LAND ADJACENT TO 67 CHAPELGATE

DRAINAGE STRATEGY AND CALCULATIONS

CLIENT:	Ecoholmes Community Trust
ARCHITECT:	GWP Architecture
SITE ADDRESS:	Land Adjacent to 67 Chapel Gate, Scholes, Holmfirth, HD9 1SX
REFERENCE (REV):	22055-DCE-XX-XX-T-C-001-C03
DATE:	16/12/2025

AUTHOR:	O.Bastain	DATE:	16/12/2025
CHECKER:	S.Reid	DATE:	16/12/2025

CONTENTS

REVISION	DATE	AUTHOR	CHECKER	COMMENTS
C01	08/04/2022	S.Reid	P.Dixon	Construction Issue
C02	11/01/2025	S.Reid	P.Dixon	Appendices Updated
C03	16/12/2025	O.Bastain	S.Reid	Updates to suit LLFA Comments from 23.10.25

EXISTING SITE

The existing brownfield site is a former quarry located between two roads to the north and east of the site. Along the west and southern boundaries are former quarry faces which are up to 5m high. The site generally has a level around 239.5m AOD and has a steep embankment down to the highway on its eastern boundary and cut stone faces.

Based off the topographical survey, which was undertaken in September 2023, it suggests that the site is generally flat with levels ranging between 238.262m AOD and 245.540m AOD, levels begin to increase where there is an existing embankment to the west. The topographical survey, appended to the rear end of this document, indicates no drainage features within the site and no drainage survey has been undertaken since February 2022 to determine the presence of drainage facilities within the site. After analysing Yorkshire Water Records, it could be seen that there is existing adopted combined water sewer which runs underneath Chapelgate to the north of the site and an existing adopted surface water sewer which runs underneath Dean Bridge Lane to the east.

PROPOSED DEVELOPMENT

The proposed development comprises of ten plots; each dwelling will have associated parking which will be situated adjacent to the access road. The access road is to provide a turning head which is required for HGVs to allow them to turn around and exit the site subject to the removal of waste from the bin collection point. There is abundant vegetation, a play area and numerous bike stores, each amenity which will contribute to an aesthetically pleasing environment.

The total site area is 1893m^2 or 0.189ha of which 1610m^2 is impermeable as show on drawing 22055-DCE-XX-XX-D-C-103 'Proposed Impermeable Area' in the appendices. Most of the site levels are proposed to be as close to existing as possible with the finished floor levels of the properties at 239.00m AOD.

Figure 1 - Proposed Site Plan

SURFACE WATER DRAINAGE STRATEGY

DESIGN STANDARDS

Drainage systems on this site have been designed in accordance with the following standards as required:

- CIRIA C753 – The SuDS Manual (2015)
- British Standard 8582:2013 – Code of Practice for Surface Water Management for Development Sites
- British Standard 752:2017 – Drain and Sewer Systems Outside Building – Sewer System Management
- British Standard 8533:2017 - Assessing and managing flood risk in development - code of practice
- Building Regulations Part H
- Sewerage Industry Guidance – Codes for Adoption
- Design Manual for Roads and Bridges
- Kirklees Local Plan (February 2019)

SURFACE WATER DRAINAGE HIERARCHY

Infiltration

The existing site consists of areas of made ground which consists of clays, gravels over the quarried stone. Within the gravels clinker and contaminants have been identified, which presents a medium risk to groundwater as detailed within the Phase 2 SI.

These contaminants will need to be explored further, as recommended in the SI, to ensure that these contaminants do not impact the underlying groundwater table. With the site being elevated above the adjacent highway, combined with this risk of contamination, soakaway has been discounted for the developed portion of the site. The land drainage within the site, including around the boundary, will utilise infiltration as it is expected that these drains will be in areas of low contamination risk, and are outside the quarry works.

Soakaway tests were undertaken within the site in March 2022, and it was identified that the site would not be suitable for soakaways as the fractured rock within the site was fully saturated and had water escaping and bubbling into the trial pits. This will need to be considered during the structural design of retaining walls, foundations and the floatation of the attenuation tank.

Watercourse

Satellite imagery indices that there are no existing watercourses within the vicinity of the site. The nearest watercourse is Dean Dike, this is approximately 210m away to the south-east of the site. This would require crossing third party land and extensive lengths of drainage would be required. Therefore, a connection into Dean Dike has been considered unviable.

Surface Water Drainage

The site is not served by a YW surface water sewer, but there is a possible route to the watercourse via an existing 300mm highway drain located to the east of the site. It is proposed to use this as the discharge point for this development for surface water. Surveys on this drain have confirmed a continuous, unrestricted route to a headwall at Dean Bridge.

PEAK FLOW CONTROL FROM SITE

The surface water is to be accommodated in a geocellular storage tank, equating to 89.775m^3. The hydraulic calculations indicate that there is no flooding of the surface water system in the 1 in 2-year event, 1 in 30, 1 in 30, 1 in 100 and 1 in 100 + 30% climate change event. The climate change allowances that have been used are the Aire and Calder Management Catchment peak rainfall allowances for the 2070's epoch, in line with the Flood Risk and Costal Change Planning Practice guidance.

FLOOD RISK AND FLOOD EXCEEDANCE

The site is in Flood Zone 1 and this is shown on the flood map for planning below. The DEFRA website for historical flood data shows that there Is no record of historical flooding on site.

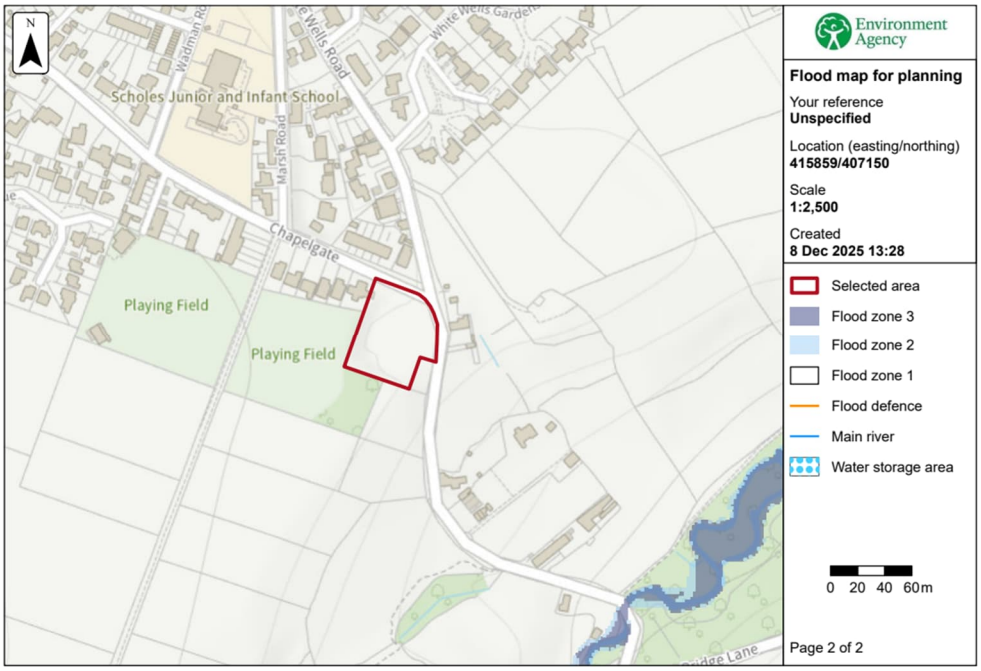


Figure 2 - Flood Map for Planning (EA)

Fluvial (River) Flooding

The map below shows that there is no risk of flooding from Rivers or Sea, as there are no immediate watercourses near the site. Therefore, the risk of fluvial flooding is considered to be low.

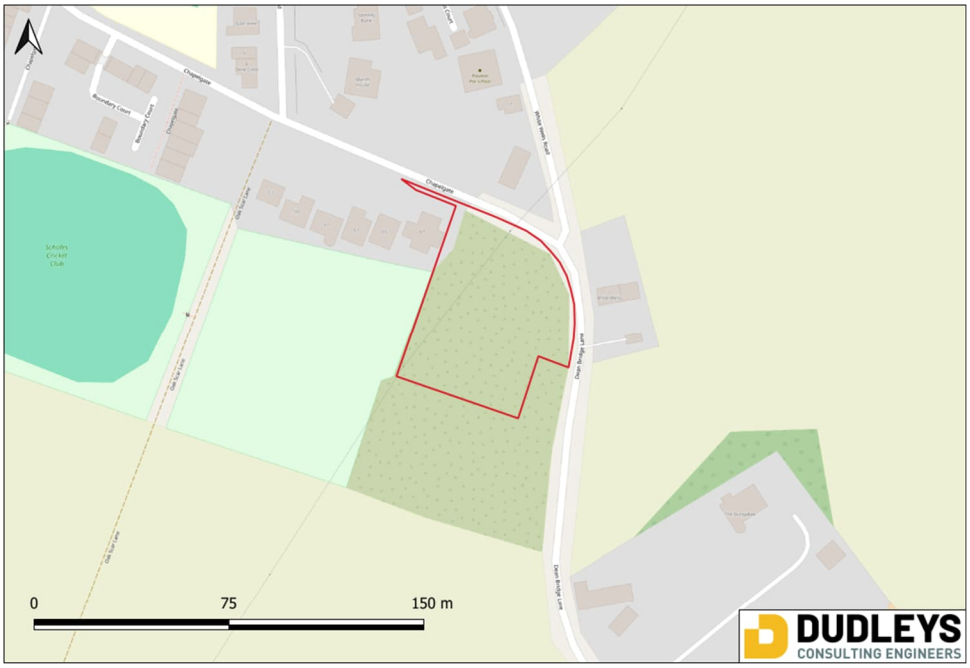


Figure 3 - Fluvial Flooding (EA)

Pluvial (Surface Water) Flooding

The map below shows that the site is not at risk from pluvial flooding. Therefore, the risk of surface water flooding is considered to be low.

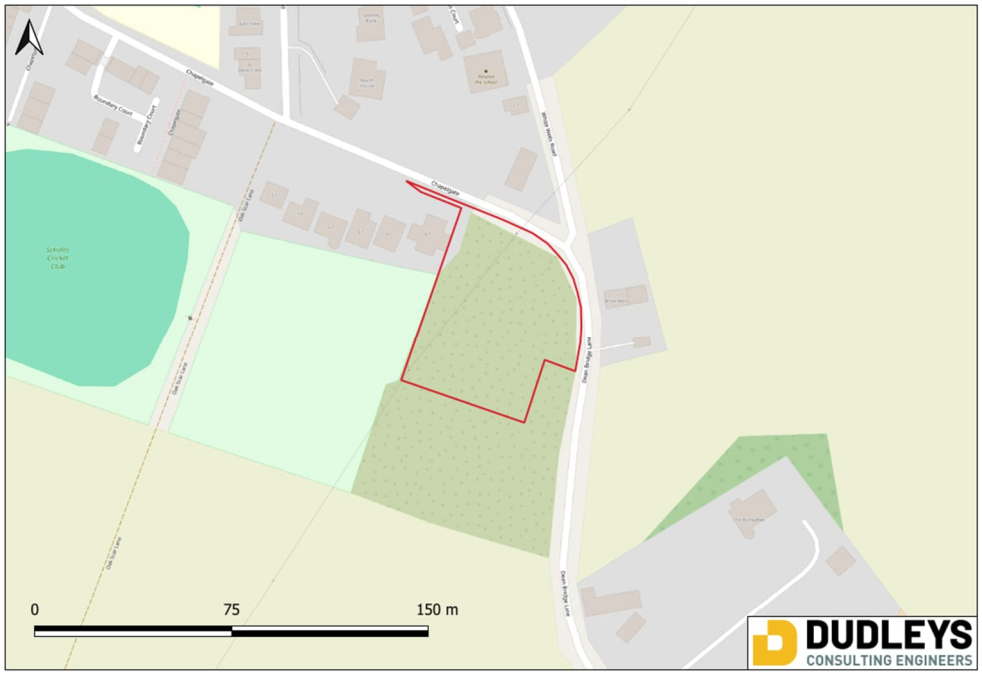


Figure 4 – Pluvial Flooding (EA)

Groundwater Flooding

The site investigation report undertaken by JNP Group Consulting Engineers in June 2022 states that during the ground investigation one ground water strike was encountered within one window sample location. 'Groundwater was only encountered in WS05 at 1.20m below ground level. This is noted to be within the gravelly clay made ground and as such is possibly perched groundwater. Subsequent monitoring visits has indicated that limited groundwater is present within the boreholes of WS02 and WS06' please refer to the geotechnical phase 2 ground investigation report appended to the rear end of this document.

Sewer Flooding

There is an existing combined water sewer to the north of the site adopted by Yorkshire Water. If flooding occurs, water will flood Chapelgate road within the channel line, having no detrimental effect on the proposed site.

Reservoir and Other Artificial Sources of Flooding

The map below shows that there is no risk from reservoirs or other artificial sources. Therefore, the risk of reservoir flooding is considered to be low.

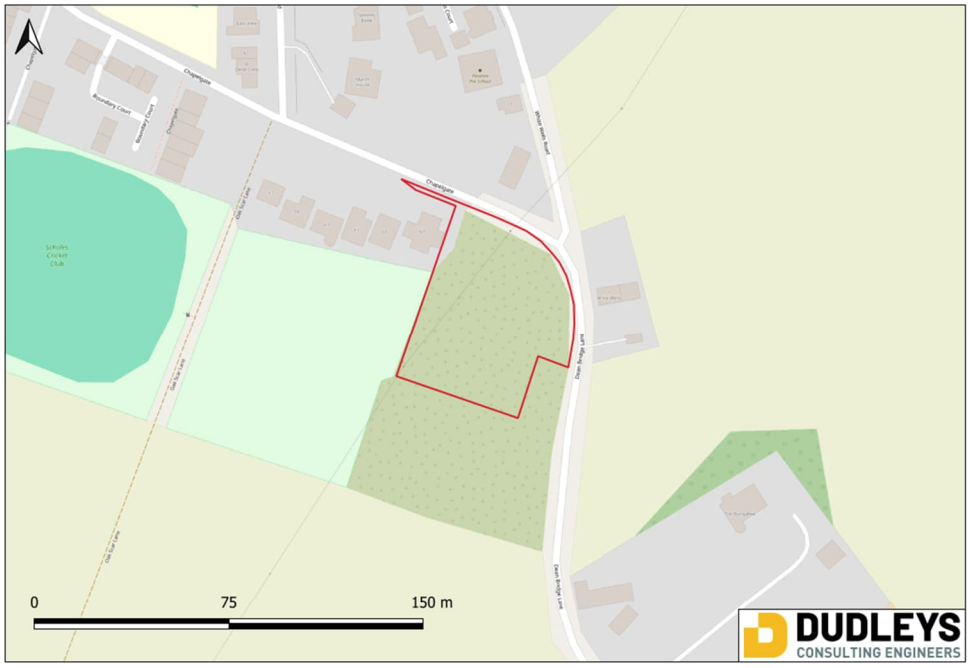


Figure 5 – Reservoir Flooding (EA)

Flood Exceedance

While the system is designed to attenuate flows within the site and manage extreme events up to 1:100 + 30% climate change underground, it is envisaged that in a more extreme storm scenario water may exceed the capacity of this system and water will leave the drainage system causing flooding. In the event beyond the design, water will be contained on the site access road and will be directed towards the landscaped area located to the south. If flood water exceeds the kerb upstand and escapes the site it will eventually drain south of the site, with no flood risk to the neighbouring properties in line with national policies. Any flooding around the perimeter of the houses will be directed away towards the landscaped areas without imposing any flood risk.

WATER QUALITY AND POLLUTION CONTROL

The site has been assessed for pollution risk in accordance with Table 26.2 of the CIRIA SUDS Manual 2015 using the Simple Index Approach method. The site is split into the following areas according to their level of risk and drainage outfall.

- Access Road

Access Road – Proposed Pollution Risk				
	Hazard Level	TSS	Metals	Hydrocarbons
Access Road	Low	0.3	0.2	0.05
Access Road - Proposed Pollution Mitigation				
Vortex Separator	X 1.0	0.7	0.6	0.7
Mitigation Index Achieved		0.7	0.6	0.6
Mitigation Index Required		0.3	0.2	0.05
		OK	OK	OK

In accordance with table 26.2 of the CIRIA SuDS Manual 2015, a low classification is assigned to individual property driveways, residential car parks, low traffic roads (e.g. Cul de sacs, home zones and general access road) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day.

DRAINAGE DESIGN

The proposed surface water drainage system incorporates an SDS Geolight 400 attenuation tank which will accommodate run-off from the hardstanding areas such as the access road, bays and houses. In the event of a 1 in 100 year storm + 30% climate change, it has the capacity to store 89.8m^3 storm water with voids taken into account. Prior to the tank is an SDS Aquaswirl, this vortex separator is to provide the required pollution mitigation indices (in accordance with the CIRIA SuDS Manual 2015) to treat run-off from the access road bays, please refer to the 'Water Quality and Pollution Control' section above. The final precast concrete manhole in the network is an FP McCann stormbrake. This device is a flow control which will discharge surface water 3.00l/s.

FOUL WATER DRAINAGE STRATEGY

Foul drainage will be discharged to the YW sewer located opposite the development. Due to the development being at a lower level than this sewer, a foul water pump station will be required on the site. A section 106 from Yorkshire Water and a highway permit will be required to accommodate the rising main crossing the highway and connecting into the sewer. Due to the shallow nature of this connection a concrete slab in the highway is required, two options are provided for this on drawing 115 and 116.

TEMPORARY, CONSTRUCTION PHASE AND LAND DRAINAGE STRATEGY

The construction phase plan, developed by the Principal Contractor, will detail temporary management of water on the site. It is expected that water will be intercepted locally on the site, with silt and other runoff filtered and pumped from the site to the watercourse. This will be detailed within the Principal Contractor's Construction Phase Plan. It is expected that the contractor will construct the flow control and outfall first. A 5-stage silt buster upstream of the tank linked to dewater pumps will allow the site water run-off to be managed during the construction phase.

MAINTENANCE OF DRAINAGE SYSTEMS

The private systems will be managed by the landowner and the individual tenants for the site. The system has been designed so that the drainage system is fully accessible and maintainable with flooding easily visible if it occurs. The maintenance schedule for the individual elements of the scheme is as per manufacturer's recommendations and as follows.

Pipe Network	
Operation	Frequency
Inspect and identify any areas that are not operating correctly, if required, take remedial actions.	Monthly for 3 months as a part of normal post completion monitoring, then biannually. If flooding is identified, take immediate action.
Debris removal from manholes (where may cause risk performance)	As required, but at least twice a year
Where rainfall into network from above, check surface or filter for blockage or silt, algae or other matter by jetting	As required, but at least twice a year
Remove sediment from pipework by jetting.	Annually or as required
Inspect/check all inlets, outlets, and overflow pipes to ensure that they are in good condition and operating as designed	Annually, or as required and after large storms

Vortex Separator	
Operation	Frequency
Desludging and removal of debris	Every 3 months or as recommended by the Manufacturer
Inspect and identify any areas that are not operating correctly, if required, take remedial actions	Monthly for first half year of operation, then every six months, or as required by the Manufacturer.
Repair/check all inlets, outlets and overflow pipes	As required
Replace malfunctioning parts or structures	As required
Inspect filter media and establish appropriate replacement frequencies	Six monthly or as required by the Manufacturer.
Note – All Vortex Interceptors should be maintained and monitored under a Service Plan which is compatible with the Manufacturer's warranty and suited to the plant used.	

Flow Control	
Operation	Frequency
Inspect and identify any areas that are not operating correctly, if required, take remedial actions.	Monthly for 3 months as a part of normal post completion monitoring, then biannually
Debris removal from manholes (where may cause risk performance)	Monthly
Where rainfall into network from above, check surface or filter for blockage or silt, algae or other matter by jetting	As required, but at least twice a year
Remove sediment from pipework by jetting.	Annually or as required
Repair/check all inlets, outlets and overflow pipes	As required
Inspect/check all inlets, outlets, and overflow pipes to ensure that they are in good condition and operating as designed	Annually and after large storms

Attenuation Tank	
Operation	Frequency
Inspect and identify any areas that are not operating correctly, if required, take remedial actions	Monthly for 3 months, then six monthly
Debris removal from attenuation tank (where may cause risk performance)	As required, but at least twice a year
Where rainfall into attenuation tank from above, check surface or filter for blockage or silt, algae or other matter by jetting	As required, but at least twice a year
Remove sediment from upstream surface water network by jetting.	Annually or as required
Inspect/check all inlets, outlets, and overflow pipes to ensure that they are in good condition and operating as designed.	Annually and after large storms with remedials as required.
Survey inside of tank for sediment build up and remove if necessary.	Every 5 years.

Pump Station	
Operation	Frequency
Desludging and removal of debris	Every 3 months or as recommended by the Manufacturer
Inspect and identify any areas that are not operating correctly, if required, take remedial actions	Monthly for first half year of operation, then every six months, or as required by the Manufacturer.
Repair/check all inlets, outlets and overflow pipes	As required
Replace malfunctioning parts or structures	As required
Inspect filter media and establish appropriate replacement frequencies	Six monthly or as required by the Manufacturer.
Note – All Package Treatment Plants and Pumping Stations should be maintained and monitored under a Service Plan which is compatible with the Manufacturer's warranty and suited to the plant used.	

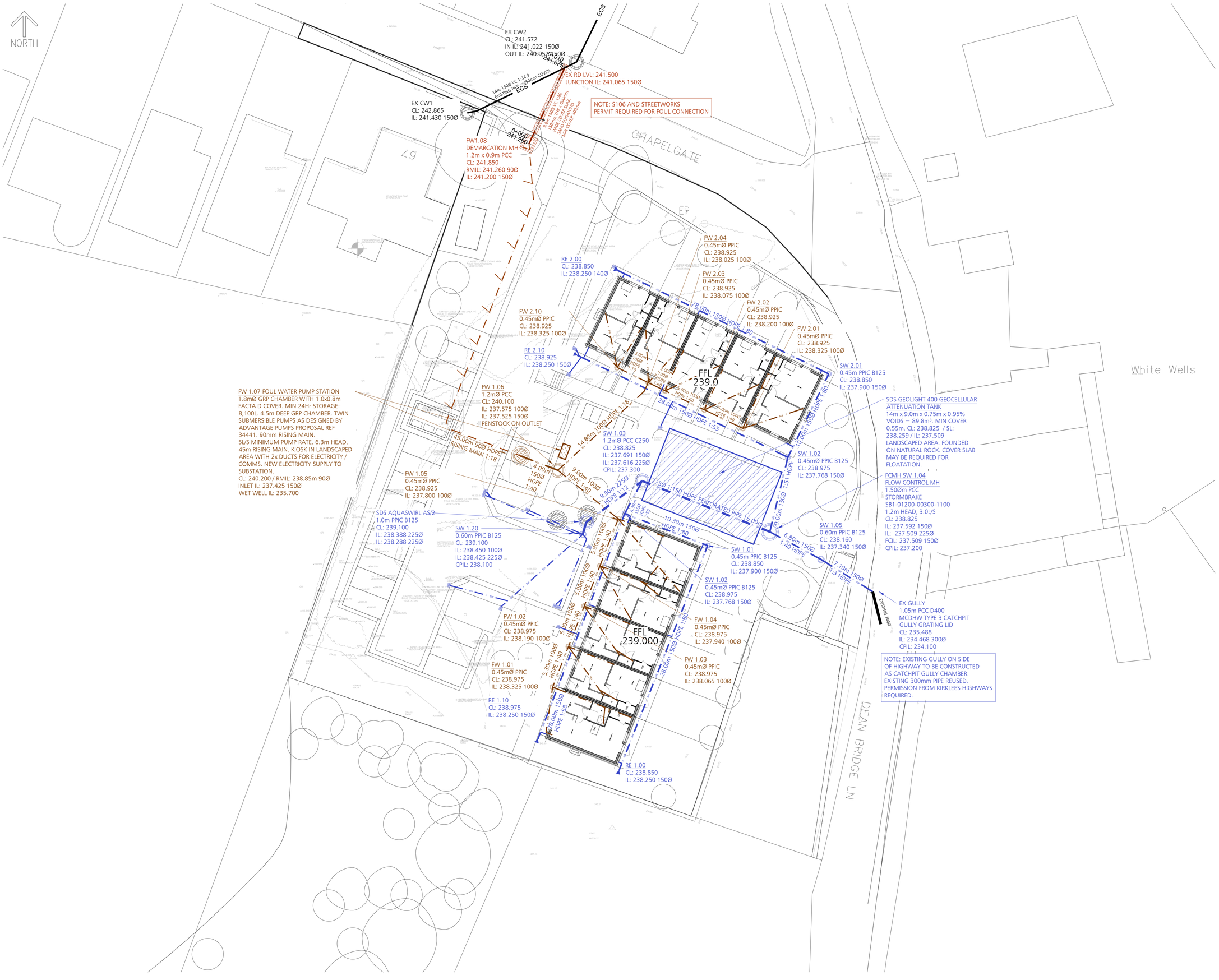
The maintenance of the drainage network and SuDS features are to be linked with the wider site maintenance.

A log of all maintenance activities is to be kept and made available to the local planning authority (LPA) and / or the Lead Local Flood Authority (LLFA) on request.

DRAINAGE DESIGN PARAMETERS

Drainage Outfalls	**Consultation with LLFA/IDB/EA/Water Co?**	None undertaken
	Soakaway Viable / Rate	Unviable, based on ground conditions
	Groundwater Level	1.20m BGL at WS05
	Watercourse	Across third party land / not easily accessible
	Surface Water Sewer	Available in adjacent road to the east, Dean Bridge Lane, existing adoptable surface water sewer
	Combined Sewer	Available in adjacent road to the north, Chapelgate, existing adoptable foul water sewer
	Invert Level of Outfalls	SW:234.468m AOD FW:241.065m AOD
Surface Water Drainage Assessment Constants	Scenarios to be Tested	1:2, 1:30, 1:100, 1:100 + 30% CC
	Discharge rate	3.00l/s
	Proposed Impermeable Area	1610m^2
	Attenuation Storage Method	SDS Geolight 400 - Geocellular Crates with perforated pipe through the tank
	Proposed Attenuation Volume	89.775m^3
	Flow Control Unit	Stormbrake SB1-1800-00300-0100
Surface Water Hydraulic Modelling Parameters	Rainfall Model Parameters (FEH/FSR)	FEH
	Modelling Parameters assume MADD of 0, Default Time of Entry of 5 Mins and Summer and Winter Coefficients of 1.0. Default Rainfall of 50mm used with 720min drain down.	
Foul Water Drainage	**Assessment Method and Assumptions** (DU, F&L4, BR Part H2, SFA)	Flows and Loads 4
	Foul Discharge Quantity	8,100 litres per day
	Pump / Treatment Plant Spec	1.8m dia. GRP Chamber
SUDS	Water Quality	Vortex separator
	Pollution Control Risk Level	Low
	Silt Capture Method Spec	Vortex separator, catchpit manholes, silt boxes
Information Provided	22055 – 100 Drainage Strategy Attenuation Calculation S106 Longsections Stormbrake Specification Phase 2 SI Summary and Contamination Recommendations	

	Greenfield Runoff Rate LLFA Comments Downstream Defender Spec Soakaway Testing Attenuation Tank Info



DO NOT SCALE

DESIGNERS HAZARD IDENTIFICATION

IT IS ASSUMED THAT ALL WORKS WILL BE UNDERTAKEN BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT. IN ADDITION TO THE HAZARDS TYPICALLY ASSOCIATED WITH THE TYPES OF CONSTRUCTION DETAILED ON THIS DRAWING, ANY KNOWN ABNORMAL HAZARDS SPECIFIC TO THIS SCHEME HAVE BEEN IDENTIFIED.

ABNORMAL HAZARD REFERENCE

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS TO BE REPRODUCED IN COLOUR.
3. IF ANY DISCREPANCIES ARE FOUND IN THIS DRAWING, PLEASE REPORT TO DUDLEYS CONSULTING ENGINEERS.
4. THIS DRAWING HAS BEEN ORIENTATED TO OS BRITISH NATIONAL GRID (EPSG:27700 OSGB36). EXISTING SURVEY STATIONS ARE SHOWN ON THE TOPOGRAPHICAL SURVEY.
5. THIS DRAWING IS BASED ON THE FOLLOWING INFORMATION:
   5.1. 2112-GWP-01-01-D-A-(SK)-0067 - TOPOGRAPHICAL SURVEY BY GWPA ARCHITECTS DATED SEPTEMBER 2023
   5.2. (462)-GWP-01-01-D-A-(00)-0003 - SITE LAYOUT PLAN BY 1ST HORIZON DATED AUGUST 2023
6. ALL WORK TO BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT EDITION OF THE BUILDING REGULATIONS, SEWERAGE SECTOR CODES OF PRACTICE, AND THE RELEVANT LOCAL HIGHWAY AUTHORITY STANDARDS.

KEY

- PROPOSED PRIVATE SURFACE WATER DRAIN
- PROPOSED PRIVATE FOUL WATER DRAIN
- PROPOSED PRIVATE SURFACE WATER MANHOLE
- PROPOSED PRIVATE SURFACE WATER PPIC
- PROPOSED PRIVATE FOUL WATER MANHOLE
- PROPOSED PRIVATE FOUL WATER PPIC
- PROPOSED PRIVATE SURFACE WATER RODDING EYE
- PROPOSED PRIVATE SURFACE WATER YARD GULLY
- PROPOSED PRIVATE SURFACE WATER ATTENUATION TANK
- PROPOSED PRIVATE FOUL WATER RISING MAIN
- PROPOSED PRIVATE FOUL WATER PUMPING STATION
- EXISTING ADOPTED HIGHWAY DRAIN MANHOLE
- PROPOSED ADOPTED S104 FOUL WATER DEMARCATION MANHOLE
- PROPOSED ADOPTED S104 FOUL WATER LATERAL
- EXISTING ADOPTED COMBINED WATER MANHOLE
- EXISTING ADOPTED COMBINED WATER SEWER
- EXISTING ADOPTED SURFACE WATER SEWER
- SITE BOUNDARY

DATE	REVISION DESCRIPTION	BY	CHK.	REV.
26.09.25	NOTES UPDATED	OB	PD	C02
23.09.25	CONSTRUCTION ISSUE	OB	SDR	C01

DUDLEYS CONSULTING ENGINEERS
Tithe House
35 Town Street
Leeds, LS18 5JJ
0113 258 3611
info@dudleys.co.uk

PROJECT
SCHOLES
CHAPELGATE

TITLE
DRAINAGE STRATEGY

SCALE	PAPER	STAGE	STATUS
1:200	A1	CONSTRUCTION	

DRAWING NO. 22055-DCE-XX-XX-D-C-100 REV. C02

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Seb Reid
Site name:	Chapel Gate
Site location:	Scholes

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

Site Details

Latitude:	53.56053° N
Longitude:	1.76191° W
Reference:	3675072644
Date:	Apr 08 2022 14:57

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 0.3625

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

Hydrological characteristics	Default	Edited
SAAR (mm):	1156	1156
Hydrological region:	3	3
Growth curve factor 1 year:	0.86	0.86
Growth curve factor 30 years:	1.75	1.75
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

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

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

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

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

(3) Is SPR/SPRHOST ≤ 0.3?

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

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	1.19	1.19
1 in 1 year (l/s):	1.02	1.02
1 in 30 years (l/s):	2.08	2.08
1 in 100 year (l/s):	2.47	2.47
1 in 200 years (l/s):	2.82	2.82

dudleys
Structural & Civil Consultants
Tithe House 35 Town St, Horsforth Leeds LS18 5LJ
T 0113 258 3611

Project

CHAPELGATE, SCHOLES

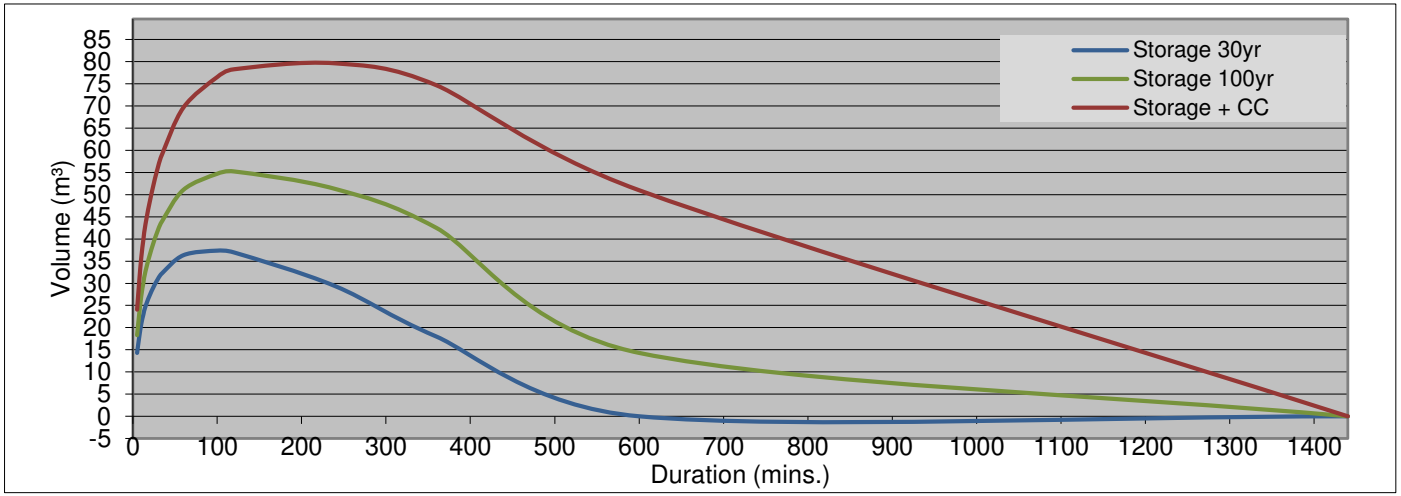
Drainage Storage

Project No.	22055
SHEET No.	C- D01
BY	SM
DATE	Apr 2022

Drainage Calculations for 1 in 30yr, 1 in 100yr return periods & 1 in 100yr + climate change;
Storage Requirements:

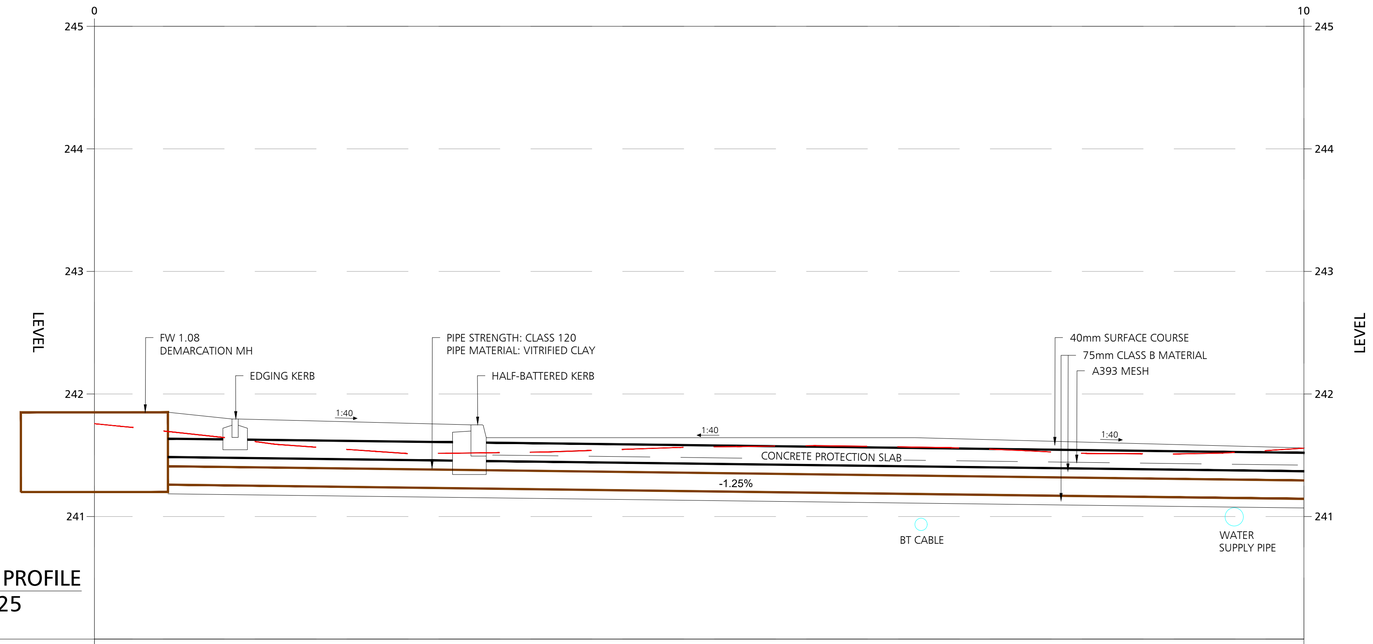
Input Data

M5-60 =	**19mm**	Fig A.1	
r =	**0.3**	Fig A.2	
T =	**30 yr**	C =	**2.78**
T =	**100 yr**		
Max. Allowable Flow =		**3.00l/s**	
Contributing Area =		**1610.0m²**	**1610.0m²**
Flow/Ha =		18.63	l/s/Ha
Percentage Increase =		30%	



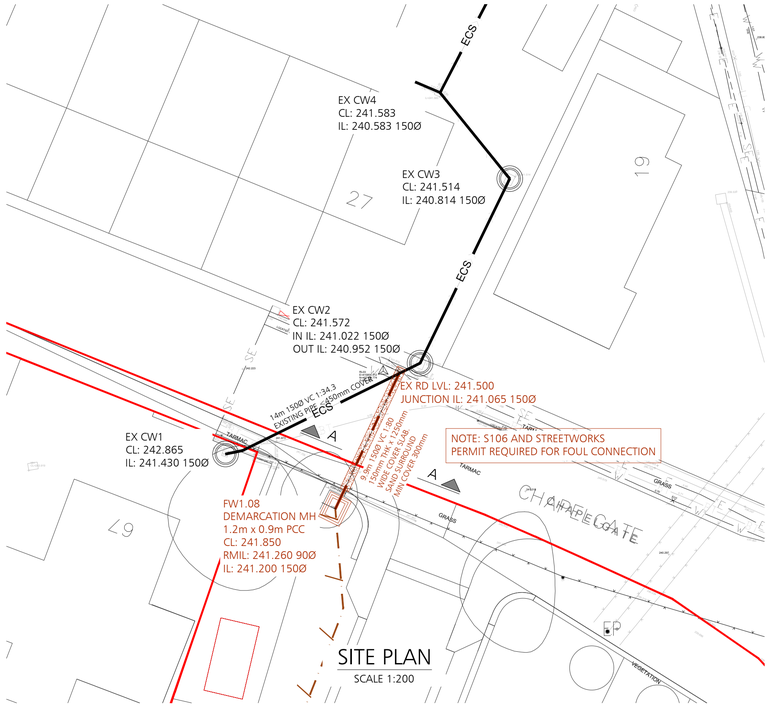
Output Data

Duration	Z1	M5-D (M5-60)*Z1	Z2 30 yr	Z2 100 yr	I (30yr) mm/h	I (100 yr) mm/h	Increased (100yr)	Qp 30 l/s	Qp 100 l/s	Increased l/s	Storage (30yr) m³	Storage (100yr) m³	Storage (+CC) m³
5	0.34	6.5	1.45	1.83	113	143	186	51	64	83	14.3	18.3	24.1
7.5	0.43	8.1	1.47	1.86	95	121	158	43	54	71	17.8	23.1	30.4
10	0.50	9.5	1.48	1.90	84	108	140	38	48	63	20.9	27.2	35.9
12.5	0.55	10.5	1.49	1.92	75	97	126	34	43	56	23.0	30.2	39.9
15	0.60	11.4	1.50	1.93	68	88	114	31	39	51	24.8	32.8	43.4
22	0.69	13.2	1.51	1.96	54	71	92	24	32	41	28.2	37.7	50.2
30	0.78	14.8	1.53	1.99	45	59	77	20	26	34	31.1	42.1	56.4
35	0.83	15.7	1.53	2.00	41	54	70	18	24	31	32.3	44.1	59.3
60	1.00	19.0	1.54	2.02	29	38	50	13	17	22	36.3	51.1	69.7
100	1.18	22.3	1.54	2.02	21	27	35	9	12	16	37.4	54.7	76.5
120	1.25	23.7	1.54	2.02	18	24	31	8	11	14	37.0	55.2	78.3
240	1.56	29.7	1.51	1.97	11	15	19	5	7	9	29.3	51.3	79.6
360	1.81	34.4	1.49	1.93	9	11	14	4	5	6	18.0	42.5	74.7
600	2.12	40.2	1.47	1.89	6	8	10	3	3	4	0.0	14.3	51.0
1440	2.81	53.4	1.41	1.79	3	4	5	1	2	2	0.0	0.0	0.0

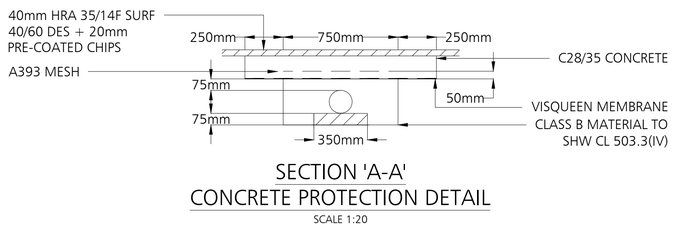


S104 FW LATERAL PROFILE
SCALE H 1:25 V 1:25

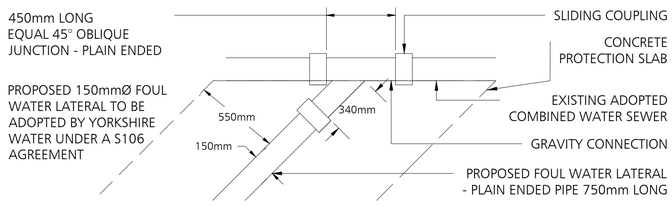
CHAINAGE	0.000	9.871
EXISTING LEVELS	241.850	241.555
HORIZONTAL GEOMETRY	L =9.871	
VERTICAL GEOMETRY	G =-1:80.018 L =9.270	



SITE PLAN
SCALE 1:200



SECTION 'A-A'
CONCRETE PROTECTION DETAIL
SCALE 1:20



NEW 45° JUNCTION
ON EXISTING PIPE
SCALE 1:20

DO NOT SCALE

DESIGNERS HAZARD IDENTIFICATION

IT IS ASSUMED THAT ALL WORKS WILL BE UNDERTAKEN BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT. IN ADDITION TO THE HAZARDS TYPICALLY ASSOCIATED WITH THE TYPES OF CONSTRUCTION DETAILED ON THIS DRAWING, ANY KNOWN ABNORMAL HAZARDS SPECIFIC TO THIS SCHEME HAVE BEEN IDENTIFIED.

ABNORMAL HAZARD REFERENCE

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS TO BE REPRODUCED IN COLOUR.
3. IF ANY DISCREPANCIES ARE FOUND IN THIS DRAWING, PLEASE REPORT TO DUDLEYS CONSULTING ENGINEERS
4. THIS DRAWING IS BASED ON THE FOLLOWING INFORMATION:
   - 4.1. EH-CG6230-01 - REV A - TOPOGRAPHICAL AND UTILITY SURVEY BY 1ST HORIZON DATED MARCH 2022
   - 4.2. (462) - GWP-01-01-D-A-(00)-003 - SITE LAYOUT PLAN BY 1ST HORIZON DATED AUGUST 2023

KEY - S104 FW LATERAL PROFILE

- EXISTING SERVICES
- EXISTING SURFACE
- CONCRETE PROTECTION SLAB

KEY - SITE PLAN DRAINAGE

- PROPOSED ADOPTED S104 FOUL WATER DEMARCATION MANHOLE
- PROPOSED ADOPTED S104 FOUL WATER LATERAL
- EXISTING ADOPTED COMBINED WATER MANHOLE
- EXISTING ADOPTED COMBINED WATER SEWER

DATE	REVISION DESCRIPTION	BY	CHK.	REV.
26.09.25	CONSTRUCTION ISSUE	OB	SDR	C01

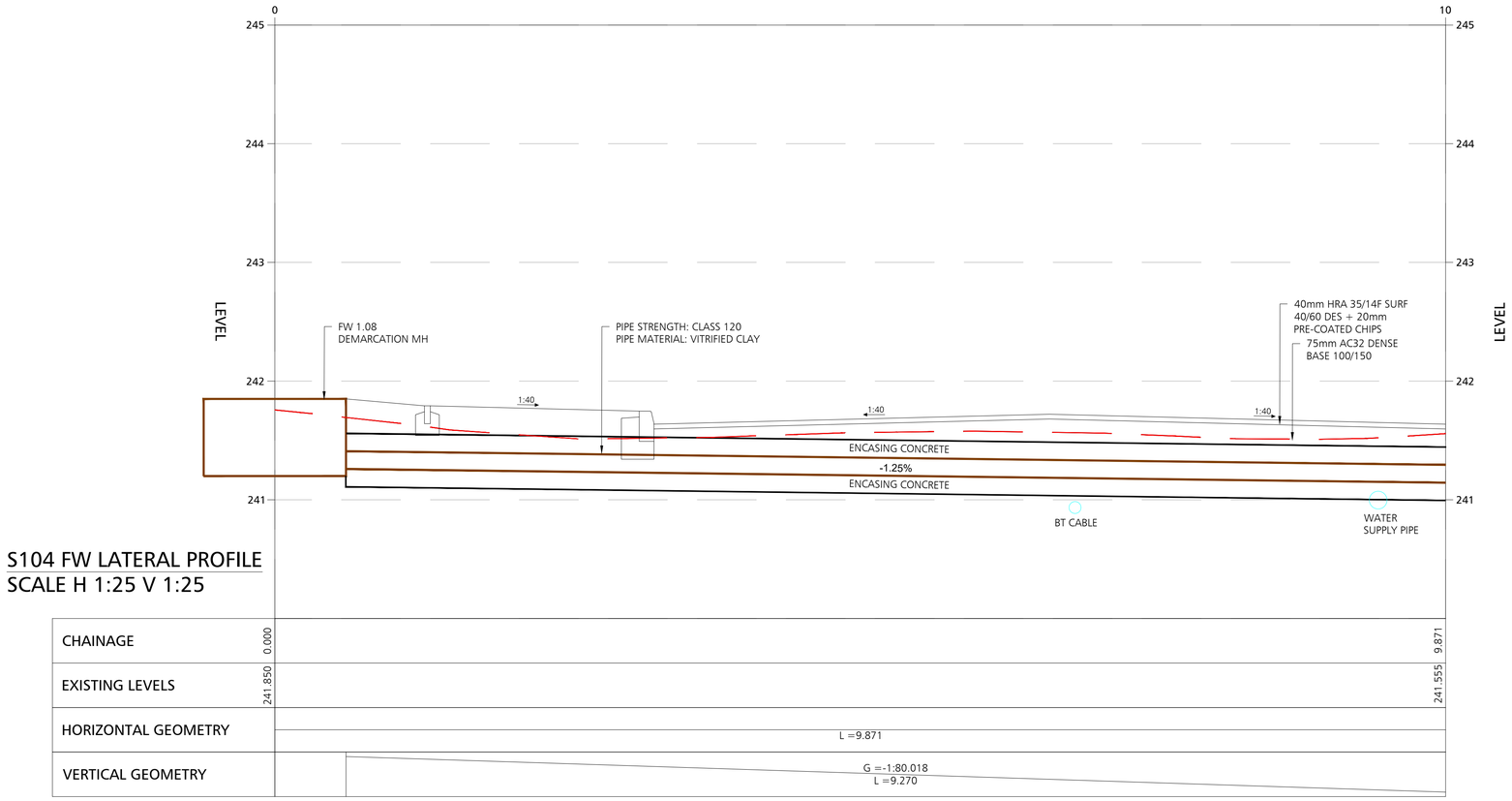
DUDLEYS CONSULTING ENGINEERS
Tithe House
35 Town Street
Leeds, LS18 5LJ
0113 258 3611
info@dudleys.co.uk

PROJECT
SCHOLES
CHAPELGATE

TITLE
FOUL WATER LATERAL
LONGITUDINAL SECTION
OPTION 1

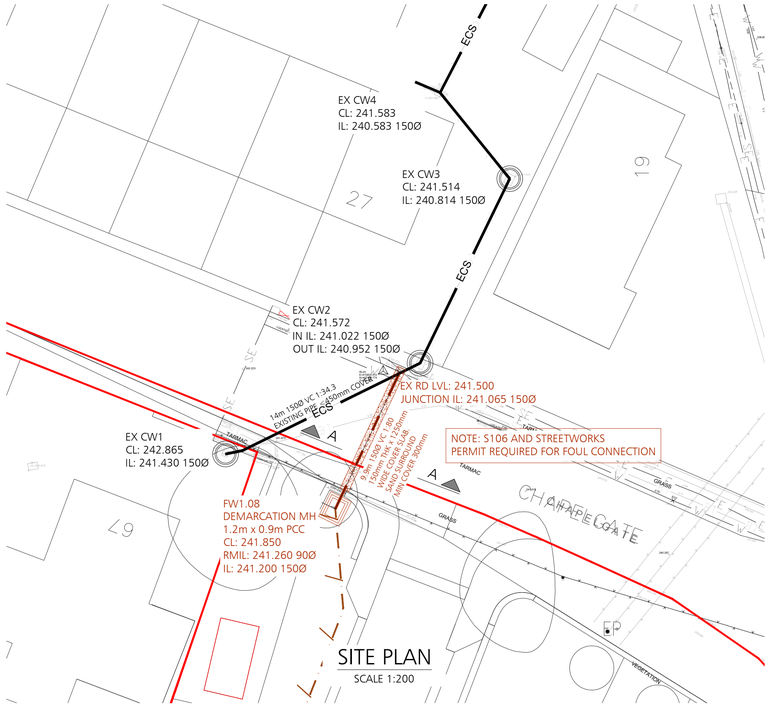
SCALE	PAPER	STAGE	STATUS
AS SHOWN	A1	CONSTRUCTION	

DRAWING NO. 22055-DCE-XX-XX-D-C-115
REV. C01

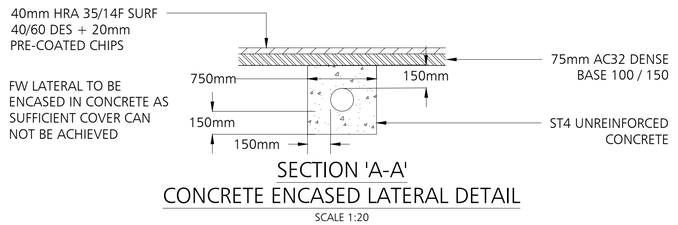


S104 FW LATERAL PROFILE
SCALE H 1:25 V 1:25

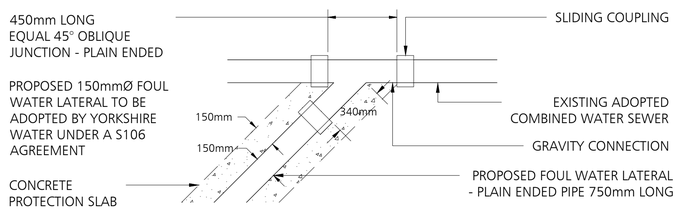
CHAINAGE	0.000	9.871
EXISTING LEVELS	241.850	241.555
HORIZONTAL GEOMETRY	L =9.871	
VERTICAL GEOMETRY	G =-1:80.018 L =9.270	



SITE PLAN
SCALE 1:200



SECTION 'A-A'
CONCRETE ENCASED LATERAL DETAIL
SCALE 1:20



NEW 45° JUNCTION
ON EXISTING PIPE
SCALE 1:20

DO NOT SCALE

DESIGNERS HAZARD IDENTIFICATION

IT IS ASSUMED THAT ALL WORKS WILL BE UNDERTAKEN BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT. IN ADDITION TO THE HAZARDS TYPICALLY ASSOCIATED WITH THE TYPES OF CONSTRUCTION DETAILED ON THIS DRAWING, ANY KNOWN ABNORMAL HAZARDS SPECIFIC TO THIS SCHEME HAVE BEEN IDENTIFIED.

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4. THIS DRAWING IS BASED ON THE FOLLOWING INFORMATION:
   4.1. EH-CG6230-01 - REV A - TOPOGRAPHICAL AND UTILITY SURVEY BY 1ST HORIZON DATED MARCH 2022
   4.2. (462) - GWP-01-01-D-A-(00)-003 - SITE LAYOUT PLAN BY 1ST HORIZON DATED AUGUST 2023

KEY - S104 FW LATERAL PROFILE

- EXISTING SERVICES
- EXISTING SURFACE
- CONCRETE PROTECTION SLAB

KEY - SITE PLAN DRAINAGE

- PROPOSED ADOPTED S104 FOUL WATER DEMARCATION MANHOLE
- PROPOSED ADOPTED S104 FOUL WATER LATERAL
- EXISTING ADOPTED COMBINED WATER MANHOLE
- EXISTING ADOPTED COMBINED WATER SEWER

DATE	REVISION DESCRIPTION	BY	CHK.	REV.
26.09.25	CONSTRUCTION ISSUE	OB	SDR	C01

DUDLEYS CONSULTING ENGINEERS
Tithe House
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PROJECT
SCHOLES
CHAPELGATE

TITLE
FOUL WATER LATERAL
LONGITUDINAL SECTION
OPTION 2

SCALE	PAPER	STAGE	STATUS
AS SHOWN	A1	CONSTRUCTION	

DRAWING NO. 22055-DCE-XX-XX-D-C-116
REV. C01

EXECUTIVE SUMMARY

Site location	Land adjacent to 67 Chapel Gate, Scholes, Holmfirth, HD9 1SX	
Development scheme	Ten affordable two-storey residential properties with private gardens.	
NGR	415861, 407155	
Current use	On-site: Disused overgrown quarry with public footpath running through.	On-site: Residential and agricultural.
Historical use And UXO	The site was undeveloped agricultural land in 1854 and was then quarried by 1888. The shape and size of the quarry did not change from 1888 until 1965-1970, when the topography of the north-western corner of the site changed, with a slope shown falling south-east into the centre of the site; this may represent the site being partially filled with road chippings – as per local anecdotal evidence. The site then remained the same until the present day. In 1854, the surrounding area was mostly occupied by small agricultural fields, with several small villages around the north and east of the site, including residential properties and several inns and mills. There were also several quarries – most of which were labelled as sandstone quarries – immediately north of the site, and between 300m to 750m south and west of the site. By 1888 there were several new mill ponds 250m north of the site, and along Dean Dike, 250m to 400m east of the site. The area around the site largely remained the same until the present day. A low UXO risk has been identified at the site.	
Geology	Rough Rock (sandstone) – Rossendale Formation.	
Hydrogeology	Secondary A Aquifer.	
Hydrology	The Dean Dike / New Mill Dike runs south-west to north-east 270m south-east of the site.	
Environmentally sensitive sites	Based on report ref 4046-CWS-01, Produced by Cotswold Wildlife Services, Dated 20/06/21, the site was concluded to be of low wildlife interest.	
Geology (from GI)	Made ground	Brown to dark brown to black, clay, sand and gravel. The proportion of clay, sand and gravel varied between exploratory holes. The gravel fraction comprised tarmac, brick, pottery, mudstone and glass with rare clinker.
	Rough Rock	Soft/very loose becoming medium dense, yellowish light brown, clayey sandy to very sandy gravel, occasionally gravelly clay, in the upper zones. With all the holes terminating on a strong yellow sandstone with the exception of WS05, this terminating on a weathered grey sandstone.
Groundwater	Trapped pockets of surface water infiltration within the made ground.	

Foundation design	**Traditional strip / trench foundations recommended placed within the intact sandstone of the Rough Rock assuming levels are not altered significantly.** Should foundations be constructed within the influence of trees, a void may be required due to heave forces, this should be in line with NHBC guidance. Design Sulphate Class of **DS4**, with an ACEC of **AC-4**, would apply for the made ground in **WS02**. Made ground in WS6 and natural soils of the Rough Rock Formation recorded a Design Sulphate Class of **DS1** and a ACEC of **AC-1**
Road construction	A **CBR of 3%** is anticipated for the natural shallow strata and <2% for the made ground. This should be checked on site with plate bearing tests.
Contamination	**Medium Risk** - elevated concentrations of lead, beryllium, PAH and TPH in the near surface soils, hence remedial actions at the site are considered necessary in these areas.
Ground gas	**Characteristic situation 1 / Green –** Gas monitoring is still ongoing. To date, no gas protection measures required (slightly elevated CO_2). Risk to construction workers during below ground works due to depleted O_2 levels. . **No radon protection measures required.**

7.6 Preliminary Risk Assessment

7.6.1 From the information obtained from the desk study JNP Group has undertaken a preliminary risk assessment.

Table 7.2 Preliminary Risk Assessment

Risk Receptor	Risk		Justification
HUMAN HEALTH	MEDIUM		Historical land use as a quarry, suspected to be partially infilled with road chippings, suggests potential sources of contamination present on site. Potential for direct contact / inhalation of vapours or gases with residential receptors.
GROUNDWATER	MEDIUM		The site is located on productive strata (Secondary Aquifer) and is not within a SPZ, although there is a well 30m east of the site.
SURFACE WATER	MEDIUM		The nearest surface water course is located 270m to the south-west, hydrologically downgradient of the site.
ECOLOGY	NONE		Based on the assumption that there are no sensitive/ protected species on site (subject to any ecological survey undertaken).
PROPERTY & INFRASTRUCURE	MEDIUM		Historic land use as a partially infilled quarry suggests potential sources of contamination present on site. Potential sources of vapours or gases on-site or migration of gases may occur form off-site sources.

7.6.2 In line with BS ISO 18400-202:2018 based on the conceptual site model as above the site is considered to be probably contaminated.

8 CONCLUSIONS OF DESK STUDY & RECOMMENDATIONS

8.1 Conclusions

8.1.1 The desk-based research has identified that:

- The geological succession below the site comprises the Rough Rock sandstone of the Rossendale Formation.
- It identifies that the site has an historic potentially contaminative use as a partially infilled quarry.

Potential On-Site Sources of Contamination:

- The earliest available maps show the site was a sandstone quarry from the late 19th century and has not been developed since. Local anecdotal evidence suggests that the quarry was later partially infilled with road chippings, and the historical maps indicate that the topography of the site changed slightly between 1955 and 1965, which could be a result of this infilling. However, there is nothing to suggest the original depth of the quarry, and the thickness of any infill material.
- Heavy metals, hydrocarbons, and soil gas associated with limited made ground materials may be present due to the quarry being partially infilled with imported and site generated fill materials – particularly given the potential composition of the infill material (road chippings, containing coal tar), which may cause significantly elevated concentrations of hydrocarbons to be present.
- Based upon guidance given in CL:AIRE research bulletin RB17 (CL:AIRE 2012), as likely depth of the infilled ground is unlikely to be greater than 5.00m, and the soil atmosphere is likely to be aerobic and of small area, the former quarry is unlikely to generate significant volumes of ground gas. RB17 indicates that even where ground gas is present from made ground and recycled soils, it generally does not pose a risk. In addition, RB17 indicates that based upon available case studies, sites where fill is >30 years old, the gassing regime results in a characteristic situation 1 classification, where gas protection measures are not required. The likely date of infilling was between 1955 and 1965, so if the pit was backfilled or partially backfilled, it was over 50 years ago.

Potential Off-Site Sources of Contamination:

- There are several disused quarries around the site, which may have been infilled or partially infilled. The material used to infill these quarries is unknown and should therefore be considered a potential source of hazardous land gas. However, based on the age of the quarries, and the likely age of the fill, JNP Group considers the risk of ground gas generation to be low. In addition, JNP Group consider that material used would have most likely to have been inert, with a low organic content, such as recycled soils, or rubble rather than domestic waste, chemical or industrial waste.
- Based upon guidance given in CL:AIRE research bulletin RB17 (CL:AIRE 2012), as likely depth of the infilled ground is unlikely to be greater than 5m, and the soil atmosphere is likely to be aerobic and of small area, the former quarries are unlikely to generate significant volumes of ground gas. RB17 indicates that even where ground gas is present from made ground and recycled soils, it generally does not pose a risk. In addition, RB17

indicates that based upon available case studies, sites where fill is > 30 years old, the gassing regime results in a characteristic situation 1 classification, where gas protection measures are not required. The quarry 70m north-west of the site does not change shape from 1893, although it does appear to be partially infilled by 1976-1977 – if it was infilled or partially infilled, it was over 40 years ago.

- There are no other potential off-site sources of contamination that could impact on ground conditions at the site. The site is surrounded by residential properties and agricultural fields. In addition, all the mills to the north, north-east, and east of the site are topographically and hydrologically downgradient of the site, and as such should not have had any impact on the site.

8.1.2 No radon protection measures are required.

8.1.3 The site is not in an area predicted to be at risk of fluvial flooding. The centre of the site has a surface water flooding risk of 1 in 30 year, 0.3m – 1.0m.

8.1.4 Based on information contained within desk study or from the previous investigation, it is the opinion of JNP Group that the potential site conditions provide a MEDIUM to LOW environmental risk and hence further investigation and assessment is required.

8.2 Recommendations

8.2.1 Based on the conclusions from the desk study and the intended redevelopment of the site JNP Group recommends that the following intrusive works are undertaken:

- One day of dynamic sampling boreholes (to target depths of 5m bgl) with representative sampling and in-situ testing.
- Three gas and groundwater monitoring standpipe installations with 6 monitoring visits over 3 months.
- Engineering laboratory testing of recovered soil samples, including testing to identify volume change potential of any cohesive material, and concrete classification.
- Chemical laboratory testing of soil samples. The testing should comprise an extensive suite of contaminants, particularly those associated with road chippings/asphalt, including metals, Total Petroleum Hydrocarbons, and Polycyclic Aromatic Hydrocarbons.

8.2.2 The site lies with an area of Low risk of unexploded ordnance (UXO).

Soakaway test hole locations Chippings HD9 1SX

Trial holes for Phase 2 requested locations ▲
Actual location of gas test holes △

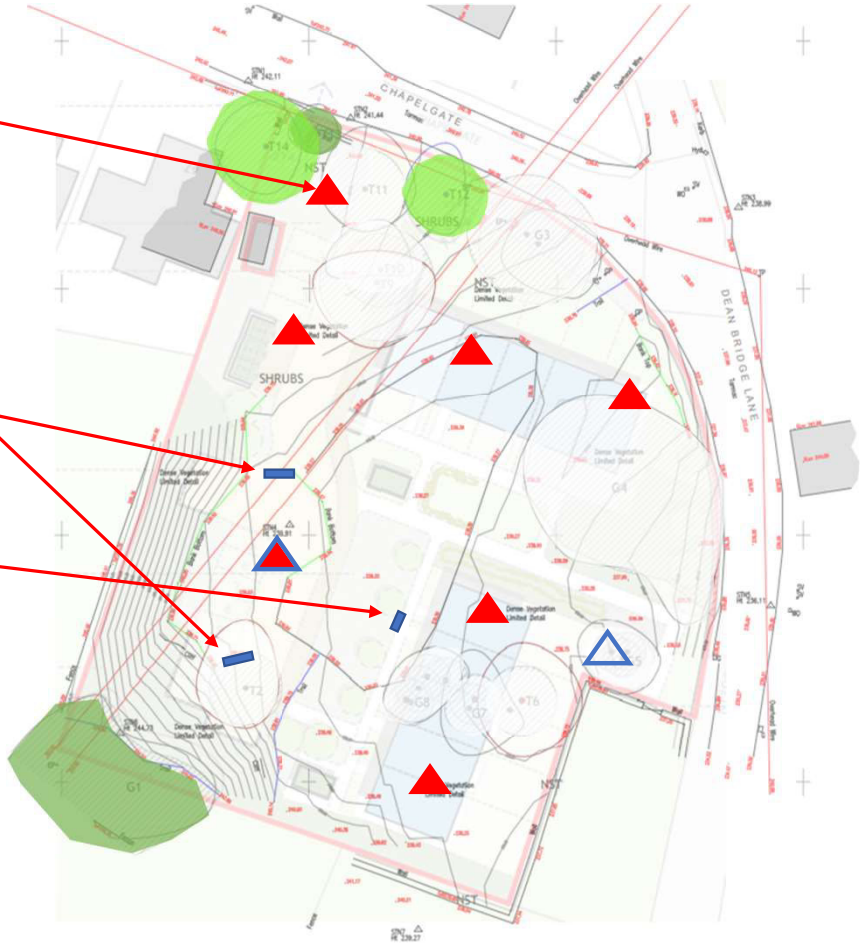
Soakaway test hole 1
0.8m wide, 3.3m long, 1.4m deep
Base of hole was bed rock
Water started seeping into hole immediately from fractured rock layer approx. 0.5 – 1.4m deep

Soakaway test hole 2
0.45m wide x 3.0 long x 1.8-1.9m deep
base of hole was fractured rock, but water started seeping into hole from around 1m deep

Soakaway test hole 3
0.45m wide x 1.6m long x 1.0-1.4m deep
Base of hole was rock
Water seeping in quickly

Note all holes backfilled on same day, hole 3 ground was 'like porridge' with fine chippings and a lot of water. Extra layer of chippings added but still very soft.

Matthew Tulley
10/3/2022



Soakaway test hole 1

Soakaway test hole 1
0.8m wide, 3.3m long, 1.4m deep
Base of hole was bed rock
Water started seeping into hole immediately from fractured rock layer approx. 0.5 – 1.4m deep

At end, water level was approx. same as base of quarry (water table is just below quarry base and very permeable)

Time	Depth of water (mm)	Top of water to top of hole (mm)	Comments
11:20	175		Water running in
11:40	325		
12:25	350		
12:50		785	
13:20		785	
13:33		785	
13:49		785	Water level with quarry base

Soakaway test hole 2

Soakaway test hole 2
0.45m wide x 3.0 long x 1.8-1.9m deep
base of hole was fractured rock, but water started seeping into hole from around 1m deep

At end, water level still rising slowly, but not much below quarry base. (water table is just below quarry base and very permeable)

Time	Depth of water (mm)	Top of water to top of hole (mm)	Comments
11:30	200		Water running in
11:45	400		
12:20	925		
12:51		840	
13:13		750	
13:34		680	
13:48		660	Water level not much above quarry base

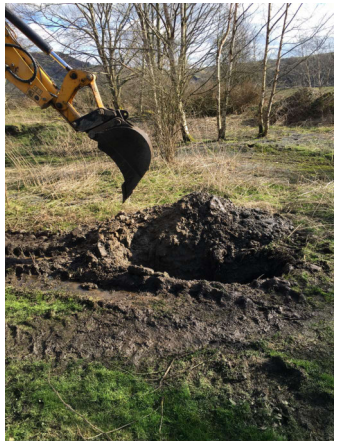
Soakaway test hole 3

Soakaway test hole 3
0.45m wide x 1.6m long x 1.0-1.4m deep
Base of hole was rock
Water seeping in quickly

This was not an ‘official test’ but wanted to see how far below the surface the water table was. In centre of quarry 1.5m from centre path

At end water was 100 below surface

Any digging in quarry for footings will need drainage ditches first, or a BIG pump. Maybe a land drain around cliff base to pick up and divert aquifer water?



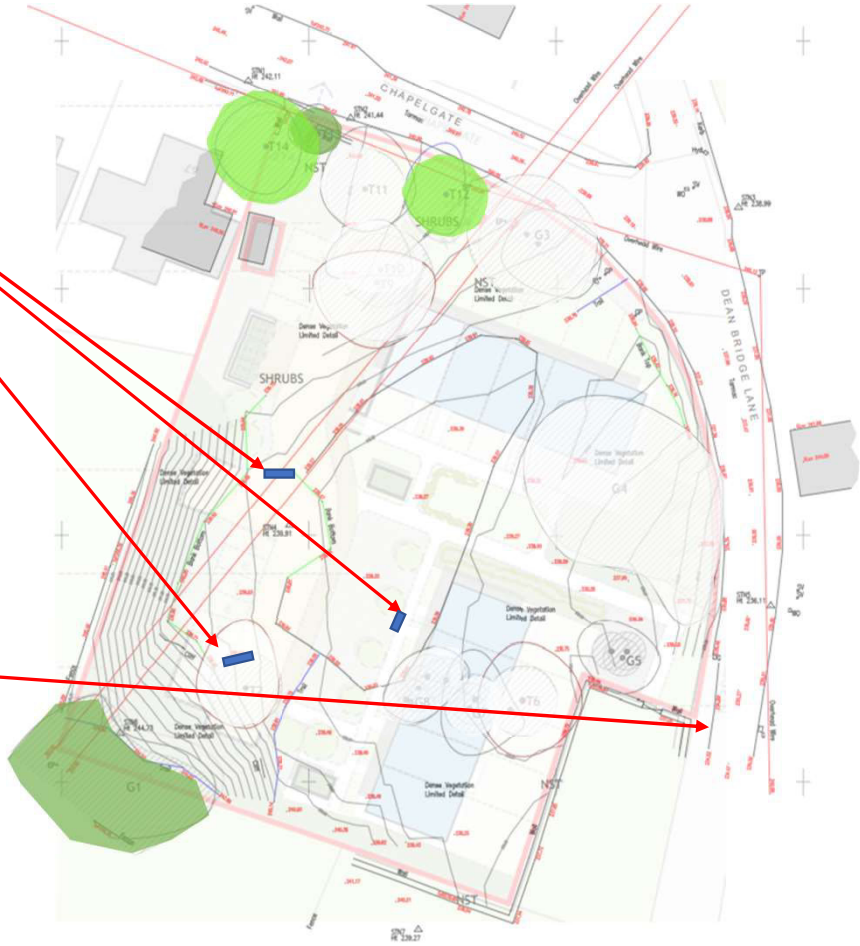
Time	Depth of water (mm)	Top of water to top of hole (mm)	Comments
13:15	50		Just digging
13:27	700		
13:36	940	100	Sides falling in, bottom rising

Soakaway Summary

Soakaways are unlikely to work

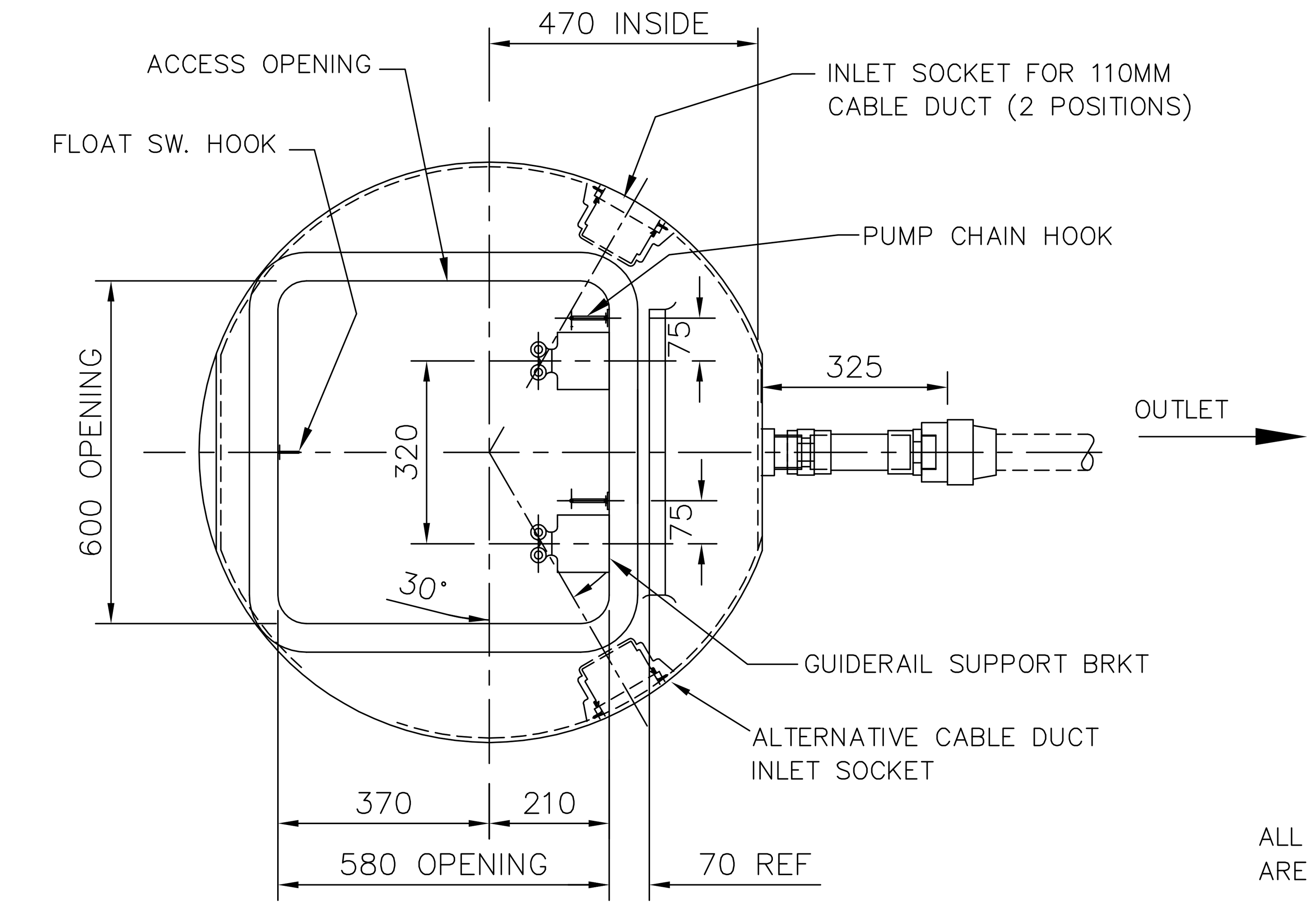
Water table is just below quarry base, about 100mm. Broken stone at 0.5 – 1.5m down (virgin ground) is very permeable and running with water. Springs are seen in the quarry base during wet weather (eg at S quarry face under rock overhang)

After backfilling the holes the ground was like porridge! Should settle down after a few days but lots of water and a bit of JCB = bit of a mess. NOTE we didn't add any water for any of these tests – all of it came for free from underground

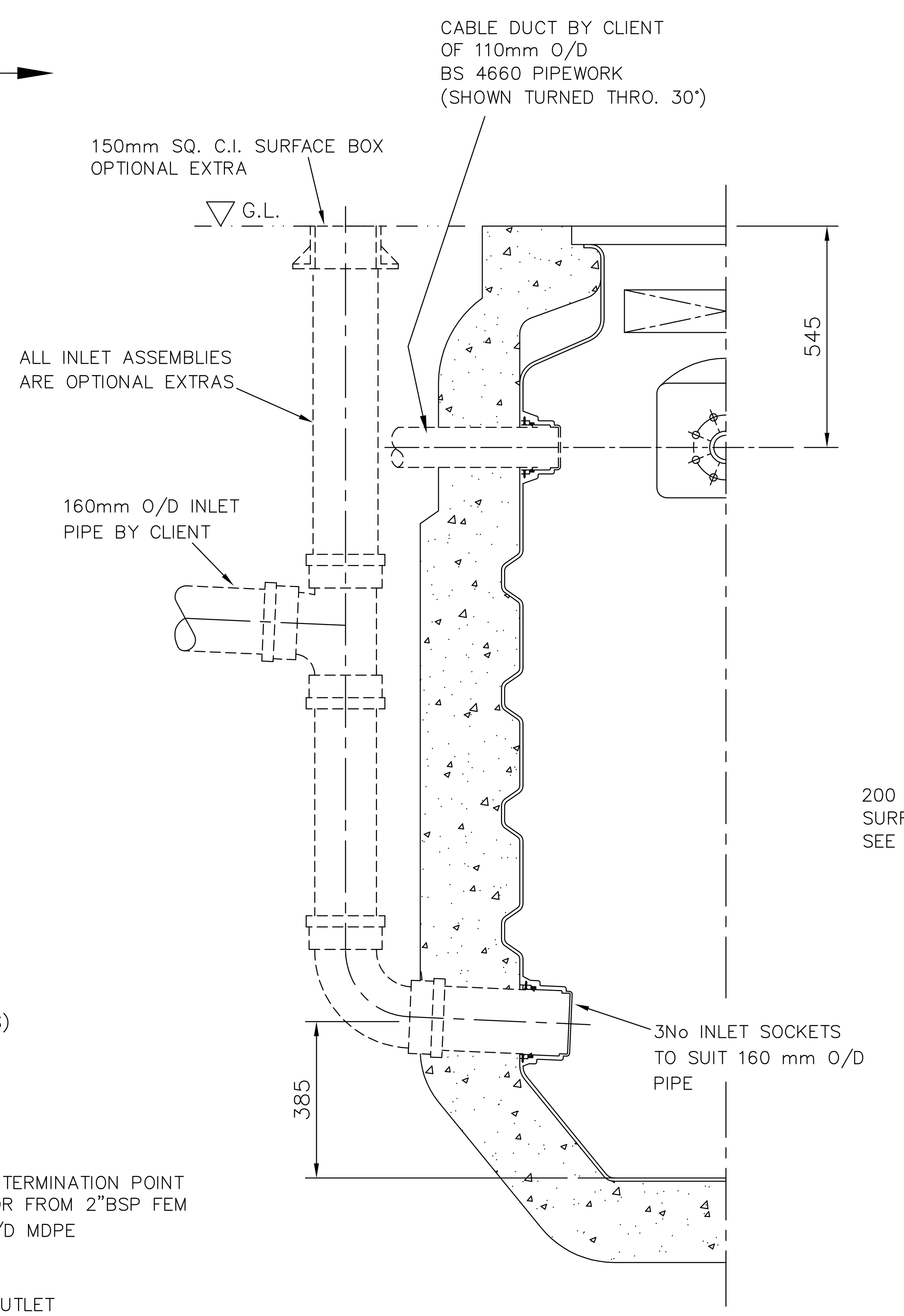


Road gulley on corner of site takes surface water down Dean Bridge Lane. Shown on Utility Scan as a 300mm drain. Flood water from quarry currently spills into road anyway

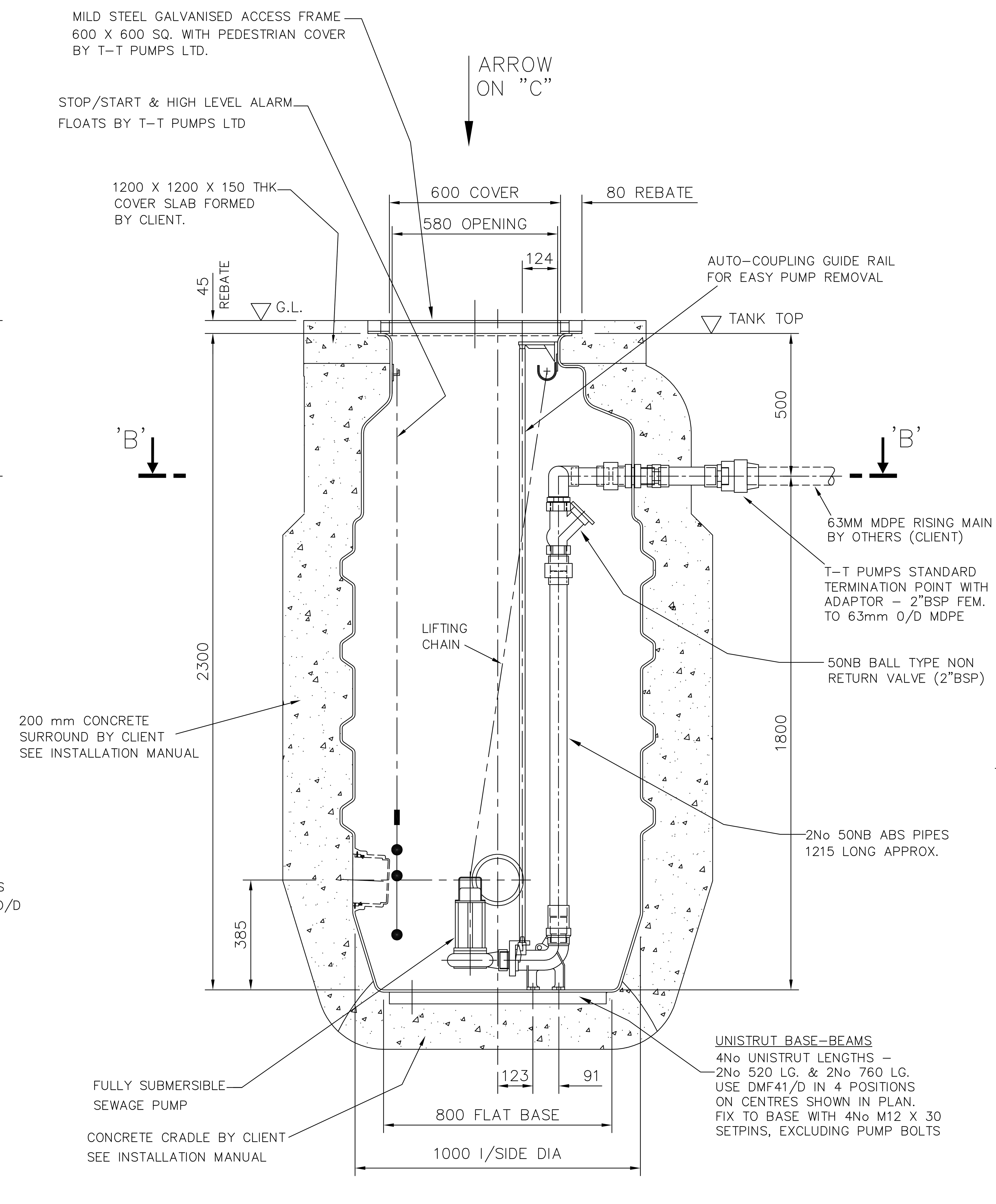
Matthew Tulley
Survey and report date 10/3/2022
Weather dry, dry yesterday too.



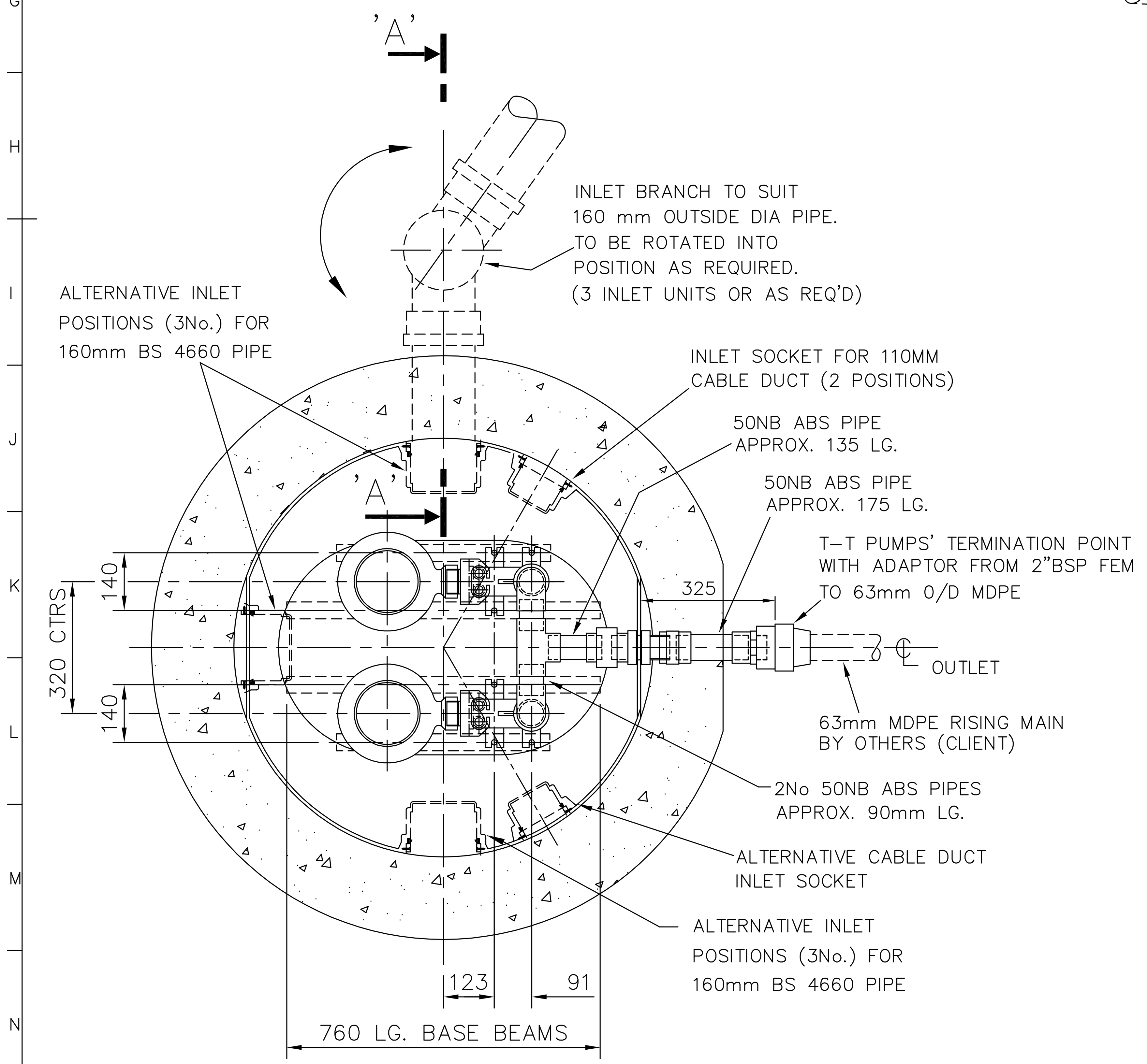
PLAN ON 'C'
(CONCRETE SURROUND OMITTED FOR CLARITY)



SECTION ON 'A'–'A'



SECTIONAL ELEVATION ON OUTLET CENTRE LINE



SECTIONAL PLAN VIEW 'B'–'B'

UNCONTROLLED DRAWING
PLEASE CHECK WITH T–T PUMPS LTD
THAT THIS DRAWING IS OF THE LATEST ISSUE

NOTES

1. POLYETHYLENE TANK SUPPLIED C/W PIPEWORK & VALVES TO TERMINATION POINT, FOR CLIENT TO INSTALL INTO GROUND – SEE SEPARATE INSTALLATION DATA SHEET.
2. ALL CIVILS WORK TO BE BY CLIENT.
3. PUMP STARTER OR CONTROL PANEL MUST BE FIXED INDOORS OR IN A WEATHERPROOF ENCLOSURE.

ISSUE	AMENDMENT	DRAWN BY	APPROVED BY	DATE
G	NEW AUTOCOUPLING & BALL TYPE NRV SHOWN	D.C.	D.J.P.	22.09.05
F	ADDITIONAL UNION SHOWN ON PIPEWORK	D.C.	D.J.P.	08.10.04
E	INLET SOCKET & CABLE DUCT SOCKET RE–DESIGNED	D.C.	T.R.P.	02.04.04
--	CABLE DUCT SOCKET RE–POSITIONED IN PLAN VIEW	--	--	--
D	PUMP LISTING DELETED	D.C.	T.R.P.	23.10.02
C	TERMINATION POINT EXTENDED BEYOND CONCRETE SURROUND	D.C.	T.R.P.	21.01.02
B	PUMP DESIGNATIONS UPDATED	D.C.	T.R.P.	05.06.01
A	SIZE OF CABLE DUCT ENTRY AMENDED	D.C.	T.R.P.	29.11.00

ENSURE THAT THIS IS THE LATEST ISSUE
DIMENSIONS IN mm UNLESS STATED OTHERWISE
TOLERANCE EXCEPT WHERE OTHERWISE STATED ± 5mm
DO NOT SCALE | IF IN DOUBT ASK

CLIENT APPROVAL

TITLE: GENERAL ARRANGEMENT FOR VENUS DUAL (50 NB ABS P'WK) PACKAGE PUMPING STATION

CLIENT

SCHEME

DRAWN BY	P.S.T.
APPROVED BY	R.D.
DATE	06.10.99
ORIGINAL SCALE @A1	1:10

T-T PUMPS
WOORE CW3 9RU ENGLAND
TEL. 01630 647200 FAX. 01630 642100

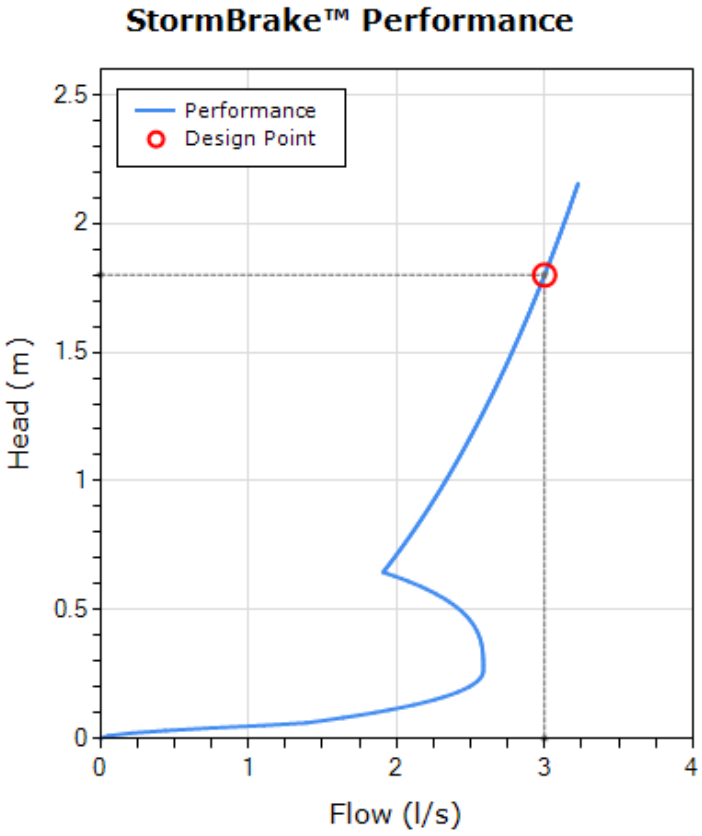
PROJECT NUMBER	DRAWING NUMBER	ISSUE	SHEET
STD.	PP/5200/G		1 OF 1

TT 060 09.98

StormBrake™ Performance Report

WRC approved PT/398/0217

Contractor:	Dudleys Consulting Engineers L	Head(m):	1.8
Site:	Scholes	Flow(l/s):	3
Date:	06/04/2022	Chamber Ref:	FCMH
Created By:	Seb Reid	Mounting Style:	LUGS (Default)
Device Ref:	FPM-SB1-01800-00300-0100		



	Head (m)	Flow (l/s)
Design Point	1.80	3.00
Flush Flow	0.26	2.59
Kick Back	0.65	1.91

	Dims (mm)
Min. Chamber Diameter	1200
Min. Outlet Pipe Diameter	100
Min. Sump Depth	250

Head (m)	Flow (l/s)
0	0.00
0.07	1.57
0.15	2.25
0.22	2.55
0.3	2.59
0.37	2.57
0.45	2.51
0.52	2.38
0.59	2.15
0.67	1.94
0.74	2.04
0.82	2.13
0.89	2.21
0.97	2.30
1.04	2.37
1.11	2.45
1.19	2.52
1.26	2.58
1.34	2.65
1.41	2.71
1.49	2.77
1.56	2.83
1.63	2.88
1.71	2.94
1.78	2.99
1.86	3.04
1.93	3.09
2.01	3.14
2.08	3.18
2.16	3.23

The unique performance characteristics of this StormBrake™ are derived from extensive dynamic modelling using parametric experimental testing and computational fluid dynamics.

Knockloughrim Precast Office:
T. 028 79549026

Ellistown Precast Office:
T. 01530 240000

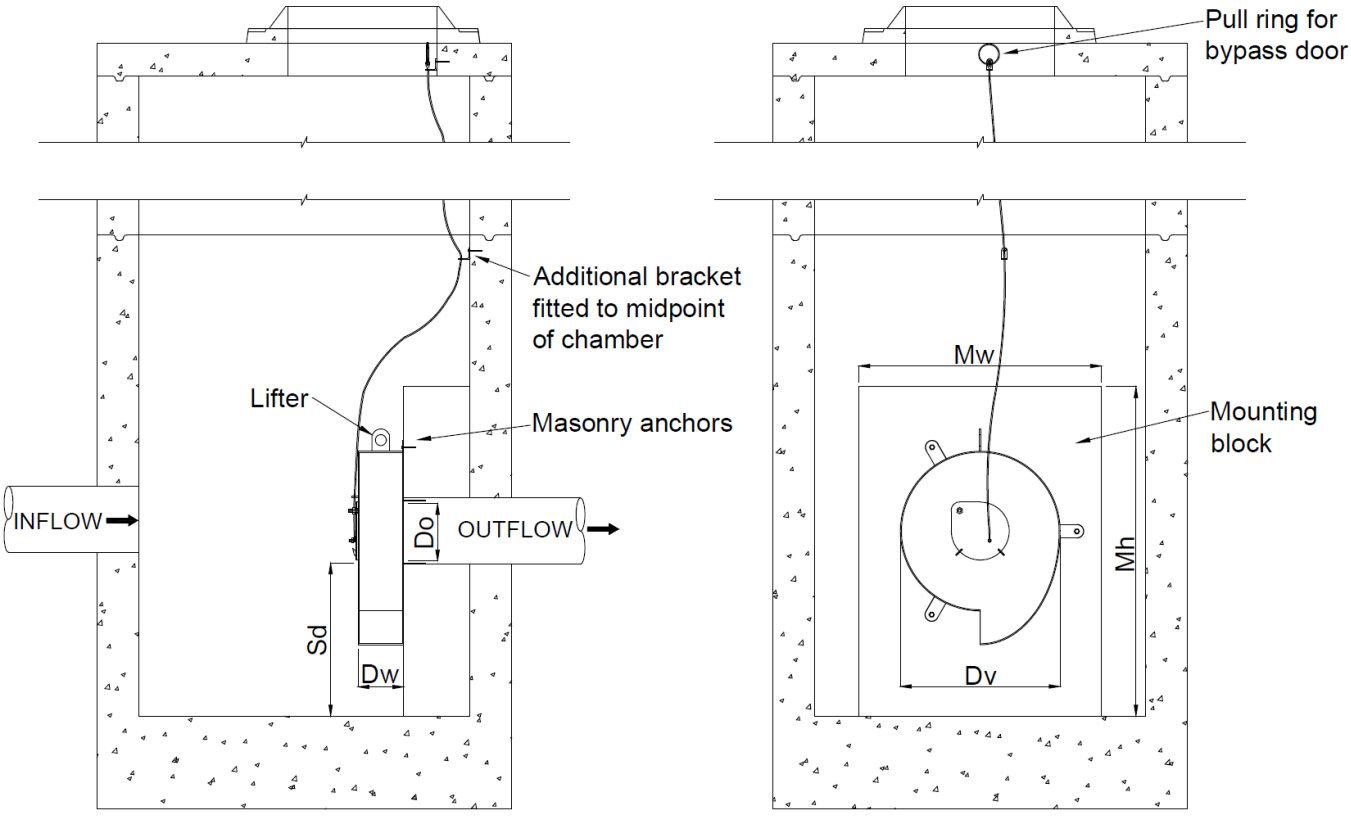
Email: info@fpmccann.co.uk
Web: www.fpmccann.co.uk

StormBrake™ Performance Report

wrc approved PT/398/0217

INSTALLATION INSTRUCTIONS

1. Position the StormBrake™ so that the inlet is at the bottom and the device outlet is in line with the chamber outlet pipe.
2. Mark the locations of the mounting points on the chamber/mounting wall.
3. Using the marked locations, drill holes to the required thickness and depth for the supplied masonry anchors (M10 throughbolts require 11 mm holes). Fit the bolts to the holes.
4. Attach the StormBrake™ to the anchor points, ensuring the neoprene gasket is flush with the chamber wall, and fasten the device by tightening the bolts. This will compress the neoprene gasket to provide a watertight seal between the StormBrake™ and the wall.
5. Fix the stainless steel wire cable from the front bypass door to the underside of the manhole cover, vertically above the device. A secondary bracket is supplied and should be fitted halfway up the chamber to guide the bypass door cable to the top.
6. Adjust the length of the bypass door cable accordingly, so that it reaches the ground level whilst ensuring the bypass door can open if required. Ensure the bypass door is closed for normal operating conditions.



Geometry	Annotation	(mm)
Device Vortex Diameter	Dv	373
Device Width	Dw	82
Device Orifice	Do	75
Sump Depth (outlet Ø100mm)	Sd	250
Mounting Block Width	Mw	610
Mounting Block Height	Mh	650

Dimensions quoted are minimum values based on the geometry of this unique StormBrake™ unit. These ensure the device can be fitted to the flow control chamber without restriction and meet the performance specification.

Design Data

Downstream Defender®

Advanced Hydrodynamic Vortex Separator

The Downstream Defender® is an advanced hydrodynamic vortex separator for the effective and reliable removal of fine particles, oils and other floatable debris from surface water runoff.

Its innovative design delivers high efficiency across a wide range of flows in a much smaller footprint than conventional or other swirl-type devices and it is the perfect choice for any catchment likely to convey high quantities of contamination.

1. Access for removal of floatables and sediments.
2. Inlet pipe.
3. Inlet chute.
4. Centre shaft.
5. Dip plate.
6. Centre cone.
7. Benching skirt.
8. Floatables and oil storage.
9. Isolated sediment storage zone.
10. Outlet pipe.

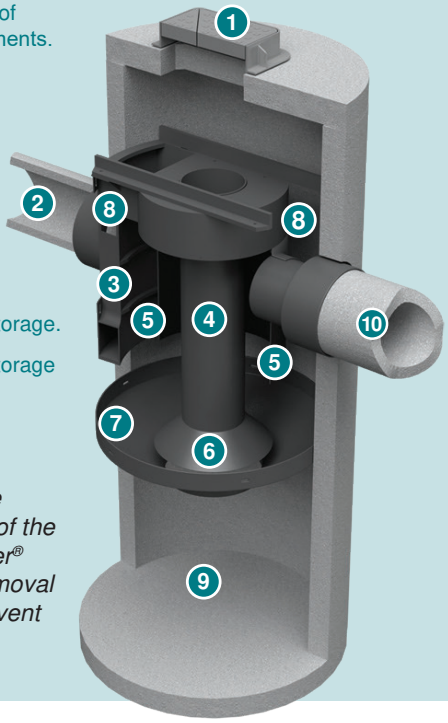


Figure 1 - The unique internal components of the Downstream Defender® enhance pollutant removal performance and prevent wash out.

Unique Flow Modifying Components

The Downstream Defender® consists of a choice of concrete or HDPE chamber with unique flow modifying internal components. It is these internal components that differentiate the Downstream Defender® from catchpits, sedimentation basins or sedimentation sumps. They facilitate advanced hydrodynamic vortex separation by reducing turbulence, lengthening the flow path to increase chamber residence time and introducing shear planes.

The internal components also ensure that the pollutant storage zones are isolated and protected from high flows that could cause pollutant re-entrainment or wash out.

Compared to devices that have poorly designed internal components, the Downstream Defender® captures and retains more of the annual pollutant load.

Watch a short video showing the Downstream Defender® components and operation at:

http://www.hydro-int.com/en-gb/products/downstream-defender-0

Repeatable, reliable performance

The Downstream Defender® delivers high removal of pollutants through advanced, hydrodynamic separation across a wide range of flows. The device has a proven track record of tackling an assortment of pollutants including:

Sediment (or Total Suspended Solids)

The Downstream Defender® is a highly effective sediment/TSS removal device. It can be sized in a number of ways to suit the application and level of protection required (see Table 1).

Gross Pollutants

100% removal of floatable debris, such as food wrappers, Styrofoam cups and drinks cartons

Liquid Hydrocarbons

Effective spill containment device that meets the BS EN 858-1:2002 Class I and Class II effluent targets at low flow rates. Note these systems are not considered oil separators according to the BS EN 858-1 and must not be used in applications where full certification is required.

Sediment Bound Hydrocarbons (including Polycylic Aromatic Hydrocarbons - PAHs)

PAHs have low solubility in water and are readily adsorbed onto sediment particles. Effective removal of sediment particles will also ensure the removal of many PAHs.

Sediment Bound Heavy Metals and Nutrients

Heavy Metals

Nutrients

As an efficient device for removal of fine sediment, the Downstream Defender® is also effective for the removal of sediment bound pollutants.

No Risk of Pollutant Wash Out

The Downstream Defender® has been specially designed to isolate the pollutant storage zones and is proven to prevent pollutant wash out.

Tel: +44 (0)1275 337937
stormwater@hydro-int.com

The Simple Index Approach (SIA)

The Simple Index Approach outlined in CIRIA C753 The SuDS Manual is a water quality design method for sites with a low to medium risk pollution hazard level. Sites with a high risk pollution hazard level should consider a more precautionary approach.

The approach assigns pollution hazard indices to the given land use for three pollutant groups, total suspended solids (TSS), metals and hydrocarbons. SuDS components are then selected until their combined pollution mitigation index score is greater than the pollution hazard index for each pollutant group.

Downstream Defender® SuDS Mitigation Indices		
Total Suspended Solids (TSS)	**Metals**	**Hydrocarbons**
0.5	0.4	0.8

Notes:
(a) All mitigation indices supplied by Hydro International Ltd are independently verified and calculated using the methods laid out in the British Water How To Guide: Applying the CIRIA SuDS Manual Simple Index Approach to Proprietary / Manufactured Stormwater Treatment Devices. Performance declarations are available on request or on the British Water website.

Table 1 - SuDS Mitigation Indices for Downstream Defender®.

Sizing

The Downstream Defender® can be sized for different treatment goals and objectives. For design purposes, the selected model's Treatment Flow Rate should be greater than or equal to the site's Water Quality Flow Rate.

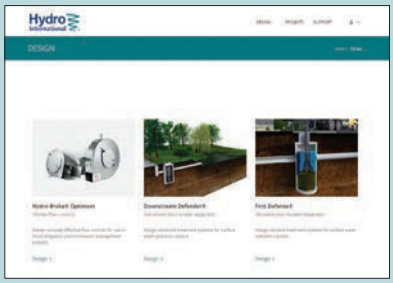
The hydraulic capacity of the selected model should be considered with respect to the peak discharge flow rate from the site.

If there is no treatment objective, just betterment, do not use a treatment flow rate and only compare the hydraulic capacity to the peak discharge flow rate.

Model Diameter (m)	Treatment Flow Rate - Fine [a][b] (l/s)	Hydraulic Capacity [c] (l/s)	Minimum Oil Storage Capacity (l)	Minimum Sediment Storage Capacity [d] (m^3)	Maximum Headloss at Treatment Flow Rate (mm)
1.2	30	120	283	0.39	150
1.8	69	270	1356	0.73	225
2.55	138	542	2535	2.89	300
3.0	190	750	4693	3.10	375

Notes:
(a) Treatment Flow Rate - Fine is based on an annualised removal efficiency of >50% of all particles up to 1000 microns with a mass-median particle size (D50) of 75 microns and a specific gravity of 2.65. The test procedure is WRc approved and in line with the British Water Code of Practice.
(b) Alternative sizing based on different sediment grades available on request.
(c) Maximum flow rate that can pass through the chamber with a maximum headloss of 500mm.
(d) Additional sediment storage capacity can be provided to extend maintenance intervals if required.

Table 2 - Downstream Defender® design information.



Design a Downstream Defender® with our Online Design Tool

Our online design tool now enables you to design your own Downstream Defender® or First Defense® stormwater treatment separators as well as Hydro-Brake® Optimum.

The tool also allows you to save project designs and submit them to our expert technical team for a free design review.

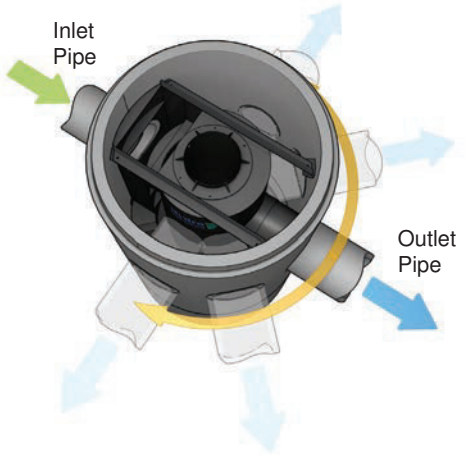
hydro-int.design

Setting out

The Downstream Defender® can accommodate a change in pipe direction to suit site specific requirements. Combined with the high rate internal bypass, this helps to avoid the need for additional manholes on site. Head loss across the chamber is kept to a minimum (see Table 2). The inlet and outlet pipes should be sized in accordance with Table 3 (opposite), and a minimum of 90 degrees between inlet and outlet is required.

Inlet and outlet pipe connections are at the same invert level.

Additional manhole sections can be provided to extend the chamber to meet site cover and invert levels or provide additional pollutant storage where required.



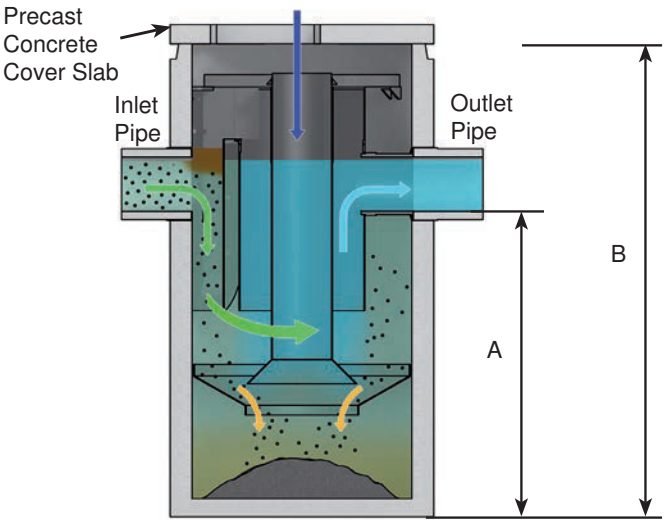
Dimensions and weights

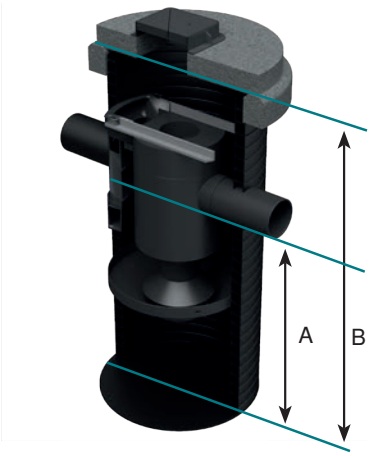
General arrangement drawings of all units are available for download from:
http://www.hydro-int.com/en-gb/products/downstream-defender-0

Model	Material	Chamber Diameter - Internal (mm)	Chamber Diameter - External (mm)	Inlet and Outlet ID (mm)	Depth to invert (m) (A) (1)	Chamber Depth (m) (B) (2)	Maximum Component Lift Weight (kg)
PQL1320.1000	Concrete	1200	1460	300	1.916	2.830	2200
PQL1320.1030	Concrete	1800	2160	450	2.495	4.029	5450
PQL1320.1060	Concrete	2550	2850	600	2.95	4.95	8700
PQL1320.1090	Concrete	3000	3350	750	3.12	5.20	12100
PQL1320.1020	HDPE Single Wall	1188	1200	300	1.55	2.3	140
PQL1320.1051	HDPE Single Wall	1776	1812	500	2.11	3.41	460
PQL1320.1081	HDPE Single Wall	2530	2570	600	2.94	4.8	900
PQL1320.1111	HDPE Single Wall	2974	3000	800	3.13	5.3	1300
PQL1320.1025	HDPE Twin Wall	1200	1300	300	1.56	2.22	400
PQL1320.1055	HDPE Twin Wall	1800	2200	560	2.467	3.75	1100

Notes:
1) Minimum depth to invert shown. Depth to invert can be increased if required.
2) Minimum chamber depth shown. Additional sediment storage capacity or increased depth to invert can be provided if required.

Table 3 - Downstream Defender® unit types, dimensions and weights.





Easy to install

The Downstream Defender® is delivered to site as a near finished manhole with internal components already installed. Installation is therefore similar to any other manhole installation on site. Full installation guidelines are available.

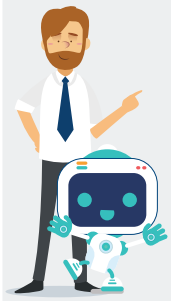
We can provide structural concrete systems for simple plug-and-play installation or choice of lightweight single and twin wall plastic chambers.

Simple, safe and cost-effective maintenance

Maintenance is carried out from the surface, using a standard vacuum tanker and personnel are not required to enter the device.

With a large capacity to store sediments and oils (see Table 2), and with a proven ability to prevent wash out, maintenance intervals can be years rather than months - depending on site conditions. The unit can also be fitted with a Hydro-Logic® Smart Monitoring system to alert the site operator when maintenance is required and provide peace of mind that the unit is operating normally at other times.

Additional pollutant storage can be built into the chamber to extend maintenance intervals if required.



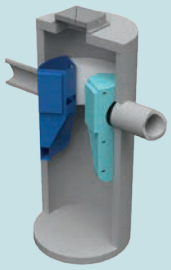
Make it Smart

Add Hydro-Logic® Smart Monitoring and your Downstream Defender® will let you know when it needs maintenance

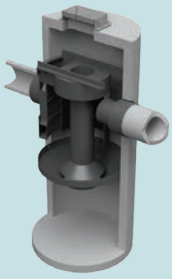
Get monitoring maintenance alerts from your Downstream Defender®
Save time and money by only visiting your Downstream Defender® when it actually needs emptying.

Our full range of surface water treatment devices

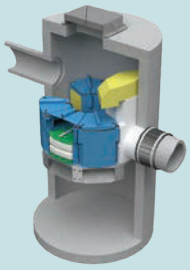
The Downstream Defender® is one of a range of surface water treatment devices. Each device delivers proven, measurable and repeatable surface water treatment performance. Each can be used independently to meet the specific needs of a site or combined to provide higher levels of treatment. They can be used alongside natural SuDS features to protect, enable or enhance them.



First Defense®
Vortex Separator



Downstream Defender®
Advanced Hydrodynamic
Vortex Separator



Up-Flo™ Filter
Fluidised Bed Up Flow
Filtration System

Hydro Biofilter™
Biofiltration System

Patent: www.hydro-int.com/patents

Tel: +44 (0)1275 337937 stormwater@hydro-int.com

Hydro International
Shearwater House, Clevedon Hall Estate,
Victoria Road, Clevedon, BS21 7RD

hydro-int.com

Water Infrastructure Systems

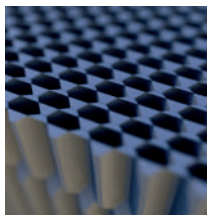
SDS GEOlight®

Stormwater Management System

Product Profile

SDS GEOlight® is an ultra lightweight honeycombed modular structure made from recycled PVC. The ready to install units are preformed to provide an underground stormwater storage facility, for the application of stormwater attenuation or infiltration.

The high void rate (>95%), high compressive strength (to 1000KN/m^2) and low resistance to water flow makes SDS GEOlight® an ideal material for cost efficient and maintainable underground water storage during storm conditions.



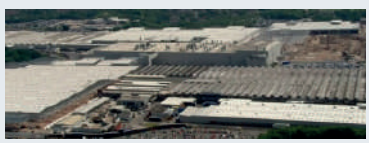
SDS GEOlight® Benefits

- High compressive strength – can be located under all roads, car parks and amenity area surfaces.
- Reduced excavation costs – the very high void rate (95%) minimises the required volume of earthworks.
- Speed of installation – 1000m^3 reservoir, completed in one week.
- Light and easy to handle.
- Excellent hydraulic characteristics.
- The honeycomb structure is highly permeable, offering low resistance to water flow.
- SDS GEOlight®'s unique lateral and vertical filling arrangement requires a minimum amount of pipework and stone.
- Depth of tank invert reduced by using patented lateral supply.
- Simplified distribution pipe network, easy maintenance – dispensing with costly and complicated pipework configurations.
- Modular format offers design flexibility to overcome topographical contraints and architectural requirements.
- Greatly reduces the risk of flooding when used as stormwater storage.
- Can also be used for water recycling and combining with irrigation systems.
- Can virtually eliminate pollution when used in combination with specialist separation and filtration technology such as SDS Aqua-Swirl™ and SDS Aqua-Filter™.
- Design service available, including calculations.

APPLICATIONS

RETAIL

INFRASTRUCTURE



INDUSTRIAL

RESIDENTIAL

COMMERCIAL

PUBLIC SECTOR

SDS Ltd, Clearwater House, Castlemills, Biddisham, Somerset, BS26 2RE

T: +44 (0)1934 751303
E: info@sdslimited.com

SDS GEOlight® 400	SDS GEOlight® 600	SDS GEOlight® 800
APPLICATIONS		
Stormwater Management		
Attenuation / Infiltration		
Bacterial filter-bed for biological treatment		
Hydrocarbon Separation		
Filtration and Separation Units		
SPECIFICATIONS		
Material	Recycled Rigid PVC	
Colour	Dark grey to black	
Standard length of a block	2000 mm	2000 mm	2000 mm
Standard width of a block	500 mm	500 mm	500 mm
Standard height of a block*	750 mm	750 mm	750 mm
	*Other block sizes available on request		
Void Ratio	> 95%	> 95%	> 95%
Compressive Strength	420 kN/m²	610 kN/m²	800 kN/m²
ADVANTAGES		
Highly cost effective		
Reduced excavation costs		
High void capacity		
Good UV resistance		
Good hydrocarbon resistance		

GEO DS/1021

SDS Ltd, Clearwater House, Castlemills,
Biddisham, Somerset, BS26 2RE

T: +44 (0)1934 751303
E: info@sdslimited.com

Planning
Investment and Regeneration Service
PO Box B93, Civic Centre 3,
Off Market Street, Huddersfield, HD1 2JR

Pre-Application Consultation Request

Town and Country Planning Act 1990

Observations By:	**KC, Lead Local Flood Authority**

Application No.	**2021/20912**
Proposed Development:	**Pre application advice for residential development**
Location:	**Land Adjacent, 67, Chapelgate, Scholes, Holmfirth, HD9 1SX**
Applicant/Agent:	**Catalina Tudor**
Planning Officer	

Your comments on the above proposal are requested. Please e-mail your comments to the DC Admin in either a Microsoft Word or PDF Document to DC.Admin@kirklees.gov.uk by 28-Sep-2021.

The submitted plans and documents for the application can be viewed using Documents from Anite or Anite, please use the application number above.

If I do not receive your response by 28-Sep-2021 then the application may be decided without the benefit of your views.

Dated: 14-Sep-2021

Mathias Franklin
Head of Planning and Development

Planning
Investment and Regeneration Service
PO Box B93, Civic Centre 3,
Off Market Street, Huddersfield, HD1 2JR

Consultation Response from KC, Lead Local Flood Authority		
2021/20912 at Land Adjacent, 67, Chapelgate, Scholes, Holmfirth, HD9 1SX		
Pre application advice for residential development		
Date Responded:	**Responding Officer:**	**Responding Ref:**

Contours
The proposed site is located on relatively steep land. The Western part of the site is about 240m above ordnance datum (AOD), whereas the East is about 235, AOD.

Water Features
There are no known water features on the proposed site. The closest water feature is a stream 30m East of the site.

Main River Flood Risk
Flood Zone 1 - land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%)
The proposed site is located in flood zone 1. The closest area within a flood zone is 230m South East in flood zone 3.

Sequential Test
This application would not be subject to a sequential test.

Surface Water Flood Risk
The proposed site has some surface water flood risk. The central section of the site has predicted surface water flooding of up to 0.3m, in the 1 in 100 annual flood event.

Flood Incidents
It is Kirklees Councils statutory duty as the LLFA to record all incidents of flooding in the district. This information gives us a wider understanding of flooding issues.
There have been no previously reported flood incidents on the proposed site. The closest reported incident was 105m North, and caused by a culvert.

Flood Routing/Site Layout
During intense rainfall events drainage systems can often become blocked or overwhelmed. We expect developers to understand where the flow of water will be in these circumstances and avoid unnecessary risk.
Any water which makes its way on site will run straight of site, towards the East. The option 2, site layout, poses less risk to the site as it reduces the risk of ponding water at the front of the houses.

Surface Water Drainage Strategy
At Kirklees Council we aim to promote sustainable drainage throughout the district. As the Lead Local Flood Authority we expect developers to follow our drainage strategy hierarchy.

We would encourage the developer to investigate the potential for soakaways on the proposed site. Although the site is relatively steep, the site has a BGS score of 1 which means that the subsurface is likely to be suitable for free-draining infiltration SuDS. Soakaways must be 5m away from properties and should not encroach this sphere of influence on 3rd part land. We recommend early dialogue with our section 38 team on highway soakaways positioning and stand-off. At the moment a landscaped area to be signed over to highways is favoured.

Planning
Investment and Regeneration Service
PO Box B93, Civic Centre 3,
Off Market Street, Huddersfield, HD1 2JR

Connecting to a watercourse would be a viable option as the Dean Dike runs 230m to the South East.

Connecting to a Yorkshire Water sewer is unlikely to be a viable option, as there are few sewers in this location. The most Likely connection point is 35m North of the site and has a diameter of 100mm, which is probably not big enough for the site.

Attenuation must store the critical 1 in 30 year storm. Volumes generated by storms up to and including the 1 in 100 + 30% climate change critical storm also has to be stored on site. Opportunities to store the additional volume in safe areas on the surface can be explored however the majority of sites in Kirklees will be sloping and this volume may also need to be stored in an underground system.
If attenuation span is greater than 1500mm and positioned under highway this is likely to preclude adoption by Kirklees Council. Please speak to our Structures department for more information. Storage in landscaped areas or non-adoptable highway is unaffected.

Section 106 – Management Company
The LPA is obligated under House of Commons Written Statement 161 to ensure the maintenance and management of sustainable drainage for the lifetime of the site. This includes the period from construction up until a date of adoption by the statutory undertaker (Yorkshire Water). There is no guarantee that systems will be adopted even if an agreement is signed to do so. It is vital therefore that an undertaking is ensured in the planning process to maintain these systems to manage flood risk. A detailed maintenance plan including access and safety is expected to be included so it can be enforced against non-compliance.

Temporary Drainage
Run off can increase post soil and vegetation strip and the risk of sediment entering the local drainage systems and watercourse. A plan to manage risk of flooding to nearby property and land and to protect watercourses from pollution will be required.