

G S A

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**DRAINAGE STRATEGY REPORT
FOR
PROPOSED COMMERCIAL UNITS AT
SITE 1 SNECKYEAT INDUSTRIAL ESTATE, WHITEHAVEN**



**FOR
NORTHERN TRUST CO. LTD**

Project : 2022.262
Date : Aug 23
Engineer : I.Schofield

Report Control

Report Title	Drainage Strategy Report			
Project Number	2020.221			
Revision	Issue	Date	Prepared	Approved
01	Issue 1	18/08/23	I. Schofield	G. Schofield

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1.0 Brief

Graham Schofield Associates Ltd have been appointed by Northern Trust Co. Ltd to undertake a Drainage Strategy in support of a planning application to construct 5 new commercial/light industrial units on existing undeveloped plots on Sneckyeat Industrial Estate, Whitehaven.

1.1 Limitations

The opinions expressed within this review are based upon sourced documentation available. Graham Schofield Associates Ltd have not undertaken any or quantitative assessments or special investigations other than monitoring the required excavation of the trial holes required for the percolation tests.

The report is based upon current guidance and may therefore require revision to incorporate any future changes in guidance or legislation.

2.0 Existing Site Description and Location

2.1 Site Location

The site is located at National Grid Reference 299025 (E), 516185 (N) and is currently a vacant plot used informally for parking it is a mixture of topsoil and wild growth. The site is loosely rectangular in shape and has an area of 0.329 Ha. Figure 1 below shows the site boundary within the local context.



Figure 1: Site Location Plan

The site is bounded by Sneckyeat Road (access road which leads onto the spine road Sneckyeat Road) to the north, the mews court for Units 8a, b and c to the west a stone surfaced car park to the east and West Cumberland Hospital to the south.

2.2 **Notable Features**

A topographical survey of the site was undertaken by JLP Surveying Consultants Ltd. in February 2023 and provides level data at metres above Ordnance Survey datum (mAD0). An inspection of the data indicates the ground levels fall fairly steeply from north east to south west, with a range in levels across site of 96.792m AOD at the south western boundary of the development and a maximum of 99.500m AOD at the north eastern boundary. The topographical survey referenced above is included within Appendix A of this report.

3.0 **Development Proposals**

The proposal for the development is to construct two blocks of commercial/light industrial units. Block 1 will consist of 2 no. units at 206sqm and 2 no. further units at 101sqm, to provide 4no. units in total. Block 2 is provided over the same footprint as Block 1 but will consist of 1no. unit only at 620sqm. The two blocks are to be located along the East and West boundaries of the site with the central 'corridor' provided for car parking, service yard and access/egress circulation. A copy of the development proposals are provided in Appendix B for information.

4.0 **Surface Water Management**

This drainage strategy report aims to examine the current site and its context in terms of any existing drainage regimes. Based on this information and paying due regard to any Environmental / Topographical constraints associated with the site, examination of available options for the satisfactory disposal of foul and surface water flows will be investigated. From these investigations a preferred Surface Water Management Plan is to be developed for later detailed design development.

The basis of this strategy will be to identify a robust and workable drainage solution that can be delivered for the site that is fully compliant with current Planning Policy, Building Regulations, and design guidance. The site is in Flood Zone 1, the site is less than 1 ha and does not appear to have critical drainage problems as notified by the Environment Agency or identified in the Copeland Borough Council Strategic Flood Risk Assessment.

5.0 **Existing Site Drainage Arrangements & Flood Risk**

5.1 **Existing Site Drainage**

From the asset search information and CCTV drainage investigation it was determined that there is a 225Ø private surface water sewer located along the top of the embankment between Sneckyeat Industrial Estate and West Cumberland Hospital. This SW drain appears to service the lower sections of Sneckyeat Industrial Estate and it is believed that this sewer discharges to a culvert located to the east of Hensingham. The following referenced information can be found in the

Appendices: United Utilities Sewer Records in Appendix C and Drain Alert Drainage Investigation in Appendix D

Existing Flood Risk

The Environment Agency Flood Map for Planning has been reviewed to initially assess the level of flood risk for the area - see Figure 2 below. The flood map shows areas that are a risk of flooding in a 1% (1 in 100 year) fluvial or a 0.5% (1 in 200 year) tidal and a 0.1% (1 in 1000 year) Annual Exceedance Probability (AEP).

This information indicates that the site lies within an area defined as Flood Zone 1 "Low Probability" envelope, which is assessed as having a less than 0.1% annual probability of rivers or sea flooding in any year by reference to National Planning Policy Framework (NPPF). The flood risk mapping indicates that the site is not within an area identified as being at risk. The Flood Map does not provide information on the depth of flooding associated with flood zones.

Flood map showing the flood zone your site is in

The map shows the flood risk to your site and the surrounding area.

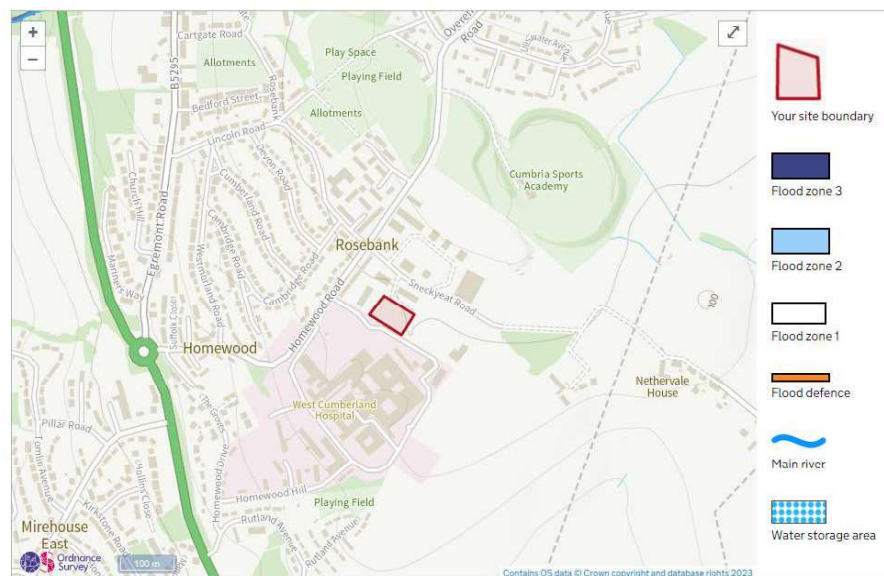


Figure 2: Environment Agency Flood Mapping for Planning

The Environment Agency also predicts the depth of flooding associated with each probability scenario. Figure 3 below indicates extent of depth associated with the High Probability risk. A high probability means that each year, the area has a chance of flooding greater than 1 in 30 (3.3%). In this scenario, the predicted water depth for the site is not at high risk of flooding.

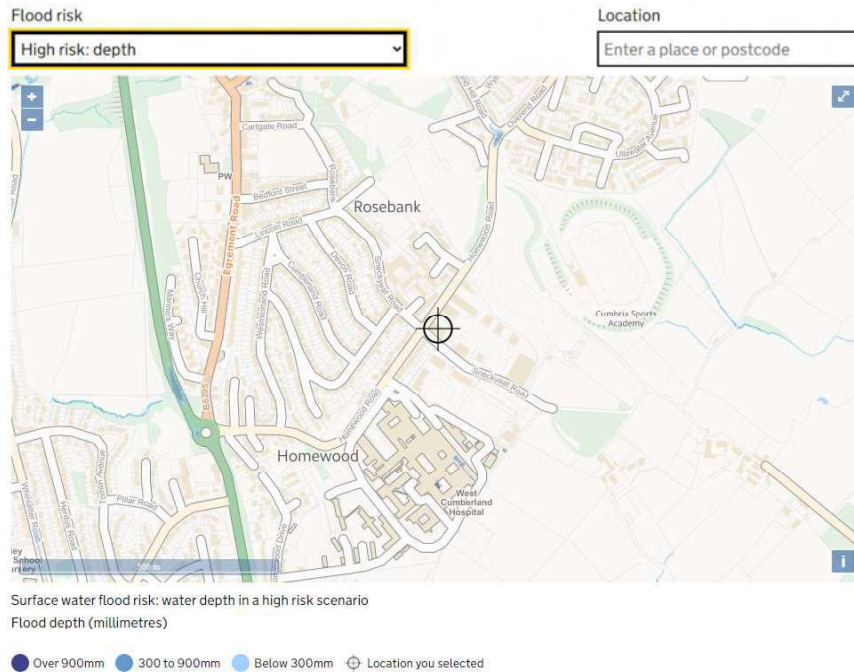


Figure 3: Environment Agency Surface Water Flooding – High Risk: Depth Extract

Surface Water Flooding has also been considered for the Low Probability event, Figure 4 below. In this respect, a Low Probability indicates flooding occurring because of rainfall will have an annual probability of occurring between 0.1% (1 in 1000 years) and 1% (1 in 100 years). The predicted water depth for the site is not at high risk of flooding.

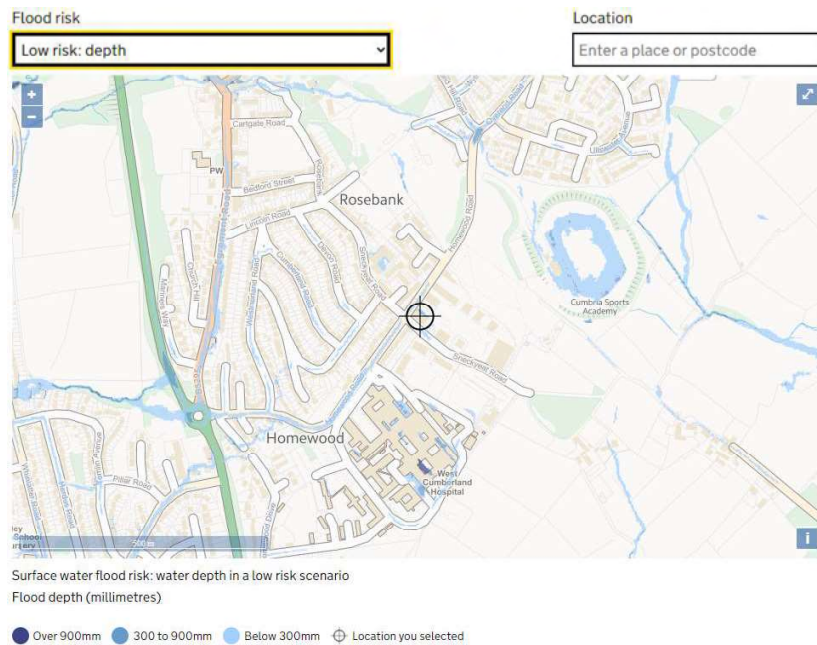


Figure 4: Environment Agency Surface Water Flooding –Low Risk: Depth Extract

6.0 Proposed Site Drainage Arrangements

The current site area is 0.33Ha which is currently a vacant plot on the industrial estate comprising grass and topsoil over made ground. The proposals include two blocks of single storey commercial units, Block 1 is 43.3m long by 15.3m wide located along the

western boundary of the site. Block 2 is of a similar footprint size and located along the eastern boundary of the site. The remaining central ‘corridor’ is provided for car parking, service yard and access/egress circulation. The development proposals for the site will result in an increase of the impermeable area of 0.33Ha and therefore an increase in the peak surface water runoff rates and volume from the site. The development proposals and their associated drainage implications are reviewed below.

6.1 Foul Water

United Utilities (UU) currently utilise the guidance provided by Sewers for Adoption (6th Edition) which indicates that for gravity sewers serving industrial developments the domestic flow design is 0.6 litres/second per hectare of developable land, which equates to a domestic flow design of 0.198l/s. It is understood that the development will be ‘normal industry’ usage, thus the trade effluent figure of 0.5 litres/second per hectare has been employed, hence the trade effluent output would be 0.165 litres/second, giving a total design flow of 0.363l/s.

From the drainage investigation survey there is a foul sewer runs along the top of the embankment between Sneckyeat Industrial Estate and West Cumberland Hospital which runs from east to west. It is intended to form a new connection onto this drain within the central part of the site.

6.2 Surface Water

Following the drainage hierarchy as presented in Paragraph 80 of the National Planning Policy Guidance the options for surface water management/discharge must be considered in the following order:

1. Infiltration (percolation) through the soil/sub strata
2. To a Surface Water Body (pond, ditch, stream, river)
3. To a Surface Water Sewer or a Highway Drain
4. Combined Water Sewer

A review of the British Geological Survey’s viewers for Bedrock and Superficial Deposits revealed the substrata consisted of clay deposits overlying sandstone (refer to Figures 5 & 6 for details). The infiltration rates associated with the soils are not considered sufficient for the practical use of infiltration devices such as soakaways or permeable surfaces. BRE Digest 365 and Section 13.4 of CIRIA 753 require that the time taken for infiltration devices to empty to 50% should be within 24 hours. This requirement is unlikely to be achieved in these soils. Furthermore, Table 25.1 of CIRIA 753 indicates that soils with this level of infiltration capacity are classified as very poor infiltration media. A trial hole investigation was undertaken on site which confirmed the presence of the clay under a varying depth of Made Ground ranging from 400mm to 1000mm in depth.

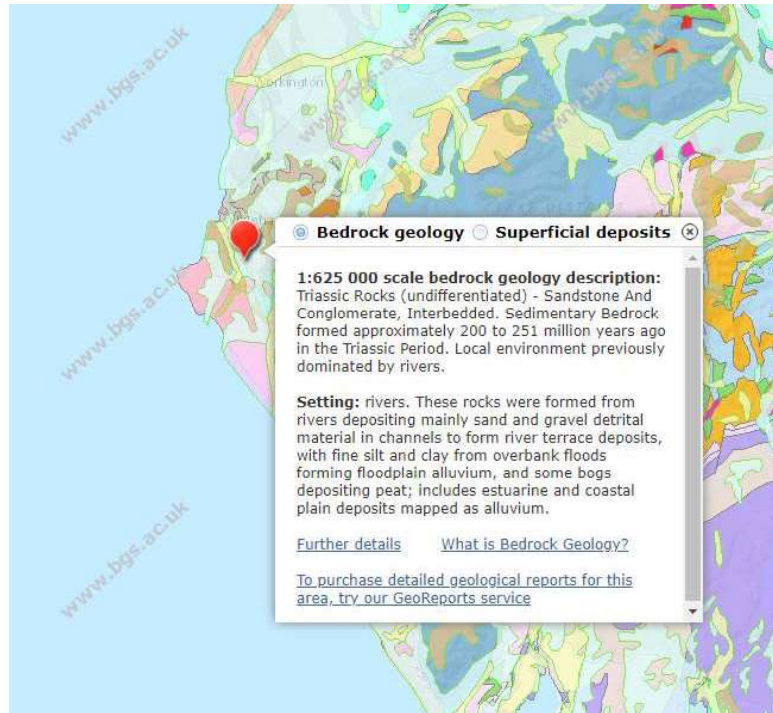


Figure 5: British Geological Survey Viewer - Bedrock Geology



Figure 6: British Geological Survey Viewer – Superficial Deposits

Ordnance Survey mapping for the area indicates the nearest watercourse is the unnamed tributary of the River Keekle which serves as field drainage approximately 500m east of the development site.

From drainage investigation work, the site is surrounded by surface water drains which run from north to south and discharge to a private surface water sewer which runs eastward along the embankment between the Industrial Estate and West

Cumberland Hospital, it is intended to form a surface water connection onto this sewer via a new manhole within the central section of the site.

The site has been a vacant plot since Sneckyeat Industrial Estate was developed in the mid-1990s they are considered to be Greenfield it is intended to restrict the pass forward flows rates to Greenfield Runoff. The HR Wallingford Greenfield runoff rate estimation was used to undertake the calculation using IH-124 methodology which gave a Qbar of 2.95l/s. Therefore onward flow rates will be restricted to 3l/s. A copy HR Wallingford Greenfield runoff rate estimation tool report is provided in Appendix E.

It is proposed to construct a geocellular attenuation tank under the car park/service yard to accommodate the volume of surface water which will be required to be stored over and above the restricted flow. A model of the proposed surface water drainage was created and simulated storm events for 1 in 2 year, 1 in 30 year, 1 in 100 year + climate change allowance. The Climate Change Allowance was derived from “*Flood Risk assessments: climate changes allowances*” gov.uk website “*Table 2: peak rainfall intensity allowance in small catchments (less than 5km²) or urban drainage catchments (based on a 1961 to 1990 baseline)*” The structural design cases for wind loading use a design life of 50 years, this will be utilised for the drainage design life, this would put the development in the “*Total potential change anticipated for the ‘2080s’ (2070 to 2115)*” The guidance states that “*Design your drainage system to make sure there is no increase in the rate of runoff discharged from the site for the upper end allowance.*” Hence 40% allowance is used. The results and a proposed drainage layout are provided in Appendix E.

6.3 **Flood Risk**

The development proposals are not currently located within areas identified by the Environment Agency as being at risk of flooding for planning purposes. Based on being able to satisfactorily manage the surface water flows from the site by means of attenuation and controlled discharge into the network it is considered that the development proposals do not affect upon the current flood risk areas or increase flood risk off

7.0 Summary

A review of the relevant guidance documents and various types of data collected at the site has enabled a full assessment of the flood risks to be quantified. The site is located within the Flood Zone 1 therefore all uses of land are appropriate in this zone.

This assessment has investigated the possibility of groundwater flooding and flooding from other sources at the site. It is considered that there will be low risk of groundwater flooding across the site and low risk of flooding from other sources.

It is proposed that a new foul drains from the development site is to be connected into the existing private foul drainage within the estate, using a 1:80 minimum gradient for self-cleansing for pipes of 150mm.

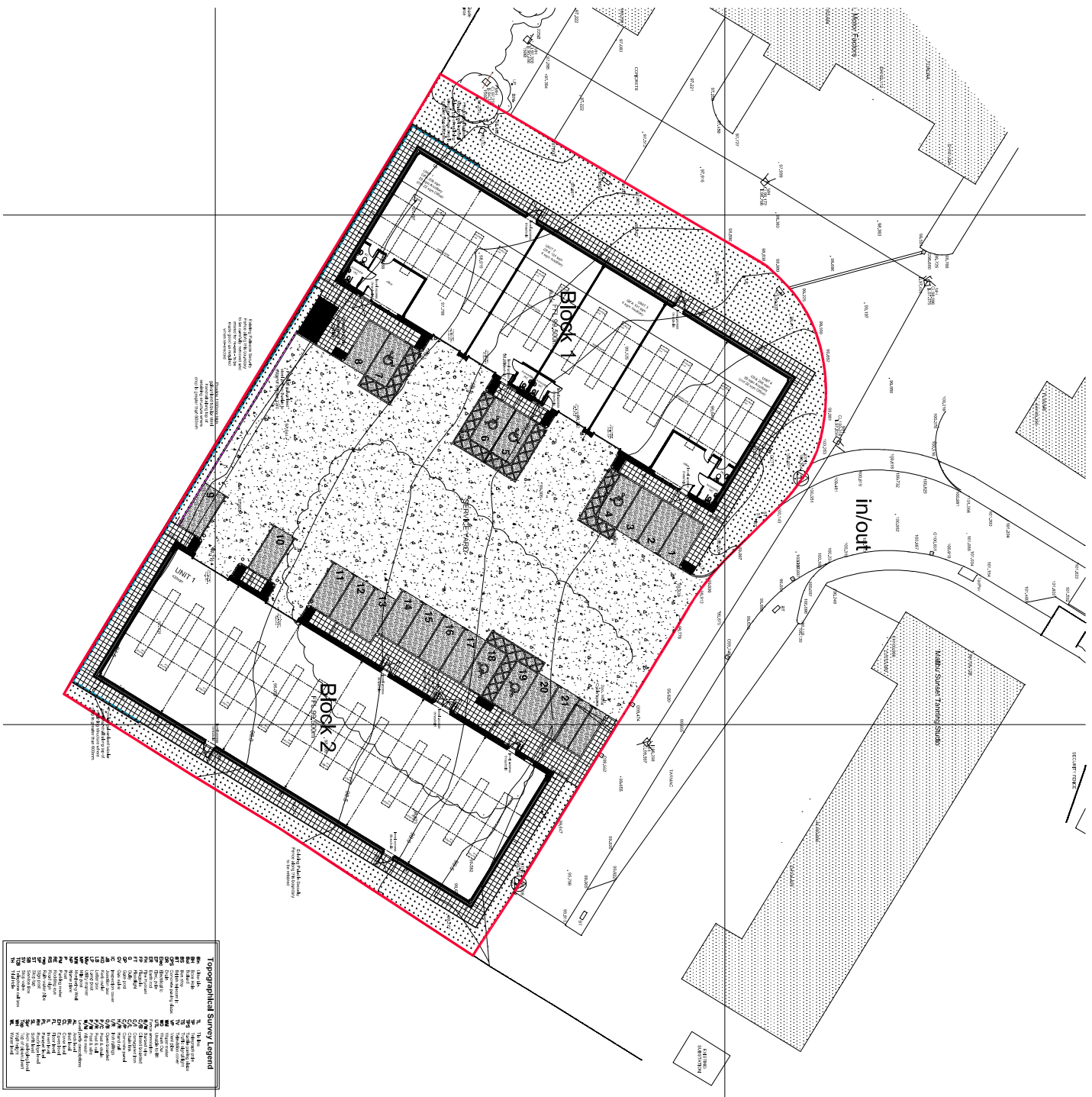
The proposed method of managing the surface water runoff is by means of an attenuated discharge from a mixture of oversized pipes and geocellular attenuation structures, before releasing into the existing surface water drainage network at a proposed controlled rate 3l/s. Pipes are to be laid at a minimum 1:150 minimum gradient for self-cleansing for pipes of 150mm diameter.

Development of the site is not considered to represent an increased flood risk to the site or the wider area. The permeable area of the site will likely decrease, however, with effective storage measures to accommodate the 100yr + 40% climate change events it will be possible to manage efficiently the surface water runoff from the proposed development.

Appendix A: - Topographical Survey

Appendix B: - Development Proposals

Item	Category	Assessment	Control Measures	Residual Risk
1	Structural	Structural integrity of existing buildings	Structural analysis and reinforcement	Low
2	Fire	Fire safety measures	Fire alarm, fire extinguishers, fire escape routes	Low
3	Health and Safety	Health and safety measures	Health and safety training, safety signs, safety barriers	Low
4	Environmental	Environmental impact	Environmental assessment, noise control, air quality monitoring	Low
5	Accessibility	Accessibility measures	Accessibility audit, ramps, lifts, tactile paving	Low
6	Security	Security measures	Security audit, CCTV, access control, security personnel	Low
7	Energy	Energy efficiency measures	Energy audit, insulation, double glazing, renewable energy	Low
8	Water	Water efficiency measures	Water audit, water saving devices, rainwater harvesting	Low
9	Waste	Waste management measures	Waste audit, recycling, waste transfer station	Low
10	Other	Other measures	Other measures as required	Low



Topographical Survey Legend

Symbol	Description
1	Level
2	Spot Height
3	Contour
4	Spot Height
5	Spot Height
6	Spot Height
7	Spot Height
8	Spot Height
9	Spot Height
10	Spot Height
11	Spot Height
12	Spot Height
13	Spot Height
14	Spot Height
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42	Spot Height
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46	Spot Height
47	Spot Height
48	Spot Height
49	Spot Height
50	Spot Height

Notes:

- 1. This drawing is intended for use as a guide only and should not be used for construction.
- 2. All dimensions are in millimeters unless otherwise stated.
- 3. All dimensions are to the centerline of the road unless otherwise stated.
- 4. All dimensions are to the centerline of the road unless otherwise stated.
- 5. All dimensions are to the centerline of the road unless otherwise stated.

Revision Table:

Rev.	Date	Description
A	10/04/23	Initial design
B	22/07/23	Revised design
C	02/08/23	Final design

Scale: 0m 5 10 15 20m

North Arrow: north

- MATERIAL KEY**
- Art Engraved Concrete Finish to Services Yard
 - 450 x 450mm Concrete Paving
 - Flags: shading indicates tactile paving
 - Tactile paving and dropped kerb
 - Bit Mac parking spaces
 - Bit Mac Road
 - Bit Mac Pavement
 - Gravel Infill
 - Grassed areas
 - Steel Bollards at Vehicular Access Shutters
 - Vehicular Armor barrier - 10 SE Detail
 - Retaining Structure with pedestrian handrail along top - 10 SE Detail
 - Retaining Structure with pedestrian handrail & vehicular Armor barrier along top - 10 SE Detail
 - Site boundary

Topographical Survey Legend

CLIENTS: E.ON Energy Distribution Limited

PROJECT: Newbury Road

DRAWING NUMBER: 2123-PJA-00-ZZ-DR-A1203-C

DRAWING TITLE: Planning

DATE: 18/05/23

SCALE: 1:1

DESIGNER: PADDOCK JOHNSON

PLANNING

DATE: 18/05/23

SCALE: 1:1

DESIGNER: PADDOCK JOHNSON

Appendix C: - United Utilities Asset Records

Appendix D: - Drain Alert Drainage Investigation Report



Cripplegate Lane, Hoghton, Preston. PR5 0RR
Tel: 01254 851500 Fax: 01254854004 service@drain-alert.co.uk

Northern Trust
Lynton House
Ackhurst Park
Foxhole Road
Chorley
PR7 1NY

12/11/2020

Dear Graham,

Reference: - JN30596, Sneakeat Industrial

May we thank you for your valued custom. As requested, we have conducted a CCTV inspection at the above premises. We have emailed a link to you to access the Wincan VX video clips and documents via the cloud.

We trust that the report is to your satisfaction; however, should you have any queries then please do not hesitate to contact me.

Yours sincerely,

Mr S W Ormisher, B.A.(Hons.),
Technical Services Consultant

Service areas: Preston • Bolton • Wigan • Salford • Tameside • Rochdale • Cheshire • Fylde • Burnley
Company Reg. No. 029502950360 • Reg. No. 448 2116 57





Plan of the drainage system, not to scale

Enclosed

Conclusion

As requested, a CCTV survey and investigation of drainage system serving two site areas on Sneakyeat Industrial park was carried out as instructed. Upon arrival visible inspection found numerous manholes to be in light road and footpath areas.

The survey was conducted upstream and downstream from manholes identified and marked on plan accordingly. Evidence from the survey found two systems to be present, foul and surface water, these systems were seen to be of 150/225 & 300mm clay construction throughout serving numerous gullies and other external drainage lines.

The general condition of lines surveyed was found to be reasonable and in expected working order throughout, although a few faults were found in certain areas which will require further work to be carried out to prevent problems occurring and deterioration in the future.

Faults Found:

Section 4 MHSW3-MHSW4

Silt debris seen at 17.40mtrs, causing restriction in flow through the drainage line, not allowing the CCTV to be carried out successfully.

We trust that the above is acceptable; however, should you require any further information, please do not hesitate to contact me.

Yours sincerely,

A handwritten signature in black ink, appearing to read "S W Ormisher", with a long horizontal flourish extending to the right.

Mr S W Ormisher,
Technical Services Consultant

Disclaimer - Please note that any dimensions, levels and drainage layout drawings that are provided by Drain Alert, should be checked before being relied upon. All updated drawings are not to scale. It is the responsibility of the client to verify all information given with regards to the drainage prior to commencing any design or work site.

Project

Project Name: 30596 Sneakyeat Industrial Park

Project Description: Converted project from v8 project

Project Date: 04/11/2020

Table of Contents

Project Name	Project Number	Project Date
30596 Sneakyeat Industrial Park		04/11/2020

Project Information	P-1
Section: 1; MHSW1 > MHSW2 (MHSW1X)	1
Section: 2; MHSW5 > MainLine (MHSW5X)	2
Section: 3; MHSW4 > MHSW5 (MHSW4X)	3
Section: 4; MHSW3 > MHSW4 (MHSW3X)	4

Project Information

Project Name	Project Number	Project Date
30596 Sneakeyat Industrial Park		04/11/2020

Client

Company: Northern Trust
Contact: Oliver Clark
Street: Sneakeyat Road
Town or City: Whitehaven
County: Cumbria

Site

Company: Sneakeyat Industrial Park
Contact: Graham Schofield
Street: Sneakeyat Road
Town or City: Whitehaven
County: Cumbria

Contractor

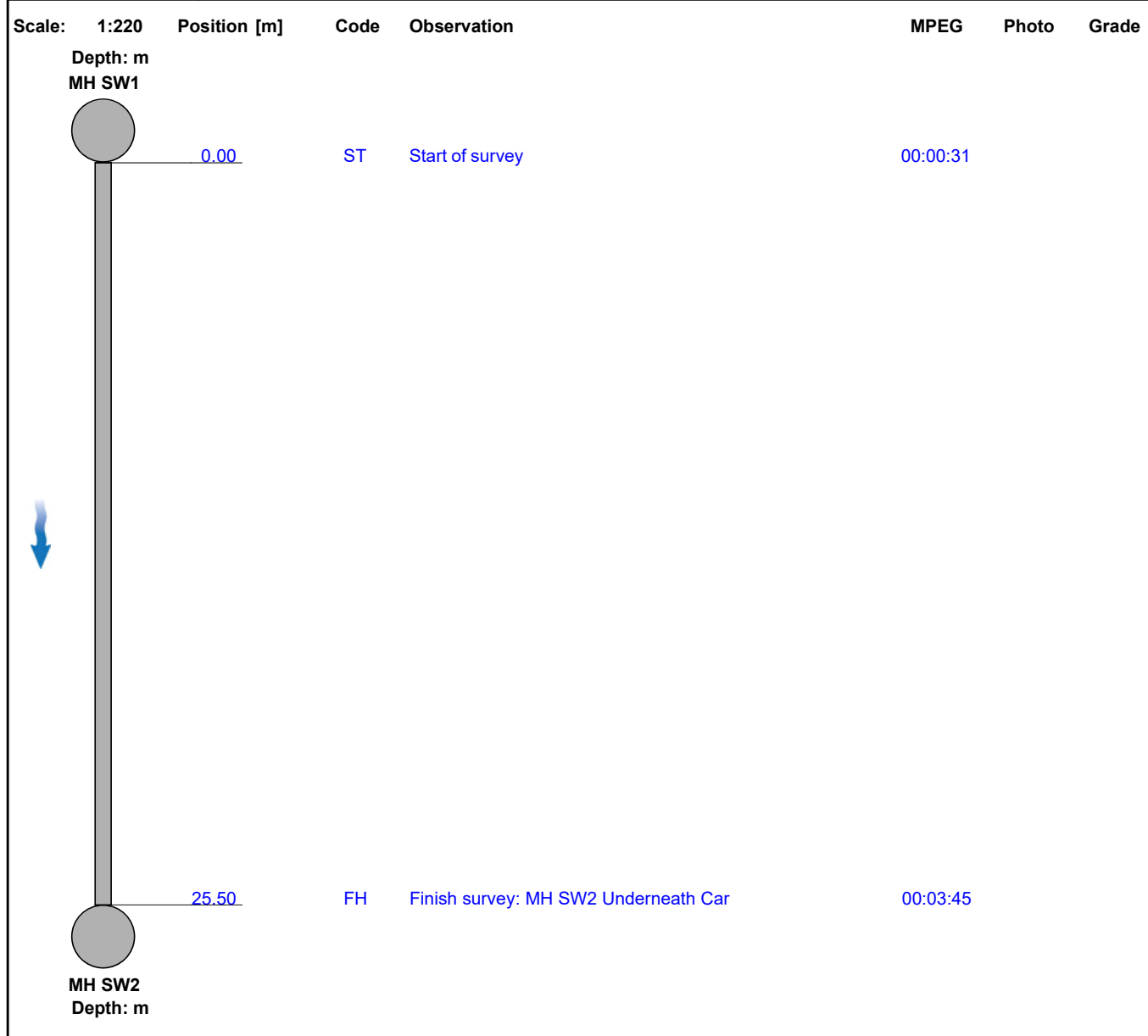
Company: Drain-Alert
Contact: Mr Stephen Ormisher
Department: Director
Street: Cripplegate Lane
Town or City: Hoghton, Preston
County: Lancashire
Phone: 01254 851500
Fax: 01254 854004
Mobile: 07973 436145
Email: service@drain-alert.co.uk

Section Inspection - 04/11/2020 - MH SW1X

Section 1	Inspection 1	Date 04/11/20	Time 11:29	Client's Job Ref 30586	Weather Dry	Pre Cleaned No	PLR MH SW1X
Operator L Hilton		Vehicle PK65 HFB		Camera P494 Tractor	Preset Length Not Specified	Legal Status Not Specified	Alternative ID Not Specified

Town or Village:	Site Area 2	Inspection Direction:	Downstream	Upstream Node:	MH SW1
Road:	Sneakeyat Road	Inspected Length:	25.50 m	Upstream Pipe Depth:	
Location:	Footpath or verge	Total Length:	25.50 m	Downstream Node:	MH SW2
Surface Type:	Unknown	Joint Length:	0.00 m	Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:		Dia/Height:	300 mm		
Flow Control:		Pipe Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining:	No Lining		
Inspection Purpose:	Sample survey to determine asset condition	Lining Material:	No Lining		

Comments:
Recommendations: None specified



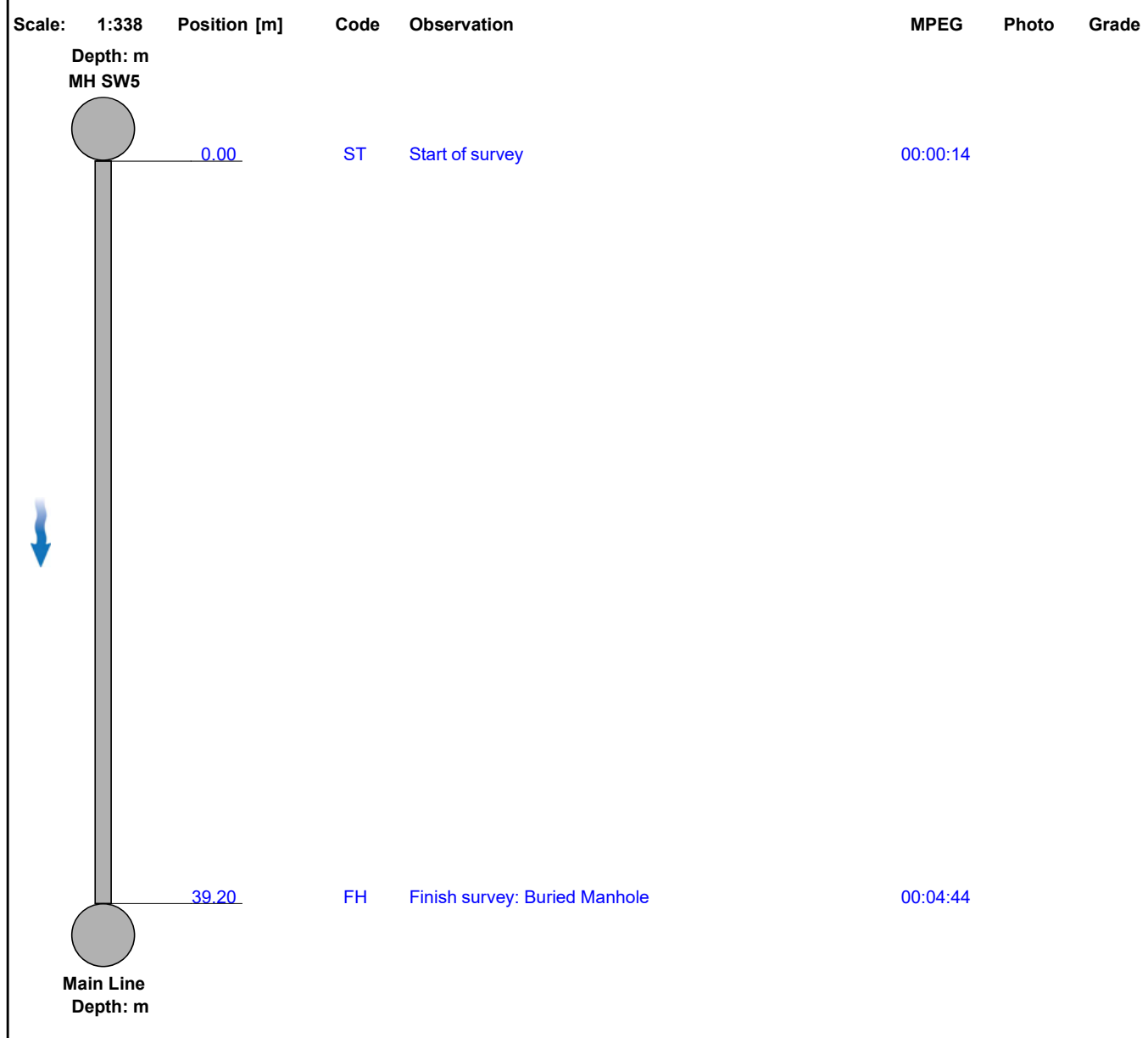
Construction Features				Miscellaneous Features					
Structural Defects				Service & Operational Observations					
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 04/11/2020 - MH SW5X

Section 2	Inspection 1	Date 04/11/20	Time 13:55	Client's Job Ref 30586	Weather Dry	Pre Cleaned No	PLR MH SW5X
Operator L Hilton		Vehicle PK65 HFB		Camera P494 Tractor	Preset Length Not Specified	Legal Status Not Specified	Alternative ID Not Specified

Town or Village:	Site Area 1	Inspection Direction:	Downstream	Upstream Node:	MH SW5
Road:	Sneakeyat Road	Inspected Length:	39.20 m	Upstream Pipe Depth:	
Location:	Footpath or verge	Total Length:	39.20 m	Downstream Node:	MAIN LINE
Surface Type:	Unknown	Joint Length:	0.00 m	Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:		Dia/Height:	225 mm		
Flow Control:		Pipe Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining:	No Lining		
Inspection Purpose:	Sample survey to determine asset condition	Lining Material:	No Lining		

Comments:
Recommendations: None specified



Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0