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**DRAINAGE STRATEGY REPORT  
FOR  
PROPOSED COMMERCIAL UNITS AT  
SITE 2 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			
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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 a new commercial/light industrial unit on an existing undeveloped plot at Sneekyeat 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 299099 (E), 516278 (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 0.345 Ha. Figure 1 below shows the site boundary within the local context.

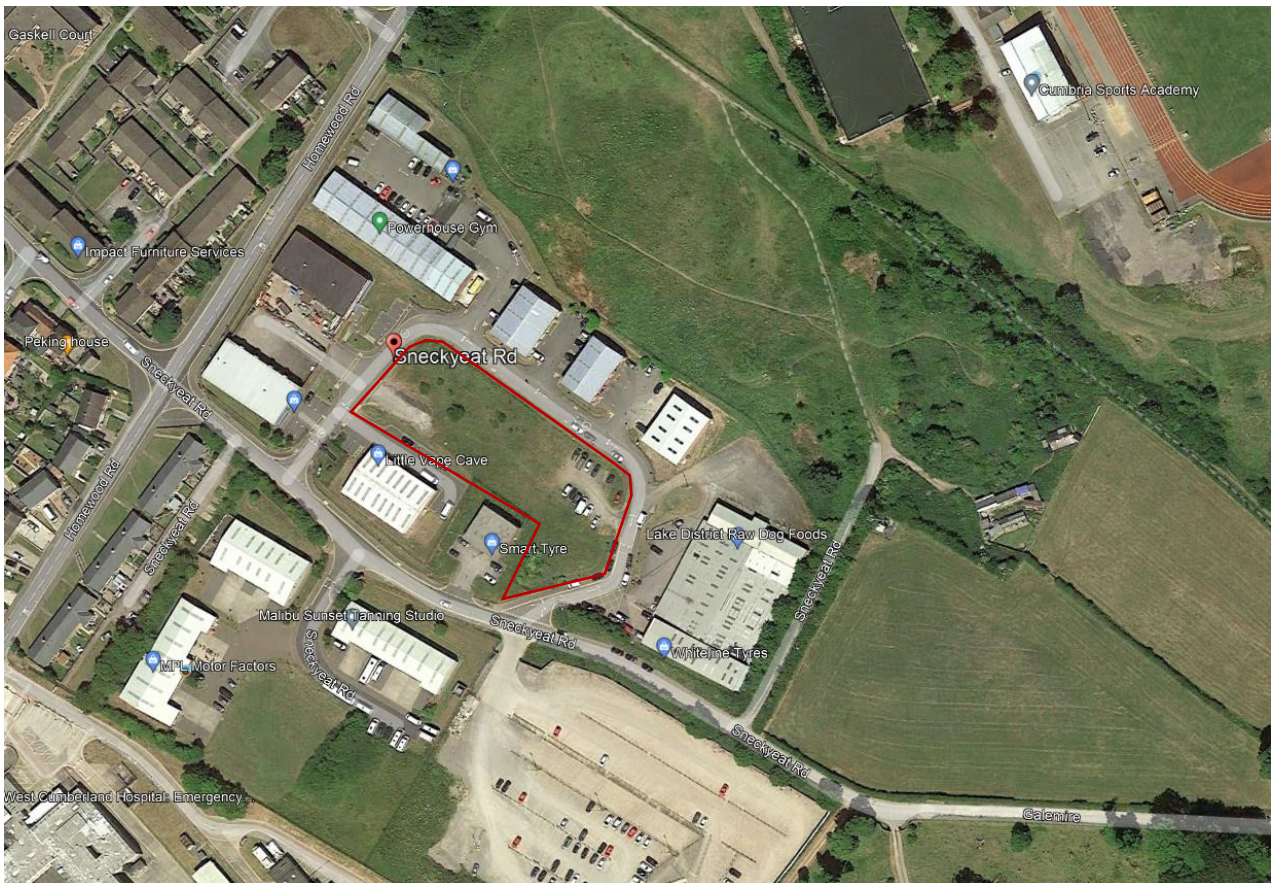


Figure 1: Site Location Plan

The site is bounded by Sneckyeat Road (private estate distributor road) to the north, east and west and to the south by Units 9A, 9BB and Unit 7.

## 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 104.567m AOD at the south western boundary of the development and a maximum of 108.106m 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 one block of commercial/light industrial units. This block will consist of 2no. units at 205sqm and 1no. unit at 412sqm, to provide 3no. units in total. The block is located centrally within the site and extends between the north and south boundaries. To the west and east there is provision for two separate hardstanding areas that are 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 300Ø private surface water sewer located in the private section of Sneckyeat Road. This sewer loosely follows the estate road from its head in the northwest corner before it discharges into a private drain within the adopted length of Sneckyeat Road. This SW drain appears to service the upper sections of Sneckyeat Industrial Estate and it is believed that it eventually discharges into 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.

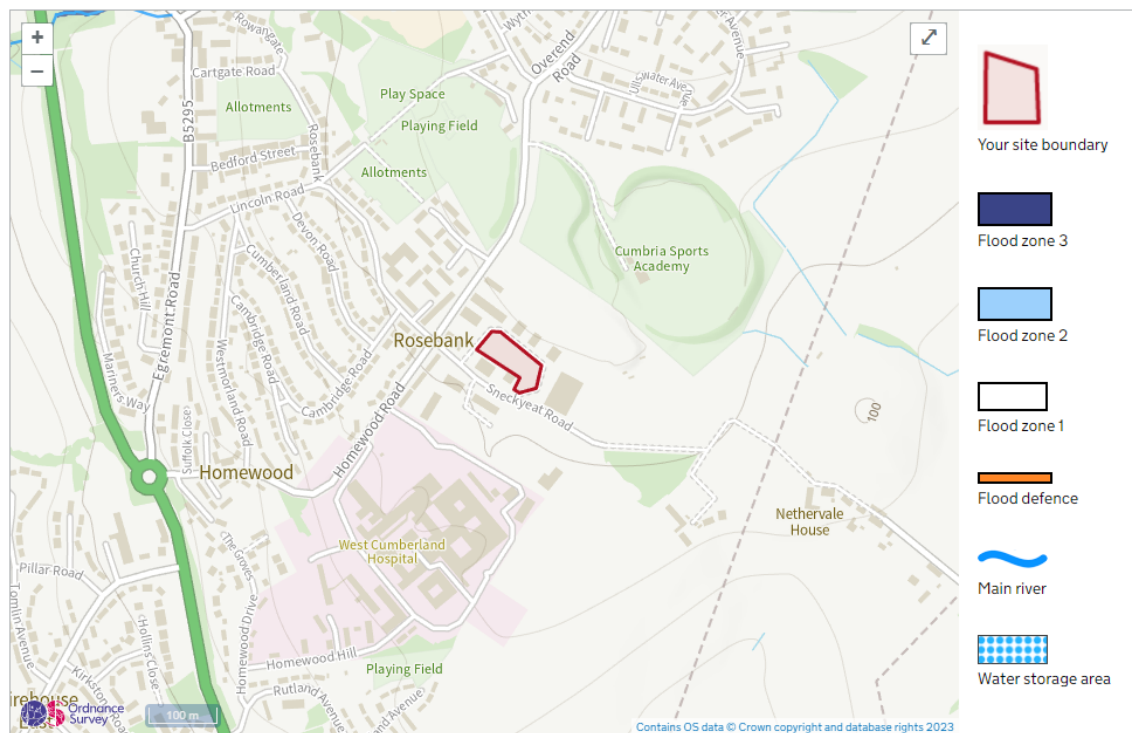


Figure 2: Environment Agency Flood Mapping for Planning

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.

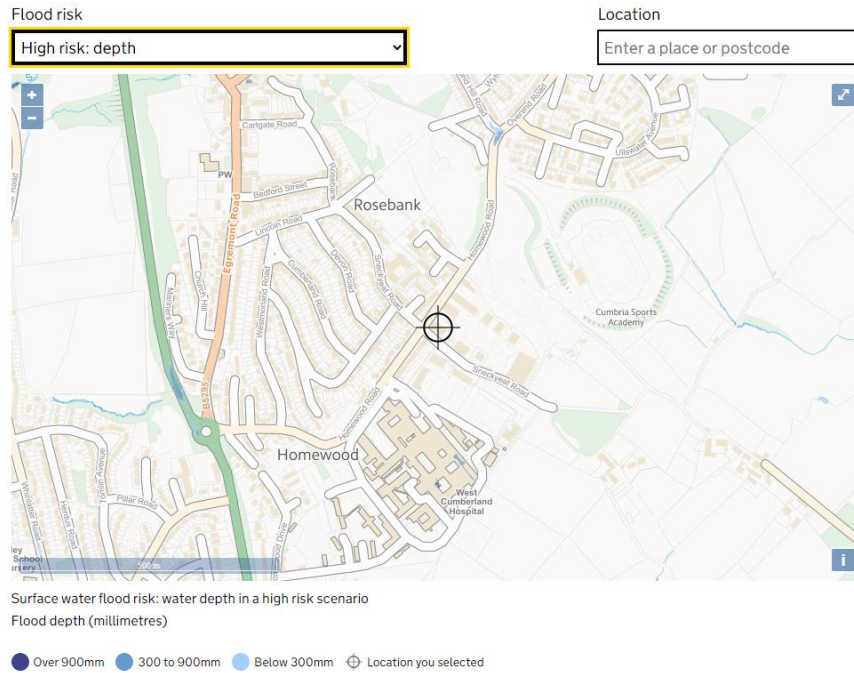


Figure 3: Environment Agency Surface Water Flooding – High Risk: Depth Extract

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.

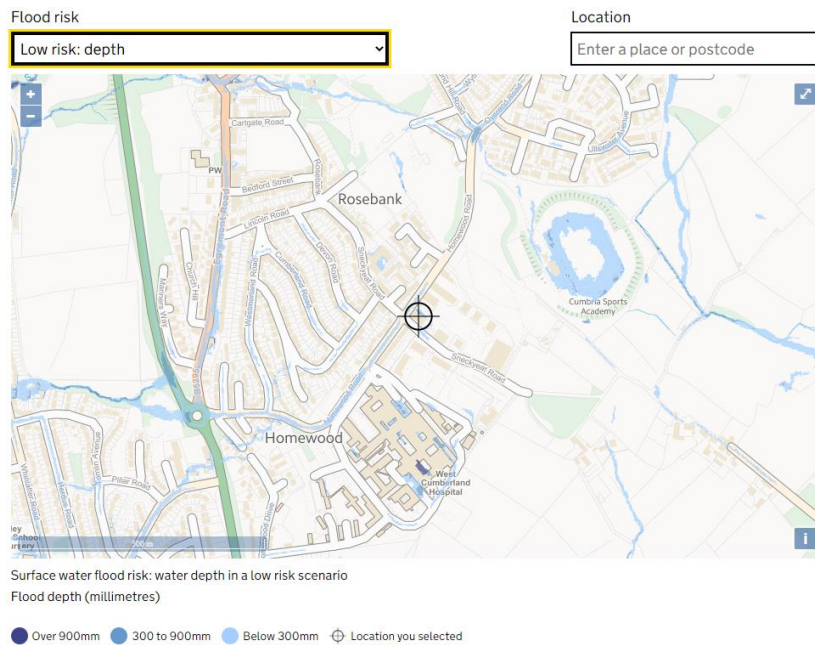


Figure 4: Environment Agency Surface Water Flooding –Low Risk: Depth Extract

## 6.0 Proposed Site Drainage Arrangements

The current site area is 0.37Ha which is currently a vacant plot on the industrial estate comprising grass and topsoil over made ground. The proposals include one block of single storey commercial units, with plan dimensions of 31.7m long by x 26.8m wide

located centrally within the plot. To the west and east of the units there is provision for two separate hardstanding areas that are 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 0.37Ha 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 0.222l/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 0.185 litres/second, giving a total design flow of 0.407l/s.

From the drainage investigation survey, there is a foul water sewer that loosely follows the route of the SW drain, around the private section of Sneckyeat Road, before discharging into a manhole within the adopted length of Sneckyeat Road. The 'radial' drain has a 150Ø tail branching off it that terminates, with a MH, within the proposed development site. It is intended to discharge all the sites FW runoff into this existing chamber.

## 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.



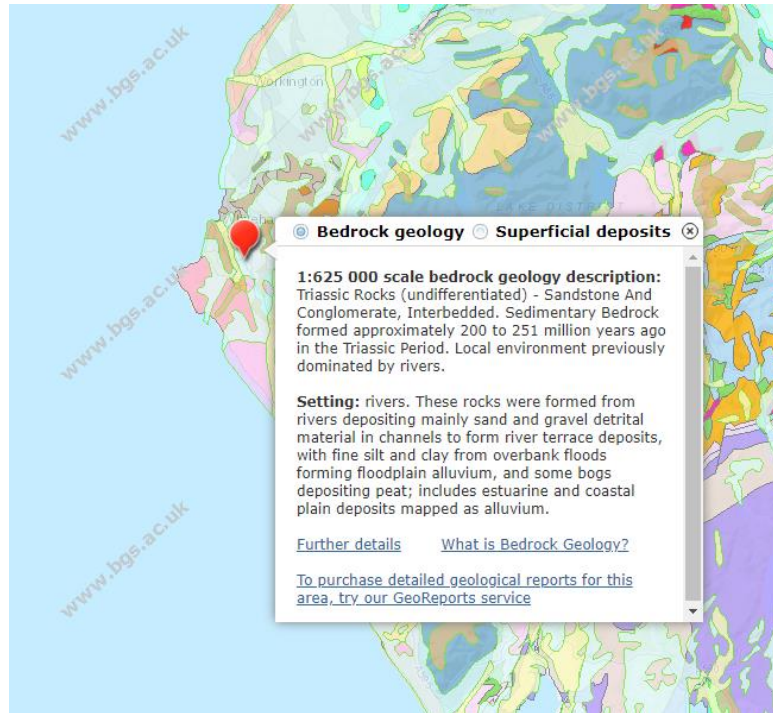


Figure 5: British Geological Survey Viewer - Bedrock Geology

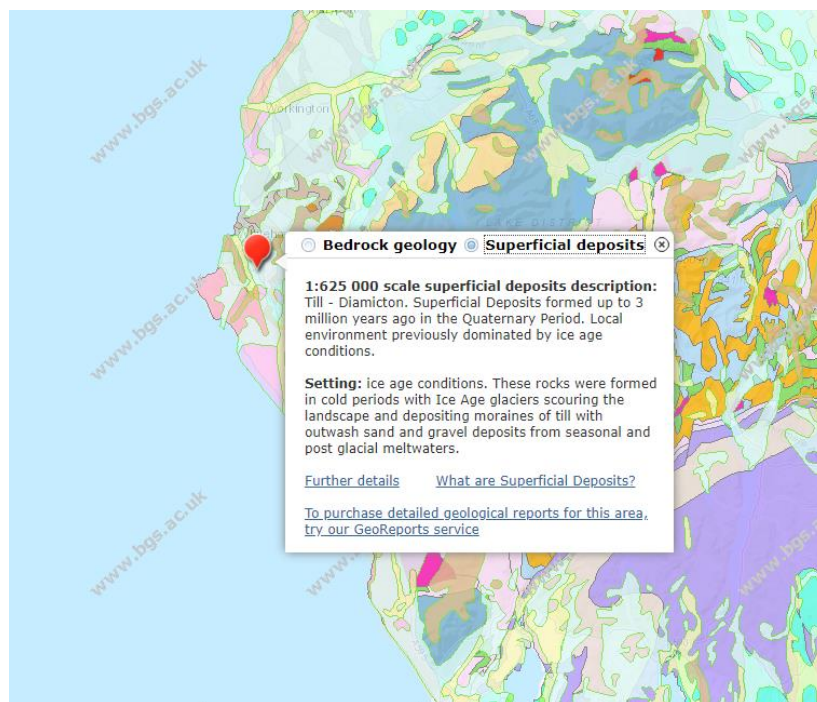


Figure 6: British Geological Survey Viewer – Superficial Deposits

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.

The site has been a vacant plot since Sneckyeat Industrial Estate was developed in the mid-1990s therefore it is 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 3.3l/s. Therefore, onward flow rates will be restricted to 1.6l/s per attenuation 'block'. 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 each of the car parks/service yards 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 for each block 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 5km<sup>2</sup>) 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 sites be connected to be connected to 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 of 3.3l/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

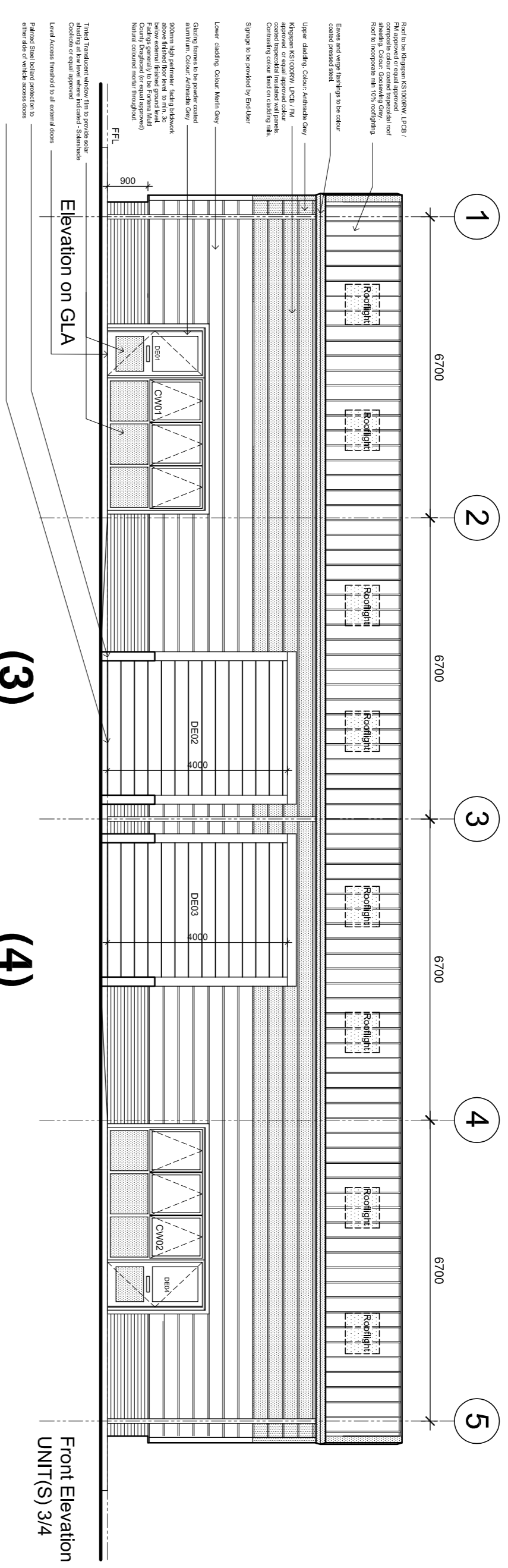


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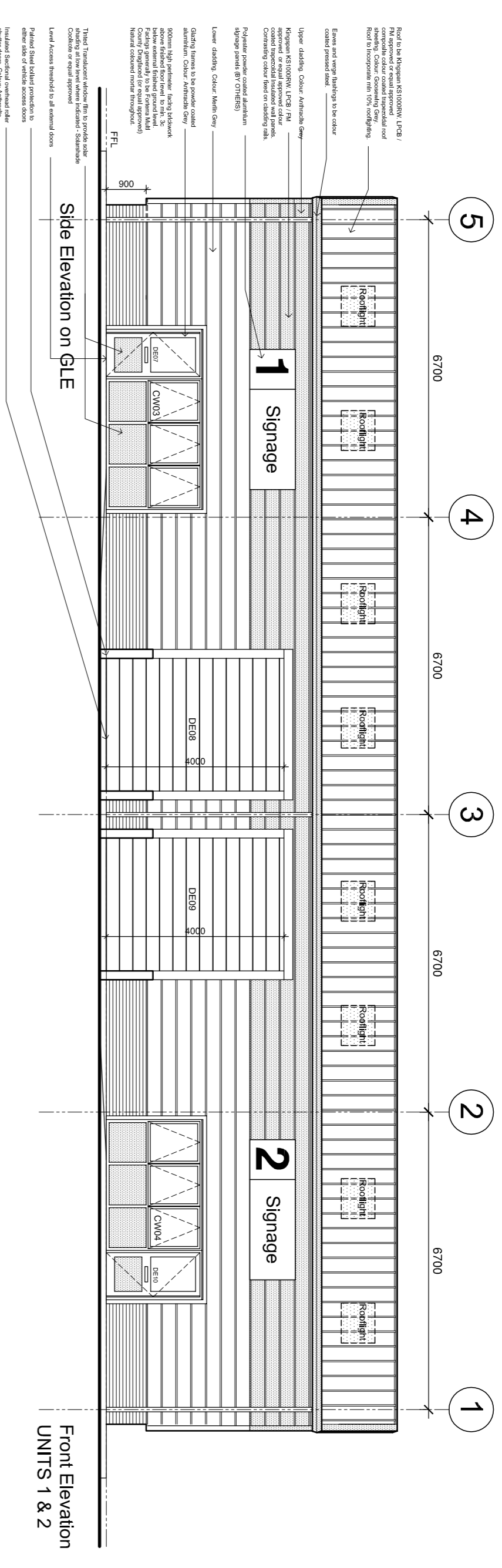
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**DATE:** 16.06.23  
**REV:** B  
**DATE:** 16.07.23

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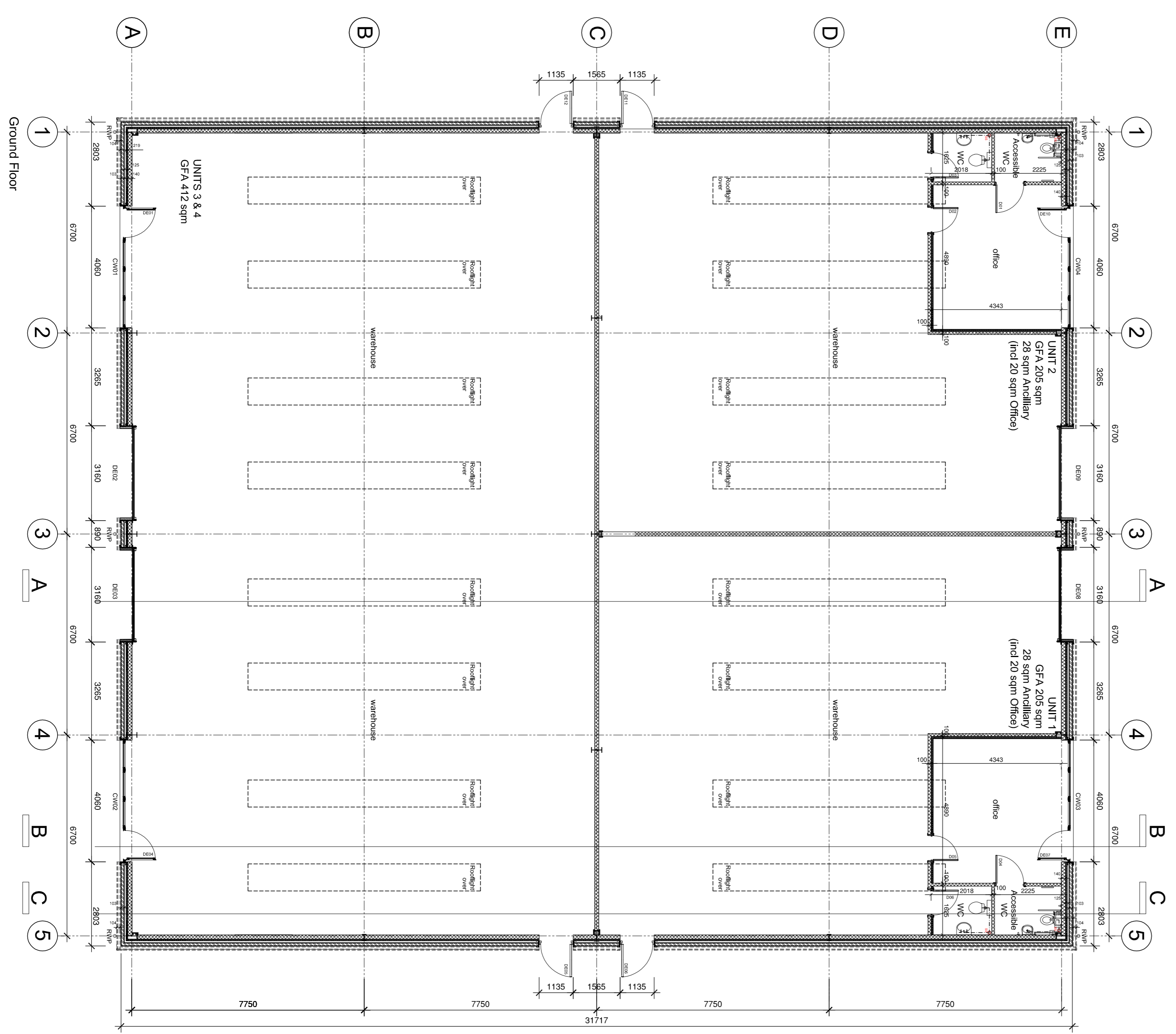
**BY:** SD  
**SD:** SD  
**PP:** SD



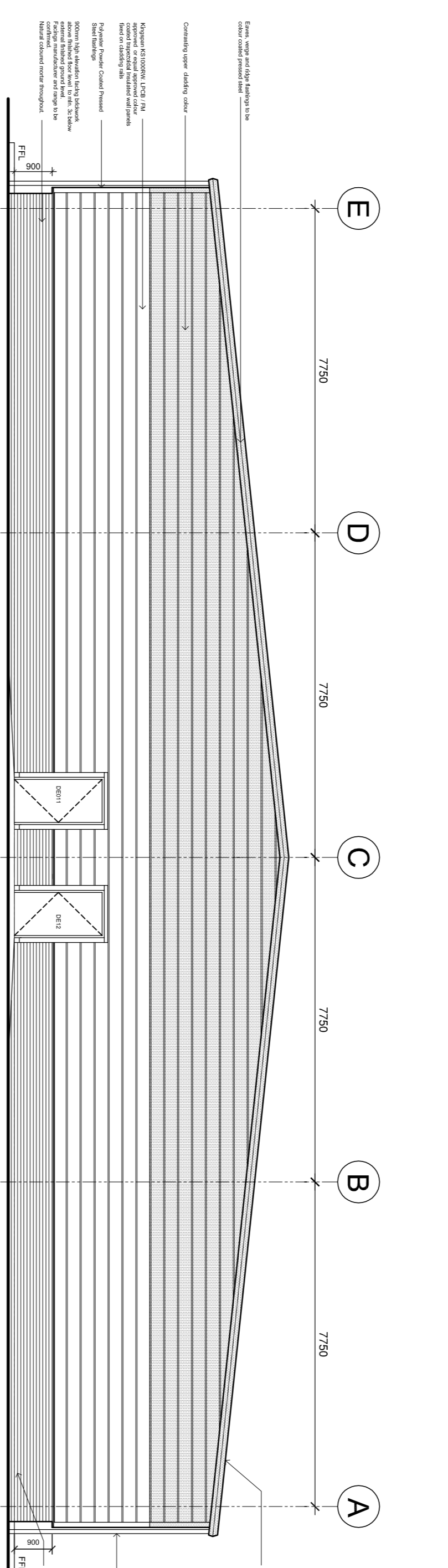
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UNIT(S) 3/4



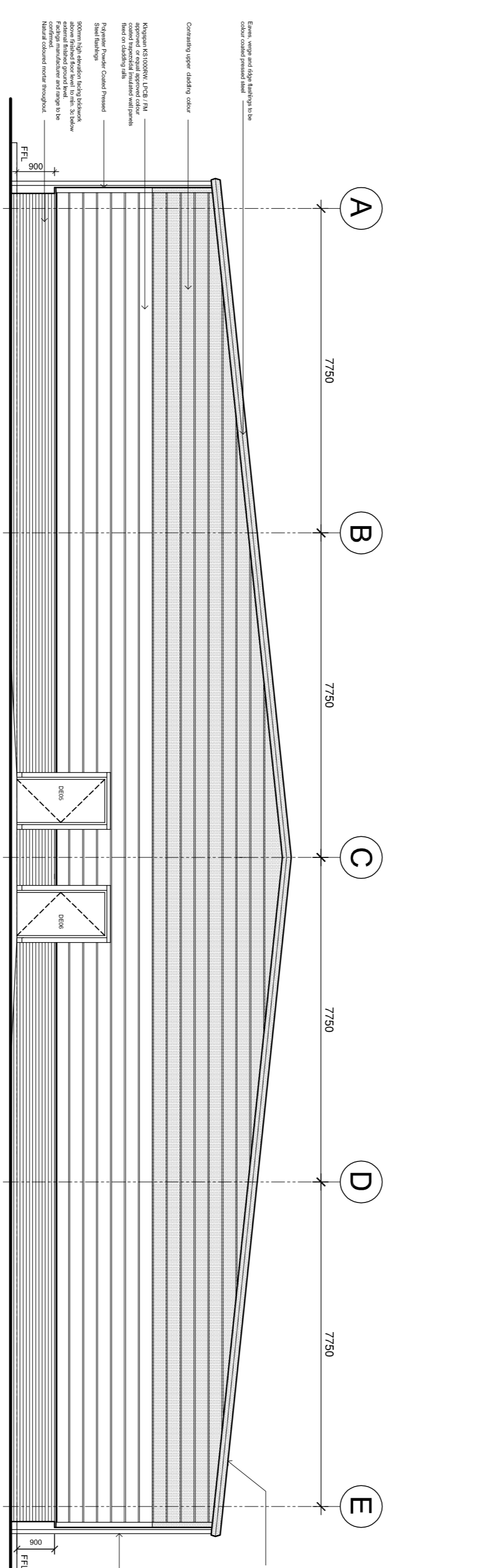
Front Elevation  
UNIT(S) 1 & 2



Ground Floor



Side Elevation on GL1



Side Elevation on GL5

All insulation to be GFC-HFC- free with zero Ozone Depletion Potential.  
 All Cladding details to comply with Kingspan Enhanced details.

**MATERIAL COLOUR KEY**

- Steel rainwater - Mattin Grey
- Roof cladding - Kingspan KS100RW Insulated Roof Panel (LPCB Approved) or equal - Colour Gossamer Grey
- Gutters, Fascias & Vapors - Colour Anthracite Grey
- Rainwater pipes - Colour Anthracite Grey
- External doors - Colour Anthracite Grey
- Internal doors - Colour Anthracite Grey
- Windows - Extruded Aluminium window sections - Colour Anthracite Grey
- Glazing unit - Colour TBA
- Handrail areas denote contrasting colors

**CRITICAL DOOR DIMENSIONS**

- Internal Doors - Minimum effective clear width 800mm
- External Doors - Minimum effective clear width 800mm
- Fire Exit Doors - Minimum effective clear width 850mm
- All external doors to have minimum zones of visibility between 800mm and 1150mm to 1500mm.

**U VALUES**

- Roof - 0.18W/m<sup>2</sup>K
- Wall - 0.28W/m<sup>2</sup>K
- Floor - 0.25W/m<sup>2</sup>K
- Windows - 1.6W/m<sup>2</sup>K
- Doors - 2.2W/m<sup>2</sup>K
- Highlights - 3.0W/m<sup>2</sup>K
- Vehicle Access Doors - 1.3W/m<sup>2</sup>K

NOTE: Manufacturers typically state U Values, these are a minimum required by the Building Standards and actual values may be better than this.

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 CLIENT: Northern Trust  
 PROJECT: Sheckel Industrial Estate  
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 DRAWING TITLE: Block 3 GA Plan & Elevations  
 STATUS: PLANNING  
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 STATUS: PLANNING  
 PROJECT: Sheckel Industrial Estate  
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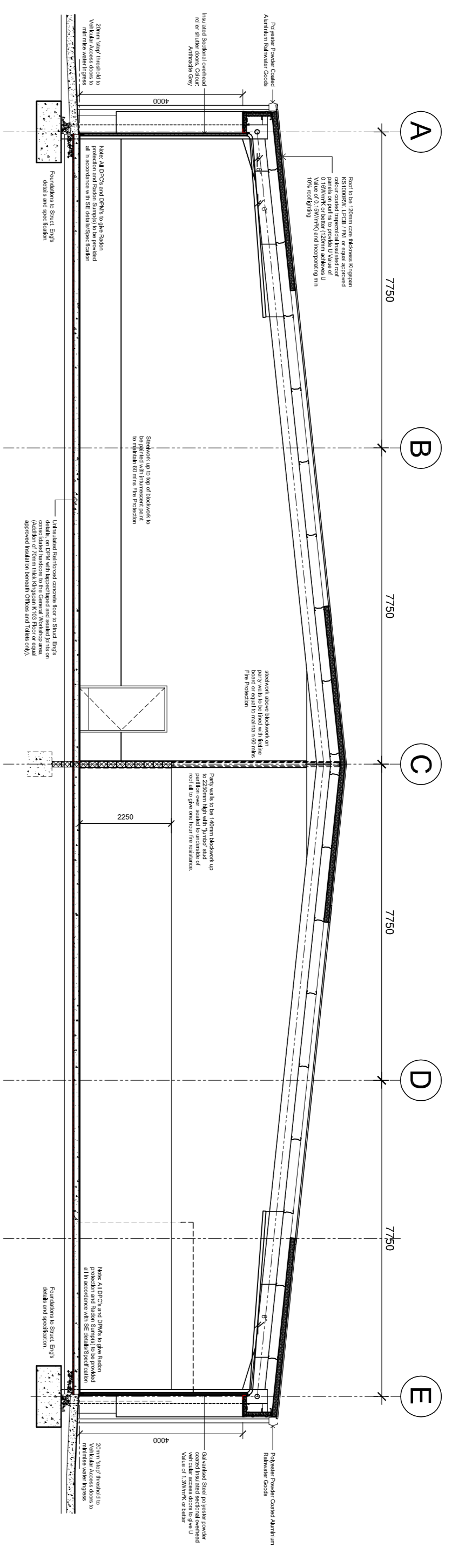
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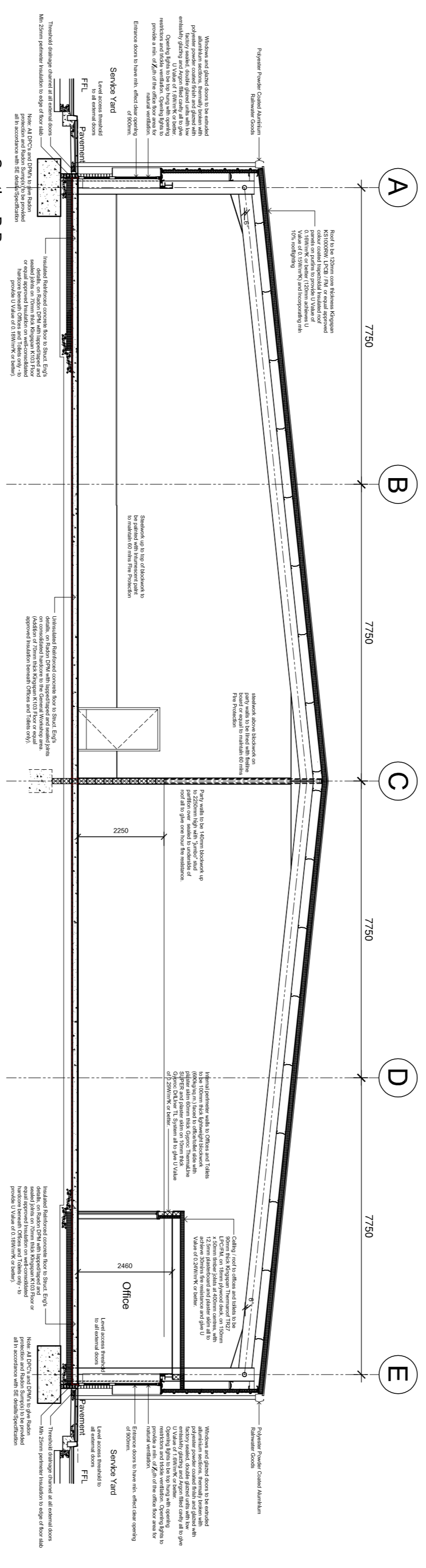
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B 11/07/23 Whole Block narrowed and deepened to accommodate electric cable route and return structure

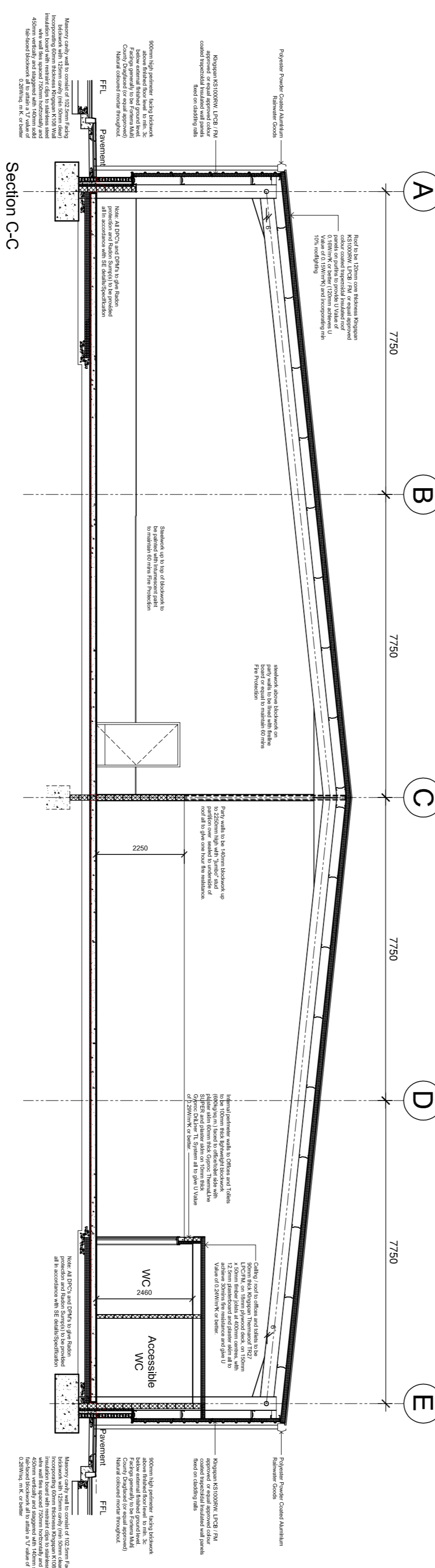
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SD



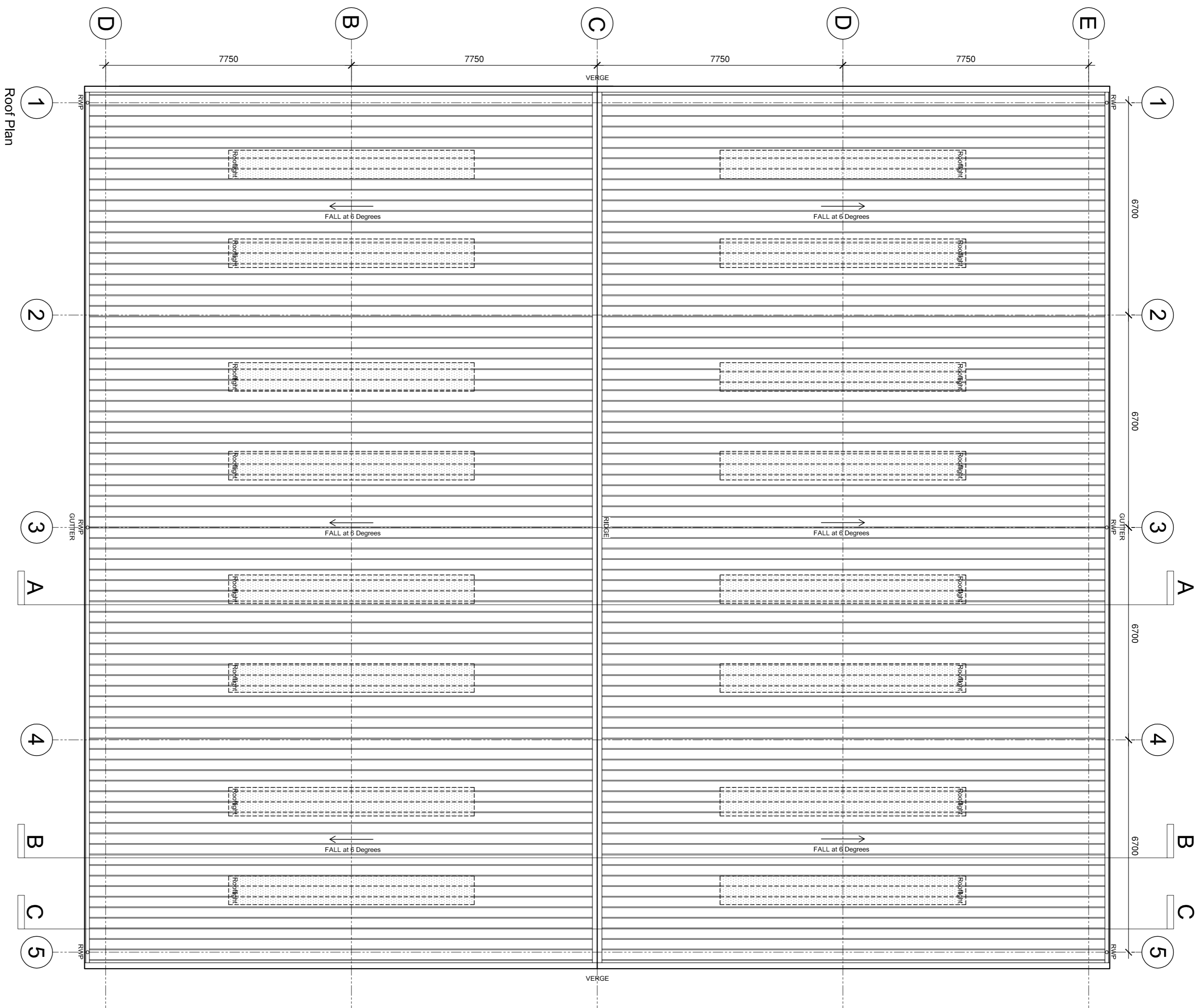
Section A-A



Section B-B



Section C-C



Roof Plan

All insulation to be GRC/HCFC-free with zero Ozone Depletion Potential.

All Cladding details to comply with Kingspan Enhanced details.

**MATERIAL/COLLOUR KEY**

- Steel paintwork - Mattin Grey
- Roof cladding - Kingspan KS100RSV Insulated Roof Panel
- External cladding - Kingspan KS100RSV Insulated Roof Panel
- Gutters, Fascias & Verges - Colour Anthracite Grey
- Rainwater pipes - Colour Anthracite Grey
- Wall cladding - Kingspan KS100RSV Insulated Wall Panel (LFCB Approved) or equal - Colour Anthracite Grey at high level and Mattin Grey at low level.
- Mattin Grey - Colour - to match wall cladding Anthracite Grey / Brickwork - Red Facings (Folens County Mull Dredged - TBA)
- Mortar - Natural TBA
- Plasterboard - Colour Anthracite Grey
- Escape doors - Colour Anthracite Grey
- Blanking/looklike panels - Colour TBA
- Windows - Extruded Aluminium window sections - Colour Anthracite Grey
- Cladding unit - Colour TBA

**CRITICAL DOOR DIMENSIONS**

- Internal Doors - Minimum effective clear width 800mm
- Entrance Doors - Minimum effective clear width 900mm
- Fire Exit Doors - Minimum effective clear width 850mm
- All vision panels to have minimum egress of visibility between 500mm to 800mm and 1150mm to 1500mm.

**U VALUES**

- Roof - 0.18W/m<sup>2</sup>K
- Wall - 0.28W/m<sup>2</sup>K
- Floor (below heated Offices and WC's only) - 0.18W/m<sup>2</sup>K
- Floor (below unheated Warehouse Space only) - No U Value
- Rooflights - 2.2W/m<sup>2</sup>K
- Personnel Doors - 1.8W/m<sup>2</sup>K
- Highusage entrance Doors - 3.0W/m<sup>2</sup>K
- Vehicle Access Doors - 1.3W/m<sup>2</sup>K

NOTE: Notwithstanding the above stated U Values, these are a minimum required by the Building Standards and actual values required. Actual values are to be as required by SBEM Calculations.

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CLIENT: Northern Trust

PROJECT: Sneekeyet Industrial Estate  
Whitehaven

DRAWING NUMBER: 22123-P-JA-83-ZZ-DR-A-3001-B

DRAWING TITLE: Block 3  
GA Roof Plan & Sections

STATUS: PLANNING

SCALE: 1:100@A1  
DATE: 28.04.23  
BY: PP  
CHECKED: PP

PADDOCK  
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www.paddockjohnson.com  
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191074065, No. 08862625

Appendix C: - United Utilities Asset Records



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
8107	FO	0	150	0	0	VC	23.07952		
8110	FO	0	150	0	0	VC	4.24254		
8505	SW	0	150	0	0	VC	23.34524		
9401	FO	0	150	0	0	VC	8.485281		
9405	SW	0	150	0	0	VC	62.18912	1 in 8	
96.15	SW	0	150	0	0	VC	10	1 in 11	
9421	105.76	SW	103.96	225		VC	19.10807	1 in 23	
9210	84.5	FO	93.58	150		VC	9.43381	1 in 23	
9313	102.1	SW	100.27	300		VC	61.02278	1 in 8	
8104	88.96	SW	87.76	225		VC	73.66138		
8505	FO	0	150	0	0	VC	2.255198		
8208	FO	0	150	0	0	VC	16.97656		
9321	SW	0	150	0	0	VC	11.40175		
9501	CO	0	150	0	0	VC	1.862811		
9311	CO	0	150	0	0	VC	16.64332		
0402	SW	0	150	0	0	VC	79.40403	1 in 15	
8301	86.86	SW	95.28	225		VC	16.27882	1 in 39	
9312	101.51	SW	99.81	300		VC	14.88607		
9409	FO	0	150	0	0	VC	2.858427		
9503	SW	0	150	0	0	VC	22.2030		
9320	FO	0	150	0	0	VC	1.830842		
9211	FO	0	150	0	0	VC	9.899495		
9408	FO	0	150	0	0	VC	14.29486		
9328	FO	0	150	0	0	VC	6.708204		
9401	FO	0	225	0	0	VC	13.45362	1 in	
8002	SW	0	300	0	0	VC	28.9528		
9404	FO	0	150	0	0	VC	13		
9305	FO	0	150	0	0	VC	28.65027		
9328	102.73	FO	100.13	225		VC	24.75884	1 in 77	
9215	FO	0	150	0	0	VC	68.0467		
9407	FO	0	150	0	0	VC	5.658854		
9217	FO	0	150	0	0	VC	1.522581		
9400	FO	0	150	0	0	VC	27.65883	1 in	
9325	FO	0	225	0	0	VC	5	1 in	
8002	SW	0	300	0	0	VC	18.43099		
9204	SW	0	150	0	0	VC	26.94139		
9315	FO	0	225	0	0	VC	7.365759		
9323	FO	0	150	0	0	VC	12.20656		
0403	FO	0	150	0	0	VC	21.47861		
9420	104.89	SW	102.68	225		VC	22.02271	1 in 17	
9413	107.45	SW	105.75	225		VC	5.385855	1 in 4	
8205	92.82	FO	81.33	150		VC	27.80288	1 in 9	
8206	93.14	FO	92.71	150		VC	12.80925		
9320	SW	0	150	0	0	VC	2.447339		
9415	SW	0	150	0	0	VC	20.51828		
9207	FO	0	150	0	0	VC	4.559111		
9311	SW	0	300	0	0	VC	6.708204		
9408	SW	0	150	0	0	VC	13.89244		
9316	SW	0	150	0	0	VC	21.40903		
9314	FO	0	150	0	0	VC	28.31166		
9405	FO	0	150	0	0	VC	23.43925		
9300	FO	0	150	0	0	VC	2.828427		
9319	SW	0	150	0	0	VC	9.053386		
9410	SW	0	150	0	0	VC	6.403134		
9302	SW	0	150	0	0	VC	7.28011	1 in 12	
8402	97.28	CO	96.03	150		VC	18.43099	1 in	
9409	SW	0	150	0	0	VC	12.64911		
8209	FO	0	150	0	0	VC	0.9201425		
9407	SW	0	150	0	0	VC	10.93015		
9307	FO	0	150	0	0	VC	26.31764		
9419	105.14	SW	103.24	225		VC	27.01851	1 in 52	
8318	FO	0	150	0	0	VC	28.07508		
8305	95.48	FO	88.17	150		VC	7.237054		
8501	99.79	CO	98.17	225		VC	99.23951	1 in 12	
8103	91.53	FO	80.75	150		VC	16.03122	1 in 12	
9502	SW	0	150	0	0	VC	16.12452		
9412	106.17	SW	104.47	225		VC	6.76204	1 in 8	
9307	102.89	FO	0	225		VC	35.35534		
9411	107.52	SW	104.92	225		VC	5.09062	1 in 73	
9208	FO	0	150	0	0	VC	28.90358		
9318	100.24	SW	0	150		VC	17.69181		
9302	FO	0	150	0	0	VC	37.48533	1 in 13	
8001	81.42	SW	70.75	225		VC	51.97115	1 in 9	
9416	107.31	SW	105.09	225		VC	12.72782	1 in 81	
9418	FO	0	150	0	0	VC	9.848858		
8503	100.87	CO	99.22	225		VC	29.20816	1 in 28	
9206	100.5	SW	99.12	150		VC	41.61731	1 in 14	
9308	100.65	SW	98.53	225		VC	72.20111	1 in 22	
8106	86.67	FO	85.14	225		VC	47.85384	1 in 7	
9408	FO	0	150	0	0	VC	12.04159		
9414	107	SW	104.85	225		VC	7.81025		
9310	100.81	SW	99.36	300		VC	16.27882		
9302	FO	0	150	0	0	VC	12.72782		
9402	FO	0	150	0	0	VC	14.88607	1 in 8	
8101	87.77	FO	84.77	150		VC	44.04543	1 in 17	
8201	93.47	FO	92.67	150		VC	27.20284		
9205	94.7	SW	93.2	225		VC	89.87213	1 in 17	
8203	91.48	SW	89.81	225		VC	99.72819	1 in 39	
9209	97.6	FO	95.69	225		VC	44.04543	1 in 20	
9417	SW	0	150	0	0	VC	11.40175		
0404	SW	0	150	0	0	VC	13.92839		
9317	SW	0	150	0	0	VC	7.071958		
9401	FO	0	150	0	0	VC	17.02939		
9504	SW	0	150	0	0	VC	8.485281		
8102	91.17	FO	89.37	150		VC	44.55334	1 in 10	
8401	CO	0	150	0	0	VC	31.07913		
9403	FO	0	150	0	0	VC	8.485281		
0406	SW	0	150	0	0	VC	16.64332		
9213	FO	0	150	0	0	VC	30.30626		
8504	CO	0	150	0	0	VC	34.88553		
8352	CO	0	150	0	0	VC	18.95977		
8333	CO	0	100	0	0	VC	4.195004		

### LEGEND

--- Abandoned  
--- Foul  
--- Surface Water  
--- Combined  
--- Public Sewer  
--- Private Sewer  
--- Section 104  
--- Rising Main  
--- Sludge Main  
--- Overflow  
--- Water Course  
--- Highway Drain

All point assets follow the standard colour convention:  
 red - combined  
 blue - surface water  
 brown - foul  
 purple - overflow

- Manhole
- ⊕ Head of System
- ⊕ Extent of Survey
- ⊕ Rodding Eye
- ⊕ Inlet
- ⊕ Discharge Point
- ⊕ Vortex
- ⊕ Penstock
- ⊕ Washout Chamber
- ⊕ Valve
- ⊕ Air Valve
- ⊕ Non Return Valve
- ⊕ Soakaway
- ⊕ Gully
- ⊕ Cascade
- ⊕ Flow Meter
- ⊕ Hatch Box
- ⊕ Oil Interceptor
- ⊕ Summit
- ⊕ Drop Shaft
- ⊕ Orifice Plate
- Side Entry Manhole
- ⊕ Outfall
- ⊕ Screen Chamber
- ⊕ Inspection Chamber
- ⊕ Bifurcation Chamber
- ⊕ Lamp Hole
- ⊕ T-Junction / Saddle
- ⊕ Catchpit
- ⊕ Valve Chamber
- ⊕ Vent Column
- ⊕ Vortex Chamber
- ⊕ Penstock Chamber
- ⊕ Non Return Chamber
- ⊕ Network Storage Tank
- ⊕ Sewer Overflow
- ⊕ Ww Treatment Works
- ⊕ Ww Pumping Station
- ⊕ Septic Tank
- ⊕ Control Kiosk
- ▽ Change of Characteristic

#### MANHOLE FUNCTION

FO Foul  
SW Surface Water  
CO Combined  
OV Overflow

#### SEWER SHAPE

CI Circular TR Trapezoidal  
EG Egg AR Arch  
OV Oval BA Barrel  
FT Flat Top HO HorseShoe  
RE Rectangular UN Unspecified  
SQ Square

#### SEWER MATERIAL

AC Asbestos Cement  
BR Brick  
PE Polyethylene  
RP Reinforced Plastic Matrix  
CO Concrete  
CSB Concrete Segment Bolted  
CSU Concrete Segment Unbolted  
CC Concrete Box Culvert  
PSC Plastic / Steel Composite  
GRC Glass Reinforced Plastic  
DI Ductile Iron  
PVC Polyvinyl Chloride  
CI Cast Iron  
SI Spun Iron  
ST Steel  
VC Vitriol Clay  
PP Polypropylene  
PF Pitch Fibre  
MAC Masonry, Coursed  
MAR Masonry, Random  
U Unspecified

**Address or Site Reference:**  
 10B SNECKYEAT ROAD INDUSTRIAL ESTATE,  
 WHITEHAVEN,  
 CA28 8PF

**Scale:** 1:1250      **Date:** 14/09/2020  
**Sheet:** 1 of 1  
**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 D: - Drain Alert Drainage Investigation Report



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

Graham Schofield Associates  
Suite 3  
Balfour Court  
Off Hough Lane  
Leyland  
PR25 2TF

21<sup>st</sup> June 2023

Dear Ian,

**Reference: - JN3884 Sneakyat Industrial Estate.**

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. 02950360 • VAT Reg. No. 448 2116 57





**Plan of the drainage system, not to scale.**

**Enclosed**

**Conclusion**

As requested, a CCTV survey and investigation of foul and surface water drainage systems serving the Industrial estate and surrounding area was carried out as instructed by client. Upon arrival visible inspection found numerous manholes to be in footpath and verge areas. Further investigation found silt and wastewater debris to be contaminating drainage lines and manholes therefore due to this HP tanker jetting was carried out as necessary to remove debris prior to the survey taking place.

The survey was conducted upstream and downstream from manholes marked and identified on plan accordingly. Evidence from the survey found drainage lines to be of various diameters and material construction throughout. 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 remedial work to be carried out to prevent further deterioration and problems occurring in the future.

**Faults Found.**

**Section 14 MHS2 MHS3.**

Cracks seen at 1.20m causing structural weakness in the drainage line.

**Section 15 MHS1 MHS2.**

Cracks seen at 20.50 and 23.60m causing structural weakness and restriction in flow through the drainage line.

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

Yours sincerely,

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:** 2023\_06\_15 33884 Sneakeat Industrial Estate

**Project Description:** CCTV Drainage Survey

**Project Number:** 33884

**Project Status:** Complete

**Project Date:** 6/15/2023

**Inspection Standard:** MSCC5 Sewers & Drainage GB (SRM5 Scoring)





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## Project Information

Project Name	Project Number	Project Date
2023_06_15 33884 Sneakeat Industrial Estate	33884	6/15/2023

### Client

**Company:** Graham Schofield Associates  
**Description:** Structural Engineer  
**Contact:** Ian Schofield  
**Street:** Hough Lane, Suite 3, Balfour Court  
**Town or City:** Leyland  
**County:** Lancashire  
**Post Code:** PR25 2TF

### Manager

**Company:** Sneakeat Industrial Estate  
**Contact:** Ian Schofield  
**Street:** Sneakeat Road  
**Town or City:** Whitehaven  
**County:** Cumbria  
**Post Code:** CA28 8PF

### Contractor

**Company:** Drain-Alert Ltd  
**Description:** Commercial & Domestic Drainage Services  
**Contact:** Stephen Ormisher  
**Department:** Director  
**Street:** Cripplegate Lane  
**Town or City:** Hoghton  
**County:** Lancashire  
**Post Code:** PR5 0RR  
**Phone:** 0800 616222



## Scoring Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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### Structural Defects

- Grade 3: Best practice suggests consideration should be given to repairs in the medium term.
- Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.
- Grade 5: Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.

Section	PLR	Grade	Description
15	MH S1X	3	Multiple defects

### Service / Operational Condition

Section	PLR	Grade	Description
All inspected pipes are in an acceptable service condition (< grade 3).			

### Abandoned Surveys

Section	PLR	Description
8	Main LineYX	Survey abandoned

### Information

These scoring summaries are based on the SRM grading from the WRC.

### Project Summary

<b>Project Name</b> 2023_06_15 33884 Sneakeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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### Pipe Summary

No.	Type	PLR	Upstream Node	Downstream Node	Road	Town	Use	Mat.	Profile	Length
1	SEC	Main LineYX	MAIN LINEY	MH F1	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	15.70 m
2	SEC	MH F1X	MH F1	MH F2	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	17.10 m
3	SEC	MH F2X	MH F2	MH F3	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	10.60 m
4	SEC	MH F3X	MH F3	MH F4	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	31.20 m
5	SEC	Branch AX	BRANCH A	MH S1	Sneakeat Road	Whitehaven	S	VC	Circular 100mm	2.00 m
6	SEC	MH F5X	MH F5	MH F6	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	22.40 m
7	SEC	MH F7X	MH F7	MH F6	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	13.80 m
8	SEC	Main LineYX	MAIN LINEY	MH F7	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	0.90 m
9	SEC	MH F6X	MH F6	MH F8	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	15.00 m
10	SEC	MH F8X	MH F8	MAIN LINE	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	20.20 m
11	SEC	Branch BX	BRANCH B	MH F8	Sneakeat Road	Whitehaven	F	PVC	Circular 100mm	19.40 m
12	SEC	MH S4X	MH S4	MAIN LINE	Sneakeat Road	Whitehaven	S	VC	Circular 375mm	24.50 m
13	SEC	MH S3X	MH S3	MH S4	Sneakeat Road	Whitehaven	S	VC	Circular 375mm	15.50 m
14	SEC	MH S2X	MH S2	MH S3	Sneakeat Road	Whitehaven	S	VC	Circular 300mm	18.30 m
15	SEC	MH S1X	MH S1	MH S2	Sneakeat Road	Whitehaven	S	VC	Circular 225mm	44.30 m
16	SEC	Main LineYX	MAIN LINEY	MH S1	Sneakeat Road	Whitehaven	S	VC	Circular 225mm	42.90 m
17	SEC	MH F4X	MH F4	MH F5	Sneakeat Road	Whitehaven	F	VC	Circular 150mm	12.30 m
<b>Total:</b>										<b>326.10 m</b>

### Pipe Levels

No.	PLR	Upstream Node	Upstream C.L.	Upstream I.L.	Upstream I.D.	Downstream Node	Downstream C.L.	Downstream I.L.	Downstream I.D.
1	Main LineYX	MAIN LINEY			0.000 m	MH F1			0.000 m
2	MH F1X	MH F1			0.000 m	MH F2			0.000 m
3	MH F2X	MH F2			0.000 m	MH F3			0.000 m
4	MH F3X	MH F3			0.000 m	MH F4			0.000 m
5	Branch AX	BRANCH A			0.000 m	MH S1			0.000 m
6	MH F5X	MH F5			0.000 m	MH F6			0.000 m

## Project Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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No.	PLR	Upstream Node	Upstream C.L.	Upstream I.L.	Upstream I.D.	Downstream Node	Downstream C.L.	Downstream I.L.	Downstream I.D.
7	MH F7X	MH F7			0.000 m	MH F6			0.000 m
8	Main LineYX	MAIN LINEY			0.000 m	MH F7			0.000 m
9	MH F6X	MH F6			0.000 m	MH F8			0.000 m
10	MH F8X	MH F8			0.000 m	MAIN LINE			0.000 m
11	Branch BX	BRANCH B			0.000 m	MH F8			0.000 m
12	MH S4X	MH S4			0.000 m	MAIN LINE			0.000 m
13	MH S3X	MH S3			0.000 m	MH S4			0.000 m
14	MH S2X	MH S2			0.000 m	MH S3			0.000 m
15	MH S1X	MH S1			0.000 m	MH S2			0.000 m
16	Main LineYX	MAIN LINEY			0.000 m	MH S1			0.000 m
17	MH F4X	MH F4			0.000 m	MH F5			0.000 m

### Pipe Summary by Profile

Profile	Total Length	No. Pipes
Circular 100mm	2.00 m	
Circular 100mm	19.40 m	
<b>Circular 100mm =</b>	<b>21.40 m</b>	<b>2</b>
Circular 150mm	15.70 m	
Circular 150mm	17.10 m	
Circular 150mm	10.60 m	
Circular 150mm	31.20 m	
Circular 150mm	22.40 m	
Circular 150mm	13.80 m	
Circular 150mm	0.90 m	
Circular 150mm	15.00 m	
Circular 150mm	20.20 m	
Circular 150mm	12.30 m	
<b>Circular 150mm =</b>	<b>159.20 m</b>	<b>10</b>
Circular 225mm	44.30 m	
Circular 225mm	42.90 m	
<b>Circular 225mm =</b>	<b>87.20 m</b>	<b>2</b>
Circular 300mm	18.30 m	
<b>Circular 300mm =</b>	<b>18.30 m</b>	<b>1</b>
Circular 375mm	24.50 m	
Circular 375mm	15.50 m	

## Project Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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Profile	Total Length	No. Pipes
Circular 375mm =	40.00 m	2
<b>Total =</b>	<b>326.10 m</b>	<b>17</b>

## Inspection Summary

Pipe No.	Insp. No.	Upstream Node	Downstream Node	Dir.	Operator	Insp. Date	Insp. Time	Str	Ser	Final Observation	Length
1	1	MAIN LINEY	MH F1	US	L Hilton	15/06/2023	10:21	1	1	MHF, Manhole Boundary Line Covered	15.70 m
2	1	MH F1	MH F2	DS	L Hilton	15/06/2023	10:24	1	1	MHF	17.10 m
3	1	MH F2	MH F3	DS	L Hilton	15/06/2023	10:26	1	1	MHF	10.60 m
4	1	MH F3	MH F4	DS	L Hilton	15/06/2023	11:12	1	1	MHF	31.20 m
5	1	BRANCH A	MH S1	US	L Hilton	15/06/2023	10:58	1	1	MHF, Road Gully	2.00 m
6	1	MH F5	MH F6	US	L Hilton	15/06/2023	11:38	1	1	MHF, Buried	22.40 m
7	1	MH F7	MH F6	US	L Hilton	15/06/2023	11:42	1	1	MHF	13.80 m
<b>8</b>	<b>1</b>	<b>MAIN LINEY</b>	<b>MH F7</b>	<b>US</b>	<b>L Hilton</b>	<b>15/06/2023</b>	<b>11:44</b>	<b>1</b>	<b>1</b>	<b>SA, Drain Redundant</b>	<b>0.90 m</b>
9	1	MH F6	MH F8	DS	L Hilton	15/06/2023	11:48	1	1	MHF, Backdrop	15.00 m
10	1	MH F8	MAIN LINE	DS	L Hilton	15/06/2023	13:34	1	1	MHF, Buried Manhole	20.20 m
11	1	BRANCH B	MH F8	US	L Hilton	15/06/2023	13:30	1	1	MHF, Manhole Boundary Line Covered	19.40 m
12	1	MH S4	MAIN LINE	DS	L Hilton	15/06/2023	13:50	1	1	MHF, Buried Manhole Boundary Line Covered	24.50 m
13	1	MH S3	MH S4	DS	L Hilton	15/06/2023	14:00	1	1	MHF	15.50 m
14	1	MH S2	MH S3	US	L Hilton	15/06/2023	14:08	2	2	MHF, Buried	18.30 m
15	1	MH S1	MH S2	DS	L Hilton	15/06/2023	14:30	3	2	MHF, Buried	44.30 m
16	1	MAIN LINEY	MH S1	US	L Hilton	15/06/2023	14:17	1	1	MHF, End of Line	42.90 m
17	1	MH F4	MH F5	DS	L Hilton	15/06/2023	14:43	1	1	MHF, Buried	12.30 m
<b>Total:</b>											<b>326.10 m</b>

## Inspection Summary by Profile

Profile	Total Length	No. Inspections
Circular 100mm	2.00 m	
Circular 100mm	19.40 m	
Circular 100mm =	21.40 m	2



## Project Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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Profile	Total Length	No. Inspections
Circular 150mm	15.70 m	
Circular 150mm	17.10 m	
Circular 150mm	10.60 m	
Circular 150mm	31.20 m	
Circular 150mm	22.40 m	
Circular 150mm	13.80 m	
Circular 150mm	0.90 m	
Circular 150mm	15.00 m	
Circular 150mm	20.20 m	
Circular 150mm	12.30 m	
<b>Circular 150mm</b>	<b>= 159.20 m</b>	<b>10</b>
Circular 225mm	44.30 m	
Circular 225mm	42.90 m	
<b>Circular 225mm</b>	<b>= 87.20 m</b>	<b>2</b>
Circular 300mm	18.30 m	
<b>Circular 300mm</b>	<b>= 18.30 m</b>	<b>1</b>
Circular 375mm	24.50 m	
Circular 375mm	15.50 m	
<b>Circular 375mm</b>	<b>= 40.00 m</b>	<b>2</b>
<b>Total</b>	<b>= 326.10 m</b>	<b>17</b>

## Defect Summary

### CCTV Drainage Survey Observation Count

Sect. No.	Insp. No.	Upstream Node	Downstream Node	General				Structural Condition								Service Condition					Misc			
				Insp. Length (m)	No. Grade 4/5 Obs.	Survey Abandoned	Camera Under Water	Cracks	Fractures	Broken	Deformed	Collapsed	Holes	Surface Damage	Displaced Joints	Open Joints	Roots	Infiltration	Encrustation	Silt	Grease	Obstruction	Water Level	Line Deviates
1	1	MAIN LINEY	MH F1	15.7																				
2	1	MH F1	MH F2	17.1																				
3	1	MH F2	MH F3	10.6																				
4	1	MH F3	MH F4	31.2																				
5	1	BRANCH A	MH S1	2.0																				
6	1	MH F5	MH F6	22.4																				



## Project Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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Sect. No.	Insp. No.	Upstream Node	Downstream Node	Insp. Length (m)	No. Grade 4/5 Obs.	Survey Abandoned	Camera Under Water	Cracks	Fractures	Broken	Deformed	Collapsed	Holes	Surface Damage	Displaced Joints	Open Joints	Roots	Infiltration	Encrustation	Silt	Grease	Obstruction	Water Level	Line Deviates
7	1	MH F7	MH F6	13.8																				
8	1	<b>MAIN LINEY</b>	<b>MH F7</b>	<b>0.9</b>		1																		
9	1	MH F6	MH F8	15.0																				
10	1	MH F8	MAIN LINE	20.2																				
11	1	BRANCH B	MH F8	19.4																				
12	1	MH S4	MAIN LINE	24.5																				
13	1	MH S3	MH S4	15.5																				
14	1	MH S2	MH S3	18.3				1																
15	1	MH S1	MH S2	44.3				2																
16	1	MAIN LINEY	MH S1	42.9																				
17	1	MH F4	MH F5	12.3																				
<b>Total:</b>				<b>326.1</b>		<b>1</b>		<b>3</b>																



## Legend of Classification (Section)

Project Name	Project Number	Project Date
2023_06_15 33884 Sneakyeat Industrial Estate	33884	6/15/2023

<b>1:</b>	<p>Brick: Minor structural defects.</p> <p>Other: Minor structural defects, i.e. open or displaced joints without additional characteristics.</p> <p><b>Acceptable structural condition.</b></p>
<b>2:</b>	<p>Brick: Circumferential cracking. Single longitudinal crack. Surface mortar loss (depth missing &lt; 15 mm). Surface damage - spalling slight (breaking away of small fragments from the surface). Surface damage - wear slight (increased roughness).</p> <p>Other: Circumferential cracking. Surface damage - spalling slight (breaking away of small fragments from the surface). Surface damage - wear slight (increased roughness).</p> <p><b>Minimal collapse likelihood in the short term but potential for further deterioration.</b></p>
<b>3:</b>	<p>Brick: Total mortar loss (depth missing &gt; 50 mm) without other defects. More than one longitudinal crack (at a single location). Multiple cracking. Single bricks displaced. Deformation &lt; 5%, no fracture and only moderate mortar loss. Surface damage - spalling medium (large areas of chipped brick). Surface damage - wear medium (entire surface of brick is missing).</p> <p>Other: Fracture with no deformation or deformation &lt; 5%. Longitudinal cracking or multiple cracking. Minor loss of level. Severe joint defects i.e. Surface damage - spalling medium. Surface damage - wear medium.</p> <p><b>Collapse unlikely in the near future but further deterioration likely.</b></p>
<b>4:</b>	<p>Brick: Total mortar loss (depth missing &gt; 50mm) with deformation &gt; 10%; deformation up to 10% and fractured; displaced or hanging brickwork; small number of missing bricks; dropped invert (drop &gt; 20mm); moderate loss of level; surface damage - large spalling (entire surface of brick is missing); surface damage - large wear (entire surface of brick is missing).</p> <p>Other: Broken; deformation up to 10% and broken; fracture with deformation 5-10%; multiple fractures; serious loss of level; serious joint defects with voids or soil visible (open joint with &gt; 50mm soil or void visible or joint displacement &gt; 25% of diameter); surface damage - entire area of pipe surface is missing or severely worn.</p> <p><b>Collapse likely in the foreseeable future.</b></p>
<b>5:</b>	<p>Brick: Already collapsed; missing Invert; deformation &gt; 10% and fractured; displaced or hanging brickwork and deformation &lt; 10%; extensive areas of missing brickwork.</p> <p>Other: Already collapsed; deformation &gt; 10% and broken; extensive areas of pipe fabric missing; fractures with deformation &gt; 10%</p> <p><b>Collapsed or collapse imminent.</b></p>





## Section Profile - 6/15/2023 - Main LineYX

**Project Name**  
2023\_06\_15 33884 Sneakeyat Industrial Estate

**Project Number**  
33884

**Project Date**  
6/15/2023

### Circular, 100 mm, 100 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
5	Branch A	MH S1	6/15/2023	Sneakeyat Road	Vitrified clay	2.00 m	2.00 m
11	Branch B	MH F8	6/15/2023	Sneakeyat Road	Polyvinyl chloride	19.40 m	19.40 m

**Total: 2 Inspections x Circular 100 mm, 100 mm = 21.40 m Total Length and 21.40 m Inspected Length**

### Circular, 150 mm, 150 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
1	Main LineY	MH F1	6/15/2023	Sneakeyat Road	Vitrified clay	15.70 m	15.70 m
2	MH F1	MH F2	6/15/2023	Sneakeyat Road	Vitrified clay	17.10 m	17.10 m
3	MH F2	MH F3	6/15/2023	Sneakeyat Road	Vitrified clay	10.60 m	10.60 m
4	MH F3	MH F4	6/15/2023	Sneakeyat Road	Vitrified clay	31.20 m	31.20 m
6	MH F5	MH F6	6/15/2023	Sneakeyat Road	Vitrified clay	22.40 m	22.40 m
7	MH F7	MH F6	6/15/2023	Sneakeyat Road	Vitrified clay	13.80 m	13.80 m
8	Main LineY	MH F7	6/15/2023	Sneakeyat Road	Vitrified clay	0.90 m	0.90 m
9	MH F6	MH F8	6/15/2023	Sneakeyat Road	Vitrified clay	15.00 m	15.00 m
10	MH F8	Main Line	6/15/2023	Sneakeyat Road	Vitrified clay	20.20 m	20.20 m
17	MH F4	MH F5	6/15/2023	Sneakeyat Road	Vitrified clay	12.30 m	12.30 m

**Total: 10 Inspections x Circular 150 mm, 150 mm = 159.20 m Total Length and 159.20 m Inspected Length**

### Circular, 225 mm, 225 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
15	MH S1	MH S2	6/15/2023	Sneakeyat Road	Vitrified clay	44.30 m	44.30 m
16	Main LineY	MH S1	6/15/2023	Sneakeyat Road	Vitrified clay	42.90 m	42.90 m

**Total: 2 Inspections x Circular 225 mm, 225 mm = 87.20 m Total Length and 87.20 m Inspected Length**

### Circular, 300 mm, 300 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
14	MH S2	MH S3	6/15/2023	Sneakeyat Road	Vitrified clay	18.30 m	18.30 m

**Total: 1 Inspection x Circular 300 mm, 300 mm = 18.30 m Total Length and 18.30 m Inspected Length**

### Circular, 375 mm, 375 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
12	MH S4	Main Line	6/15/2023	Sneakeyat Road	Vitrified clay	24.50 m	24.50 m
13	MH S3	MH S4	6/15/2023	Sneakeyat Road	Vitrified clay	15.50 m	15.50 m

**Total: 2 Inspections x Circular 375 mm, 375 mm = 40.00 m Total Length and 40.00 m Inspected Length**

**Total: 17 Inspections = 326.10 m Total Length and 326.10 m Inspected Length**



## Section Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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Number of sections	17
Total length of sections	326.10 m
Total length of inspected sections	326.10 m
Total length of not inspected sections	0.00 m
Total abandoned inspections	1
Number of section inspection photos	3
Number of section inspection videos	17
Number of section inspection scans	0
Number of section inclination measurements	0

<b>PLR:</b> Main LineYX	<b>Upstream Node:</b> Main LineY
<b>Inspection Direction:</b> Upstream	<b>Downstream Node:</b> MH F1
<b>Inspected Length:</b> 15.70 m	<b>Dia/Height:</b> 150 mm
<b>Total Length:</b> 15.70 m	<b>Material:</b> Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F1
2	15.70	MHF	Finish node, manhole, reference: Main LineY

<b>PLR:</b> MH F1X	<b>Upstream Node:</b> MH F1
<b>Inspection Direction:</b> Downstream	<b>Downstream Node:</b> MH F2
<b>Inspected Length:</b> 17.10 m	<b>Dia/Height:</b> 150 mm
<b>Total Length:</b> 17.10 m	<b>Material:</b> Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F1
2	17.10	MHF	Finish node, manhole, reference: MH F2

<b>PLR:</b> MH F2X	<b>Upstream Node:</b> MH F2
<b>Inspection Direction:</b> Downstream	<b>Downstream Node:</b> MH F3
<b>Inspected Length:</b> 10.60 m	<b>Dia/Height:</b> 150 mm
<b>Total Length:</b> 10.60 m	<b>Material:</b> Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F2
2	10.60	MHF	Finish node, manhole, reference: MH F3

<b>PLR:</b> MH F3X	<b>Upstream Node:</b> MH F3
<b>Inspection Direction:</b> Downstream	<b>Downstream Node:</b> MH F4
<b>Inspected Length:</b> 31.20 m	<b>Dia/Height:</b> 150 mm
<b>Total Length:</b> 31.20 m	<b>Material:</b> Vitrified clay



## Section Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F3
2	31.20	MHF	Finish node, manhole, reference: MH F4

<b>PLR:</b>	Branch AX	<b>Upstream Node:</b>	Branch A
<b>Inspection Direction:</b>	Upstream	<b>Downstream Node:</b>	MH S1
<b>Inspected Length:</b>	2.00 m	<b>Dia/Height:</b>	100 mm
<b>Total Length:</b>	2.00 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH S1
2	2.00	MHF	Finish node, manhole, reference: Branch A

<b>PLR:</b>	MH F5X	<b>Upstream Node:</b>	MH F5
<b>Inspection Direction:</b>	Upstream	<b>Downstream Node:</b>	MH F6
<b>Inspected Length:</b>	22.40 m	<b>Dia/Height:</b>	150 mm
<b>Total Length:</b>	22.40 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F6
2	22.40	MHF	Finish node, manhole, reference: MH F5

<b>PLR:</b>	MH F7X	<b>Upstream Node:</b>	MH F7
<b>Inspection Direction:</b>	Upstream	<b>Downstream Node:</b>	MH F6
<b>Inspected Length:</b>	13.80 m	<b>Dia/Height:</b>	150 mm
<b>Total Length:</b>	13.80 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F6
2	13.80	MHF	Finish node, manhole, reference: MH F7

<b>PLR:</b>	Main LineYX	<b>Upstream Node:</b>	Main LineY
<b>Inspection Direction:</b>	Upstream	<b>Downstream Node:</b>	MH F7
<b>Inspected Length:</b>	0.90 m	<b>Dia/Height:</b>	150 mm
<b>Total Length:</b>	0.90 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F7
2	0.50	SC	Pipe size changes, new size(s), 100mm high
3	0.90	SA	Survey abandoned

<b>PLR:</b>	MH F6X	<b>Upstream Node:</b>	MH F6
<b>Inspection Direction:</b>	Downstream	<b>Downstream Node:</b>	MH F8
<b>Inspected Length:</b>	15.00 m	<b>Dia/Height:</b>	150 mm
<b>Total Length:</b>	15.00 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F6
2	15.00	MHF	Finish node, manhole, reference: MH F8

<b>PLR:</b>	MH F8X	<b>Upstream Node:</b>	MH F8
<b>Inspection Direction:</b>	Downstream	<b>Downstream Node:</b>	Main Line
<b>Inspected Length:</b>	20.20 m	<b>Dia/Height:</b>	150 mm
<b>Total Length:</b>	20.20 m	<b>Material:</b>	Vitrified clay



## Section Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F8
2	20.20	MHF	Finish node, manhole, reference: Main Line

<b>PLR:</b>	Branch BX	<b>Upstream Node:</b>	Branch B
<b>Inspection Direction:</b>	Upstream	<b>Downstream Node:</b>	MH F8
<b>Inspected Length:</b>	19.40 m	<b>Dia/Height:</b>	100 mm
<b>Total Length:</b>	19.40 m	<b>Material:</b>	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F8
2	19.40	MHF	Finish node, manhole, reference: Branch B

<b>PLR:</b>	MH S4X	<b>Upstream Node:</b>	MH S4
<b>Inspection Direction:</b>	Downstream	<b>Downstream Node:</b>	Main Line
<b>Inspected Length:</b>	24.50 m	<b>Dia/Height:</b>	375 mm
<b>Total Length:</b>	24.50 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH S4
2	24.50	MHF	Finish node, manhole, reference: Main Line

<b>PLR:</b>	MH S3X	<b>Upstream Node:</b>	MH S3
<b>Inspection Direction:</b>	Downstream	<b>Downstream Node:</b>	MH S4
<b>Inspected Length:</b>	15.50 m	<b>Dia/Height:</b>	375 mm
<b>Total Length:</b>	15.50 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH S3
2	4.90	JN	Junction at 2 o'clock, 150mm dia
3	15.50	MHF	Finish node, manhole, reference: MH S4

<b>PLR:</b>	MH S2X	<b>Upstream Node:</b>	MH S2
<b>Inspection Direction:</b>	Upstream	<b>Downstream Node:</b>	MH S3
<b>Inspected Length:</b>	18.30 m	<b>Dia/Height:</b>	300 mm
<b>Total Length:</b>	18.30 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH S3
2	1.20	CC	Crack, circumferential from 12 o'clock to 12 o'clock
3	11.60	JN	Junction at 10 o'clock, 100mm dia
4	18.30	MHF	Finish node, manhole, reference: MH S2

<b>PLR:</b>	MH S1X	<b>Upstream Node:</b>	MH S1
<b>Inspection Direction:</b>	Downstream	<b>Downstream Node:</b>	MH S2
<b>Inspected Length:</b>	44.30 m	<b>Dia/Height:</b>	225 mm
<b>Total Length:</b>	44.30 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH S1
2	20.50	CM	Cracks, multiple from 12 o'clock to 12 o'clock
3	22.20	JN	Junction at 2 o'clock, 150mm dia
4	23.60	CM	Cracks, multiple from 12 o'clock to 12 o'clock



## Section Summary

<b>Project Name</b> 2023_06_15 33884 Sneakyeat Industrial Estate	<b>Project Number</b> 33884	<b>Project Date</b> 6/15/2023
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No.	m+	Code	Observation
5	26.00	JN	Junction at 11 o'clock, 150mm dia
6	44.30	MHF	Finish node, manhole, reference: MH S2

<b>PLR:</b>	Main LineYX	<b>Upstream Node:</b>	Main LineY
<b>Inspection Direction:</b>	Upstream	<b>Downstream Node:</b>	MH S1
<b>Inspected Length:</b>	42.90 m	<b>Dia/Height:</b>	225 mm
<b>Total Length:</b>	42.90 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH S1
2	2.10	JN	Junction at 2 o'clock, 150mm dia
3	21.00	JN	Junction at 9 o'clock, 150mm dia
4	33.00	JN	Junction at 2 o'clock, 150mm dia
5	42.90	MHF	Finish node, manhole, reference: Main LineY

<b>PLR:</b>	MH F4X	<b>Upstream Node:</b>	MH F4
<b>Inspection Direction:</b>	Downstream	<b>Downstream Node:</b>	MH F5
<b>Inspected Length:</b>	12.30 m	<b>Dia/Height:</b>	150 mm
<b>Total Length:</b>	12.30 m	<b>Material:</b>	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: MH F4
2	12.30	MHF	Finish node, manhole, reference: MH F5



## Completed section inspection

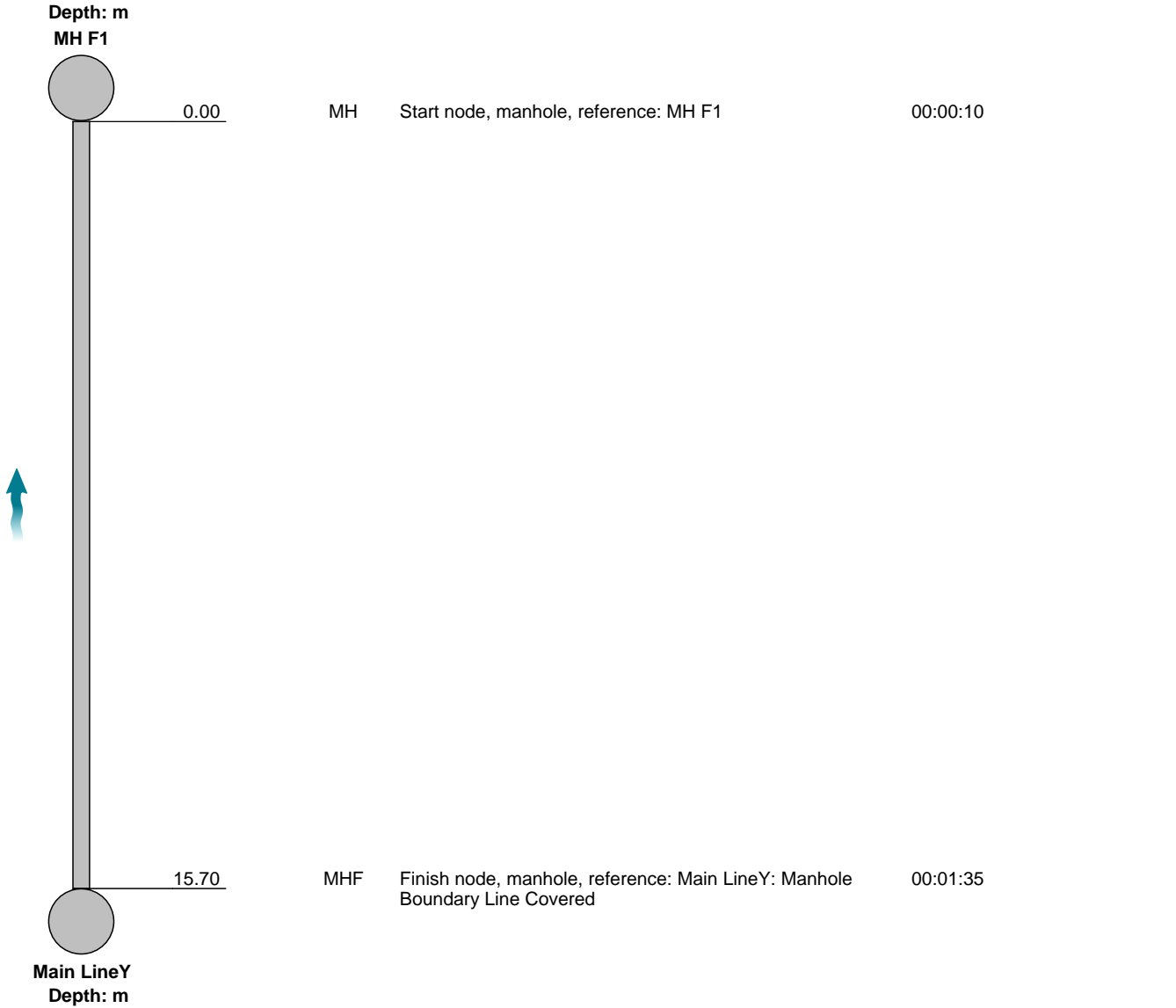
<b>Item No.</b> 1	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 10:21	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MAIN LINEYX
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Upstream	<b>Upstream Node:</b>	MAIN LINEY
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	15.70 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	15.70 m	<b>Downstream Node:</b>	MH F1
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	150 mm <b>Width:</b> 150 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale: 1:136      Position [m]      Code      Observation      MPEG      Photo      Grade



<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 2	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 10:24	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH F1X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH F1
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	17.10 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	17.10 m	<b>Downstream Node:</b>	MH F2
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular		
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Dia/Height:</b>	150 mm	<b>Width:</b>	150 mm
<b>Flow Control:</b>	No flow control	<b>Material:</b>	Vitrified clay		
<b>Year Constructed:</b>	Not Specified	<b>Lining Type:</b>	No Lining		
<b>Inspection Purpose:</b>	Sample condition survey	<b>Lining Material:</b>	No Lining		

**Comments:**

**Recommendations:**

Scale:	1:149	Position [m]	Code	Observation	MPEG	Photo	Grade		
<p>Depth: m MH F1</p>									
		0.00	MH	Start node, manhole, reference: MH F1	00:00:10				
		17.10	MHF	Finish node, manhole, reference: MH F2	00:01:12				
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 3	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 10:26	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH F2X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH F2
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	10.60 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	10.60 m	<b>Downstream Node:</b>	MH F3
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	150 mm <b>Width:</b> 150 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale:	1:92	Position [m]	Code	Observation	MPEG	Photo	Grade
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Depth: m  
MH F2



0.00

MH

Start node, manhole, reference: MH F2

00:00:10



10.60

MHF

Finish node, manhole, reference: MH F3

00:00:54

MH F3  
Depth: m

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





## Completed section inspection

Item No. 4	Insp. No. 1	Date 15/06/23	Time 11:12	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH F3X
Operator L Hilton		Vehicle PK65 HFB		Camera P235 Flexi-Rod	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH F3
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	31.20 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	31.20 m	<b>Downstream Node:</b>	MH F4
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular		
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Dia/Height:</b>	150 mm	<b>Width:</b>	150 mm
<b>Flow Control:</b>	No flow control	<b>Material:</b>	Vitrified clay		
<b>Year Constructed:</b>	Not Specified	<b>Lining Type:</b>	No Lining		
<b>Inspection Purpose:</b>	Sample condition survey	<b>Lining Material:</b>	No Lining		

**Comments:**  
**Recommendations:**

Scale:	1:271	Position [m]	Code	Observation	MPEG	Photo	Grade		
<p>Depth: m MH F3</p>									
		0.00	MH	Start node, manhole, reference: MH F3	00:00:10				
		31.20	MHF	Finish node, manhole, reference: MH F4	00:01:41				
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 5	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 10:58	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> BRANCH AX
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Upstream	<b>Upstream Node:</b>	BRANCH A
<b>Road:</b>	Sneakyeat Road	<b>Inspected Length:</b>	2.00 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	2.00 m	<b>Downstream Node:</b>	MH S1
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Surface water	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	100 mm <b>Width:</b> 100 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:****Recommendations:**

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
		Depth: m MH S1					
		0.00	MH	Start node, manhole, reference: MH S1	00:00:10		
		2.00	MHF	Finish node, manhole, reference: Branch A: Road Gully	00:01:13		
		Branch A Depth: m					

<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

Item No. 6	Insp. No. 1	Date 15/06/23	Time 11:38	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH F5X
Operator L Hilton		Vehicle PK65 HFB		Camera P235 Flexi-Rod	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Upstream	<b>Upstream Node:</b>	MH F5
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	22.40 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	22.40 m	<b>Downstream Node:</b>	MH F6
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	150 mm <b>Width:</b> 150 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale:	1:194	Position [m]	Code	Observation	MPEG	Photo	Grade		
<p>Depth: m MH F6</p>									
		0.00	MH	Start node, manhole, reference: MH F6	00:00:10				
		22.40	MHF	Finish node, manhole, reference: MH F5: Buried	00:01:30				
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 7	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 11:42	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH F7X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Upstream	<b>Upstream Node:</b>	MH F7
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	13.80 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	13.80 m	<b>Downstream Node:</b>	MH F6
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	150 mm <b>Width:</b> 150 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale:	1:120	Position [m]	Code	Observation	MPEG	Photo	Grade		
<b>Depth: m</b>									
<b>MH F6</b>									
		0.00	MH	Start node, manhole, reference: MH F6	00:00:10				
<b>MH F7</b>									
		13.80	MHF	Finish node, manhole, reference: MH F7	00:00:55				
<b>Depth: m</b>									
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Abandoned section inspection

<b>Item No.</b> 8	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 11:44	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MAIN LINEYX
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Upstream	<b>Upstream Node:</b>	MAIN LINEY
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	0.90 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	0.90 m	<b>Downstream Node:</b>	MH F7
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	150 mm <b>Width:</b> 150 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
	Depth: m						
	MH F7						
	0.00	MH		Start node, manhole, reference: MH F7	00:00:10		
	0.50	SC		Pipe size changes, new size(s), 100mm high	00:00:22		
	0.90	SA		Survey abandoned: Drain Redundant	00:00:37		

<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

Item No. 9	Insp. No. 1	Date 15/06/23	Time 11:48	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH F6X
Operator L Hilton		Vehicle PK65 HFB		Camera P235 Flexi-Rod	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH F6
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	15.00 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	15.00 m	<b>Downstream Node:</b>	MH F8
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	150 mm <b>Width:</b> 150 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale:	1:130	Position [m]	Code	Observation	MPEG	Photo	Grade		
<p>Depth: m MH F6</p>									
	0.00	MH	Start node, manhole, reference: MH F6	00:00:09					
	15.00	MHF	Finish node, manhole, reference: MH F8: Backdrop	00:02:12					
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 10	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 13:34	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH F8X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH F8
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	20.20 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	20.20 m	<b>Downstream Node:</b>	MAIN LINE
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	150 mm <b>Width:</b> 150 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale: 1:175      Position [m]      Code      Observation      MPEG      Photo      Grade

Depth: m  
MH F8



0.00

MH

Start node, manhole, reference: MH F8

00:00:10

20.20

MHF

Finish node, manhole, reference: Main Line: Buried Manhole

00:01:04

Main Line  
Depth: m

<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 11	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 13:30	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> BRANCH BX
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Upstream	<b>Upstream Node:</b>	BRANCH B
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	19.40 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	19.40 m	<b>Downstream Node:</b>	MH F8
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	100 mm <b>Width:</b> 100 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Polyvinyl chloride	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale:	1:168	Position [m]	Code	Observation	MPEG	Photo	Grade		
<p><b>Depth: m</b> <b>MH F8</b></p>									
	0.00	MH	Start node, manhole, reference: MH F8	00:00:08					
	19.40	MHF	Finish node, manhole, reference: Branch B: Manhole Boundary Line Covered	00:01:46					
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0





## Completed section inspection

<b>Item No.</b> 12	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 13:50	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH S4X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH S4
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	24.50 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	24.50 m	<b>Downstream Node:</b>	MAIN LINE
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Surface water	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	375 mm <b>Width:</b> 375 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale:	1:213	Position [m]	Code	Observation	MPEG	Photo	Grade		
<p>Depth: m MH S4</p>									
	0.00	MH	Start node, manhole, reference: MH S4	00:00:10					
	24.50	MHF	Finish node, manhole, reference: Main Line: Buried Manhole Boundary Line Covered	00:01:54					
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 13	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 14:00	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH S3X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH S3
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	15.50 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	15.50 m	<b>Downstream Node:</b>	MH S4
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Surface water	<b>Pipe Shape:</b>	Circular		
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Dia/Height:</b>	375 mm	<b>Width:</b>	375 mm
<b>Flow Control:</b>	No flow control	<b>Material:</b>	Vitrified clay		
<b>Year Constructed:</b>	Not Specified	<b>Lining Type:</b>	No Lining		
<b>Inspection Purpose:</b>	Sample condition survey	<b>Lining Material:</b>	No Lining		

**Comments:**

**Recommendations:**

Scale:	1:135	Position [m]	Code	Observation	MPEG	Photo	Grade		
	0.00	MH	Start node, manhole, reference: MH S3	00:00:10					
	4.90	JN	Junction at 2 o'clock, 150mm dia	00:00:41					
	15.50	MHF	Finish node, manhole, reference: MH S4	00:02:23					
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 14	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 14:08	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH S2X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Upstream	<b>Upstream Node:</b>	MH S2
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	18.30 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	18.30 m	<b>Downstream Node:</b>	MH S3
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Surface water	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	300 mm <b>Width:</b> 300 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

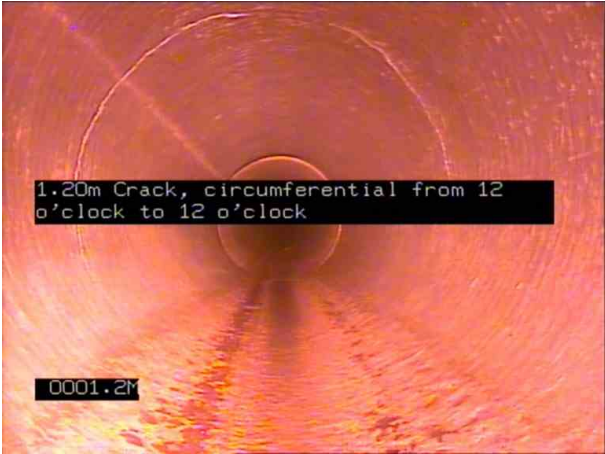
**Recommendations:**

Scale:	1:159	Position [m]	Code	Observation	MPEG	Photo	Grade		
		0.00	MH	Start node, manhole, reference: MH S3	00:00:09				
		1.20	CC	Crack, circumferential from 12 o'clock to 12 o'clock	00:00:28		2 / 2		
		11.60	JN	Junction at 10 o'clock, 100mm dia	00:01:27				
		18.30	MHF	Finish node, manhole, reference: MH S2: Buried	00:02:01				
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
1	10.0	0.5	10.0	2.0	1	1.0	0.1	1.0	2.0



## Section Pictures - 6/15/2023 - MH S2X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
14	Upstream	MH S2X		33884



MH

S2X\_800260c4-c07f-4107-a4ec-0df9db68a9b2\_20230615\_19  
1152\_545.jpg, 00:00:28, 1.20 m



## Completed section inspection

<b>Item No.</b> 15	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 14:30	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH S1X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH S1
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	44.30 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	44.30 m	<b>Downstream Node:</b>	MH S2
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Surface water	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	225 mm <b>Width:</b> 225 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

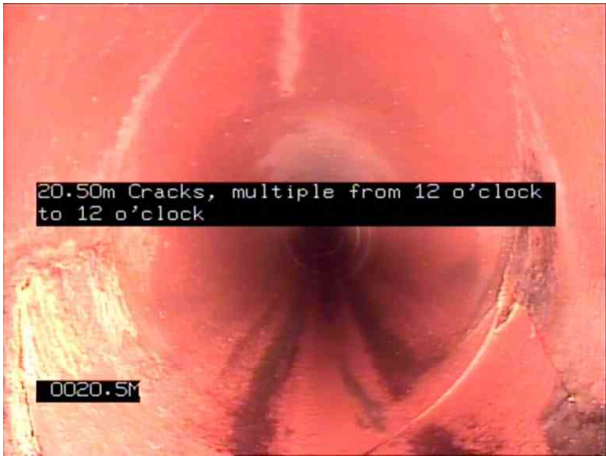
**Comments:****Recommendations:**

Scale:	1:384	Position [m]	Code	Observation	MPEG	Photo	Grade																																				
<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>Depth: m</p> <p>MH S1</p> </div> <table border="1"> <tr> <td>0.00</td> <td>MH</td> <td>Start node, manhole, reference: MH S1</td> <td>00:00:11</td> <td></td> <td></td> </tr> <tr> <td>20.50</td> <td>CM</td> <td>Cracks, multiple from 12 o'clock to 12 o'clock</td> <td>00:01:45</td> <td></td> <td>3 / 2</td> </tr> <tr> <td>22.20</td> <td>JN</td> <td>Junction at 2 o'clock, 150mm dia</td> <td>00:01:58</td> <td></td> <td></td> </tr> <tr> <td>23.60</td> <td>CM</td> <td>Cracks, multiple from 12 o'clock to 12 o'clock</td> <td>00:02:13</td> <td></td> <td>3 / 2</td> </tr> <tr> <td>26.00</td> <td>JN</td> <td>Junction at 11 o'clock, 150mm dia</td> <td>00:02:30</td> <td></td> <td></td> </tr> <tr> <td>44.30</td> <td>MHF</td> <td>Finish node, manhole, reference: MH S2: Buried</td> <td>00:04:01</td> <td></td> <td></td> </tr> </table> </div>								0.00	MH	Start node, manhole, reference: MH S1	00:00:11			20.50	CM	Cracks, multiple from 12 o'clock to 12 o'clock	00:01:45		3 / 2	22.20	JN	Junction at 2 o'clock, 150mm dia	00:01:58			23.60	CM	Cracks, multiple from 12 o'clock to 12 o'clock	00:02:13		3 / 2	26.00	JN	Junction at 11 o'clock, 150mm dia	00:02:30			44.30	MHF	Finish node, manhole, reference: MH S2: Buried	00:04:01		
0.00	MH	Start node, manhole, reference: MH S1	00:00:11																																								
20.50	CM	Cracks, multiple from 12 o'clock to 12 o'clock	00:01:45		3 / 2																																						
22.20	JN	Junction at 2 o'clock, 150mm dia	00:01:58																																								
23.60	CM	Cracks, multiple from 12 o'clock to 12 o'clock	00:02:13		3 / 2																																						
26.00	JN	Junction at 11 o'clock, 150mm dia	00:02:30																																								
44.30	MHF	Finish node, manhole, reference: MH S2: Buried	00:04:01																																								
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>																																		
2	40.0	1.8	80.0	3.0	2	1.0	0.0	2.0	2.0																																		



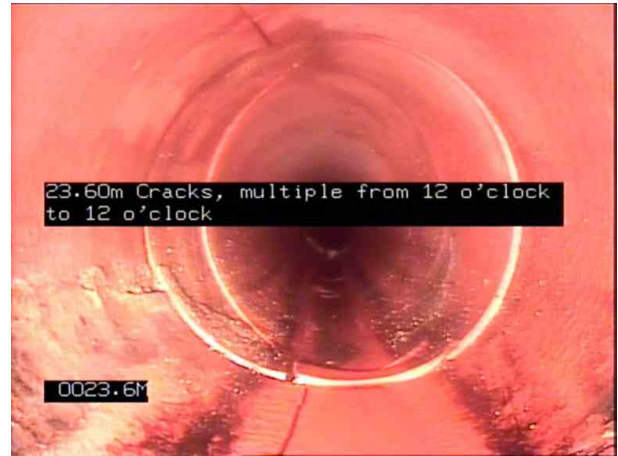
## Section Pictures - 6/15/2023 - MH S1X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
15	Downstream	MH S1X		33884



MH

S1X\_cf33a996-a7df-4a86-a3d3-1aa8c43f2ec7\_20230615\_191213\_943.jpg, 00:01:45, 20.50 m



MH

S1X\_263130bd-fda0-4778-9d8e-105c846b918c\_20230615\_191239\_467.jpg, 00:02:13, 23.60 m

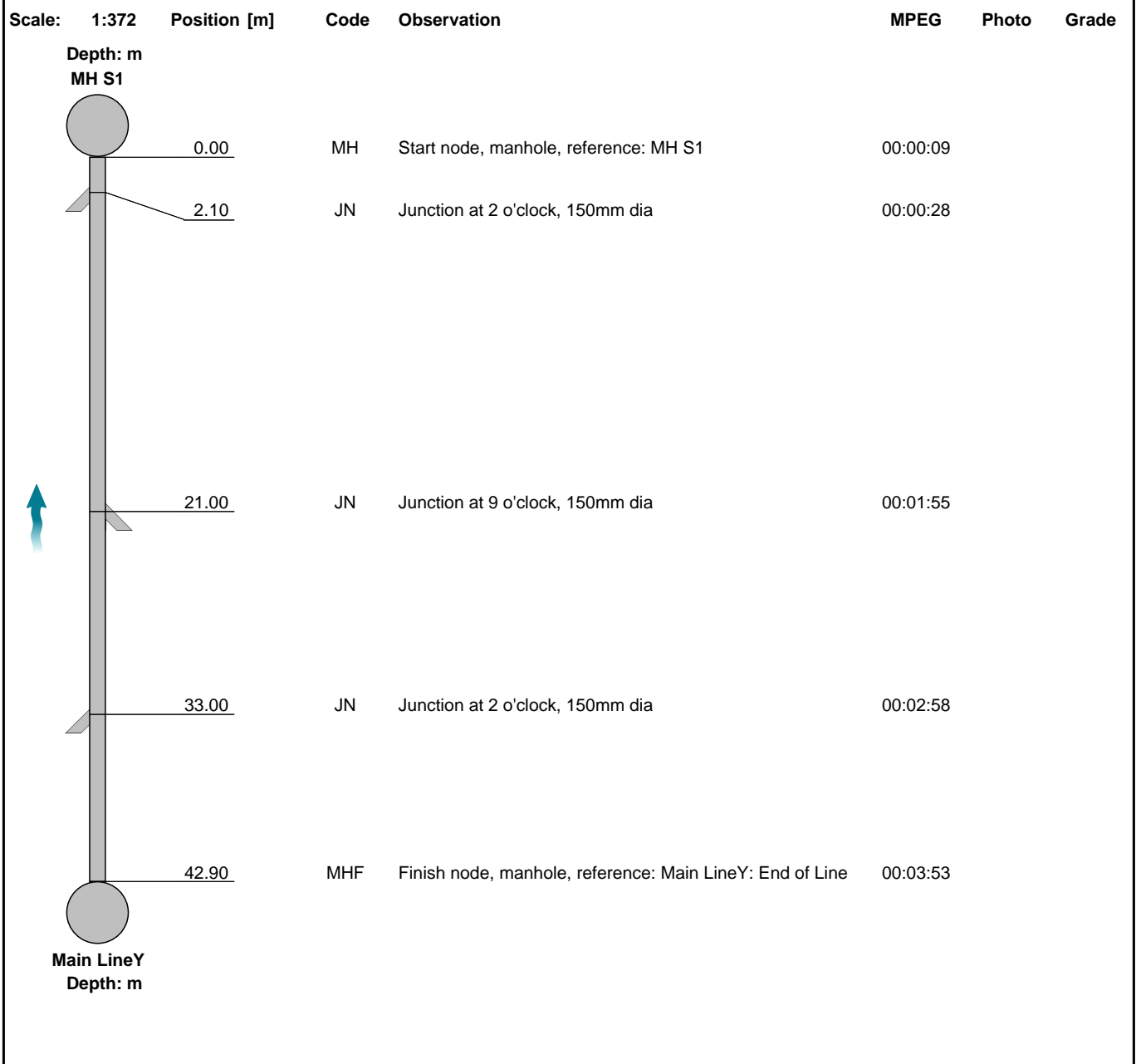


## Completed section inspection

<b>Item No.</b> 16	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 14:17	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MAIN LINEYX
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Upstream	<b>Upstream Node:</b>	MAIN LINEY
<b>Road:</b>	Sneakeyat Road	<b>Inspected Length:</b>	42.90 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	42.90 m	<b>Downstream Node:</b>	MH S1
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Surface water	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	225 mm <b>Width:</b> 225 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**  
**Recommendations:**



<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



## Completed section inspection

<b>Item No.</b> 17	<b>Insp. No.</b> 1	<b>Date</b> 15/06/23	<b>Time</b> 14:43	<b>Client's Job Ref</b> Not Specified	<b>Weather</b> No Rain Or Snow	<b>Pre Cleaned</b> Yes	<b>PLR</b> MH F4X
<b>Operator</b> L Hilton		<b>Vehicle</b> PK65 HFB		<b>Camera</b> P235 Flexi-Rod	<b>Preset Length</b> Not Specified	<b>Legal Status</b> Private Sewer	<b>Alternative ID</b> Not Specified

<b>Town or Village:</b>	Whitehaven	<b>Inspection Direction:</b>	Downstream	<b>Upstream Node:</b>	MH F4
<b>Road:</b>	Sneakeat Road	<b>Inspected Length:</b>	12.30 m	<b>Upstream Pipe Depth:</b>	
<b>Location:</b>	Footway	<b>Total Length:</b>	12.30 m	<b>Downstream Node:</b>	MH F5
<b>Surface Type:</b>		<b>Joint Length:</b>		<b>Downstream Pipe Depth:</b>	
<b>Use:</b>	Foul	<b>Pipe Shape:</b>	Circular	<b>Dia/Height:</b>	150 mm <b>Width:</b> 150 mm
<b>Type of Pipe:</b>	Gravity drain/sewer	<b>Material:</b>	Vitrified clay	<b>Lining Type:</b>	No Lining
<b>Flow Control:</b>	No flow control	<b>Lining Material:</b>	No Lining		
<b>Year Constructed:</b>	Not Specified				
<b>Inspection Purpose:</b>	Sample condition survey				

**Comments:**

**Recommendations:**

Scale:	1:107	Position [m]	Code	Observation	MPEG	Photo	Grade		
<p>Depth: m MH F4</p>									
		0.00	MH	Start node, manhole, reference: MH F4	00:00:10				
		12.30	MHF	Finish node, manhole, reference: MH F5: Buried	00:01:00				
<p>MH F5 Depth: m</p>									
<b>STR No. Def</b>	<b>STR Peak</b>	<b>STR Mean</b>	<b>STR Total</b>	<b>STR Grade</b>	<b>SER No. Def</b>	<b>SER Peak</b>	<b>SER Mean</b>	<b>SER Total</b>	<b>SER Grade</b>
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0





**WinCan**

**Drain-Alert Ltd**  
*Cripplegate Lane, Houghton*  
*Tel. 0800 616222*

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# Manhole Record Card

Number	<input type="text" value="MHF1"/>	Date Of Survey	<input type="text" value="15/06/2023"/>
Status	<input type="text" value="PR"/>	Function	<input type="text" value="F"/>
		Type	<input type="text"/>

### Cover Details:

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	<input type="text" value="600"/> X <input type="text" value="400"/>	Chamber	<input type="text" value="0"/> X <input type="text" value="0"/>	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	<input type="text" value="0"/> X <input type="text" value="0"/>	ShaftDepth	<input type="text" value="0"/>	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	<input type="text" value="0"/>	Step Irons	<input type="checkbox"/>
		Ladder	<input type="checkbox"/>		

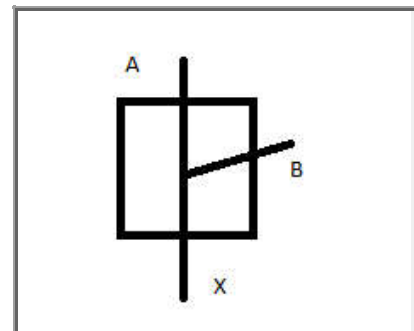
PlanPhoto



LocationPhoto



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### Chamber Conditions:

Cover	<input type="text" value="OK"/>	Shaft	<input type="text" value="OK"/>
Irons/Ladder	<input type="text" value="OK"/>	Chamber	<input type="text" value="OK"/>
Benching/Channel	<input type="text" value="OK"/>		

Pipe	Invert L	Depth	Fr	Upstream	Re	Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-1.950	1.95	MH				C			150		VC	
B	-1.050	1.05	MH				C			100		VC	
X	-1.980	1.98				MHF2	C			150		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



# Manhole Record Card

Number	<input type="text" value="MHF2"/>	Date Of Survey	<input type="text" value="15/06/2023"/>
Status	<input type="text" value="PR"/>	Function	<input type="text" value="F"/>
		Type	<input type="text" value="M"/>

### Cover Details:

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	<input type="text" value="600"/> X <input type="text" value="400"/>	Chamber	<input type="text" value="0"/> X <input type="text" value="0"/>	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	<input type="text" value="0"/> X <input type="text" value="0"/>	ShaftDepth	<input type="text" value="0"/>	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	<input type="text" value="0"/>	Step Irons	<input checked="" type="checkbox"/>
		Ladder	<input type="checkbox"/>		

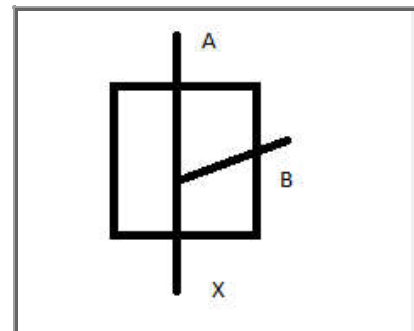
PlanPhoto



LocationPhoto



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### Chamber Conditions:

Cover	<input type="text" value="OK"/>	Shaft	<input type="text" value="OK"/>
Irons/Ladder	<input type="text" value="OK"/>	Chamber	<input type="text" value="OK"/>
Benching/Channel	<input type="text" value="OK"/>		

Pipe	Invert L	Depth	Fr	UpstreamRe	Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-2.180	2.18	MHF1			C			150		VC	
B	-1.420	1.42	MH			C			100		VC	
X	-2.210	2.21			MHF3	C			150		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



# Manhole Record Card

Number	<input type="text" value="MHF3"/>	Date Of Survey	<input type="text" value="15/06/2023"/>
Status	<input type="text" value="PR"/>	Function	<input type="text" value="F"/>
		Type	<input type="text" value="M"/>

**Cover Details:**

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	<input type="text" value="600"/> X <input type="text" value="400"/>	Chamber	<input type="text" value="0"/> X <input type="text" value="0"/>	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	<input type="text" value="0"/> X <input type="text" value="0"/>	ShaftDepth	<input type="text" value="0"/>	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	<input type="text" value="0"/>	Step Irons	<input type="checkbox"/>
		Ladder	<input type="checkbox"/>		

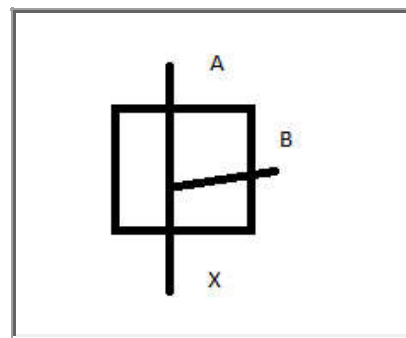
PlanPhoto



LocationPhoto



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**Chamber Conditions:**

Cover	<input type="text" value="OK"/>	Shaft	<input type="text" value="OK"/>
Irons/Ladder	<input type="text" value="OK"/>	Chamber	<input type="text" value="OK"/>
Benching/Channel	<input type="text" value="OK"/>		

Pipe	Invert L	Depth	Fr	UpstreamRe	Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-2.340	2.34	MHF2			C			150		VC	
B	-1.400	1.40				C			100		VC	
X	-2.450	2.45		MHF4		C			150		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



# Manhole Record Card

Number	<input type="text" value="MHS1"/>	Date Of Survey	<input type="text" value="15/06/2023"/>
Status	<input type="text" value="PR"/>	Function	<input type="text" value="F"/>
		Type	<input type="text" value="M"/>

**Cover Details:**

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable   
 CoverLevel  Cover Load Class

Cover	<input type="text" value="600"/> X <input type="text" value="400"/>	Chamber	<input type="text" value="0"/> X <input type="text" value="0"/>	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	<input type="text" value="0"/> X <input type="text" value="0"/>	ShaftDepth	<input type="text" value="0"/>	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	<input type="text" value="0"/>	Step Irons	<input checked="" type="checkbox"/>
		Ladder	<input type="checkbox"/>		

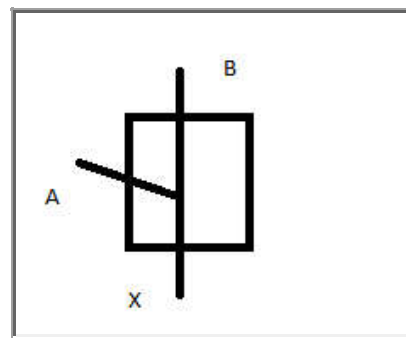
PlanPhoto



LocationPhoto



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**Chamber Conditions:**

Cover	<input type="text" value="OK"/>	Shaft	<input type="text" value="OK"/>
Irons/Ladder	<input type="text" value="OK"/>	Chamber	<input type="text" value="OK"/>
Benching/Channel	<input type="text" value="OK"/>		

Pipe	Invert L	Depth	Fr	Upstream	Re/Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-1.880	1.88	GULLY			C			100		VC	
B	-2.000	2.00	main line y			C			225		VC	
X	-2.050	2.05			MHS2	C			225		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



# Manhole Record Card

Number	<input type="text" value="MHF4"/>	Date Of Survey	<input type="text" value="15/06/2023"/>
Status	<input type="text" value="PR"/>	Function	<input type="text" value="F"/>
		Type	<input type="text" value="M"/>

**Cover Details:**

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	<input type="text" value="600"/> X <input type="text" value="400"/>	Chamber	<input type="text" value="0"/> X <input type="text" value="0"/>	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	<input type="text" value="0"/> X <input type="text" value="0"/>	ShaftDepth	<input type="text" value="0"/>	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	<input type="text" value="0"/>	Step Irons	<input type="checkbox"/>
		Ladder	<input type="checkbox"/>		

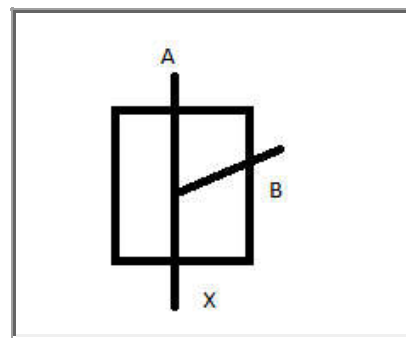
PlanPhoto



LocationPhoto



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**Chamber Conditions:**

Cover	<input type="text" value="OK"/>	Shaft	<input type="text" value="OK"/>
Irons/Ladder	<input type="text" value="OK"/>	Chamber	<input type="text" value="OK"/>
Benching/Channel	<input type="text" value="OK"/>		

Pipe	Invert L	Depth	Fr	UpstreamRe	Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-2.550	2.55	MHF3			C			150		VC	
B	-1.120	1.12	MH			C			100		VC	
X	0.000	0.00			MHF2	C			150		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



# Manhole Record Card

Number	<input type="text" value="MHS3"/>	Date Of Survey	<input type="text" value="15/06/2023"/>
Status	<input type="text" value="PR"/>	Function	<input type="text" value="S"/>
		Type	<input type="text" value="M"/>

### Cover Details:

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	<input type="text" value="600"/> X <input type="text" value="400"/>	Chamber	<input type="text" value="0"/> X <input type="text" value="0"/>	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	<input type="text" value="0"/> X <input type="text" value="0"/>	ShaftDepth	<input type="text" value="0"/>	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	<input type="text" value="0"/>	Step Irons	<input checked="" type="checkbox"/>
		Ladder	<input type="checkbox"/>		

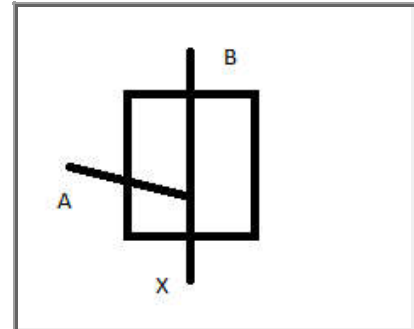
PlanPhoto



LocationPhoto



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### Chamber Conditions:

Cover	<input type="text" value="OK"/>	Shaft	<input type="text" value="OK"/>
Irons/Ladder	<input type="text" value="OK"/>	Chamber	<input type="text" value="OK"/>
Benching/Channel	<input type="text" value="OK"/>		

Pipe	Invert L	Depth	Fr	Upstream	Re/Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-2.500	2.50	redundant			C			100		VC	
B	-1.500	1.50	MHS2			C			300		VC	
X	-2.700	2.70			MHS4	C			375		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



# Manhole Record Card

Number	MHF6	Date Of Survey	15/06/2023
Status	PR	Function	F
		Type	M

### Cover Details:

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	600 X 400	Chamber	0 X 0	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	0	Step Irons	<input checked="" type="checkbox"/>
		Ladder	<input type="checkbox"/>		

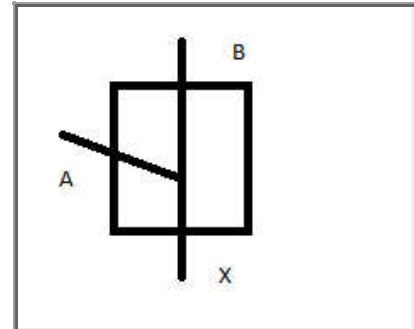
PlanPhoto



LocationPhoto



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### Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

Pipe	Invert L	Depth	Fr	Upstream	Re/Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-2.420	2.42	MHF7			C			150		VC	
B	-1.100	1.10	MHF5			C			150		VC	
X	-2.570	2.57			MHF8	C			150		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.





# Manhole Record Card

Number	MHF7	Date Of Survey	15/06/2023
Status	PR	Function	F
		Type	M

### Cover Details:

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	600 X 600	Chamber	0 X 0	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	0	Step Irons	<input type="checkbox"/>
		Ladder	<input type="checkbox"/>		

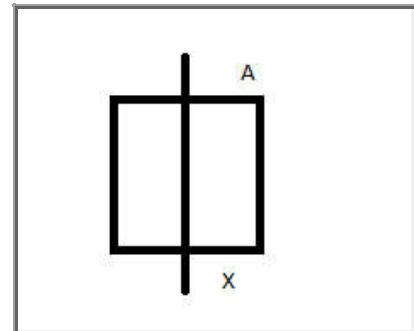
PlanPhoto



LocationPhoto



PlanofManhol



### Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

Pipe	Invert L	Depth	Fr	Upstream	Re	Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-1.210	1.21	redundant				C			150		VC	
X	-1.230	1.23			MHF6		C			150		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



# Manhole Record Card

Number	<input type="text" value="MHS4"/>	Date Of Survey	<input type="text" value="15/06/2023"/>
Status	<input type="text" value="PR"/>	Function	<input type="text" value="S"/>
		Type	<input type="text" value="M"/>

### Cover Details:

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	<input type="text" value="600"/> X <input type="text" value="400"/>	Chamber	<input type="text" value="0"/> X <input type="text" value="0"/>	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	<input type="text" value="0"/> X <input type="text" value="0"/>	ShaftDepth	<input type="text" value="0"/>	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.RegCourses	<input type="text"/>	Segments	<input type="checkbox"/>
		No.Land	<input type="text" value="0"/>	Step Irons	<input checked="" type="checkbox"/>
		Ladder	<input type="checkbox"/>		

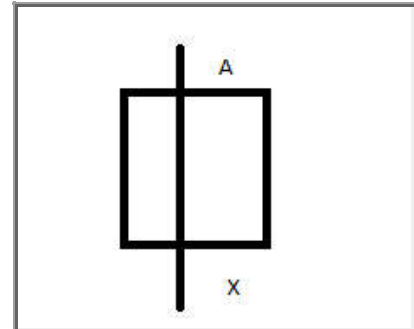
PlanPhoto



LocationPhoto



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### Chamber Conditions:

Cover	<input type="text" value="OK"/>	Shaft	<input type="text" value="OK"/>
Irons/Ladder	<input type="text" value="OK"/>	Chamber	<input type="text" value="OK"/>
Benching/Channel	<input type="text" value="OK"/>		

Pipe	Invert L	Depth	Fr	UpstreamRe	Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-1.510	1.51	MHS3			C			300			
X	-2.120	2.12		BMH		C			375	VC		

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



# Manhole Record Card

Number	<input type="text" value="MHF8"/>	Date Of Survey	<input type="text" value="15/06/2023"/>
Status	<input type="text" value="PR"/>	Function	<input type="text" value="F"/>
		Type	<input type="text" value="M"/>

**Cover Details:**

Square Recta  Double Triang  Single Triangl  Circular  Multiple  Hinged  Lockable

CoverLevel  Cover Load Class

Cover	<input type="text" value="600"/> X <input type="text" value="400"/>	Chamber	<input type="text" value="0"/> X <input type="text" value="0"/>	EvidenceOfSurcharge	<input type="checkbox"/>
Shaft	<input type="text" value="0"/> X <input type="text" value="0"/>	ShaftDepth	<input type="text" value="0"/>	ToxicAtmosphere	<input type="checkbox"/>
Brick	<input checked="" type="checkbox"/>	Precast Concrete	<input type="checkbox"/>	PVC	<input type="checkbox"/>
Reducing Slab	<input type="checkbox"/>	Taper	<input type="checkbox"/>	Side Entry	<input type="checkbox"/>
		No.Land	<input type="text" value="0"/>	Step Irons	<input checked="" type="checkbox"/>
		Segments	<input type="checkbox"/>	No.RegCourses	<input type="text"/>
		Ladder	<input type="checkbox"/>		

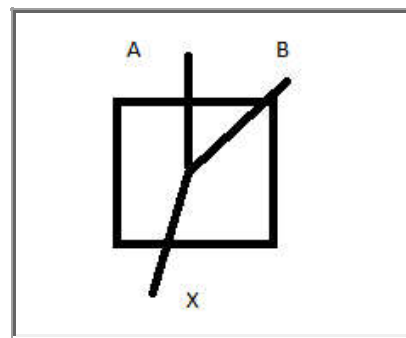
PlanPhoto



LocationPhoto



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**Chamber Conditions:**

Cover	<input type="text" value="OK"/>	Shaft	<input type="text" value="OK"/>
Irons/Ladder	<input type="text" value="OK"/>	Chamber	<input type="text" value="OK"/>
Benching/Channel	<input type="text" value="OK"/>		

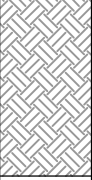





Pipe	Invert L	Depth	Fr	Upstream	Re	Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-1.210	1.21	MHF6				C			150		VC	
B	-1.710	1.71	MH				C			100		PVC	
X	-1.900	1.90				BMH	C			150		VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.

## Appendix E: - Trial Hole Investigation Logs

# TRIAL PIT LOG

LOCATION ID:	PROJECT No:	2020.221		
<b>TPO1 SITE 2</b>	PROJECT TITLE	SNECKYEAT INDUSTRIAL ESTATE, WHITEHAVEN		
	CLIENT	NORTHERN TRUST		
	PLANT		START & END DATE	04.11.20
GROUND LEVEL (m AOD)				

STRATA					SAMPLES			IN-SITU TESTS			
GROUND WATER STRIKE	BACKFILL	LEVEL (m AOD)	DESCRIPTION	LEGEND	DEPTH (m BGL)	TYPE	FROM (m)	TO (m)	TYPE	DEPTH (m)	RESULT
			Grass over soft dark brown sandy slightly CLAY with abundant rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse. (Topsoil)		0.20						
			General Fill material comprising bricks/concrete and general builders waste (Hardcore)		0.60						
			Thin layer Soft to Firm dark orangish brown mottled bluish grey slightly sandy slightly gravelly CLAY. Sand is fine and medium.		0.80						
			Graded Limestone MOT Material		0.90						
			Thin layer Soft to Firm dark orangish brown mottled bluish grey slightly sandy slightly gravelly CLAY. Sand is fine and medium.		1.20						
			Hole Terminated at 1.20m BGL								

## REMARKS

**Reason for Termination:**  
Target depth reached.

**Groundwater Notes:**  
No groundwater encountered.

**Other Remarks:**

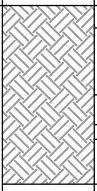



**GRAHAM SCHOFIELD ASSOCIATES  
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**GSA**

# TRIAL PIT LOG

LOCATION ID:	PROJECT No:	2020.221		
TPO2 SITE 2	PROJECT TITLE	SNECKYEAT INDUSTRIAL ESTATE, WHITEHAVEN		
	CLIENT	NORTHERN TRUST		
	PLANT		START & END DATE	04.11.20
GROUND LEVEL (m AOD)				

STRATA					SAMPLES			IN-SITU TESTS			
GROUND WATER STRIKE	BACKFILL	LEVEL (m AOD)	DESCRIPTION	LEGEND	DEPTH (m BGL)	TYPE	FROM (m)	TO (m)	TYPE	DEPTH (m)	RESULT
			Grass over soft dark brown sandy slightly CLAY with abundant rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse. (Topsoil)		0.15						
			General Fill material comprising LIMESTONE bricks/concrete and general builders waste (Hardcore)		0.60						
			Thin layer Soft to Firm dark orangish brown mottled bluish grey slightly sandy slightly gravelly CLAY. Sand is fine and medium.		1.20						
			Hole Terminated at 1.20m BGL								

## REMARKS

**Reason for Termination:**  
Target depth reached.

**Groundwater Notes:**  
No groundwater encountered.

**Other Remarks:**

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**GSA**

Appendix F: - HR Wallingford Greenfield Runoff Rate Estimation for Sites

Calculated by:

Site name:

Site location:

**Site Details**

Latitude:

Longitude:

Reference:

Date:

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.

**Runoff estimation approach**

**Site characteristics**

Total site area (ha):

**Methodology**

Q<sub>BAR</sub> 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):	1188	1188
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<sub>BAR</sub> < 2.0 l/s/ha?**

When Q<sub>BAR</sub> 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 ≤ 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 <sub>BAR</sub> (l/s):	3.31	3.31
1 in 1 year (l/s):	2.88	2.88
1 in 30 years (l/s):	5.62	5.62
1 in 100 year (l/s):	6.88	6.88
1 in 200 years (l/s):	7.84	7.84

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at [www.uksuds.com](http://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](http://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 G: - Proposed Drainage Strategy and Calculations



72 Balcarres Road  
Leyland  
Lancashire PR25 3ED

Northern Trust  
Proposed Commercial Units  
Sneckyeat Industrial Estate

Date 07/10/2020

Designed by O. Clark

File Proposed Drainage Networks

Checked by G. Scofield



XP Solutions

Network 2020.1

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Block 1 - West SW

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	16.000	Add Flow / Climate Change (%)	0
Ratio R	0.258	Minimum Backdrop Height (m)	0.600
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.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Block 1 - West SW

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
S11.000	22.000	0.376	58.5	0.033	5.00	0.0	0.600	o	150	Pipe/Conduit	
S12.000	3.630	0.076	47.8	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	
S11.001	16.769	1.209	13.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S13.000	14.216	0.095	150.0	0.060	5.00	0.0	0.600	o	150	Pipe/Conduit	
S11.002	11.920	0.397	30.0	0.009	0.00	0.0	0.600	o	150	Pipe/Conduit	
S11.003	8.836	0.275	32.1	0.012	0.00	0.0	0.600	o	150	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)
S11.000	43.97	5.28	105.785	0.033	0.0	0.0	0.0	1.32	23.3	3.9
S12.000	44.71	5.04	105.485	0.020	0.0	0.0	0.0	1.46	25.8	2.4
S11.001	43.66	5.38	105.409	0.053	0.0	0.0	0.0	2.72	48.1	6.3
S13.000	43.93	5.29	104.295	0.060	0.0	0.0	0.0	0.82	14.5	7.1
S11.002	43.34	5.49	104.200	0.122	0.0	0.0	0.0	1.84	32.6	14.3
S11.003	43.09	5.57	103.803	0.134	0.0	0.0	0.0	1.78	31.5	15.6

72 Balcarres Road  
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 Proposed Commercial Units  
 Sneckyeat Industrial Estate



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Manhole Schedules for Block 1 - West SW

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S11	106.685	0.900	Open Manhole	600	S11.000	105.785	150				
S12	106.685	1.200	Open Manhole	600	S12.000	105.485	150				
S13	106.685	1.276	Open Manhole	600	S11.001	105.409	150	S11.000	105.409	150	
								S12.000	105.409	150	
S14	106.310	2.015	Open Manhole	1200	S13.000	104.295	150				
S15	105.400	1.200	Open Manhole	1800	S11.002	104.200	150	S11.001	104.200	150	
								S13.000	104.200	150	
S16	105.300	1.497	Open Manhole	1800	S11.003	103.803	150	S11.002	103.803	150	
S17	104.700	1.172	Open Manhole	1200		OUTFALL		S11.003	103.528	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S11	299094.686	516302.580	299094.686	516302.580	Required	
S12	299079.318	516281.962	299079.318	516281.962	Required	
S13	299081.490	516284.876	299081.490	516284.876	Required	
S14	299076.533	516306.284	299076.533	516306.284	Required	
S15	299068.047	516294.879	299068.047	516294.879	Required	
S16	299057.113	516299.655	299057.113	516299.655	Required	
S17	299049.015	516303.190			No Entry	

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PIPELINE SCHEDULES for Block 1 - West SW

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)
S11.000	o	150	S11	106.685	105.785	0.750	Open Manhole	600
S12.000	o	150	S12	106.685	105.485	1.050	Open Manhole	600
S11.001	o	150	S13	106.685	105.409	1.126	Open Manhole	600
S13.000	o	150	S14	106.310	104.295	1.865	Open Manhole	1200
S11.002	o	150	S15	105.400	104.200	1.050	Open Manhole	1800
S11.003	o	150	S16	105.300	103.803	1.347	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S11.000	22.000	58.5	S13	106.685	105.409	1.126	Open Manhole	600
S12.000	3.630	47.8	S13	106.685	105.409	1.126	Open Manhole	600
S11.001	16.769	13.9	S15	105.400	104.200	1.050	Open Manhole	1800
S13.000	14.216	150.0	S15	105.400	104.200	1.050	Open Manhole	1800
S11.002	11.920	30.0	S16	105.300	103.803	1.347	Open Manhole	1800
S11.003	8.836	32.1	S17	104.700	103.528	1.022	Open Manhole	1200

Free Flowing Outfall Details for Block 1 - West SW

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

S11.003 S17 104.700 103.528 103.162 1200 0

Simulation Criteria for Block 1 - West SW

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m <sup>3</sup> /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	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	16.000	Storm Duration (mins)	30
Ratio R	0.260		

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Checked by G. Scofield

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Online Controls for Block 1 - West SW

Hydro-Brake® Optimum Manhole: S16, DS/PN: S11.003, Volume (m³): 4.0

Unit Reference MD-SHE-0062-1700-1000-1700  
 Design Head (m) 1.000  
 Design Flow (l/s) 1.7  
 Flush-Flo™ Calculated  
 Objective Minimise upstream storage  
 Application Surface  
 Sump Available Yes  
 Diameter (mm) 62  
 Invert Level (m) 103.803  
 Minimum Outlet Pipe Diameter (mm) 75  
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	1.7	Kick-Flo®	0.549	1.3
Flush-Flo™	0.270	1.6	Mean Flow over Head Range	-	1.4

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	1.4	0.800	1.5	2.000	2.3	4.000	3.2	7.000	4.2
0.200	1.6	1.000	1.7	2.200	2.4	4.500	3.4	7.500	4.3
0.300	1.6	1.200	1.8	2.400	2.5	5.000	3.6	8.000	4.4
0.400	1.5	1.400	2.0	2.600	2.6	5.500	3.7	8.500	4.6
0.500	1.4	1.600	2.1	3.000	2.8	6.000	3.9	9.000	4.7
0.600	1.3	1.800	2.2	3.500	3.0	6.500	4.0	9.500	4.8

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Storage Structures for Block 1 - West SW

Cellular Storage Manhole: S15, DS/PN: S11.002

Invert Level (m) 104.200 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )
0.000	82.0	0.0	1.800	0.0	0.0	3.600	0.0	0.0
0.200	82.0	0.0	2.000	0.0	0.0	3.800	0.0	0.0
0.400	82.0	0.0	2.200	0.0	0.0	4.000	0.0	0.0
0.600	82.0	0.0	2.400	0.0	0.0	4.200	0.0	0.0
0.800	82.0	0.0	2.600	0.0	0.0	4.400	0.0	0.0
0.801	0.0	0.0	2.800	0.0	0.0	4.600	0.0	0.0
1.200	0.0	0.0	3.000	0.0	0.0	4.800	0.0	0.0
1.400	0.0	0.0	3.200	0.0	0.0	5.000	0.0	0.0
1.600	0.0	0.0	3.400	0.0	0.0			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block 1 - West SW

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/ha Storage 0.000  
 Hot Start Level (mm) 0 Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.000 Cv (Summer) 0.750  
 Region England and Wales Ratio R 0.259 Cv (Winter) 0.840

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

Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080  
 Return Period(s) (years) 1, 2, 30, 100  
 Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S11.000	S11	15 Winter	1	+0%					105.823	-0.112
S12.000	S12	15 Winter	1	+0%					105.518	-0.117
S11.001	S13	15 Winter	1	+0%					105.443	-0.116
S13.000	S14	15 Winter	1	+0%	30/15 Winter				104.365	-0.080
S11.002	S15	120 Winter	1	+0%	30/30 Summer				104.285	-0.065
S11.003	S16	120 Winter	1	+0%	1/15 Summer				104.280	0.327

PN	US/MH Name	Flooded		Half Drain Pipe			Status	Level Exceeded
		Volume (m <sup>3</sup> )	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Flow (l/s)		
S11.000	S11	0.000	0.14			3.2	OK	
S12.000	S12	0.000	0.11			1.9	OK	
S11.001	S13	0.000	0.11			5.0	OK	
S13.000	S14	0.000	0.43			5.7	OK	
S11.002	S15	0.000	0.11		61	3.3	OK	
S11.003	S16	0.000	0.06			1.5	SURCHARGED	



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 Checked by G. Scofield

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Network 2020.1

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block 1 - West SW

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/ha Storage 0.000  
 Hot Start Level (mm) 0 Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.000 Cv (Summer) 0.750  
 Region England and Wales Ratio R 0.259 Cv (Winter) 0.840

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

Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080  
 Return Period(s) (years) 1, 2, 30, 100  
 Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S11.000	S11	15 Winter	2	+0%					105.829	-0.106
S12.000	S12	15 Winter	2	+0%					105.523	-0.112
S11.001	S13	15 Winter	2	+0%					105.447	-0.112
S13.000	S14	15 Winter	2	+0%	30/15 Winter				104.376	-0.069
S11.002	S15	180 Winter	2	+0%	30/30 Summer				104.325	-0.025
S11.003	S16	180 Winter	2	+0%	1/15 Summer				104.320	0.367

PN	US/MH Name	Flooded		Half Drain Pipe			Level Exceeded
		Volume (m <sup>3</sup> )	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status	
S11.000	S11	0.000	0.19		4.1	OK	
S12.000	S12	0.000	0.14		2.5	OK	
S11.001	S13	0.000	0.15		6.5	OK	
S13.000	S14	0.000	0.55		7.4	OK	
S11.002	S15	0.000	0.10	91	2.8	OK	
S11.003	S16	0.000	0.06		1.5	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block 1 - West SW

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/ha Storage 0.000  
 Hot Start Level (mm) 0 Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.000 Cv (Summer) 0.750  
 Region England and Wales Ratio R 0.259 Cv (Winter) 0.840

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

Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080  
 Return Period(s) (years) 1, 2, 30, 100  
 Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S11.000	S11	15 Winter	30	+0%					105.846	-0.089
S12.000	S12	15 Winter	30	+0%					105.538	-0.097
S11.001	S13	15 Winter	30	+0%					105.463	-0.096
S13.000	S14	240 Winter	30	+0%	30/15 Winter				104.530	0.085
S11.002	S15	240 Winter	30	+0%	30/30 Summer				104.527	0.177
S11.003	S16	240 Winter	30	+0%	1/15 Summer				104.523	0.570

PN	US/MH Name	Flooded			Half Drain Pipe			Level Exceeded
		Volume (m <sup>3</sup> )	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	
S11.000	S11	0.000	0.35			7.6	OK	
S12.000	S12	0.000	0.27			4.6	OK	
S11.001	S13	0.000	0.27			12.1	OK	
S13.000	S14	0.000	0.27			3.5	SURCHARGED	
S11.002	S15	0.000	0.09		204	2.5	SURCHARGED	
S11.003	S16	0.000	0.06			1.5	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block 1 - West SW

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/ha Storage 0.000  
Hot Start Level (mm) 0 Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.000 Cv (Summer) 0.750  
Region England and Wales Ratio R 0.259 Cv (Winter) 0.840

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

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080  
Return Period(s) (years) 1, 2, 30, 100  
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S11.000	S11	15 Winter	100	+40%					105.871	-0.064
S12.000	S12	15 Winter	100	+40%					105.559	-0.076
S11.001	S13	15 Winter	100	+40%					105.484	-0.075
S13.000	S14	360 Winter	100	+40%	30/15 Winter				104.958	0.513
S11.002	S15	360 Winter	100	+40%	30/30 Summer				104.955	0.605
S11.003	S16	360 Winter	100	+40%	1/15 Summer				104.949	0.996

PN	US/MH Name	Flooded		Half Drain Pipe			Level Exceeded
		Volume (m <sup>3</sup> )	Flow / Cap.	Flow (l/s)	Time (mins)	Flow (l/s)	
S11.000	S11	0.000	0.62			13.6	OK
S12.000	S12	0.000	0.48			8.3	OK
S11.001	S13	0.000	0.49			21.7	OK
S13.000	S14	0.000	0.37			4.9	SURCHARGED
S11.002	S15	0.000	0.06		340	1.9	SURCHARGED
S11.003	S16	0.000	0.07			1.8	SURCHARGED

# Technical Specification

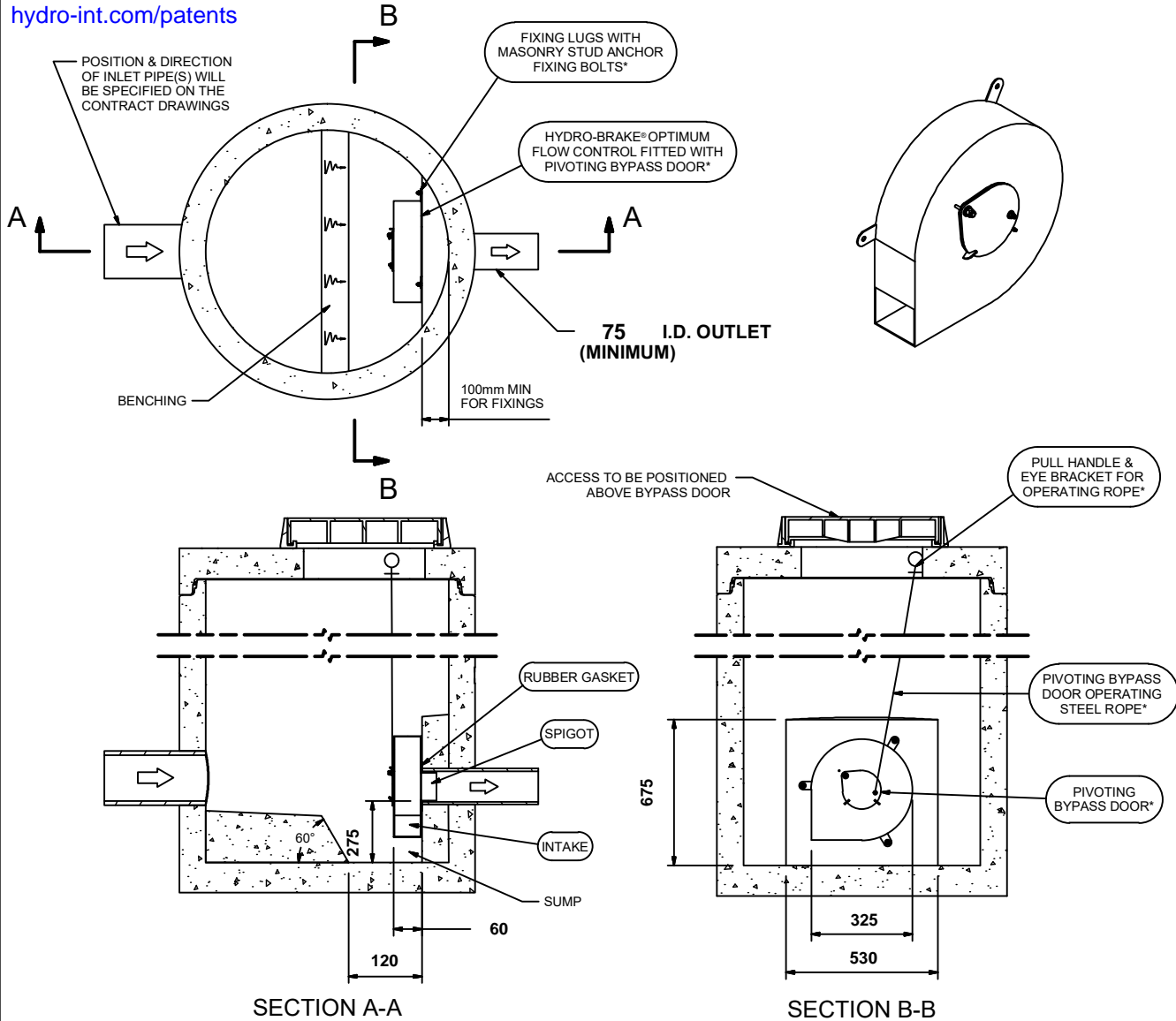
Control Point	Head (m)	Flow (l/s)
Primary Design	1.600	1.600
Flush-Flo™	0.234	1.130
Kick-Flo®	0.475	0.928
Mean Flow		1.202

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet



[hydro-int.com/patents](http://hydro-int.com/patents)



**IMPORTANT:** ○ LIMIT OF HYDRO INTERNATIONAL SUPPLY  
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS  
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL  
 ALL CIVIL AND INSTALLATION WORK BY OTHERS  
 \* WHERE SUPPLIED  
 HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

**THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.**

<b>DESIGN ADVICE</b> 	The head/flow characteristics of this SHE-0053-1600-1600-1600 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve. <b>The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.</b>			
	DATE	10/7/2020 2:26 PM		SHE-0053-1600-1600-1600 Hydro-Brake® Optimum
	SITE	Sneckyeat Industrial Estate		
	DESIGNER	Oliver Clark		
REF	2020.221			

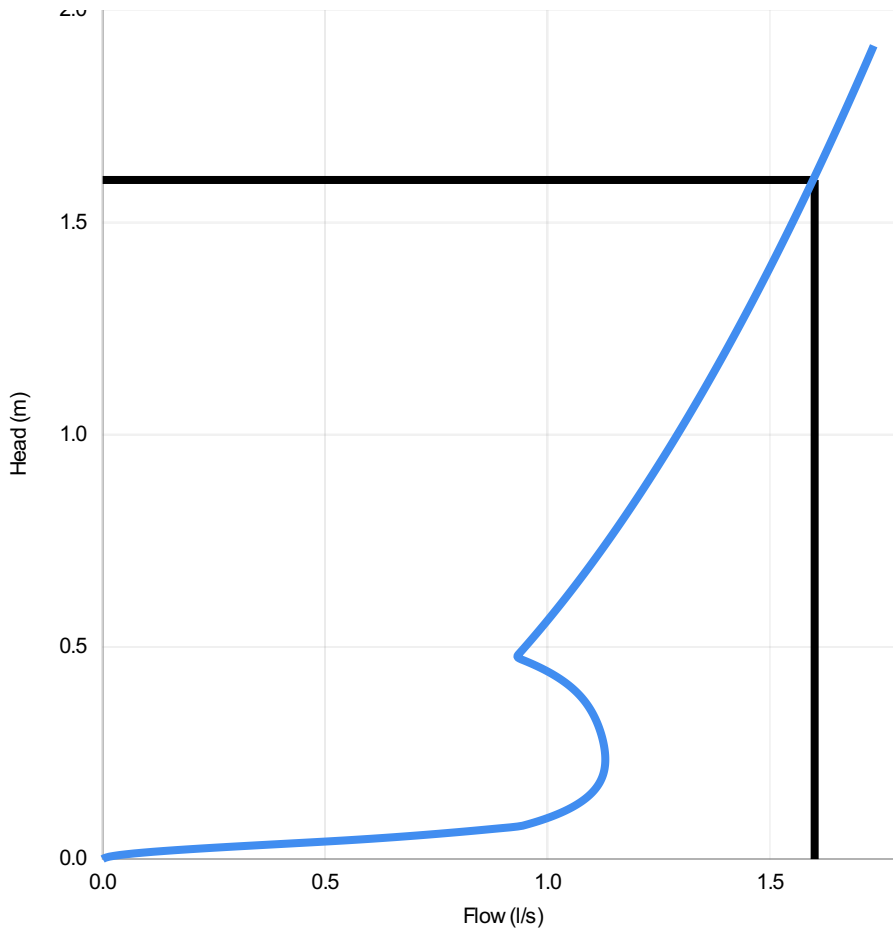
## Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.600	1.600
Flush-Flo	0.234	1.130
Kick-Flo®	0.475	0.928
Mean Flow		1.202



PT/329/0412

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Head (m)	Flow (l/s)
0.000	0.000
0.055	0.700
0.110	1.032
0.166	1.107
0.221	1.129
0.276	1.125
0.331	1.107
0.386	1.072
0.441	1.001
0.497	0.946
0.552	0.991
0.607	1.034
0.662	1.075
0.717	1.113
0.772	1.151
0.828	1.187
0.883	1.221
0.938	1.255
0.993	1.287
1.048	1.319
1.103	1.350
1.159	1.380
1.214	1.409
1.269	1.437
1.324	1.465
1.379	1.493
1.434	1.519
1.490	1.545
1.545	1.571
1.600	1.596

### DESIGN ADVICE

The head/flow characteristics of this SHE-0053-1600-1600-1600 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.




**The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**



DATE	07/10/2020 14:26
Site	Sneckyeat Industrial Estate
DESIGNER	Oliver Clark
Ref	2020.221

SHE-0053-1600-1600-1600  
Hydro-Brake Optimum®

Graham Schofield Associates		Page 1
72 Balcarres Road Leyland Lancashire PR25 3ED	Northern Trust Proposed Commercial Units Sneckyeat Industrial Estate	
Date 07/01/2021 File Proposed Drainage Networks	Designed by O. Clark Checked by G. Scofield	
XP Solutions	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Block 1 - East SW







Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	16.000	Add Flow / Climate Change (%)	0
Ratio R	0.260	Minimum Backdrop Height (m)	0.600
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.	0.750	Min Slope for Optimisation (1:X)	250

Designed with Level Soffits

Network Design Table for Block 1 - East SW

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	12.845	0.220	58.4	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	
S2.000	12.871	0.220	58.5	0.021	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	17.069	1.250	13.7	0.021	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.000	12.871	0.086	150.0	0.056	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	8.781	0.164	53.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	11.613	0.551	21.1	0.013	0.00	0.0	0.600	o	150	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	44.50	5.16	105.785	0.020	0.0	0.0	0.0	1.32	23.3	2.4
S2.000	44.50	5.16	105.785	0.021	0.0	0.0	0.0	1.32	23.3	2.5
S1.001	44.18	5.27	105.565	0.062	0.0	0.0	0.0	2.74	48.4	7.4
S3.000	44.19	5.26	104.401	0.056	0.0	0.0	0.0	0.82	14.5	6.7
S1.002	43.85	5.37	104.315	0.118	0.0	0.0	0.0	1.38	24.4	14.0
S1.003	43.59	5.46	104.151	0.131	0.0	0.0	0.0	2.20	38.9	15.5

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Manhole Schedules for Block 1 - East SW

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)
S1	106.685	0.900	Open Manhole	600	S1.000	105.785	150				
S2	106.685	0.900	Open Manhole	600	S2.000	105.785	150				
S3	106.685	1.120	Open Manhole	1200	S1.001	105.565	150	S1.000	105.565	150	
								S2.000	105.565	150	
S4	105.735	1.334	Open Manhole	1200	S3.000	104.401	150				
S5	106.485	2.170	Open Manhole	1200	S1.002	104.315	150	S1.001	104.315	150	
								S3.000	104.315	150	
S6	106.150	1.999	Open Manhole	1800	S1.003	104.151	150	S1.002	104.151	150	
S7	105.600	2.000	Open Manhole	1200		OUTFALL		S1.003	103.600	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	299125.193	516279.923	299125.193	516279.923	Required	
S2	299109.897	516259.252	299109.897	516259.252	Required	
S3	299117.553	516269.598	299117.553	516269.598	Required	
S4	299123.591	516249.063	299123.591	516249.063	Required	
S5	299131.247	516259.409	299131.247	516259.409	Required	
S6	299138.292	516254.167	299138.292	516254.167	Required	
S7	299148.085	516247.925			No Entry	

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PIPELINE SCHEDULES for Block 1 - East SW

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	S1	106.685	105.785	0.750	Open Manhole	600
S2.000	o	150	S2	106.685	105.785	0.750	Open Manhole	600
S1.001	o	150	S3	106.685	105.565	0.970	Open Manhole	1200
S3.000	o	150	S4	105.735	104.401	1.184	Open Manhole	1200
S1.002	o	150	S5	106.485	104.315	2.020	Open Manhole	1200
S1.003	o	150	S6	106.150	104.151	1.849	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	12.845	58.4	S3	106.685	105.565	0.970	Open Manhole	1200
S2.000	12.871	58.5	S3	106.685	105.565	0.970	Open Manhole	1200
S1.001	17.069	13.7	S5	106.485	104.315	2.020	Open Manhole	1200
S3.000	12.871	150.0	S5	106.485	104.315	2.020	Open Manhole	1200
S1.002	8.781	53.5	S6	106.150	104.151	1.849	Open Manhole	1800
S1.003	11.613	21.1	S7	105.600	103.600	1.850	Open Manhole	1200

Free Flowing Outfall Details for Block 1 - East SW

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

S1.003      S7    105.600    103.600    103.600    1200    0

Simulation Criteria for Block 1 - East SW

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m <sup>3</sup> /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	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	16.000	Storm Duration (mins)	30
Ratio R	0.260		



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Date 07/01/2021

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Online Controls for Block 1 - East SW

Hydro-Brake® Optimum Manhole: S6, DS/PN: S1.003, Volume (m<sup>3</sup>): 5.2

Unit Reference	MD-SHE-0053-1600-1600-1600
Design Head (m)	1.600
Design Flow (l/s)	1.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	53
Invert Level (m)	104.151
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	1.6	Kick-Flo®	0.475	0.9
Flush-Flo™	0.234	1.1	Mean Flow over Head Range	-	1.2

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	1.0	0.800	1.2	2.000	1.8	4.000	2.4	7.000	3.2
0.200	1.1	1.000	1.3	2.200	1.8	4.500	2.6	7.500	3.3
0.300	1.1	1.200	1.4	2.400	1.9	5.000	2.7	8.000	3.4
0.400	1.1	1.400	1.5	2.600	2.0	5.500	2.8	8.500	3.5
0.500	0.9	1.600	1.6	3.000	2.1	6.000	2.9	9.000	3.5
0.600	1.0	1.800	1.7	3.500	2.3	6.500	3.0	9.500	3.6

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Storage Structures for Block 1 - East SW

Cellular Storage Manhole: S4, DS/PN: S3.000

Invert Level (m) 104.535 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )
0.000	85.0	0.0	1.800	0.0	0.0	3.600	0.0	0.0
0.200	85.0	0.0	2.000	0.0	0.0	3.800	0.0	0.0
0.400	85.0	0.0	2.200	0.0	0.0	4.000	0.0	0.0
0.600	85.0	0.0	2.400	0.0	0.0	4.200	0.0	0.0
0.800	85.0	0.0	2.600	0.0	0.0	4.400	0.0	0.0
0.801	0.0	0.0	2.800	0.0	0.0	4.600	0.0	0.0
1.200	0.0	0.0	3.000	0.0	0.0	4.800	0.0	0.0
1.400	0.0	0.0	3.200	0.0	0.0	5.000	0.0	0.0
1.600	0.0	0.0	3.400	0.0	0.0			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block 1 - East SW

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0    MADD Factor \* 10m<sup>3</sup>/ha Storage 0.000  
 Hot Start Level (mm) 0    Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500    Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 16.000 Cv (Summer) 0.750  
 Region England and Wales    Ratio R 0.259 Cv (Winter) 0.840

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

Profile(s)    Summer and Winter  
 Duration(s) (mins)    15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080  
 Return Period(s) (years)    1, 2, 30, 100  
 Climate Change (%)    0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m <sup>3</sup> )
S1.000	S1	15 Winter	1	+0%					105.815	-0.120	0.000
S2.000	S2	15 Winter	1	+0%					105.816	-0.119	0.000
S1.001	S3	15 Winter	1	+0%					105.600	-0.115	0.000
S3.000	S4	180 Winter	1	+0%	1/15 Summer				104.615	0.064	0.000
S1.002	S5	180 Winter	1	+0%	1/15 Summer				104.614	0.149	0.000
S1.003	S6	180 Winter	1	+0%	1/15 Summer				104.611	0.310	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.09			1.9	OK	
S2.000	S2	0.10			2.0	OK	
S1.001	S3	0.12			5.6	OK	
S3.000	S4	0.08		89	1.0	SURCHARGED	
S1.002	S5	0.08			1.6	SURCHARGED	
S1.003	S6	0.03			1.1	SURCHARGED	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block 1 - East SW

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/ha Storage 0.000  
Hot Start Level (mm) 0 Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.000 Cv (Summer) 0.750  
Region England and Wales Ratio R 0.259 Cv (Winter) 0.840

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

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080  
Return Period(s) (years) 1, 2, 30, 100  
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m <sup>3</sup> )
S1.000	S1	15 Winter	2	+0%					105.819	-0.116	0.000
S2.000	S2	15 Winter	2	+0%					105.820	-0.115	0.000
S1.001	S3	15 Winter	2	+0%					105.606	-0.109	0.000
S3.000	S4	240 Winter	2	+0%	1/15 Summer				104.660	0.109	0.000
S1.002	S5	240 Winter	2	+0%	1/15 Summer				104.658	0.193	0.000
S1.003	S6	240 Winter	2	+0%	1/15 Summer				104.655	0.354	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.12			2.5	OK	
S2.000	S2	0.12			2.6	OK	
S1.001	S3	0.16			7.3	OK	
S3.000	S4	0.08		135	1.0	SURCHARGED	
S1.002	S5	0.07			1.6	SURCHARGED	
S1.003	S6	0.03			1.1	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block 1 - East SW

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/ha Storage 0.000  
Hot Start Level (mm) 0 Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.000 Cv (Summer) 0.750  
Region England and Wales Ratio R 0.259 Cv (Winter) 0.840

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

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080  
Return Period(s) (years) 1, 2, 30, 100  
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m <sup>3</sup> )
S1.000	S1	15 Winter	30	+0%					105.833	-0.102	0.000
S2.000	S2	15 Winter	30	+0%					105.834	-0.101	0.000
S1.001	S3	15 Winter	30	+0%					105.624	-0.091	0.000
S3.000	S4	240 Winter	30	+0%	1/15 Summer				104.874	0.323	0.000
S1.002	S5	240 Winter	30	+0%	1/15 Summer				104.872	0.407	0.000
S1.003	S6	240 Winter	30	+0%	1/15 Summer				104.869	0.568	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.22			4.6	OK	
S2.000	S2	0.23			4.9	OK	
S1.001	S3	0.32			14.6	OK	
S3.000	S4	0.08		242	1.1	SURCHARGED	
S1.002	S5	0.07			1.4	SURCHARGED	
S1.003	S6	0.03			1.1	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Block 1 - East SW

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/ha Storage 0.000  
 Hot Start Level (mm) 0 Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.000 Cv (Summer) 0.750  
 Region England and Wales Ratio R 0.259 Cv (Winter) 0.840

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

Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080  
 Return Period(s) (years) 1, 2, 30, 100  
 Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m <sup>3</sup> )
S1.000	S1	15 Winter	100	+40%					105.850	-0.085	0.000
S2.000	S2	15 Winter	100	+40%					105.852	-0.083	0.000
S1.001	S3	15 Winter	100	+40%					105.648	-0.067	0.000
S3.000	S4	480 Winter	100	+40%	1/15 Summer				105.330	0.779	0.000
S1.002	S5	480 Winter	100	+40%	1/15 Summer				105.328	0.863	0.000
S1.003	S6	480 Winter	100	+40%	1/15 Summer				105.324	1.023	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.39			8.3	OK	
S2.000	S2	0.41			8.7	OK	
S1.001	S3	0.58			26.2	OK	
S3.000	S4	0.10		470	1.3	SURCHARGED	
S1.002	S5	0.06			1.3	SURCHARGED	
S1.003	S6	0.04			1.4	SURCHARGED	

## Technical Specification

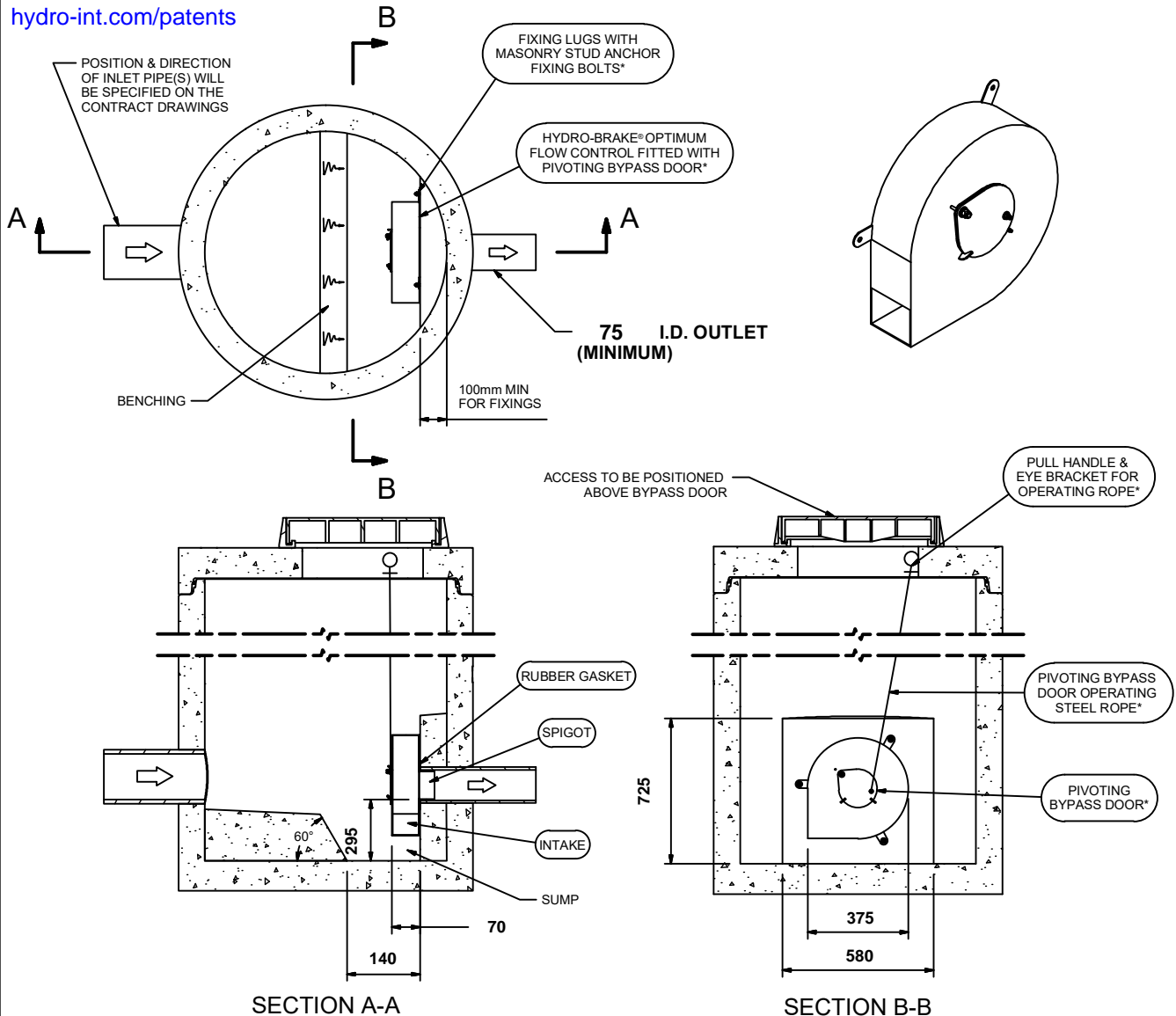
Control Point	Head (m)	Flow (l/s)
Primary Design	1.000	1.700
Flush-Flo™	0.270	1.591
Kick-Flo®	0.549	1.295
Mean Flow		1.433

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet



[hydro-int.com/patents](http://hydro-int.com/patents)



**IMPORTANT:** ○ LIMIT OF HYDRO INTERNATIONAL SUPPLY  
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS  
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL  
 ALL CIVIL AND INSTALLATION WORK BY OTHERS  
 \* WHERE SUPPLIED  
 HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW  
 CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

**THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.**

### DESIGN ADVICE



The head/flow characteristics of this SHE-0062-1700-1000-1700 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.  
**The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**

**Hydro**  
International®

DATE 10/7/2020 2:25 PM

SITE Sneekyeat Industrial Estate

DESIGNER Oliver Clark

REF 2020.221

SHE-0062-1700-1000-1700

Hydro-Brake® Optimum

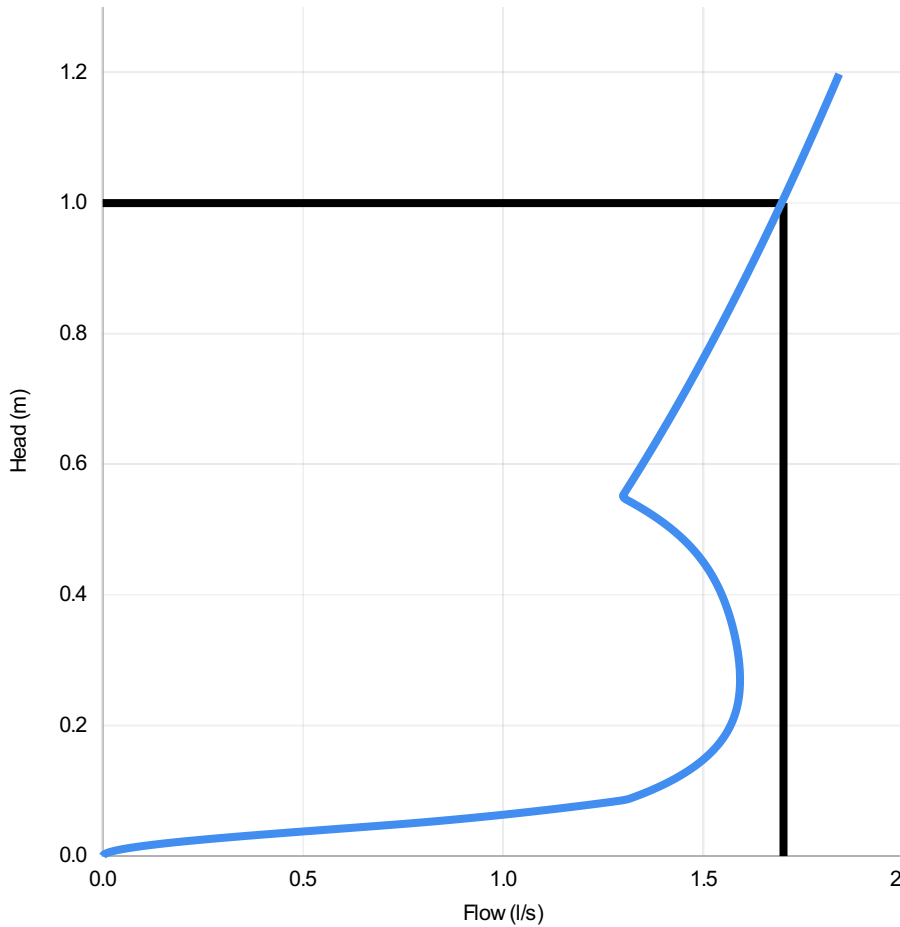
## Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.000	1.700
Flush-Flo	0.270	1.591
Kick-Flo®	0.549	1.295
Mean Flow		1.433



PT/329/0412

[hydro-int.com/patents](http://hydro-int.com/patents)



Head (m)	Flow (l/s)
0.000	0.000
0.034	0.431
0.069	1.084
0.103	1.379
0.138	1.479
0.172	1.539
0.207	1.573
0.241	1.588
0.276	1.591
0.310	1.586
0.345	1.575
0.379	1.559
0.414	1.536
0.448	1.502
0.483	1.454
0.517	1.385
0.552	1.299
0.586	1.334
0.621	1.368
0.655	1.402
0.690	1.434
0.724	1.466
0.759	1.497
0.793	1.527
0.828	1.556
0.862	1.585
0.897	1.613
0.931	1.641
0.966	1.668
1.000	1.695

### DESIGN ADVICE

The head/flow characteristics of this SHE-0062-1700-1000-1700 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.



**The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**



DATE	07/10/2020 14:25
Site	Sneckyeat Industrial Estate
DESIGNER	Oliver Clark
Ref	2020.221

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