1.005
Area = 0m² = (0.0ha)
Fall = 1.260m / Length = 29.696m
- Pipe 1.006
Area = 0m² = (0.0ha)
Fall = 0.875m / Length = 87.691m
- Pipe 1.007
Area = 0m² = (0.0ha)
Fall = 2.550m / Length = 38.906m
- Pipe 2.000
Area = 4200m² = (0.4200ha)
Fall = 2.570m / Length = 58.894m
- Pipe 3.000
Area = 2090m² = (0.2090ha)
Fall = 0.345m / Length = 34.062m

Impermeable Areas Total = 8870m² = (0.8870ha)

Issued for Planning	JJH	P02	JC	23.03.2022
FIRST DRAFT	JJH	P01	JC	05.11.2021
AMENDMENT	BY	REV	CHK	DATE

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

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Client	Copeland Borough Council
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Project	Cleator Moor Innovation Quarter	Project No.	21T2034
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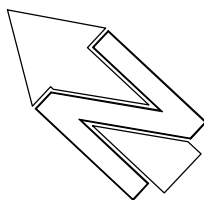
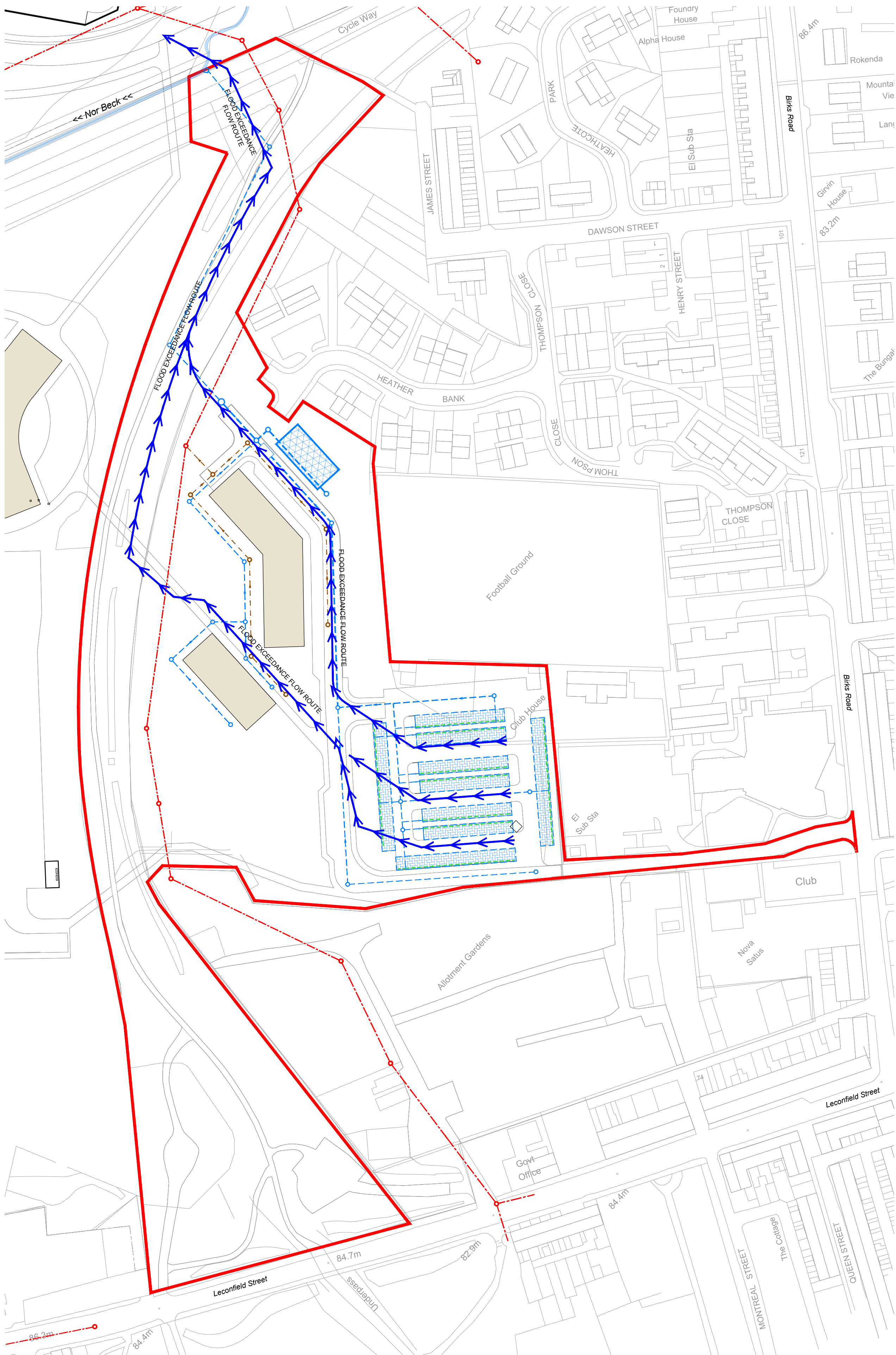
Drawing Title	Area 2 - Impermeable Areas Plan
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Drawn	Date	Checked	Date	Size	Scale	Class.	Rev.
JJH	Nov 2021	JC	Nov 2021	A1	1:1000	52	P02
Location	Originator	Volume	Level	Type	Role	Unique No.	
CMIQ	BGP	03	XX	DR	C	03101	

File Reference	CMIQ-BGP-03-XX-DR-C-52-03101
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Area 2 Reference Drawings

- CMIQ-BGP-03-XX-DR-C-52-03101 - Impermeable Areas Plan
- CMIQ-BGP-03-XX-DR-C-52-03102 - Flood Exceedance Flow Route
- CMIQ-BGP-03-XX-DR-C-52-03130 - Drainage Plan
- CMIQ-BGP-03-XX-DR-C-52-03131 - Manhole Schedule



DO NOT SCALE

Notes

1. 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
- Area 2 Redline Boundary
- Proposed Attenuation Tank
- Permeable Paved Parking Bays (Tanked) with Perforated Pipe
- Flood Exceedance Flow Path (Based on a Complete Drainage System Failure)
- FLOOD EXCEEDANCE FLOW ROUTE

Area 2 Reference Drawings							
CMIQ-BGP-03-XX-DR-C-52-03101 - Impermeable Areas Plan							
CMIQ-BGP-03-XX-DR-C-52-03102 - Flood Exceedance Flow Route							
CMIQ-BGP-03-XX-DR-C-52-03130 - Drainage Plan							
CMIQ-BGP-03-XX-DR-C-52-03131 - Manhole Schedule							

Issued for Planning	JJH	P02	JC	23.03.2022
FIRST DRAFT	JJH	P01	JC	05.11.2021
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Rev P = Preliminary T = Tender C = Construction LCI = Last Construction Issue

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Client		Copeland Borough Council	
--------	--	--------------------------	--

Project		Project No.	
Cleator Moor Innovation Quarter		21T2034	

Drawing Title		Area 2 - Flood Exceedance Flow Path	
---------------	--	-------------------------------------	--

Drawn	Date	Checked	Date	Size	Scale	Class.	Rev.
JJH	Nov 2021	JC	Nov 2021	A1	1:1000	52	P02

Location	Originator	Volume	Level	Type	Role	Unique No.
CMIQ	BGP	03	XX	DR	C	03102

File Reference		CMIQ-BGP-03-XX-DR-C-52-03102	
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Appendix G

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

S220142

Project Name

Site C-1, Leconfield, Cleator Moor

Client

Copeland Borough Council

Date

March 2022

DRG Number

Figure 2

Scale

1:1500 @ A4 [DO NOT SCALE]

- Legend Key
- Locations By Type - Empty
 - ◆ Locations By Type - BH
 - Locations By Type - RO
 - Locations By Type - TP
 - ▭ Project Bounds - Project Bounds



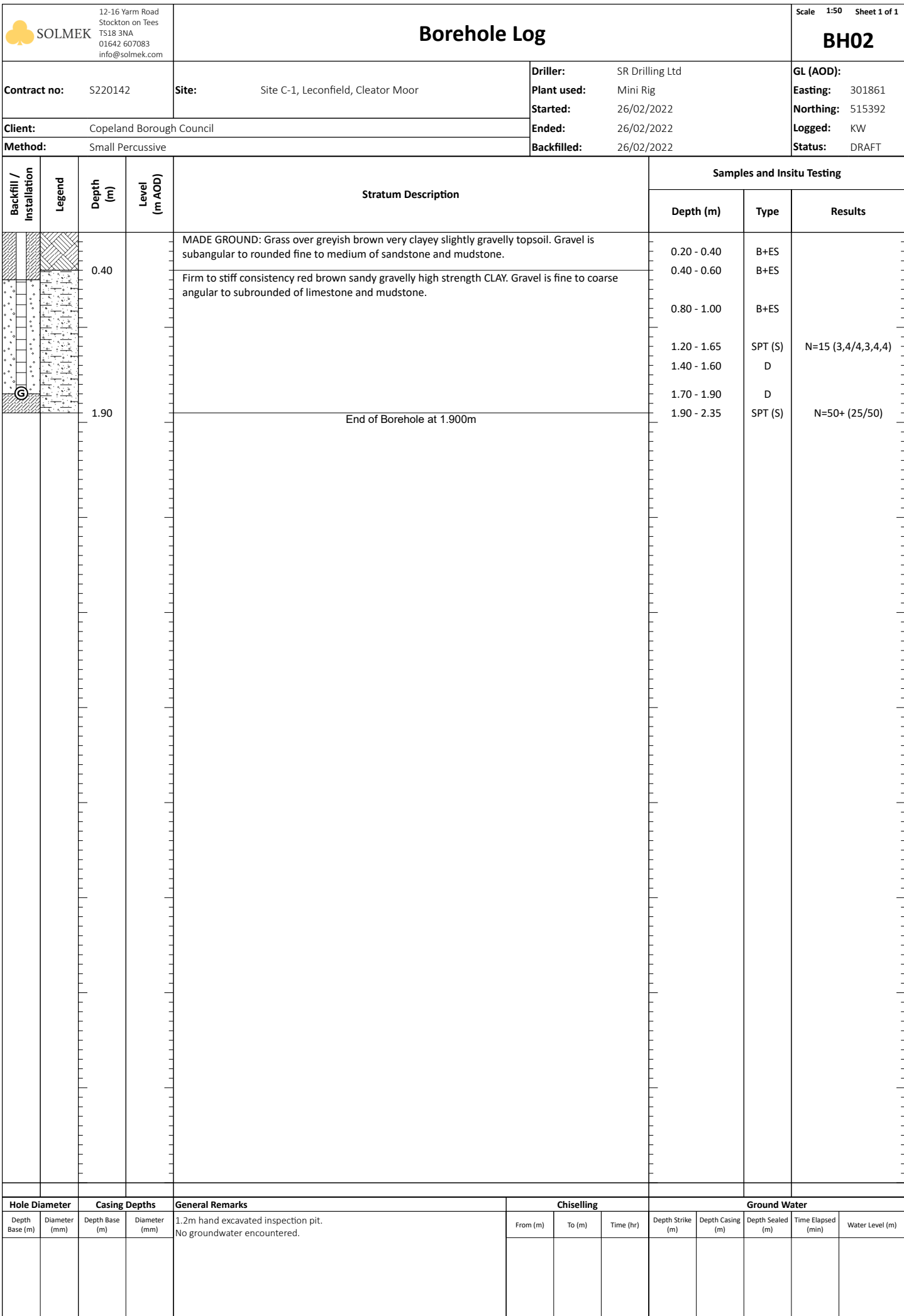
Borehole Log

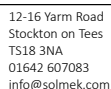
BH01

GL (AOD):	
Easting:	301854
Northing:	515371
Logged:	KW
Status:	DRAFT

Method:	Small Percussive
----------------	------------------

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
					1.2m hand excavated inspection pit. No groundwater encountered.							





Borehole Log

Scale	1:50	Sheet 1 of 1
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BH03

Contract no: S220142

Site: Site C-1, Leconfield, Cleator Moor

Driller:	SR Drilling Ltd
Plant used:	Mini Rig
Started:	26/02/2022
Ended:	26/02/2022
Backfilled:	26/02/2022

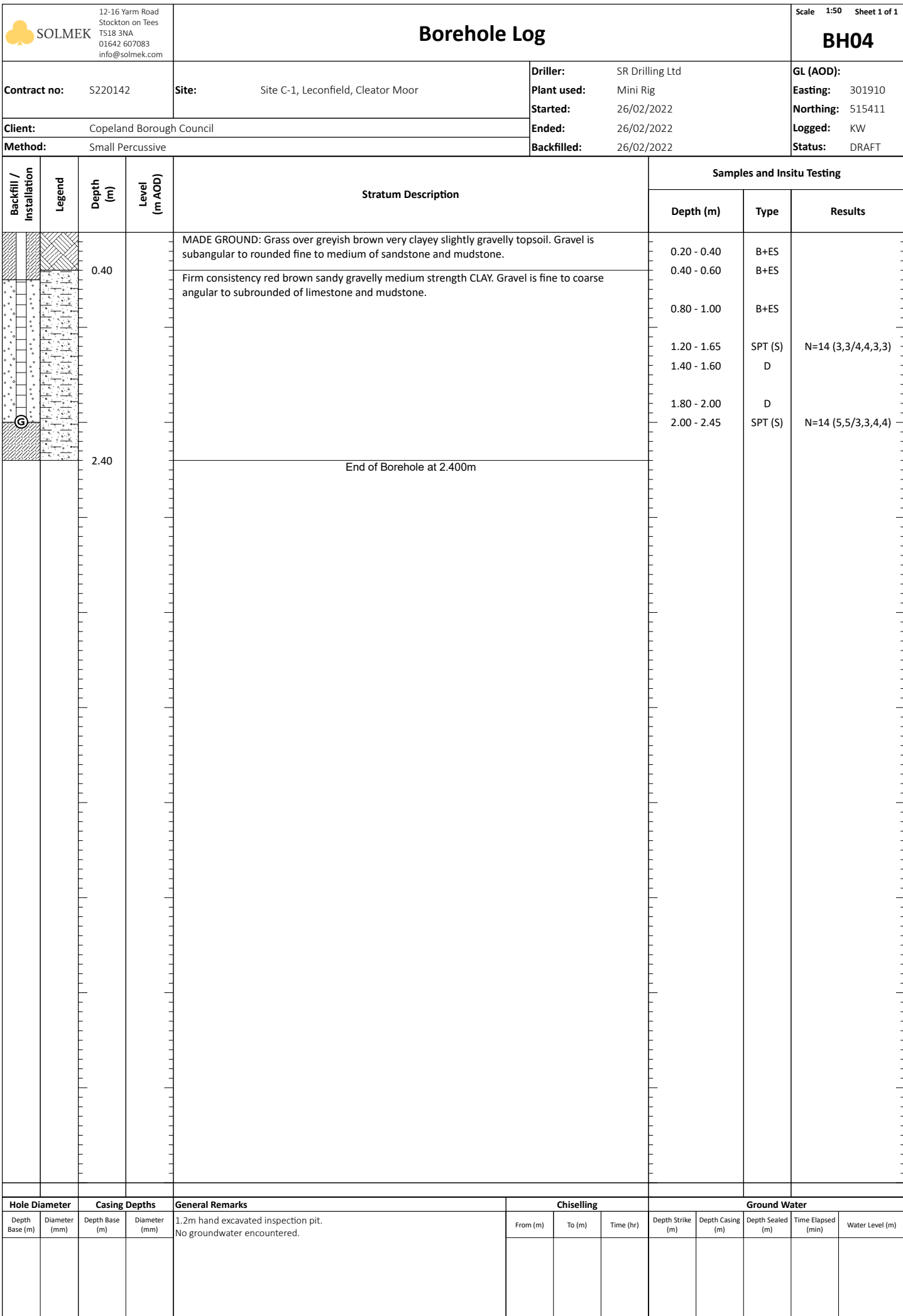
GL (AOD):	
Easting:	301862
Northing:	515435
Logged:	KW
Status:	DRAFT

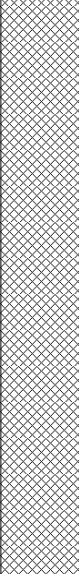
Client:	Copeland Borough Council
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Method:	Small Percussive
----------------	------------------

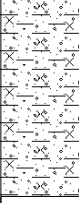
[illegible]

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
					1.2m hand excavated inspection pit. No groundwater encountered.							



 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No TP01 Sheet 1 of 1	
Project Name: Site C-1, Leconfield, Cleator Moor				Project No. S220142		Co-ords: 301863E - 515285N Level:		Date 24/02/2022	
Plant Used: JCB 3CX				Dimensions (m):		1.30 		Scale 1:26	
Client: Copeland Borough Council				Depth 2.30		0.80 		Logged KW	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.20	B+ES		0.20			MADE GROUND: Grass over greyish brown very clayey slightly gravelly topsoil. Gravel is fine to medium subangular to angular of sandstone, mudstone and brick.		
	0.60 - 0.80	B+ES					MADE GROUND: Soft to firm consistency brown slightly sandy very gravelly clay (reworked). Gravel is fine to medium angular of brick, sandstone, plastic, metal, slag and wood. Occasional full bricks.		
	1.80 - 1.90	B					Grey crystallised weathered LIMESTONE. Joints infilled with orange brown clay.		
					2.20 2.30		End of Pit at 2.300m		
Remarks: No groundwater encountered.									
Stability: Pit walls stable									

 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: Site C-1, Leconfield, Cleator Moor				Project No. S220142		Co-ords: 301835E - 515333N Level:		Date 24/02/2022	
Plant Used: JCB 3CX				Dimensions (m): 1.30		Scale 1:26		Logged KW	
Client: Copeland Borough Council				Depth 2.00		0.80			
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.20	B+ES		0.30			MADE GROUND: Grass over greyish brown very clayey slightly gravelly topsoil. Gravel is subangular to rounded fine to medium of sandstone and mudstone.		
	0.50	B+ES				Firm consistency orange brown sandy very gravelly medium strength silty CLAY. Gravel is fine to medium subrounded to rounded of sandstone and mudstone.			
	1.00	HV	70kPa						
	1.50	B							
				1.90			Highly weathered black SHALE.		
				2.00			End of Pit at 2.000m		
Remarks: No groundwater encountered.									
Stability: Pit walls stable									

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No TP03 Sheet 1 of 1	
Project Name: Site C-1, Leconfield, Cleator Moor				Project No. S220142		Co-ords: 301820E - 515379N Level:		Date 24/02/2022	
Plant Used: JCB 3CX				Dimensions (m): Depth 0.90 0.80 1.20		Scale 1:26		Logged KW	
Client: Copeland Borough Council									
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.20	B+ES		0.20			MADE GROUND: Grass over greyish brown very clayey slightly gravelly topsoil. Gravel is subangular to rounded fine to medium of sandstone and mudstone.		
	0.80 0.80	B+ES HV	73kPa	0.90			Firm consistency orange brown sandy very gravelly medium strength silty CLAY. Gravel is fine to medium subrounded to rounded of sandstone and mudstone.		
							Grey crystallised weathered LIMESTONE. Joints infilled with orange brown clay. End of Pit at 0.900m		1
									2
									3
									4
									5
Remarks: No groundwater encountered.									
Stability: Pit walls stable									



TrialPit No
TP04
Sheet 1 of 1

Date
24/02/2022

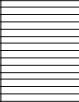
Scale
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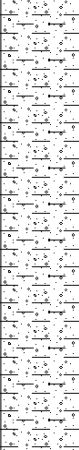
Logged
KW

[illegible]

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

Stability: Pit walls stable

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No TP05 Sheet 1 of 1	
Project Name: Site C-1, Leconfield, Cleator Moor				Project No. S220142		Co-ords: 301871E - 515413N Level:		Date 24/02/2022	
Plant Used: JCB 3CX				Dimensions (m):		1.30 		Scale 1:26	
Client: Copeland Borough Council				Depth 1.60		0.80 		Logged KW	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.20	B+ES		0.30			MADE GROUND: Grass over greyish brown very clayey slightly gravelly topsoil. Gravel is subangular to rounded fine to medium of sandstone and mudstone.		
	0.80 - 0.90	B+ES					Firm consistency light brown pink slightly sandy very gravelly CLAY of low cobble content. Gravel is fine to coarse subrounded to angular of sandstone and shale.		
	1.20 - 1.30	B		1.20			Reddish/pink highly weathered MUDSTONE recovered as fine to coarse subangular to angular gravel.		
				1.60			End of Pit at 1.600m		
1 2 3 4 5									
Remarks: No groundwater encountered.									
Stability: Pit walls stable									

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No TP06 Sheet 1 of 1	
Project Name: Site C-1, Leconfield, Cleator Moor				Project No. S220142		Co-ords: 301885E - 515453N Level:		Date 24/02/2022	
Plant Used: JCB 3CX				Dimensions (m):		1.30 		Scale 1:26	
Client: Copeland Borough Council				Depth 2.10		0.80 		Logged KW	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.20	B+ES		0.20			MADE GROUND: Grass over greyish brown very clayey slightly gravelly topsoil. Gravel is subangular to rounded fine to medium of sandstone and mudstone.		
	0.60 - 0.80	B+ES					Firm to stiff consistency red brown sandy very gravelly high strength CLAY. Gravel is fine to medium subrounded to angular of sandstone, shale and mudstone.		
	1.60 - 1.80	B		1.80			Highly weathered red SHALE recovered as fine to medium subangular gravel.		
				2.10			End of Pit at 2.100m		
Remarks: No groundwater encountered.									
Stability: Pit walls stable									

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com				Rotary Open Hole Log						Scale 1:150 Sheet 1 of 1				RBH01	
Contract no: S220142				Site: Site C-1, Leconfield, Cleator Moor				Driller: Bainbridge Brothers Ltd				GL (AOD):			
								Plant used: Beretta T151				Easting: 301869.22			
Client: Copeland Borough Council								Started: 04/03/2022				Northing: 515306.90			
Method: Rotary Openhole								Ended: 04/03/2022				Logged: KW			
								Backfilled: 04/03/2022				Status: DRAFT			
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures							
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture				
		0.40		MADE GROUND: Grass over brown clayey topsoil. Firm consistency reddish brown sandy CLAY.											
		2.30		Black soft silty gravelly CLAY											
		5.20		Whitish grey LIMESTONE.											
		5.80		COAL.											
		5.90		Black SILTSTONE with thin mudstone bands.											
		9.80		Whitish grey LIMESTONE (Noted as very hard by driller, drill-bit damage).											
		20.20		End of Borehole at 20.200m											
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)	
6.00	102	6.00	102			5.20	20.20	Water	100						
				1.2m hand excavated inspection pit. No groundwater encountered.											

 SOLMEK 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Rotary Open Hole Log							Scale 1:150 Sheet 1 of 2		RBH02			
Contract no: S220142		Site: Site C-1, Leconfield, Cleator Moor				Driller: Bainbridge Brothers Ltd		GL (AOD):		Easting: 301825.13				
Client: Copeland Borough Council						Plant used: Beretta T151		Started: 03/03/2022		Northing: 515401.00				
Method: Rotary Openhole						Ended: 03/03/2022		Logged: KW		Status: DRAFT				
Backfilled: 03/03/2022														
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures						
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture			
		0.40		MADE GROUND: Grass over brown clayey topsoil. Firm consistency reddish brown sandy CLAY.										
		2.80		Whitish grey LIMESTONE (Noted as very hard by driller).										
		14.60		Grey SANDSTONE.										
		17.10		Black SILTSTONE with thin mudstone bands.										
		23.40		Grey SANDSTONE.										
		25.80		Black SILTSTONE with thin mudstone bands.										
		29.00		Whitish grey LIMESTONE (Noted as very hard by driller).										
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. No groundwater encountered.		From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.50	102	4.50	102			2.80	40.00	Water	100					

 SOLMEK 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com				Rotary Open Hole Log							Scale 1:150 Sheet 1 of 1 RBH03				
Contract no: S220142				Site: Site C-1, Leconfield, Cleator Moor				Driller: Bainbridge Brothers Ltd				GL (AOD):			
								Plant used: Beretta T151				Easting: 301907.67			
Client: Copeland Borough Council								Started: 02/03/2022				Northing: 515453.28			
Method: Rotary Openhole								Ended: 02/03/2022				Logged: KW			
								Backfilled: 02/03/2022				Status: DRAFT			
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			Coring / Fractures							
					Depth (m)	Type	Results	TCR (%)	SCR (%)	RQD (%)	Fracture				
		0.30		MADE GROUND: Grass over brown clayey topsoil. Firm consistency reddish brown sandy CLAY.											
		2.70		Grey SANDSTONE.											
		5.00		Whitish grey LIMESTONE (Noted as very hard by driller, drill-bit damaged).											
		11.00		Black SILTSTONE.											
		20.00		Whitish grey LIMESTONE.											
		30.00		End of Borehole at 30.000m											
Hole Diameter		Casing Depths		General Remarks		Flush Returns				Ground Water					
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)			From (m)	To (m)	Flush Type	Flush (%)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)	
3.00	102	3.00	102			2.70	30.00	Water	100						

Norwest Holst Soil Engineering Ltd.

Trial Pit No.

8

Contract No. F5911

Location Cleator Moor

Client Copeland Borough Council

Excavation Plant JCB 3C III

Dimensions (l x b x h) 2.50 x 1.00 x 2.50 m

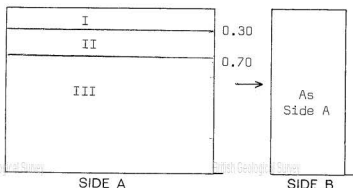
TRIAL PIT LOG

Chainage British Geological Survey

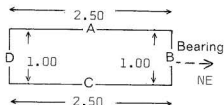
Ground Level 85.58 m.A.O.D.

Date 3/4/84

ELEVATIONS.—



PLAN (Not to scale)



SAMPLES

No. & Type	Depth m.
1B	0.50
2B	1.10
3B	2.20

No. Depth m.

STRATA DESCRIPTION

I	G.L. 0.30	Loose dark grey friable sandy silty clay with turf (TOPSOIL).
II	0.30-0.70	Firm, yellowish brown with brown mottle very sandy silty CLAY with occasional gravel and cobbles.
III	0.70-2.50	Stiff dark reddish brown with light grey mottle very gravelly sandy silty CLAY with fresh to slightly weathered limestone and sandstone cobbles (BOULDER CLAY).

Cv/Cp
kN/m²

NOTES Cv/Cp: Approximate value of undrained shear strength from hand vane/penetrometer

Groundwater: None.

Pumping: None.

Supports/Stability: No supports used/stable



Appendix H

Flood Maps for Planning

Flood map for planning

Your reference
SITE C

Location (easting/northing)
301860/515379

Created
29 Sep 2021 14:55

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

This means:

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

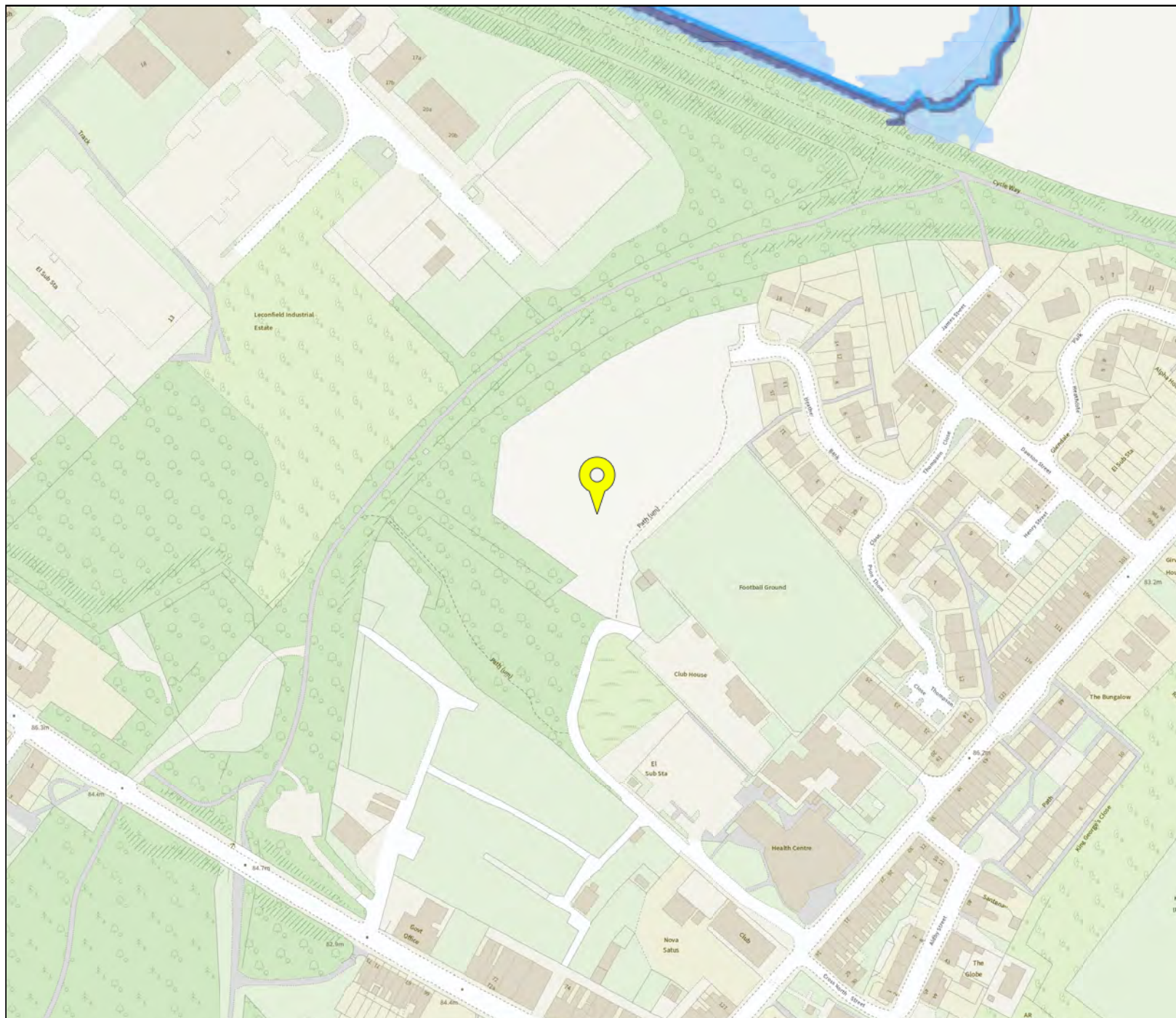
Notes

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

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

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

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



Flood map for planning

Your reference

SITE C

Location (easting/northing)

301860/515379

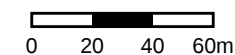
Scale

1:2500

Created

29 Sep 2021 14:55

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





Appendix I

United Utilities, LLFA and EA Predevelopment Correspondence

James Herbert

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 28 October 2021 15:41
To: James Herbert
Cc: Wastewater Developer Services
Subject: {Disarmed} Pre Development Enquiry for: Leconfield Industrial Estate UU Reference Number : 4200044472

Good afternoon James,

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

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

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

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

Foul Water

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

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

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

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

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

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

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

Surface Water

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

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

This is outlined as follows, in order of priority:

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

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

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

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

Infiltration

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

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

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

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

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

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

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

Waterbody

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

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

Highway Drainage

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

Public Sewer

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

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

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

Levels

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

Land drainage / Overland flows / track drainage

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

SuDS

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

Section 104 Pre application form (1b)

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

Existing Wastewater Assets Crossing the Site

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

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

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

Existing Water Assets Crossing the Site

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

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

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

Connection Application

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

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

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

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

Kind regards,



Mohammed Aljafarawi

Developer Engineer
Developer Services & Metering
Customer Services

Email: Mohammed.Aljafarawi@uuplc.co.uk
[unitedutilities.com](https://www.unitedutilities.com)

If you have received a great service today why not tell us?

Visit: [unitedutilities.com/wow](https://www.unitedutilities.com/wow)

Did you know we now have a live chat facility available to you Mon to Friday 8 -5pm. You just click on the orange live chat box on our webpage and one of our advisors will be ready to chat to you and help you with your enquiry <https://www.unitedutilities.com/builders-developers/> or you can email us at developerserviceswater@uuplc.co.uk

Barbara Vernon

For the attention of Barbara Vernon

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

Dear Barbara Vernon

PRE-PLANNING APPLICATION ADVICE

Pre-App Reference No. PPA/2021/2180

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

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

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

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

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

Overview

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

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

Lead Local Flood Authority Advice and Comments

Existing Flood Risks:

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

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

Drainage Strategy/Design:

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

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

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

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

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

Opportunities:

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

Information Necessary to Support a Planning Application

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

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

Proviso

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

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

Yours sincerely

Pieter Barnard

Lead Officer - Flood & Development Management 01228221331

James Herbert

From: NWNorthPlanning <CLPlanning@environment-agency.gov.uk>
Sent: 18 October 2021 17:27
To: James Herbert
Subject: {Disarmed} RE: New Development : Leconfield Industrial Estate, Cleator-Moor (Site B)

Dear Sir,

Thank you for your email.

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

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

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

Regards,

Liz Locke

Planning Advisor Sustainable Places, Cumbria and Lancashire.

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

Liz.locke@environment-agency.gov.uk

External: | Mobile: 07795 968515
Working days: Monday to Thursday



From: James Herbert [mailto:James.Herbert@bgp-teesside.co.uk]
Sent: 05 October 2021 16:25
To: NWNorthPlanning <CLPlanning@environment-agency.gov.uk>
Subject: New Development : Leconfield Industrial Estate, Cleator-Moor (Site B)

FAO Flood Risk Department

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