

Surface Water Drainage Report

32-33 Marine Parade, Worthing

Planning Ref: AWDM/1174/23

For

Jo Murataj

Rev - P

Reference **C3937**

Date **19th December 2025**

Revision	Date of Issue	Comments	Prepared By	Checked By
P	19/12/2025	Initial Issue	MR	CS

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1 Introduction

- 1.1.1 CGS Civils Ltd has been appointed to undertake a drainage strategy report for a proposed development at 32-34 Marine Parade, Worthing.
- 1.1.2 The purpose of this drainage strategy is to demonstrate how the development area can be satisfactorily drained without increasing flood risk onsite and elsewhere in order to satisfy Condition 8, 9 and 10 of the Decision Notice from **8.10.2025**, with the planning reference: **AWDM/1174/23**. The condition requires the following to be addressed:
- *8. No works to implement the development shall take place unless and until construction drawings of the surface water drainage network, associated sustainable drainage components and flow control mechanisms and a construction method statement have been submitted to and agreed in writing by the local planning authority. The scheme shall then be constructed as per the agreed drawings and FRA (Flood Risk & Sustainable Drainage Assessment by HOP, 03/01/2024, revision V1.2) and remain in perpetuity for the lifetime of the development unless agreed in writing by the Local Planning Authority. No alteration to the agreed drainage scheme shall occur without prior written approval from the Local Authority. Reason: To ensure that the development achieves a high standard of sustainability and in accordance with the NPPF and policy DM20 of the Worthing Local Plan*
 - *9. The development hereby approved shall not be first occupied until details of the maintenance and management of the sustainable drainage scheme have been submitted to and approved in writing by the Local Planning Authority. The drainage scheme shall be implemented prior to the first occupation of the development hereby approved and thereafter managed and maintained in accordance with the approved details in perpetuity. The Local Planning Authority shall be granted access to inspect the sustainable drainage scheme for the lifetime of the development. The details of the scheme to be submitted for approval shall include: i) ii) iii) a timetable for its implementation; details of SuDS features and connecting drainage structures and maintenance requirement for each aspect; a management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime. Reason: To ensure that the development achieves a high standard of sustainability and ensure the flood risk is adequately addressed for each new dwelling and not increased in accordance with the NPPF and policy DM20 of the Worthing Local Plan*
 - *10. Upon completion of the surface water drainage system, including any SuDS features, and prior to the first occupation of the development; a survey and report from an independent surveyor shall be submitted to and approved in writing by the Local Planning Authority. The survey and report shall demonstrate that the surface water drainage system has been constructed in accordance with the details approved pursuant to condition 8. Where necessary, details of corrective works to be carried out along with a timetable for their completion, shall be included for approval in writing by the Local Planning Authority. Any corrective works required shall be carried out in accordance with the approved timetable and subsequently re-surveyed with the findings submitted to and approved in writing by the Local Planning Authority. Reason: To ensure that the flood risk is adequately addressed, not increased and users remain safe for the lifetime of the development in accordance with the NPPF and policy DM20 of the Worthing Local Plan.*
- 1.1.3 The existing site comprises a building containing commercial properties and residential flats. It is proposed to refurbish the fourth-floor residential unit and expand the area by constructing new fourth-floor space over the existing flat roof. The new construction will be lightweight to minimise additional loading on the existing building structure. The proposed development is located as OS Grid Reference **TQ 14909 02388** and has the post code **BN11 3QA**.
- 1.1.4 The proposed site plan can be found at **Appendix A**.

Fig 1. Site Location



2 Executive Summary:

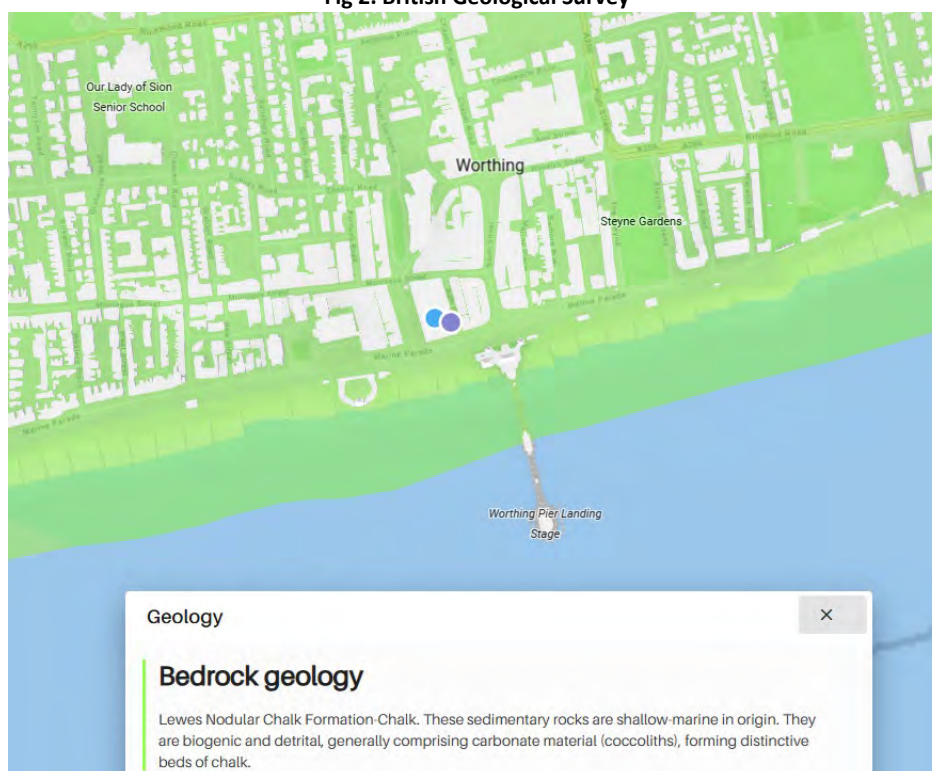
- 2.1.1 Surface water runoff from the roof areas will be discharged to the existing public surface water sewer located in Bath Place, with the discharge restricted to 12.1 l/s. The drainage system has been assessed for the 1 in 100 year rainfall event with a 45% allowance for climate change; however, due to site constraints with the site being fully urbanised, it is not feasible to provide full on-site attenuation for this event. The proposed strategy therefore incorporates raised SuDS planters above ground, which provide attenuation sufficient to contain runoff from the 1 in 10 year rainfall event, with flows in excess of this safely managed via a controlled exceedance route.
- 2.1.2 The surface water connection is to be agreed under S106 application with Southern Water.

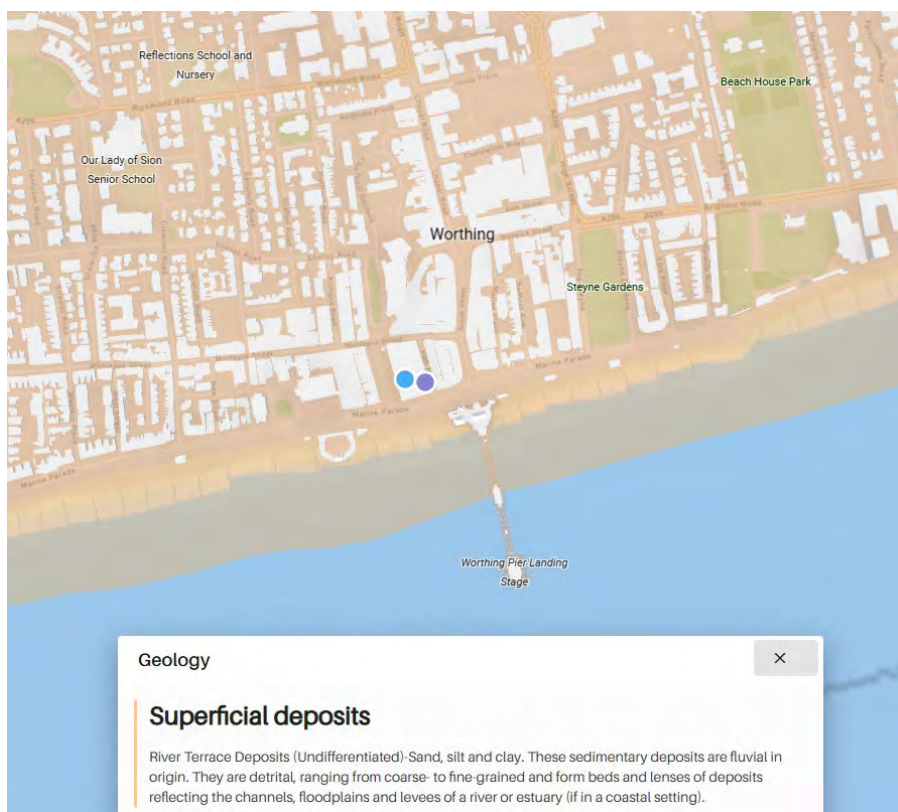
3 Site Geology

3.1 British Geological Survey information

- 3.1.1 The British Geological Survey confirms the bedrock geology to be made up of Lewes Nodular Chalk Formation- Chalk. The BGS website confirms the superficial deposits on site to be made up of River Terrace Deposits (Undifferentiated) Sand, silt and clay.
- 3.1.2 The British Geological Survey also holds records of historical boreholes near the site which give some insight into the ground geology.
- Borehole **TQ10SW81** (Located approx. 70m South of the site) – Ground geology (Sand, Gravel, stiff Chalk)
- 3.1.3 The British Historical Borehole Logs can be found at **Appendix B**.

Fig 2. British Geological Survey





Snippet from BGS Website showing Bedrock geology and superficial deposits
<http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>

Fig 3. British Geological Survey



Snippet from BGS Website showing Borehole Logs locations

3.2 Geological Assessment

- 3.2.1 No intrusive ground investigation has been undertaken for the site. This is considered appropriate as the proposed surface water drainage strategy does not rely on infiltration and there are no changes to ground-bearing structures or formation levels.
- 3.2.2 The site is located within a dense urban environment with existing structures and services, further limiting the practicality and necessity of intrusive investigation works.

4 Existing Drainage

- 4.1.1 It is not currently known exactly how surface water runoff from the existing site is discharged. However, it is presumed that all surface water is directed into the existing public storm water sewer, based on the confirmed locations of storm water sewers in Bath Place to the west of the site and Marine Parade Road to the south. The existing CCTV survey has not confirmed the presence of the existing storm water drainage. The topographical survey suggests that all rainwater downpipes are located to the rear of the building along the northern elevation.
- 4.1.2 The CCTV Survey can be found at **Appendix C**.

5 Proposed Drainage Strategy

5.1 SuDS Hierarchy

- 5.1.1 All options for the destination of run-off generated on site have been assessed in line with the SuDS hierarchy as set out in Building Regulations Part H document and DEFRA's Draft National Standards for SuDS.

Table 1. SuDS Hierarchy

Discharge Destination	
Rainwater Harvesting	N/A
Discharge to Ground	N/A
Discharge to Watercourse	N/A
Discharge to Surface Water Sewer	Yes- Due to limited space on site, site conditions and dense urban site it is proposed that all surface water runoff from the roof is to be discharged into the storm water public sewer in Bath Place with a restricted flow discharge rate of 12.1 l/s
Discharge to Other Sewer	N/A

5.2 Proposed Hydraulic Calculation Specifications:

Table 2. SuDS Hierarchy

Hydraulic Calculations Settings:	
Rainfall Methodology	FEH-22
Volumetric Run-off Coefficient Cv	1
CV Winter and Summer	1
Additional Storage (m ³ / ha)	0.0
Maximum Rainfall (mm/hr)	75
Flow Control	0.6m Head @ 12.1l/s discharge
SuDS Planters	Base Coefficient (m/hr): 0.00000
	Side Coefficient (m/hr): 0.00000
	Factor of Safety: 2
	Time to Half Empty (mins): 5

5.3 Surface Water Drainage

- 5.3.1 The originally approved drainage strategy included a blue roof system to provide attenuation of surface water runoff. However, it has been confirmed by the structural engineer that the existing building cannot safely accommodate the additional loading associated with a blue roof. Consequently, the originally proposed solution is unviable.
- 5.3.2 A review of alternative SuDS measures has been undertaken in accordance with the SuDS hierarchy. Infiltration techniques are not possible due to the proximity of existing structures and the constraints of the dense urban site. Open SuDS features and underground attenuation tanks are not feasible due to the lack of available space. Within these constraints, the proposed use of raised SuDS planters on the balconies/ terrace area of the fourth floor and at ground floor level represents the maximum practicable attenuation that can be achieved on site. The ten above ground planters provide a total storage volume of approximately 3.5 cubic metres, sufficient to manage runoff from a 1 in 10 year rainfall event, with discharge maintained at the previously agreed rate of 12.1 l/s to the existing public surface water sewer.
- 5.3.3 Consequently, the overall the surface water runoff will not increase. In consideration of the site constraints, the proposed drainage follows the existing drainage system, maintaining assumed discharge to the same public surface water sewer, but is additionally supported by SuDS planters providing 3.5 m³ of extra storage volume and delivering pollution mitigation from the roof area.
- 5.3.4 Due to site constraints and the limited available area for attenuation, it is not feasible to provide full storage to prevent flooding for the 1 in 100 year plus 45% climate change (CC) event. The proposed surface water strategy therefore combines attenuation via raised planters with a controlled discharge system to the public sewer and a safe exceedance route.
- 5.3.5 A flow control chamber will be installed upstream of the public sewer connection to regulate runoff from the site. The chamber is designed to maintain a maximum discharge rate of 12.1 l/s, even during the 1 in 100 year + 45% CC event, ensuring the public sewer is not overloaded. For rainfall events exceeding the 1 in 10 year return period, any surplus water will safely exceed via the flow control gully grate cover, preventing flooding within the building or neighboring properties.
- 5.3.6 The raised planters will remain above the surcharge level, preventing backflow into the storage units during extreme events. This approach providing attenuation where feasible and a controlled, safe exceedance route for extreme rainfall events. The flow control chamber with gully grates is accessible for inspection and maintenance to ensure long-term performance.
- 5.3.7 Proposed Drainage Plan, Contributing Area & Exceedance Flow Routes and Typical Construction Details Hydraulic calculations have been carried out which can be found at **Appendix D**.

5.4 Water Quality

- 5.4.1 A key requirement of any SuDS system is that it protects the receiving water body from the risk of pollution.
- 5.4.2 Frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals, and various organic and inorganic contaminants) Therefore the first 5-10mm of rainfall should be adequately treated with SuDS.
- 5.4.3 The new SuDS Manual (Ciria C753, November 2015) introduces slightly different approach compared to the previous version for the water quality management of surface water. The Manual describes risks posed by the surface water runoff to the receiving environment as a function of:
- The pollution hazard at a particular site (i.e., the pollution source)
 - The effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels
 - The sensitivity of the receiving environment
- 5.4.4 The EA website indicates that the site does not lie within a Source Protection Zone.

5.4.5 The recommended approaches for water quality risk management are given in the SuDS Manual Table 26.1.

Table 26.1 from SuDS manual. Approaches to Water Quality Risk Management

Table 26.1 Approaches to Water Quality Risk Management			
Design method	Hazard Characterisation	Risk Reduction	
		For Surface Water	For Groundwater
Simple Index Approach	Simple pollution hazard indices based on land use (Table 26.2)	Simple SuDS hazard mitigation indices (Table 26.3)	Simple SuDS hazard mitigation indices (Table 26.4)
Risk Screening	Factors characterising traffic density and extent of infiltration likely to occur (Table 26.5)	N/A	Factors characterising unsaturated soil depth and type, and predominant flow type through the soils (Table 26.5)
Detailed Risk Assessment	Site specific information used to define likely pollutants and their significance	More detailed, component specific performance information used to demonstrate that the proposed SuDS components reduce the hazard to acceptable levels	
Process-based treatment modelling	Time series rainfall used with generic pollution characteristics to determine statistical distributions of likely concentrations and loadings in the runoff	Models that represent the treatment processes in the proposed SuDS components give estimates of reductions in even mean discharge concentrations and total annual load reductions delivered by the system	

5.4.6 As per Table 26.1 Simple Index approach will be used as a design method for this site.

5.4.7 Table 26.2 will provide hazard classification of different land uses. The land uses for the surface water drainage for this site are.

- Residential Roofs

5.4.8 To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index for each contaminant type that equals or exceeds the pollution hazard index for each contaminant type. Therefore, the following must be achieved for the surface running off the site.

Total SuDS mitigation index $\geq$ pollution hazard index

5.4.9 Pollution Hazard Indices are given for different land uses in Table 26.2 of the SuDS manual;

Table 26.2 from SuDS manual. Pollution Hazard Indices for Different Land Use Classifications

Table 26.2 Pollution hazard indices for different land use classifications				
Land Use	Pollution Hazard Level	Total Suspended solids (TSS)	Metals	Hydro-Carbons
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs (Typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (e.g., cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g., schools, offices) i.e., < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g., hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g., haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

5.4.10 From Table 26.2 the following information is tabulated in Table 1

Table 1: Pollution hazard index and destination of runoff for the proposed site

Table 3: Pollution Hazard Index and Destination of runoff for the proposed Site					
Land Use	Destination of Runoff	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Residential Roof	Ground Water	Very Low	0.2	0.2	0.05

5.4.11 The SuDS mitigation index will be obtained from Table 26.4 (for groundwater) of the SuDS manual.

Table 26.3 from SuDS manual. Indicative SuDS Mitigation Indices for discharges to surface waters.

Table 26.3 Indicative SuDS mitigation indices for discharges to surface waters			
Type of SuDS Components	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Filter Strip	0.4	0.4	0.5
Filter Drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention System	0.8	0.8	0.8
Permeable Pavement	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area		

5.4.12 SuDS mitigation indices are tabulated in Table 5 as follows:

Table 5: SuDS mitigation index

Table 4 Mitigation Indices						
Runoff Source	Destination of Runoff	Mitigation Index Source	Type of SuDS Component	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential Roof	Surface water	Table 26.3 (for surface waters)	Bioretention System- SuDS planter units	0.8	0.8	0.8

5.4.13 The above analysis demonstrates that the SuDS devices within the design will mitigate any pollution present within the surface water system.

5.5 Construction Phase Drainage

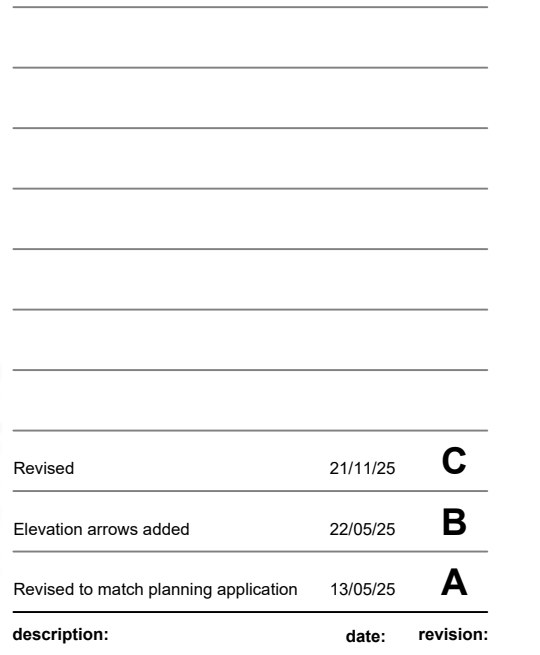
- 5.5.1 It is an offence to cause or knowingly permit the entry of any polluting, poisonous or noxious material in the water environment. If the pollution is serious enough to lower the ecological status of the water body as set out in terms by the Water Framework Directive (2000/60/EC) than prosecution may occur.
- 5.5.2 Remediation of any damage caused will not require the polluter to be prosecuted first. If the water pollution is serious enough to be classed an environmental damage, the damage will require to be remediated such that the area is returned to the condition it would have been in if the damage had not occurred.
- 5.5.3 If any pollution has not been reported or the polluter has not taken actions to prevent any further damage; they would then be causing an offence. Third parties (e.g., Private water supply users, landowners, recreation users and the public) who may be affected by possible damage may also report the risk of any environmental damage to the enforcing authority.
- 5.5.4 The principles of SuDS (Sustainable Drainage Systems) shall be applied to all components of design and construction regarding surface water management. Any design or site works that may impact on the site drainage or the water quality shall:
- Soakaway where soils allow
 - Consider and manage erosion
 - Remove pollutants in surface water
 - Retain any silts on site and prevent silts from discharging to watercourses or drains
 - Keep runoff rates at existing greenfield runoff
 - Prevent accidental spillages reaching watercourse
- 5.5.5 As infiltration on site is not feasible, the temporary drainage for the development will be in the form where surface water runoff can be pumped into the existing sewer.
- 5.5.6 Pollution will be controlled via the use of catchpit manholes and geotextiles.
- 5.5.7 Any potential hazardous substances will be within a controlled compound with a separate drainage system that will contain a penstock valve / containment kit in the event of a spillage.

6 Summary and Conclusions

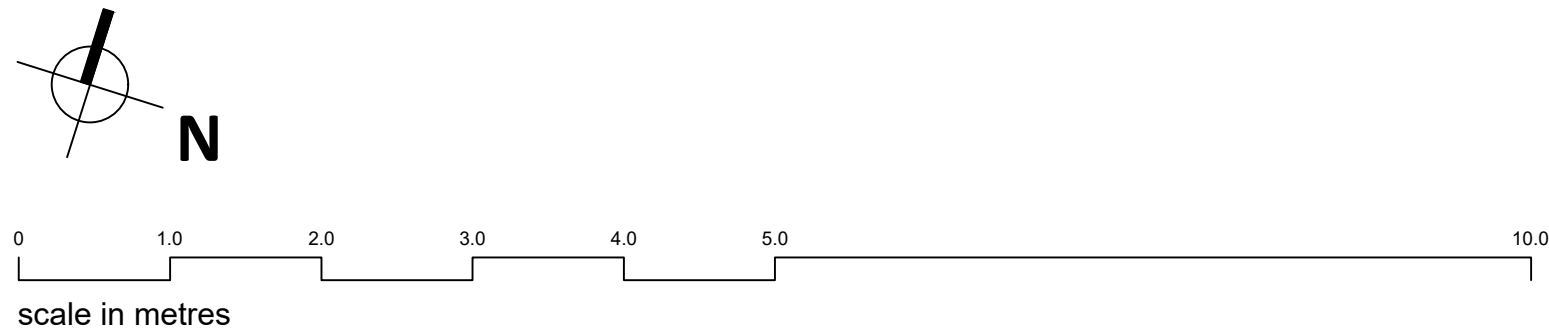
- 6.1.1 CGS Civils has been instructed to produce a Drainage statement under National Planning Policy Framework (NPPF) to support the Planning Application for a construction of the conversion of an existing building to deliver 21 residential and commercial units.
- 6.1.2 The Surface Water will discharge into the public storm water sewer located in Bath Place, with a restricted flow rate of 12.1 l/s. The proposed drainage system has been designed based on the 1 in 100-year rainfall event, with a 45% allowance for climate change. However, due to site constraints, the only feasible option is to provide raised SuDS planters above ground, which can accommodate surface water runoff for the 1 in 10-year rainfall event.
- 6.1.3 The report has demonstrated that the proposed drainage measures ensure that suitable means of surface water drainage can be achieved for the proposed development.
- 6.1.4 A maintenance schedule has been written up for the drainage network including the SuDS features and can be found within **Appendix E**.

7 Appendices

7.1 Appendix A – Site Plan



32 - 34 Marine Parade, Worthing



7.2 **Appendix B – Borehole Logs**

Bore hole No.	Log	Depth (m)	Water Table	Cohesion. kN/m ²	Angle of friction	N blows/ 0.3 m	Type of foundation	Remarks
[149] 0235	TQ 10 SW/81	G.L.						5.55 O.D.
	Fill (tarmacadam, sand, chalk, etc.)	0.61						
	Medium dense to dense, fine to coarse gravel	2.29	S.W.L.					
	Stiff to very stiff weathered chalk	5.33						
		6.10		102				
		7.61		64.5				
		10.68						
[1462] 0230	TQ 10 SW/82	G.L.						5.95 O.D.
	Tarmacadam	0.15						
	Fine to coarse gravel	0.76						
	Soft brown silty clay with gravel (possible fill)	1.22						
	Medium dense fine to coarse gravel	3.04	S.W.L.					
	Stiff weathered chalk with traces of grey clay	4.41						
	Very stiff to hard white chalk	5.16		117				
		5.18						
		10.68						
[1448] 0226	TQ 10 SW/83	G.L.						5.90 O.D.
	Tarmacadam	0.15						
	Medium dense, fine to coarse gravel	4.11						
	Firm, light grey sandy silty clay	4.56	S.W.L.					
		5.35		59.8				
		5.64						
		6.86		254				
		8.39		95.8				
		10.68						
[1419] 0219	TQ 10 SW/84	G.L.						5.78 O.D.
	Fill (tarmacadam, clay, gravel, chalk and fragments of brick)	1.53						
	Fine to coarse gravel.	1.83						
	Soft dark brown silty clay	2.29						
	Firm mottled grey-brown silty clay with occasional chalk gravel	2.58		50.2				
		3.63	W.S.					
	Soft grey and brown silty clay	4.11		62				
	Firm mottled grey-brown silty clay with occasional chalk gravel	4.56						
		4.87	W.S.					
	Stiff weathered chalk with flints.	5.62		40.6				
		8.05		55				
		10.68						

7.3 **Appendix C – The CCTV Survey**



CCTV Inspection Report

View via iTouch Live 

Your full report,
including the video
is only a click away
download or
view online now.



**32-34 Marine Parade
Worthing
BN11 3QA**

16/09/2025

**Approved By: Richard Kempson
Job Number: 1325388
Client Job Number: CAP-29033**

Metro Rod (Sussex and Tunbridge)

270A Old Shoreham Road, Hove, East Sussex, BN3 7EG
Tel: 01273 023 728

Job Number
1325388Surveyed by (Operator)
iTouchBase Unit
DABG8JXHBCDate
16/09/2025

Client Details:

Connaught House (Marine Parade) Ltd
32-34 Marine Parade
Worthing
BN11 3QAClient Contact Name: Murataj Kelmend
Client Contact Tel: 07375 757547

Site Details:

32-34 Marine Parade
Worthing
BN11 3QASite Contact Name: Murataj Kelmend
Site Contact Tel: 07375 757547

Contractor Details:

Metro Rod (Sussex and Tunbridge)
270A Old Shoreham Road
Hove
East Sussex
BN3 7EGOffice Contact Name: Richard Kempson
Office Contact Number: 01273 023 728

Purpose of Survey:

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
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Page 14 Survey Run Sheet(Survey 3 - MH1 B1 to UNKNOWN)

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Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
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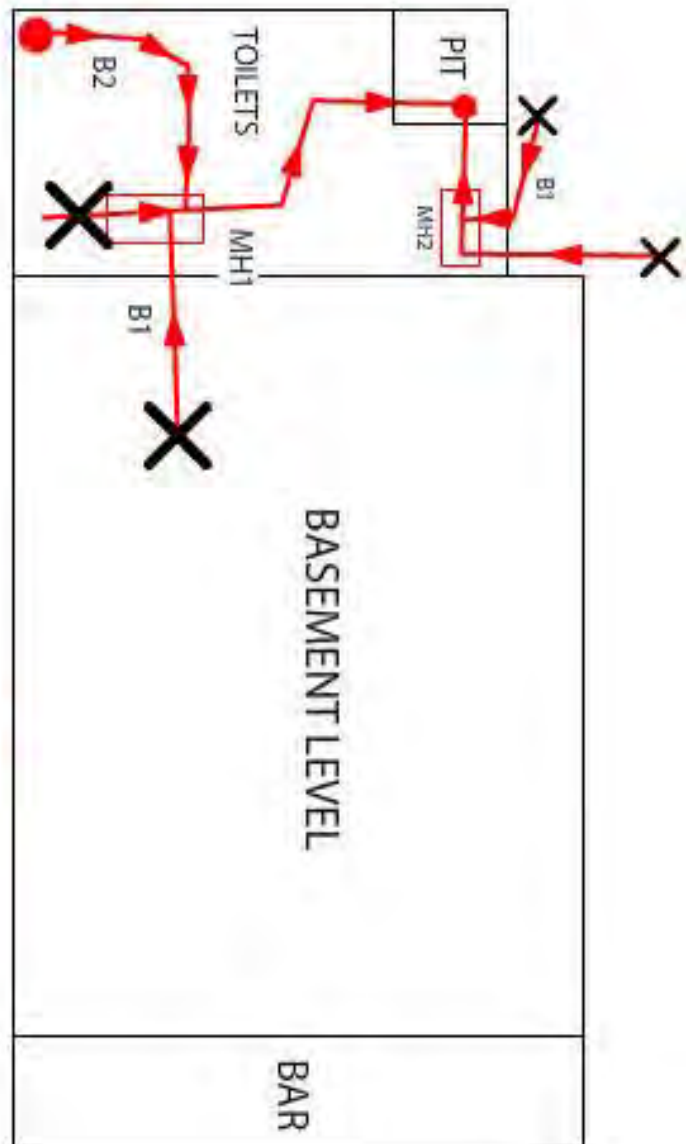
Page 30 Survey Run Sheet(Survey 11 - MH3 B4 to UNKNOWN)

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Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
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This sketch is not to scale and does not represent the exact routing of the drainage system



Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
1: Occurences without damage. For example, laterals, joints,etc. NO DEFECTS WERE DETECTED.			
2: Constructional deficiencies or occurences with insignificant influence to tightness, hydraulic or static pressure or pipe: Eg. wide joints, badly torched intakes, minor deformation of plastic pipes, minor erosions etc. REHABILITATION CAN BE SCHEDULED LONG-TERM.			
3: Constructional deficiencies diminishing static, hydraulic and tightness: Eg. untorched intakes, cracks, minor drainage obstructions such as calcite build ups, protruding laterals, minor damages to pipe wall, individual root penetrations, corroded pipe walls etc. REHABILITATION IS NECESSARY MEDIUM-TERM WITHIN 3 TO 5 YEARS.			
4: Constructional damages with insufficient static safety, hydraulic or tightness: Eg. axial/radial pipe bursts, pipe deformations, visually noticeable infiltration/exfiltration, cavities, in pipe-wall, severe protruding, laterals severe root penetrations, severe corrosion of pipe wall etc. REHABILITATION PROCEDURE IS URGENT AND HAS TO BE COMPLETED WITHIN 1 TO 2 YEARS. NECESSITY FOR EMERGENCY OPERATIONS HAS TO BE EXAMINED.			
5: Pipe is already or will shortly be impermeable: Eg. collapsed pipe, deeply rooted pipe or other drainage obstructions. Pipe loses water or danger of backwater in basements etc. REHABILITATION IS URGENT AND SHORT-TERM. IN ORDER TO PREVENT FURTHER DAMAGE, NECESSARY TEMPORARY SPOT REPAIR HAS TO BE CONDUCTED ON EMERGENCY LEVEL.			

Job Number
1325388

Surveyed by (Operator)
iTouch

Base Unit
DABG8JXHBC

Date
16/09/2025



Manhole / Access Point: MH1 Internal



Manhole / Access Point: MH1 Location



Manhole / Access Point: MH2 Internal



Manhole / Access Point: MH2 Location

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
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Job Information

Total Distance Surveyed: **32.54 meters**
Engineer: **iTouch**
Number of Surveys: **11**
Number of Surveys grade 4 or above: **0**

Job Comments

The lines are generally in poor condition, with fixed and settled deposits present throughout. Fixed deposits should be removed using a Picote vortex cutter and chains. All settled deposits should be cleared with a HPWJ.

Two lines are currently holding water, which caused the survey to be abandoned. This may be due to blockages further down the line, which should be investigated and cleared using a HPWJ.

Section 1 Overview (16/09/2025)

Manholes: **MH1 to UNKNOWN**
Pipe Length: **5 metres**
Structural Grade: **0**
Service Grade: **0**
Material: **Vitrified clay**
Pipe Size: **100mm**
Use: **Foul**

Line holding water resulting in zero visibility.

Section 2 Overview (16/09/2025)

Manholes: **MH1 to UNKNOWN**
Pipe Length: **1 metres**
Structural Grade: **0**
Service Grade: **4**
Material: **Vitrified clay**
Pipe Size: **100mm**
Use: **Foul**

Settled and fixed deposits greater than 50% through which the camera cannot pass. The deposits should be removed with a picote vortex cutter and chains.

Section 3 Overview (16/09/2025)

Manholes: **MH1 B1 to UNKNOWN**
Pipe Length: **2 metres**
Structural Grade: **0**
Service Grade: **4**
Material: **Vitrified clay**
Pipe Size: **100mm**
Use: **Foul**

Settled and fixed deposits through which the camera cannot pass. The deposits should be removed with a picote vortex cutter and chains.

Section 4 Overview (16/09/2025)

Manholes: **MH1 B2 to STACK**
Pipe Length: **4.98 metres**
Structural Grade: **0**
Service Grade: **4**
Material: **Vitrified clay**
Pipe Size: **100mm**
Use: **Foul**

Settled deposits through which the camera cannot pass. The deposits should be removed with a HPWJ.

Section 5 Overview (16/09/2025)

Manholes: **MH2 to UNKNOWN**
Pipe Length: **2 metres**
Structural Grade: **0**
Service Grade: **0**
Material: **Cast iron**
Pipe Size: **100mm**
Use: **Foul**

Line holding water resulting in zero visibility

Job Number
1325388

Surveyed by (Operator)
iTouch

Base Unit
DABG8JXHBC

Date
16/09/2025

Section 6 Overview (16/09/2025)

Manholes: **MH2 to UNKNOWN**
Pipe Length: **6.76 metres**
Structural Grade: **0**
Service Grade: **0**
Material: **Cast iron**
Pipe Size: **100mm**
Use: **Foul**

Settled deposits through which the camera cannot pass. The deposits should be removed with a HPWJ.

Section 7 Overview (16/09/2025)

Manholes: **MH2 B1 to UNKNOWN**
Pipe Length: **2 metres**
Structural Grade: **0**
Service Grade: **0**
Material: **Cast iron**
Pipe Size: **100mm**
Use: **Foul**

Settled deposits through which the camera cannot pass. The deposits should be removed with a HPWJ.

Section 8 Overview (16/09/2025)

Manholes: **MH3 B1 to UNKNOWN**
Pipe Length: **2.02 metres**
Structural Grade: **0**
Service Grade: **0**
Material: **Cast iron**
Pipe Size: **100mm**
Use: **Foul**

Fixed deposits present in the line.

Section 9 Overview (16/09/2025)

Manholes: **MH3 B2 to UNKNOWN**
Pipe Length: **1.4 metres**
Structural Grade: **0**
Service Grade: **0**
Material: **Cast iron**
Pipe Size: **100mm**
Use: **Foul**

Settled deposits in the line. The deposits should be removed with a HPWJ.

Section 10 Overview (16/09/2025)

Manholes: **MH3 B3 to UNKNOWN**
Pipe Length: **1 metres**
Structural Grade: **0**
Service Grade: **4**
Material: **Cast iron**
Pipe Size: **100mm**
Use: **Foul**

Settled and fixed deposits greater than 25% through which the camera cannot pass. The deposits should be removed with a picote vortex cutter and chains.

Section 11 Overview (16/09/2025)

Manholes: **MH3 B4 to UNKNOWN**
Pipe Length: **4.38 metres**
Structural Grade: **0**
Service Grade: **0**
Material: **Cast iron**
Pipe Size: **100mm**
Use: **Foul**

Settled deposits in the line. The deposits should be removed with a HPWJ.

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) MH1	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DABG8JXHBC	Section Number 1
Road 32-34 Marine Parade Place Worthing Location BN11 3QA		Division District Location Details		
Purpose Duty Foul Catchment	Shape/Size 100mm Material Vitrified clay Category		Start Node MH1 End Node UNKNOWN Total length 5 metres	
Scale 1:0.26 Direction Downstream		View via iTouch Live  Download 		

Start Node Ref:MH1 | I/L : metres | Depth: .40 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH1	13097598	Comment / 0
0.00	WL	Water level 0% height/diameter	13097600	Comment / 0
0.50	LCCI	Lining of drain/sewer changes to cast iron at this point	13097601	Comment / 0
1.83	REM	LCPVC - Lining of drain/sewer changes to polyvinyl chloride at this point	13097602	Comment / 0
4.19	REM	HOLDING WATER	13097603	Comment / 0
4.19	SA	Survey abandoned - Remark: HOLDING WATER	13097604	Comment / 0

End Node Ref:UNKNOWN | I/L : metres

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
 Start node type, manhole, reference MH1		 Water level 0% height/diameter	
From: MH1 / To: MH2 Size: 100mm  Lining of drain/sewer changes to cast iron at this point		From: MH1 / To: MH2 Size: 100mm  LCPVC - Lining of drain/sewer changes to polyvinyl chloride at this point	
From: MH1 / To: MH2 Size: 100mm  HOLDING WATER		From: MH1 / To: MH2 Size: 100mm  Survey abandoned - Remark: HOLDING WATER	

Scale **1:0.05**
Direction **Upstream**

[View via iTouch Live](#) [Download](#)

13097607 Service / 4
13097608 Comment / 0



12

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
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Start node type, manhole, reference MH1



Water level 0% height/diameter



Settled deposits hard or compacted 50% cross-sectional area loss



Survey abandoned - Remark: UNABLE TO PASS OBSTRUCTION

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) UNKNOWN	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 4/0	Base Unit DABG8JXHBC	Section Number 3
Road 32-34 Marine Parade Place Worthing Location BN11 3QA		Division District Location Details		
Purpose Duty Foul Catchment	Shape/Size 100mm Material Vitrified clay Category		Start Node MH1 B1 End Node UNKNOWN Total length 2 metres	
Scale 1:0.10 Direction Upstream		View via iTouch Live  Download 		

Start Node Ref:MH1 B1 | I/L : metres | Depth: .40 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH1 B1	13097610	Comment / 0
0.00	WL	Water level 0% height/diameter	13097611	Comment / 0
0.67	DER	Settled deposits coarse 25% cross-sectional area loss	13097612	Service / 4
1.45	SA	Survey abandoned - Remark: UNABLE TO PASS OBSTRUCTION	13097613	Comment / 0

End Node Ref:UNKNOWN | I/L : metres

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
 0.00 M Start node type, manhole, reference MH1 B1		 0.00 M Water level 0% height/diameter	
From: MH1 B1 / To: UNKNOWN Size: 100mm  0.67 M Settled deposits coarse 25% cross-sectional area loss		From: MH1 B1 / To: UNKNOWN Size: 100mm  1.45 M Survey abandoned - Remark: UNABLE TO PASS OBSTRUCTION	

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) STACK	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 4/0	Base Unit DABG8JXHBC	Section Number 4
Road 32-34 Marine Parade Place Worthing Location BN11 3QA			Division District Location Details	
Purpose Duty Foul Catchment	Shape/Size 100mm Material Vitrified clay Category		Start Node MH1 B2 End Node STACK Total length 4.98 metres	
Scale 1:0.26 Direction Upstream			View via iTouch Live  Download 	

Start Node Ref:MH1 B2 | I/L : metres | Depth: .40 metres

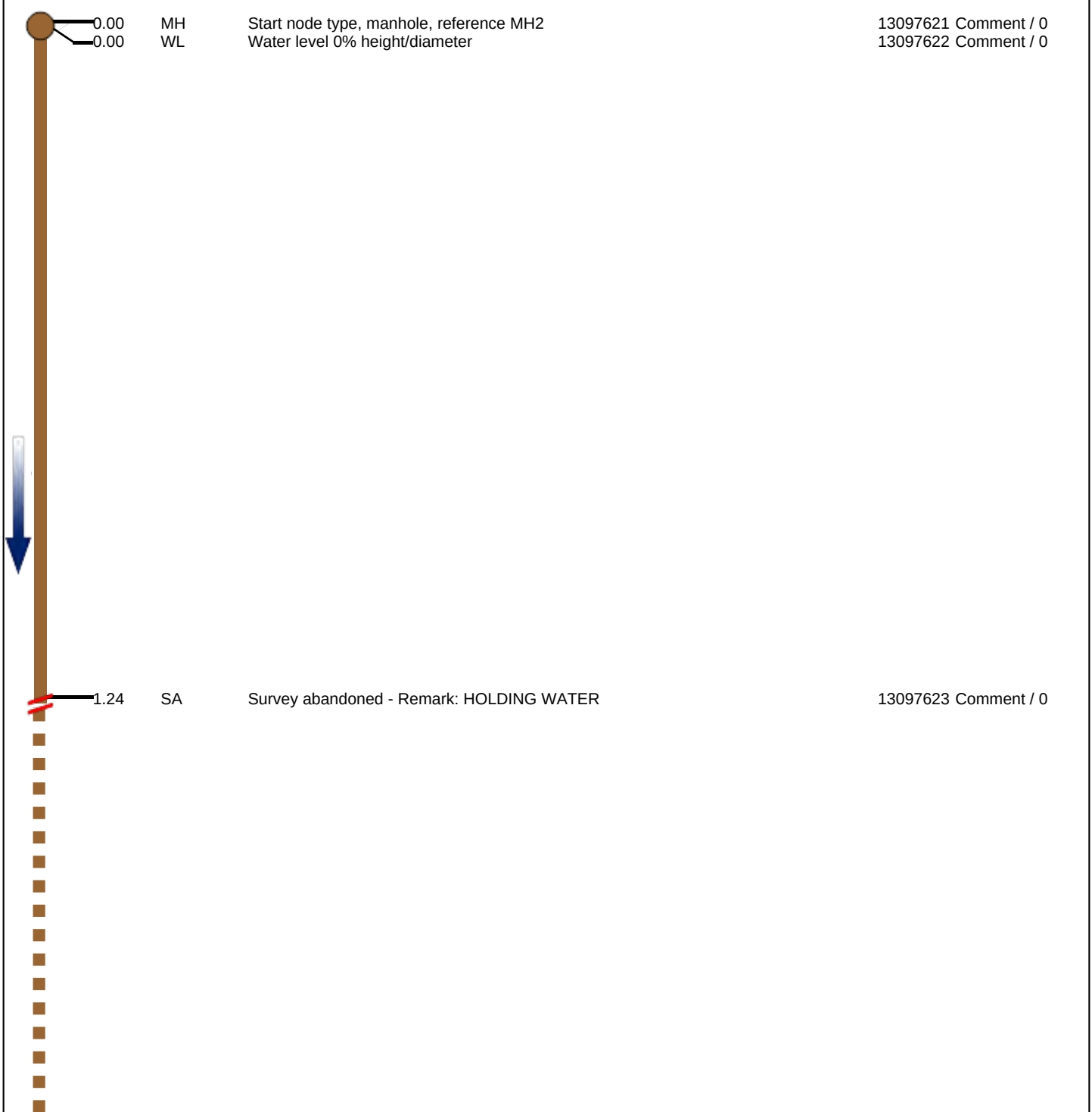
Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH1 B2	13097614	Comment / 0
0.00	WL	Water level 0% height/diameter	13097615	Comment / 0
2.76	JN	Junction at 10 o'clock, diameter 100mm	13097616	Comment / 0
3.50	JN	Junction at 10 o'clock, diameter 100mm	13097617	Comment / 0
4.69	DEC	Settled deposits hard or compacted 25% cross-sectional area loss	13097618	Service / 4
4.98	BRF	Finish node type, major connection without manhole, reference STACK	13097619	Comment / 0

End Node Ref:STACK | I/L : metres

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
 0.00 M Start node type, manhole, reference MH1 B2		 0.00 M Water level 0% height/diameter	
 From: MH1 B2 / To: STACK Size: 100mm 2.76 M Junction at 10 o'clock, diameter 100mm		 From: MH1 B2 / To: STACK Size: 100mm 3.50 M Junction at 10 o'clock, diameter 100mm	
 From: MH1 B2 / To: STACK Size: 100mm 4.69 M Settled deposits hard or compacted 25% cross-sectional area loss		 From: MH1 B2 / To: STACK Size: 100mm 4.98 M Finish node type, major connection without manhole, reference STACK	

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) MH2	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DABG8JXHBC	Section Number 5
Road 32-34 Marine Parade Place Worthing Location BN11 3QA			Division District Location Details	
Purpose Duty Foul Catchment		Shape/Size 100mm Material Cast iron Category	Start Node MH2 End Node UNKNOWN Total length 2 metres	
Scale 1:0.10 Direction Downstream			View via iTouch Live Download	

Start Node Ref:MH2 | I/L : metres | Depth: .40 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH2	13097621	Comment / 0
0.00	WL	Water level 0% height/diameter	13097622	Comment / 0
				
1.24	SA	Survey abandoned - Remark: HOLDING WATER	13097623	Comment / 0

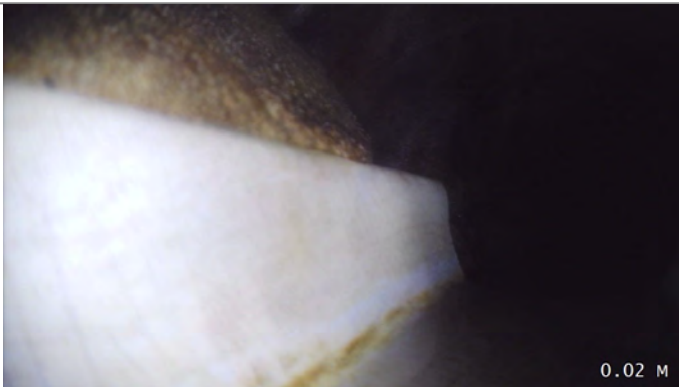
End Node Ref:UNKNOWN | I/L : metres

Job Number
1325388

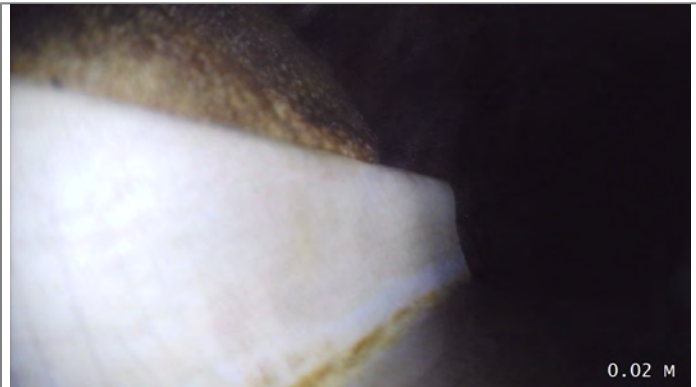
Surveyed by (Operator)
iTouch

Base Unit
DABG8JXHBC

Date
16/09/2025



Start node type, manhole, reference MH2



Water level 0% height/diameter



Survey abandoned - Remark: HOLDING WATER

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) UNKNOWN	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DABG8JXHBC	Section Number 6
Road 32-34 Marine Parade Place Worthing Location BN11 3QA			Division District Location Details	
Purpose Duty Foul Catchment	Shape/Size 100mm Material Cast iron Category		Start Node MH2 End Node UNKNOWN Total length 6.76 metres	
Scale 1:0.35 Direction Upstream			View via iTouch Live  Download 	

Start Node Ref:MH2 | I/L : metres | Depth: .40 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH2	13097624	Comment / 0
0.00	WL	Water level 0% height/diameter	13097625	Comment / 0
				
6.76	BRF	Finish node type, major connection without manhole, reference Y JUNCTION	13097626	Comment / 0

End Node Ref:UNKNOWN | I/L : metres

Job Number
1325388

Surveyed by (Operator)
iTouch

Base Unit
DABG8JXHBC

Date
16/09/2025



Start node type, manhole, reference MH2



Water level 0% height/diameter



Finish node type, major connection without manhole, reference Y
JUNCTION

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) UNKNOWN	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DABG8JXHBC	Section Number 7
Road 32-34 Marine Parade Place Worthing Location BN11 3QA			Division District Location Details	
Purpose Duty Foul Catchment	Shape/Size 100mm Material Cast iron Category		Start Node MH2 B1 End Node UNKNOWN Total length 2 metres	
Scale 1:0.10 Direction Upstream			View via iTouch Live Download	

Start Node Ref:MH2 B1 | I/L : metres | Depth: .40 metres

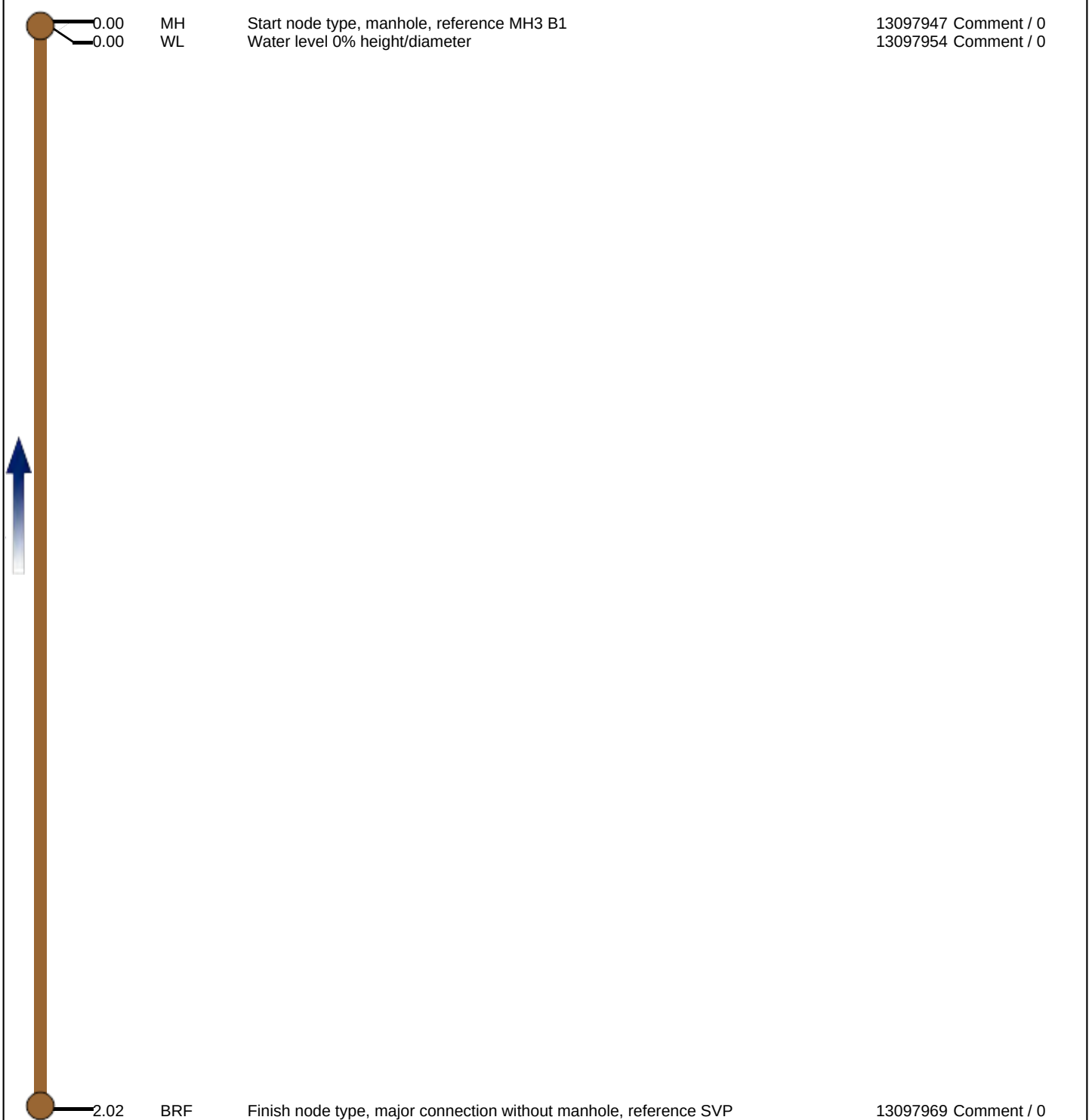
Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH2 B1	13097627	Comment / 0
0.00	WL	Water level 0% height/diameter	13097628	Comment / 0
1.52	JN	Junction at 12 o'clock, diameter 100mm	13097629	Comment / 0
2.00	REM	UNABLE TO PUSH	13097630	Comment / 0
2.00	SA	Survey abandoned - Remark: UNABLE TO PASS RUBBLE	13097631	Comment / 0

End Node Ref:UNKNOWN | I/L : metres

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
 Start node type, manhole, reference MH2 B1		 Water level 0% height/diameter	
 Junction at 12 o'clock, diameter 100mm		 UNABLE TO PUSH	
 Survey abandoned - Remark: UNABLE TO PASS RUBBLE			

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) UNKNOWN	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DABG8JXHBC	Section Number 8
Road 32-34 Marine Parade Place Worthing Location BN11 3QA		Division District Location Details		
Purpose Duty Foul Catchment	Shape/Size 100mm Material Cast iron Category	Start Node MH3 B1 End Node UNKNOWN Total length 2.02 metres		
Scale 1:0.11 Direction Upstream		View via iTouch Live Download		

Start Node Ref:MH3 B1 | I/L : metres | Depth: 1 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH3 B1	13097947	Comment / 0
0.00	WL	Water level 0% height/diameter	13097954	Comment / 0
				
2.02	BRF	Finish node type, major connection without manhole, reference SVP	13097969	Comment / 0

End Node Ref:UNKNOWN | I/L : metres

Job Number
1325388

Surveyed by (Operator)
iTouch

Base Unit
DABG8JXHBC

Date
16/09/2025



Start node type, manhole, reference MH3 B1



Water level 0% height/diameter



Finish node type, major connection without manhole, reference SVP

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) UNKNOWN	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DABG8JXHBC	Section Number 9
Road 32-34 Marine Parade Place Worthing Location BN11 3QA			Division District Location Details	
Purpose Duty Foul Catchment	Shape/Size 100mm Material Cast iron Category		Start Node MH3 B2 End Node UNKNOWN Total length 1.4 metres	
Scale 1:0.07 Direction Upstream			View via iTouch Live  Download 	

Start Node Ref:MH3 B2 | I/L : metres | Depth: 1 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH3 B2	13097971	Comment / 0
0.00	WL	Water level 0% height/diameter	13097973	Comment / 0
				
1.40	BRF	Finish node type, major connection without manhole, reference SVP	13098048	Comment / 0

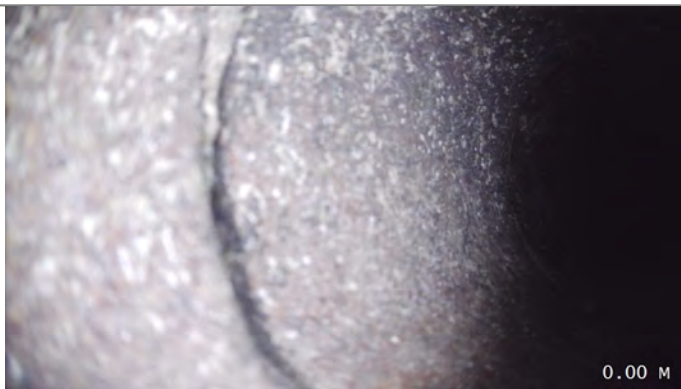
End Node Ref:UNKNOWN | I/L : metres

Job Number
1325388

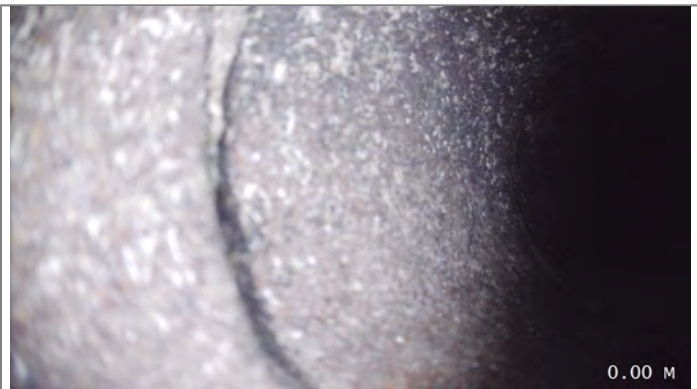
Surveyed by (Operator)
iTouch

Base Unit
DABG8JXHBC

Date
16/09/2025



Start node type, manhole, reference MH3 B2



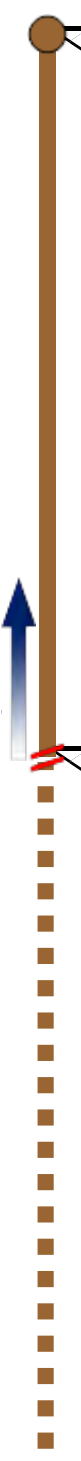
Water level 0% height/diameter



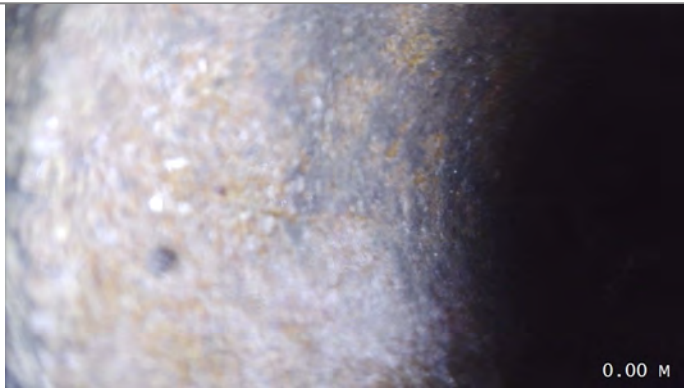
Finish node type, major connection without manhole, reference SVP

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) UNKNOWN	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 4/0	Base Unit DABG8JXHBC	Section Number 10
Road 32-34 Marine Parade Place Worthing Location BN11 3QA			Division District Location Details	
Purpose Duty Foul Catchment	Shape/Size 100mm Material Cast iron Category		Start Node MH3 B3 End Node UNKNOWN Total length 1 metres	
Scale 1:0.05 Direction Upstream			View via iTouch Live  Download 	

Start Node Ref:MH3 B3 | I/L : metres | Depth: 1 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH3 B3	13098134	Comment / 0
0.00	WL	Water level 0% height/diameter	13098136	Comment / 0
				
0.50	DEE	Attached deposits, encrustation from 3 to 9 o'clock 25% cross-sectional area loss	13098138	Service / 4
0.50	SA	Survey abandoned - Remark: UNABLE TO PASS	13098140	Comment / 0

End Node Ref:UNKNOWN | I/L : metres

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
 Start node type, manhole, reference MH3 B3		 Water level 0% height/diameter	
From: MH3 B3 / To: UNKNOWN Size: 100mm  Attached deposits, encrustation from 3 to 9 o'clock 25% cross-sectional area loss		From: MH3 B3 / To: UNKNOWN Size: 100mm  Survey abandoned - Remark: UNABLE TO PASS	

Surveyed by (Operator) iTouch	Job Number 1325388	Pipe Length Reference(PLR) UNKNOWN	Date 16/09/2025	Pre Cleaned Not Cleaned
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DABG8JXHBC	Section Number 11
Road 32-34 Marine Parade Place Worthing Location BN11 3QA			Division District Location Details	
Purpose Duty Foul Catchment	Shape/Size 100mm Material Cast iron Category		Start Node MH3 B4 End Node UNKNOWN Total length 4.38 metres	
Scale 1:0.23 Direction Upstream			View via iTouch Live  Download 	

Start Node Ref:MH3 B4 | I/L : metres | Depth: 1 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH3 B4	13098183	Comment / 0
0.00	WL	Water level 0% height/diameter	13098184	Comment / 0
				
3.88	JN	Junction at 9 o'clock, diameter 100mm	13098185	Comment / 0
4.38	BRF	Finish node type, major connection without manhole, reference REST BEND	13098203	Comment / 0

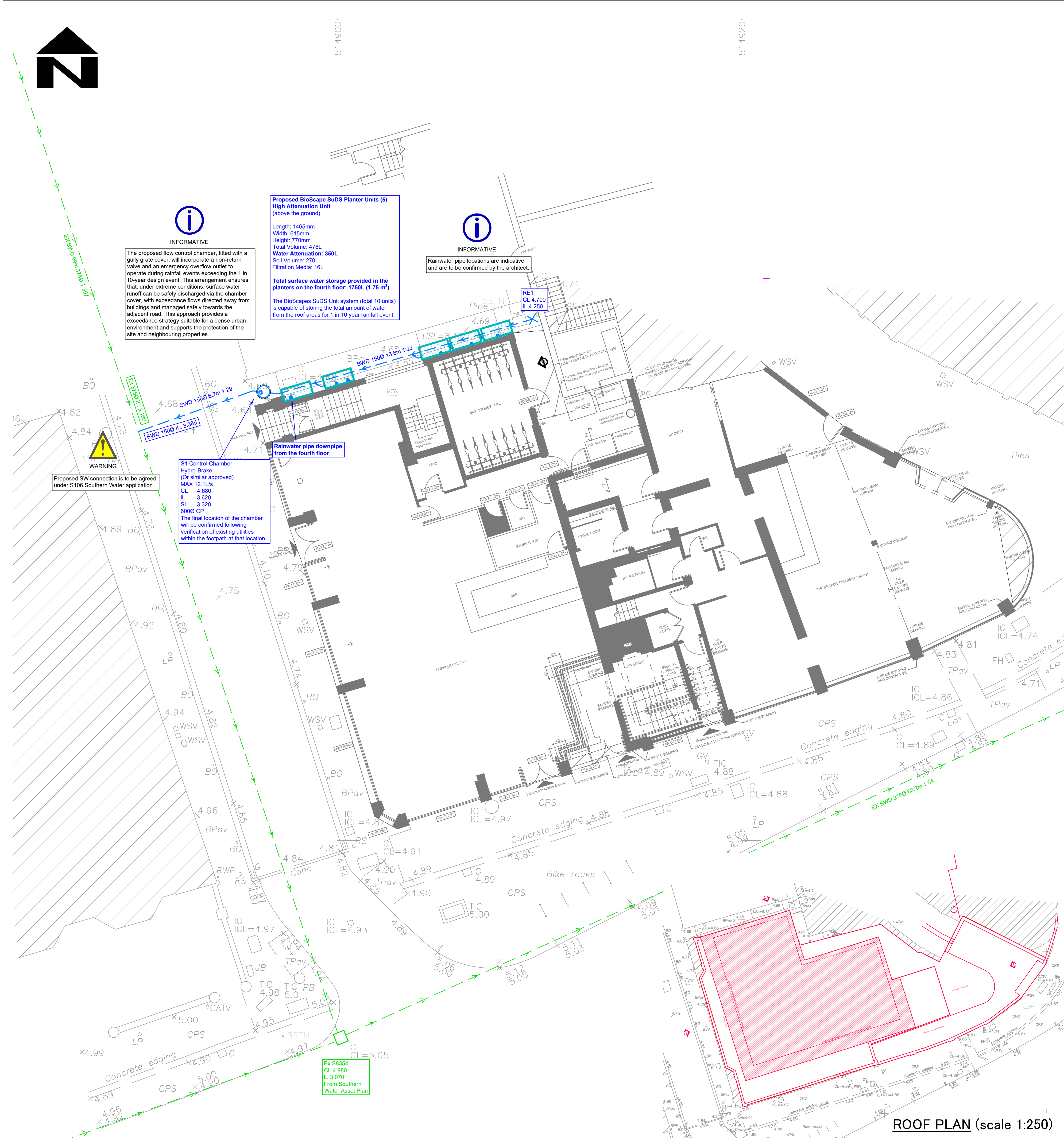
End Node Ref:UNKNOWN | I/L : metres

Job Number 1325388	Surveyed by (Operator) iTouch	Base Unit DABG8JXHBC	Date 16/09/2025
 Start node type, manhole, reference MH3 B4		 Water level 0% height/diameter	
 Junction at 9 o'clock, diameter 100mm		 Finish node type, major connection without manhole, reference REST BEND	

Job Number 1325388				Surveyed by (Operator) iTouch		Base Unit DABG8JXHBC			Date 16/09/2025				
No.	PLR	Dir.	Use	Shape/Size	Date	Mat.	Total Length	Inspection Length	Cat.	Peak Score	Grade	Mean Score	Total Score
1	MH1	D	F	100	16/09/2025	Vitrified clay	5 metres	4.19		0	1	0	0
2	UNKNOWN	U	F	100	16/09/2025	Vitrified clay	1 metres	0.07		0	1	0	0
3	UNKNOWN	U	F	100	16/09/2025	Vitrified clay	2 metres	1.45		0	1	0	0
4	STACK	U	F	100	16/09/2025	Vitrified clay	4.98 metres	4.98		0	1	0	0
5	MH2	D	F	100	16/09/2025	Cast iron	2 metres	1.24		0	1	0	0
6	UNKNOWN	U	F	100	16/09/2025	Cast iron	6.76 metres	6.76		0	1	0	0
7	UNKNOWN	U	F	100	16/09/2025	Cast iron	2 metres	2		0	1	0	0
8	UNKNOWN	U	F	100	16/09/2025	Cast iron	2.02 metres	2.02		0	1	0	0
9	UNKNOWN	U	F	100	16/09/2025	Cast iron	1.4 metres	1.4		0	1	0	0
10	UNKNOWN	U	F	100	16/09/2025	Cast iron	1 metres	0.5		0	1	0	0
11	UNKNOWN	U	F	100	16/09/2025	Cast iron	4.38 metres	4.38		0	1	0	0

Job Number 1325388				Surveyed by (Operator) iTouch		Base Unit DABG8JXHBC			Date 16/09/2025				
No.	PLR	Dir.	Use	Shape/Size	Date	Mat.	Total Length	Inspection Length	Cat.	Peak Score	Grade	Mean Score	Total Score
1	MH1	D	F	100	16/09/2025	Vitrified clay	5 metres	4.19		0	1	0	0
2	UNKNOWN	U	F	100	16/09/2025	Vitrified clay	1 metres	0.07		5	4	71.43	5
3	UNKNOWN	U	F	100	16/09/2025	Vitrified clay	2 metres	1.45		5	4	3.45	5
4	STACK	U	F	100	16/09/2025	Vitrified clay	4.98 metres	4.98		5	4	1.00	5
5	MH2	D	F	100	16/09/2025	Cast iron	2 metres	1.24		0	1	0	0
6	UNKNOWN	U	F	100	16/09/2025	Cast iron	6.76 metres	6.76		0	1	0	0
7	UNKNOWN	U	F	100	16/09/2025	Cast iron	2 metres	2		0	1	0	0
8	UNKNOWN	U	F	100	16/09/2025	Cast iron	2.02 metres	2.02		0	1	0	0
9	UNKNOWN	U	F	100	16/09/2025	Cast iron	1.4 metres	1.4		0	1	0	0
10	UNKNOWN	U	F	100	16/09/2025	Cast iron	1 metres	0.5		5	4	10.00	5
11	UNKNOWN	U	F	100	16/09/2025	Cast iron	4.38 metres	4.38		0	1	0	0

7.4 Appendix D – Proposed Drainage Plan, Contributing Area & Exceedance Flow Routes, Typical Construction Details and Hydraulic Calculations.



DRAINAGE LEGEND

EXISTING FEATURES

Existing surface water sewer/drain and manhole

PROPOSED FEATURES

Surface Water Drainage

Rainwater pipe

Storm water rodding eye

Storm water vortex flow control chamber

Proposed BioScape SuDS Planter Unit (above the ground)

Finished floor level

Pipe info - diameter, length, gradient, bedding type

ABBREVIATIONS

- MH - MANHOLE
- IC - INSPECTION CHAMBER
- AC - ACCESS CHAMBER
- CP - CATCHPIT
- BC - BRAKE CHAMBER
- RE - RODDING EYE
- IL - INVERT LEVEL
- SL - SUMP LEVEL
- RA - RESTRICTED ACCESS COVER
- CL - COVER LEVEL
- TL - TOP OF CELLULAR SA
- BL - BASE OF CELLULAR SA
- FL - FORMATION LEVEL

Site Specific Notes

- The surface water drainage network has been designed for the critical 1 in 100-year storm event, with an additional 45% allowance for the predicted effects of climate change. However, due to site constraints and limited available space, it is not feasible to provide underground or open SuDS features capable of fully accommodating all surface water runoff generated by this event. Hydraulic calculations demonstrate that the proposed SuDS planter units can accommodate surface water runoff for the 1 in 10-year storm event, ensuring no on-site flooding, while operating within the agreed site discharge flow rate of 12.1 l/s.
- Hydraulic calculations based on FEH22 rainfall data.
- As the impermeable area of the development remains unchanged, and noting that the precise nature of the existing surface water discharge arrangement is not fully documented, the proposed surface water strategy focuses on supporting the site drainage in the most effective manner for the development. This is achieved by accommodating surface water runoff within the proposed BioScape SuDS raised planter units located above ground level, which provide approximately 3.5 m³ of attenuation storage.
- Proposed storm water connection is to be agreed under S106 Southern Water application.

STANDARD DRAINAGE NOTES

- DO NOT SCALE FROM THIS DRAWING. REFER TO FIGURED DIMENSIONS ONLY. THE CONTRACTOR SHOULD CHECK ALL DIMENSIONS ON SITE.
- ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECT AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
- ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT AND/OR ENGINEER IMMEDIATELY, SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO THE COMMENCEMENT OF WORK.
- BEFORE COMMENCING CONSTRUCTION THE CONTRACTOR MUST CHECK THE INVERT LEVELS OF EXISTING SEWERS TO WHICH CONNECTIONS ARE MADE. IN ADDITION THE CONTRACTOR MUST LOCATE AND DETERMINE INVERT LEVELS OF THE EXISTING SPURS TO WHICH CONNECTIONS ARE PROPOSED. ANY DISCREPANCIES ARE TO BE NOTIFIED TO THE ENGINEER IMMEDIATELY, PRIOR TO CONSTRUCTION.
- ALL DRAINAGE WORKS SHOULD COMMENCE AT THE PROPOSED DOWNSTREAM CONNECTION POINT. THE WORKS CONTINUING UPSTREAM FOLLOWING CONFIRMATION OF THE TIE-IN INVERT LEVELS TO THE ENGINEER. CONNECTIONS TO MANHOLES OR LARGER SIZED PIPES ETC. SHOULD BE SOFFIT TO SOFFIT UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, IF THIS IS NOT POSSIBLE INFORM THE ENGINEER IMMEDIATELY.
- COVER LEVELS SHOWN ARE APPROXIMATE. COVERS AND FRAMES SHALL BE SET TO FINISHED GROUND LEVELS AND FALLS.
- ALL UN-REFERENCED PIPES ARE TO BE 100mm DIA.
- ALL PIPES TO BE ADOPTED, OR CONNECTING TO ADOPTED SEWERS, TO BE VITRIFIED CLAY TO BS EN 295 AND BS65 (SWS ONLY), OR CONCRETE PIPES TO BE EN 1916 AND BS5911-PART 1.
- ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA. WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN124, UNLESS OTHERWISE STATED.
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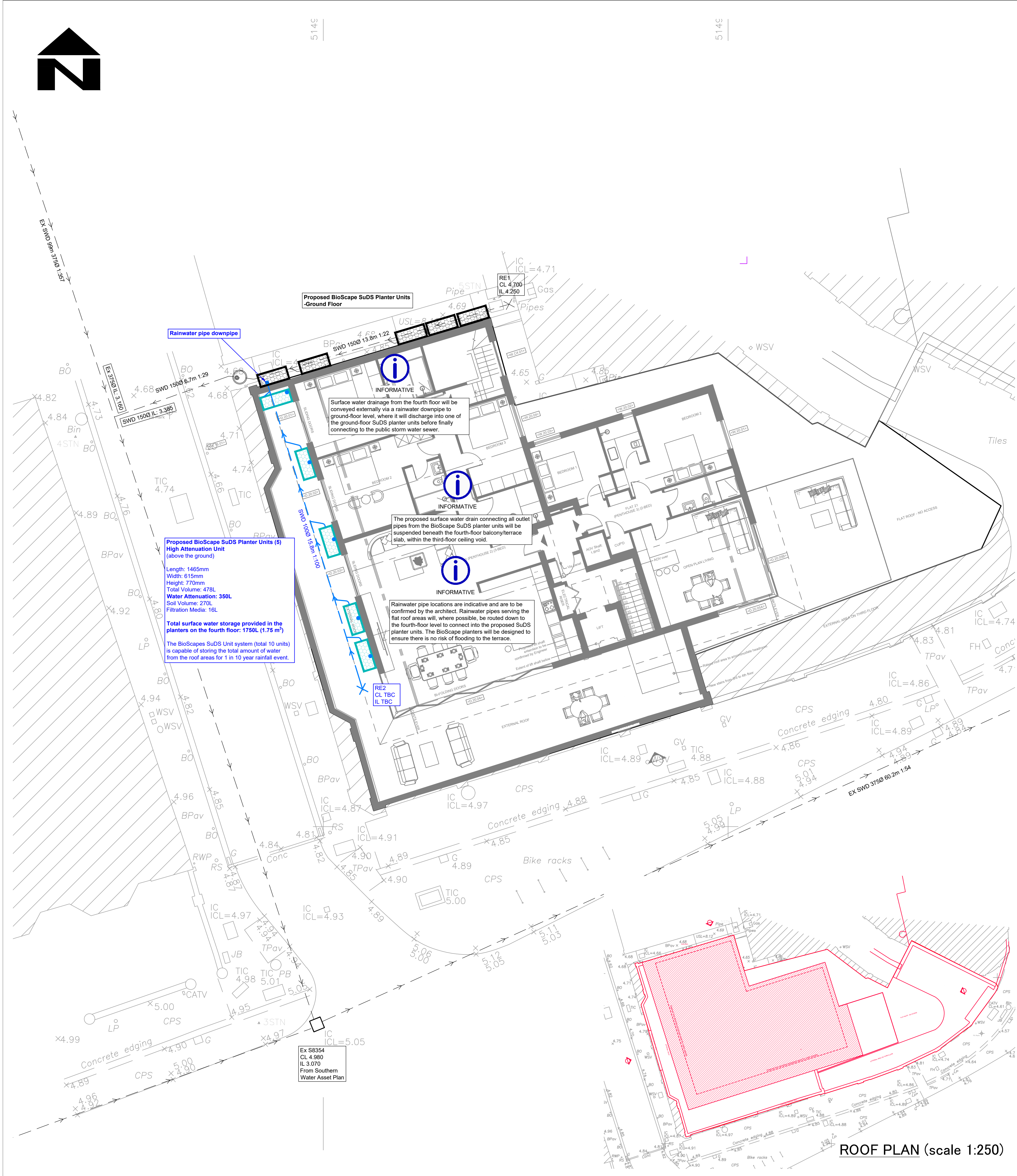
 civils Consulting Civil Engineers				
CLIENT JO MURATAJ				
ARCHITECT LIFE SIZE ARCHITECTURE				
JOB TITLE 32-33 MARINE PARADE, WORTHING BN11 3QA				
DRAWING TITLE PROPOSED DRAINAGE PLAN GROUND FLOOR				
DRAWN MR		ENGINEER CS		CHECKED CS
APPROVED CS				
DATE DEC 2025		SCALE @ A1 1:100		
JOB No. C3937		STATUS P		DRAWING No. 101
REV. P-				

DESIGN SUBJECT TO THE APPROVAL OF:
PLANNING AUTHORITY
BUILDING CONTROL
WATER AUTHORITY

DESIGN SUBJECT TO THE CONFIRMATION OF:
EXTERNAL LEVELS DESIGN
LOCATION AND DEPTH OF EXISTING UTILITIES

ROOF PLAN (scale 1:250)

PRELIMINARY



DRAINAGE LEGEND

EXISTING FEATURES

Existing surface water sewer/drain and manhole

PROPOSED FEATURES

Surface Water Drainage

Rainwater pipe

Storm water rodding eye

Storm water vortex flow control chamber

Proposed BioScape SuDS Planter Unit (above the ground)

Finished floor level

Pipe info - diameter, length, gradient, bedding type

ABBREVIATIONS

MH - MANHOLE
IC - INSPECTION CHAMBER
AC - ACCESS CHAMBER
CP - CATCHPIT
BC - BRAKE CHAMBER
RE - RODDING EYE
IL - INVERT LEVEL
SL - SUMP LEVEL
RA - RESTRICTED ACCESS COVER
CL - COVER LEVEL
TL - TOP OF CELLULAR SA
BL - BASE OF CELLULAR SA
FL - FORMATION LEVEL

Site Specific Notes

- The surface water drainage network has been designed for the critical 1 in 100-year storm event, with an additional 45% allowance for the predicted effects of climate change. However, due to site constraints and limited available space, it is not feasible to provide underground or open SuDS features capable of fully accommodating all surface water runoff generated by this event. Hydraulic calculations demonstrate that the proposed SuDS planter units can accommodate surface water runoff for the 1 in 10-year storm event, ensuring no on-site flooding, while operating within the agreed site discharge flow rate of 12.1 l/s.
- Hydraulic calculations based on FEH22 rainfall data.
- As the impermeable area of the development remains unchanged, and noting that the precise nature of the existing surface water discharge arrangement is not fully documented, the proposed surface water strategy focuses on supporting the site drainage in the most effective manner for the development. This is achieved by accommodating surface water runoff within the proposed BioScape SuDS raised planter units located above ground level, which provide approximately 3.5 m³ of attenuation storage.
- Proposed storm water connection is to be agreed under S106 Southern Water application.

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DATE DEC 2025		SCALE @ A1 1:100			
JOB No. C3937	STATUS P	DRAWING No. 102		REV. P-	

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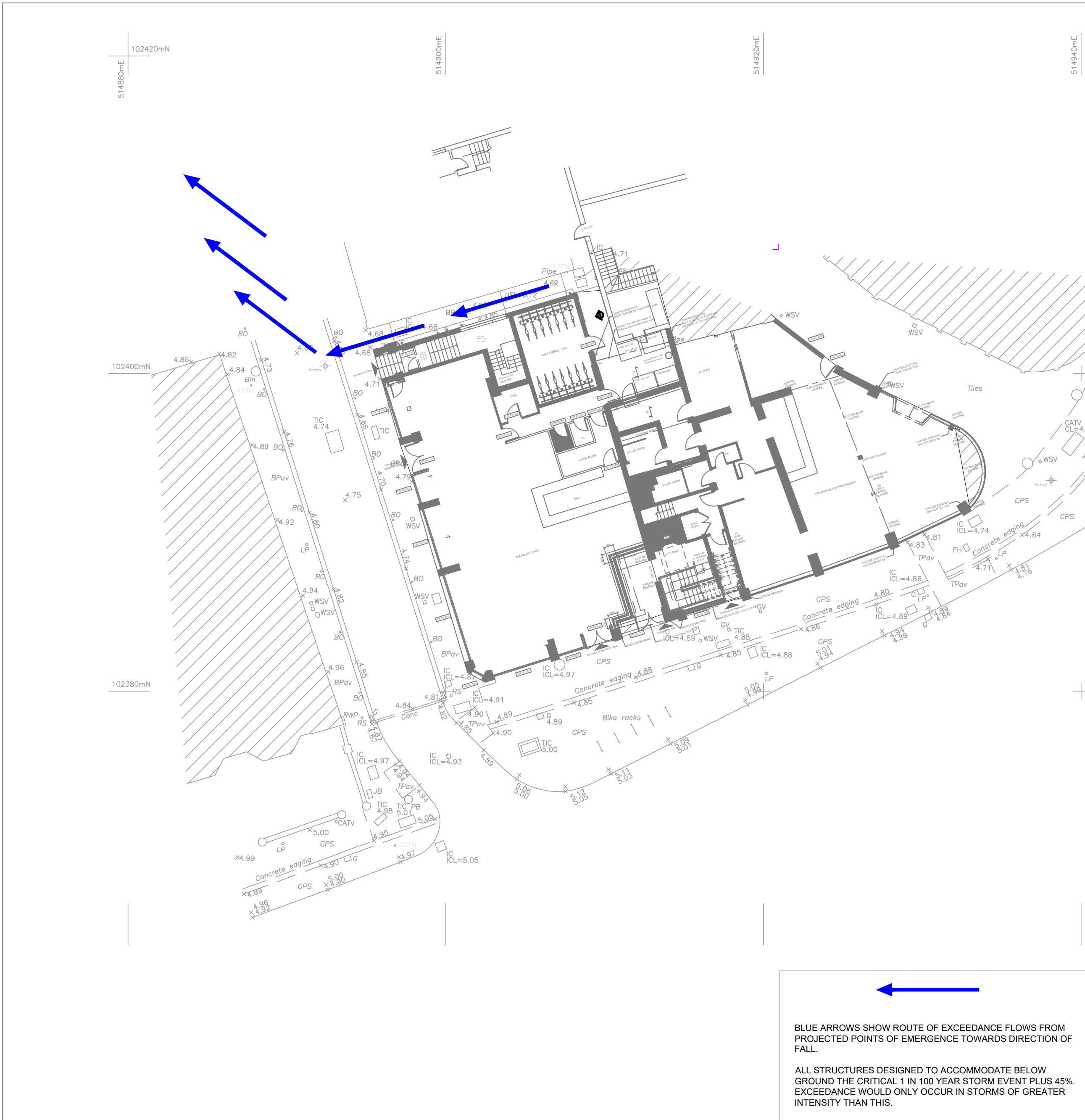
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ROOF PLAN (scale 1:250)

PRELIMINARY

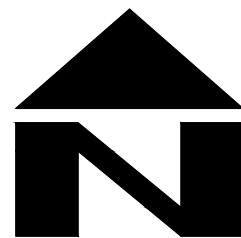


CONTRIBUTING AREA PLAN (scale 1:200)



EXCEEDANCE FLOW ROUTES (scale 1:200)

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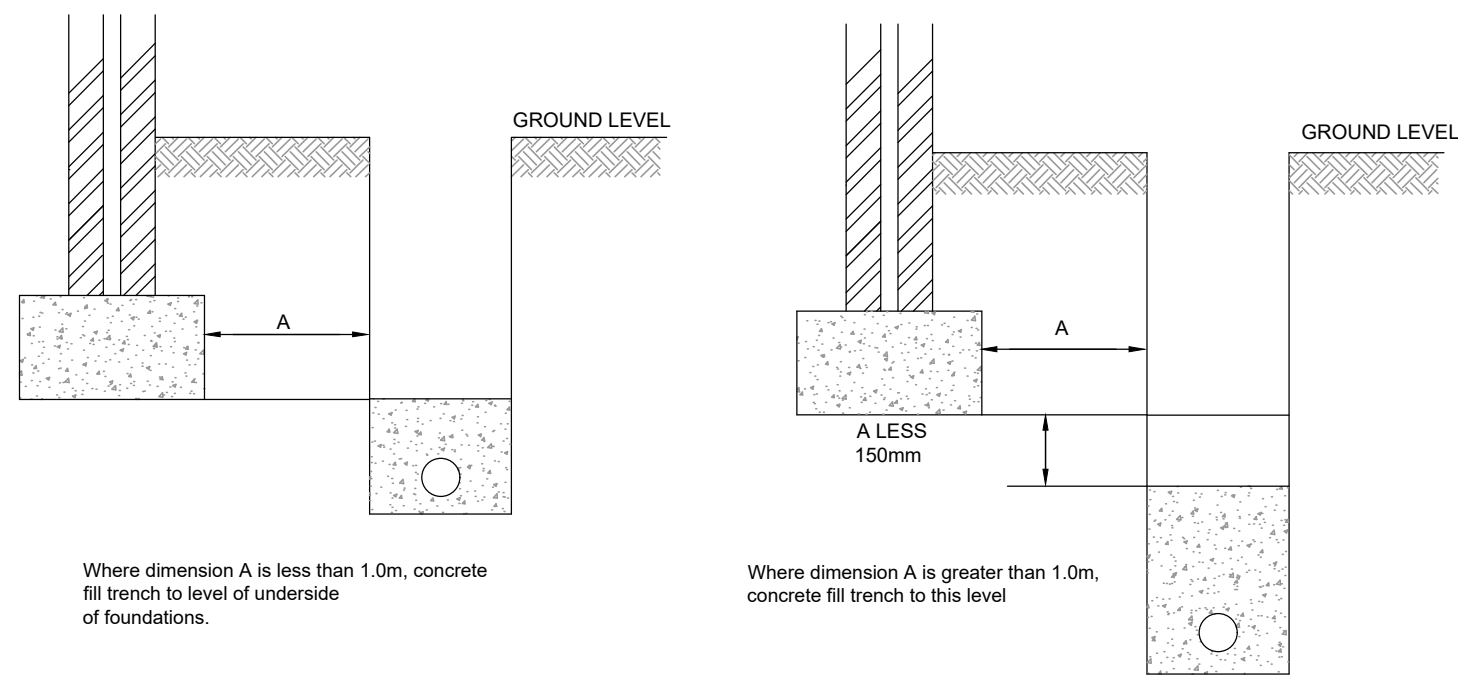


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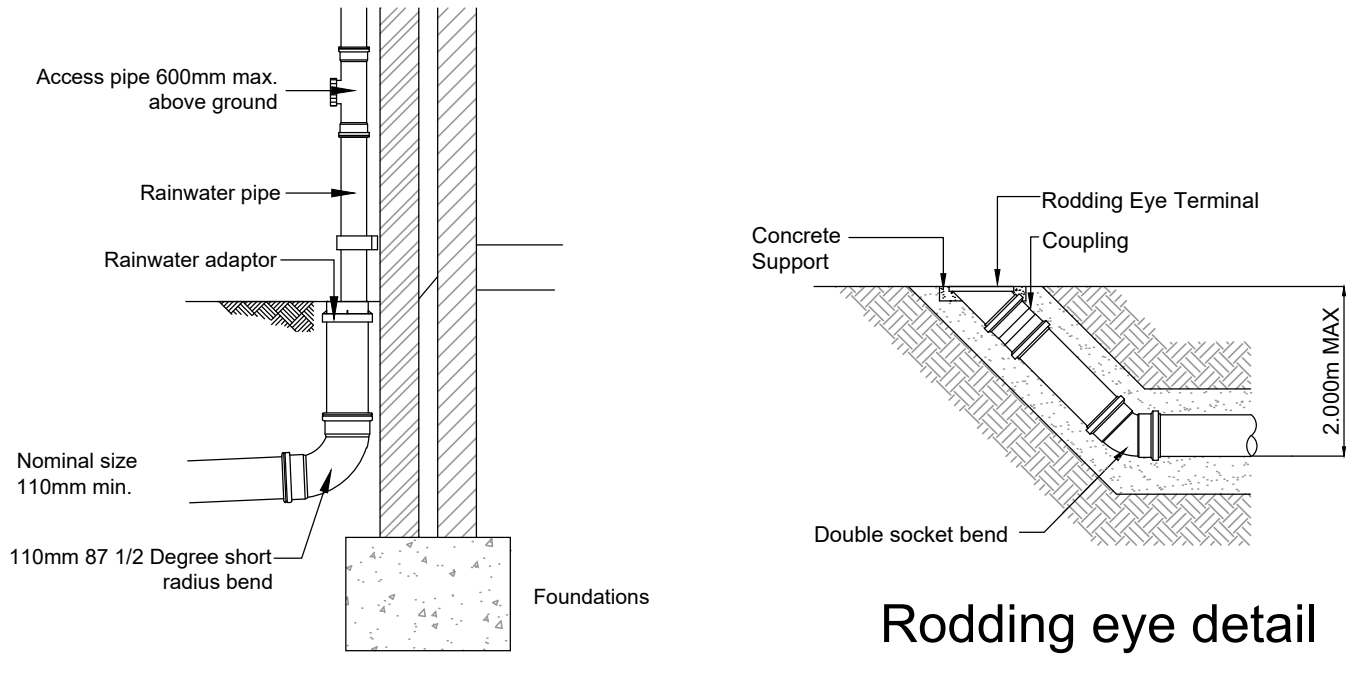
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ARCHITECT			LIFE SIZE ARCHITECTURE		
JOB TITLE			32-33 MARINE PARADE, WORTHING BN11 3QA		
DRAWING TITLE					
PROPOSED DRAINAGE PLAN GROUND FLOOR					
DRAWN		ENGINEER		CHECKED	APPROVED
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DEC 2025					
JOB No.		STATUS	DRAWING No.		REV.
C3937		P	101		P-

PRELIMINARY

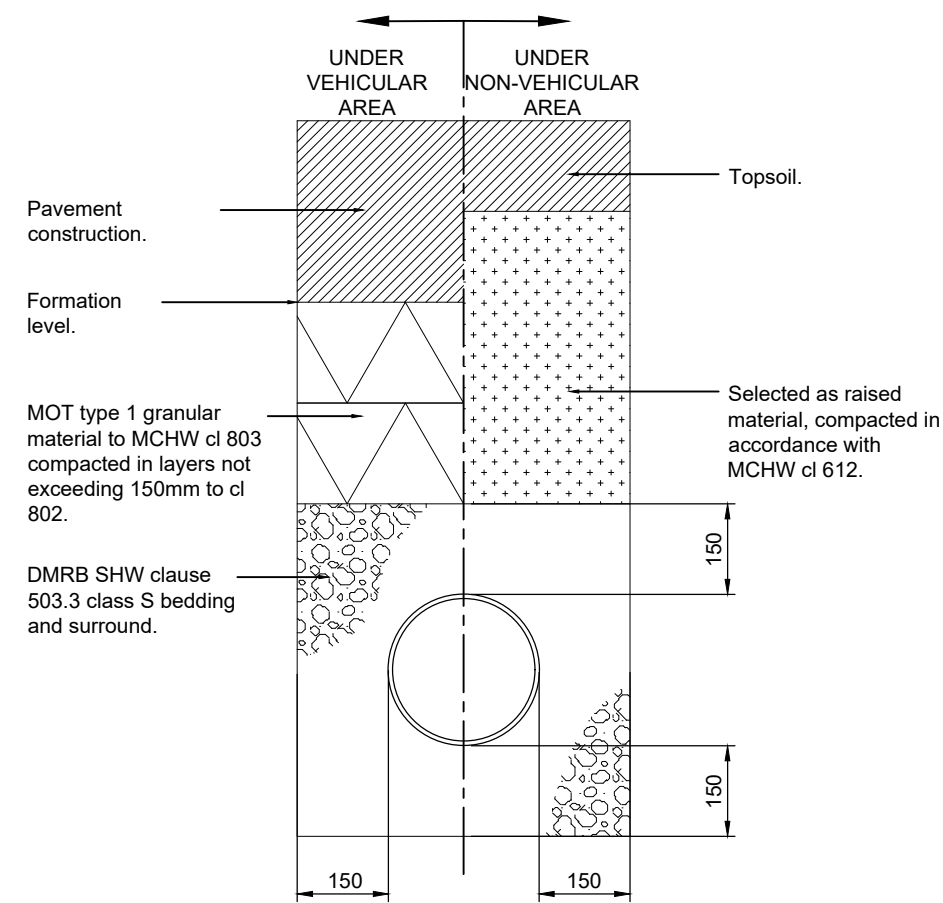


Pipes near buildings
(not to scale)

Pipes near buildings
(not to scale)

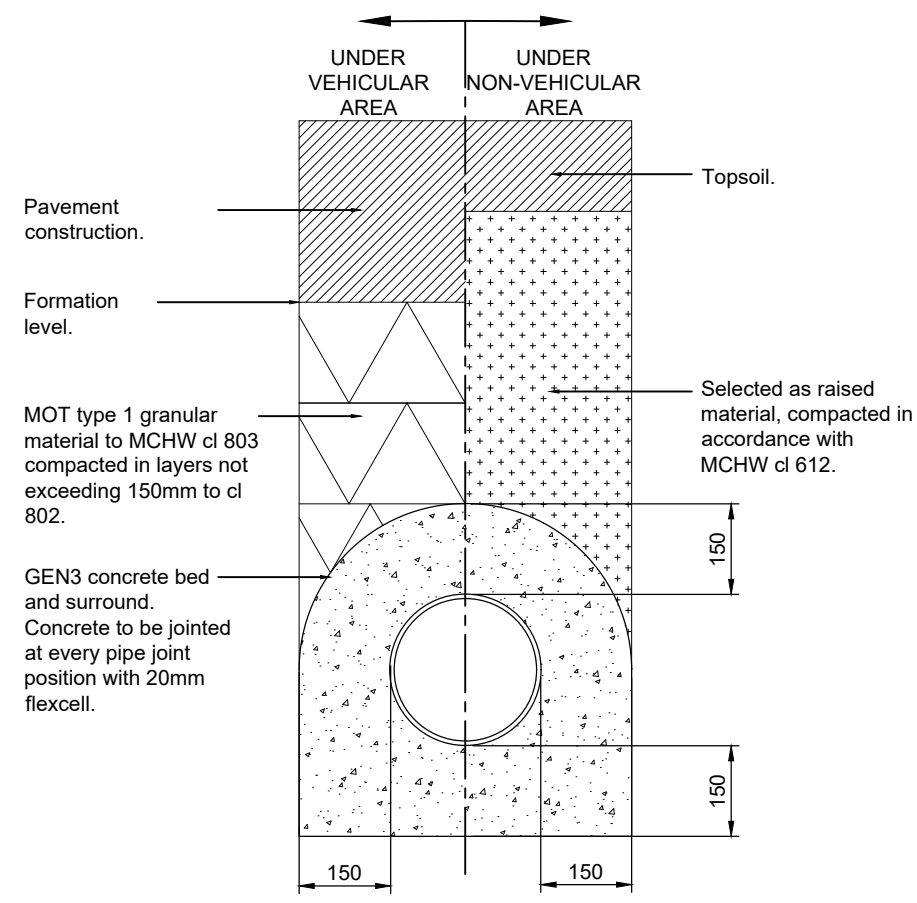


External Rainwater
Pipe to Drain
(scale 1:20)

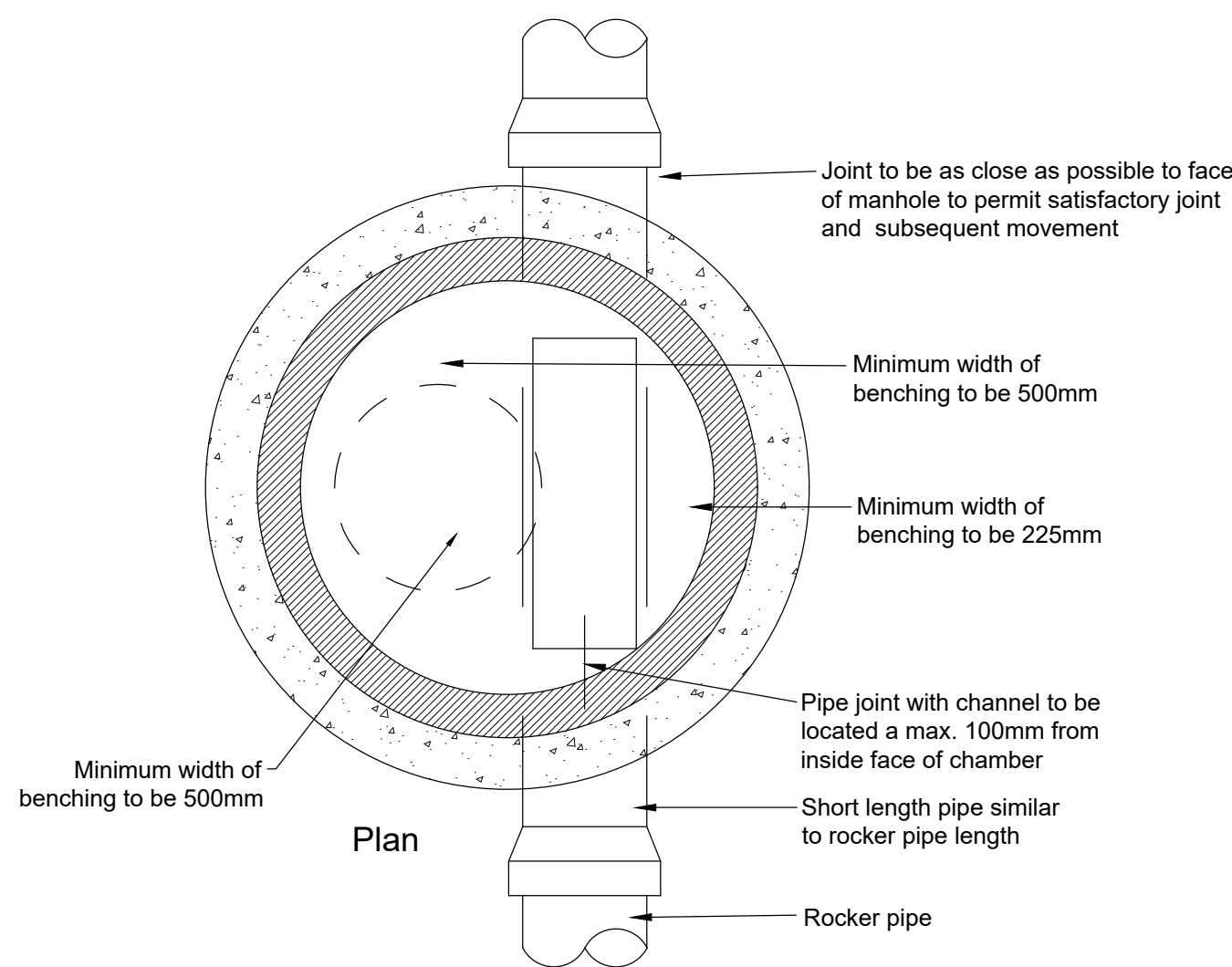


Class S granular pipe bed and
surround
To be used for plastic, vitrified and concrete
pipework where cover to crown is greater than
900mm.

Pipe Bedding Details
(scale 1:20)



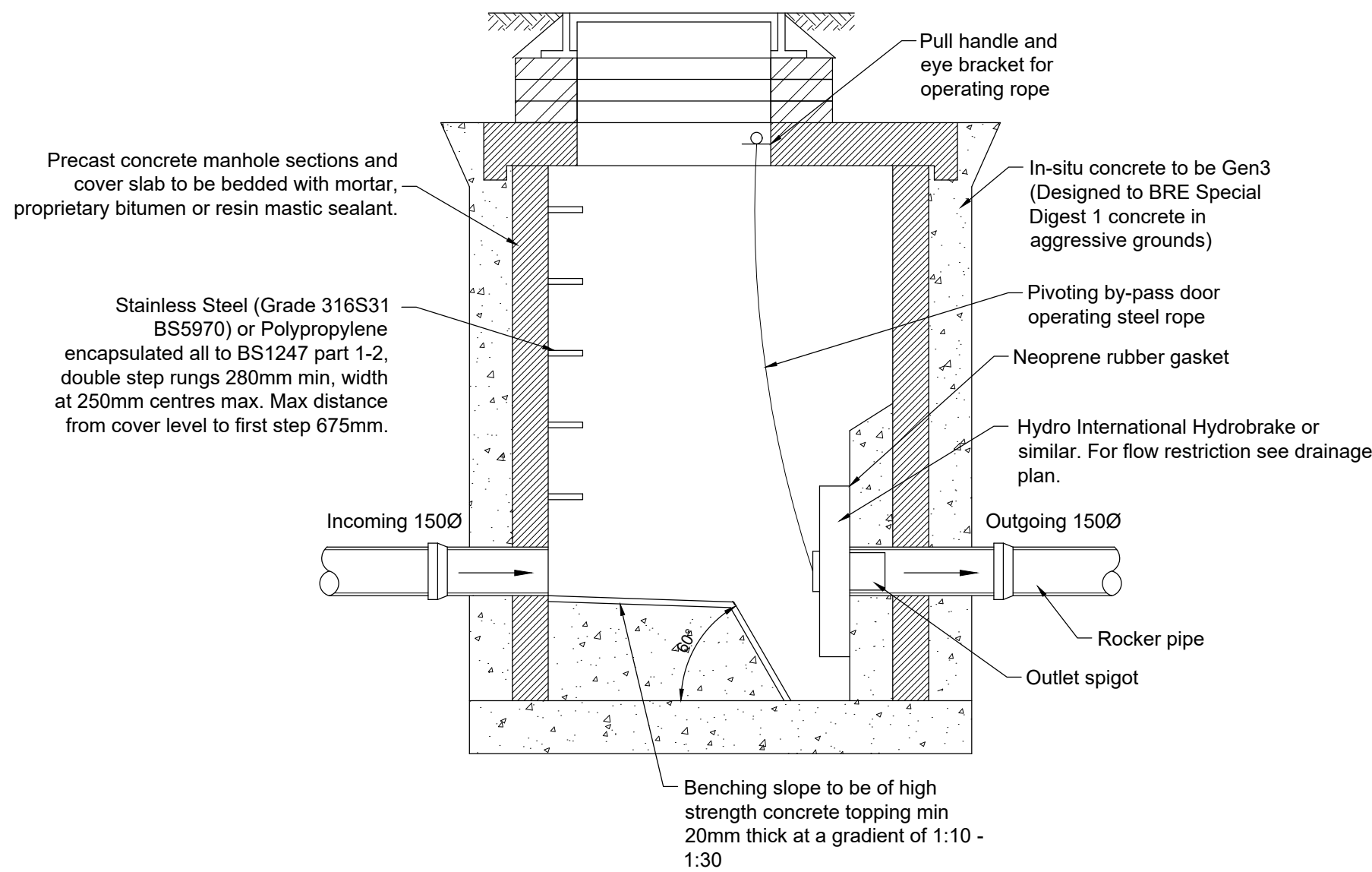
Class Z concrete pipe bed and
surround
To be used for plastic, vitrified and concrete
pipework where cover to crown is less than
900mm.



Nominal diameter (mm) DN	Effective rocker pipe length (m)
150 - 600	0.6
675 - 750	1.0
OVER 750	1.25

Diameter of largest pipe in manhole (mm) DN	Internal diameter of manhole (mm)
< 375	1200 (1050 Where Soffit IS 1.35-1.5m)
375 - 450	1350
500 - 700	1500
750 - 900	1800
> 900	Consult undertaker

(scale 1:20)



Typical Hydrobrake Manhole detail
Chamber is to be constructed to flow control manufacturers
specific requirements

(scale 1:20)

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DRAWING TITLE TYPICAL CONSTRUCTION DETAILS					
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DATE DEC 2025	SCALE @ A1 AS SHOWN				
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PRELIMINARY

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	75.0		

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Roof	0.059	4.600	1200	514907.136	102405.247	0.600

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	------

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
10	0	0	0
30	0	0	0
30	45	0	0
100	0	0	0
100	45	0	0

Node Roof Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	4.000	Product Number	CTL-SHE-0164-1210-0600-1210
Design Depth (m)	0.600	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	12.1	Min Node Diameter (mm)	1200

Node Roof Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.000	Depth (m)	0.390
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	5	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	0.615	Number Required	10
Porosity	1.00	Pit Length (m)	1.465		

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Roof	11	4.105	0.105	7.7	1.0642	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	Roof	Hydro-Brake®	6.3	3.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Roof	11	4.148	0.148	12.3	1.4970	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	Roof	Hydro-Brake®	10.2	4.8

Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Roof	12	4.388	0.388	24.9	3.9328	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	Roof	Hydro-Brake®	12.1	9.6

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Roof	11	4.600	0.600	32.6	4.1970	2.5060	FLOOD

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	Roof	Hydro-Brake®	12.1	10.8

Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.19%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	Roof	16	4.600	0.600	41.6	4.1970	7.3693	FLOOD

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
30 minute summer	Roof	Hydro-Brake®	12.1	17.7

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.41%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	Roof	17	4.600	0.600	36.4	4.1970	4.5621	FLOOD

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
30 minute summer	Roof	Hydro-Brake®	12.1	16.7

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	Roof	16	4.600	0.600	52.8	4.1970	12.4226	FLOOD

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
30 minute summer	Roof	Hydro-Brake®	12.1	19.5

7.5 **Appendix E – Maintenance Schedule and SuDS Planters Specification**

Maintenance Schedule

32-33 Marine Parade, Worthing

Planning Ref: AWDM/1174/23

For

Jo Murataj

Rev - P

Reference **C3937**

Date **19th December 2025**

Revision	Date of Issue	Comments	Prepared By	Checked By
P	19/12/2025	Initial Issue	MR	CS

1.1 Introduction

- 1.1.1 During construction, the Contractor will be responsible for maintaining the drainage and SuDS (Sustainable Drainage Systems). Upon handover, the occupier will take on the responsibility of these duties as laid out in this report.
- 1.1.2 The maintenance schedule for the proposed development will be split down into two separate categories; SuDS features and regular private drainage.

1.2 SuDS at 32-33 Marine Parade, Worthing

- 1.2.1 As listed above, in section 5.1.2, the SuDS features used on site will be **SuDS Planters – Bio retention system**
- 1.2.2 The SuDS features have been designed for easy maintenance and comprise:
- Regular Day-to-Day care – litter collection, regular gardening to control vegetation growth and checking inlets where water enters the SuDS features
 - Occasional tasks – checking the SuDS features and removing any silt that builds up in the SuDS feature
 - Remedial work – repairing damage where necessary

1.3 SuDS Drainage Maintenance Specification

1.3.1 Bio retention systems

In order to maintain the functioning of the bio retention systems, the following maintenance requirements should be adhered to:

Maintenance Schedule	Required Action	Typical Frequency
Regular Inspections	Inspection infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc and replace as necessary	Quarterly
	Inspect inlets and outlets for blockages	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

1.4 General Drainage Maintenance Specification

1.4.1 Inlet Structures and Inspection Chambers

- Inlet structures such as rainwater downpipes, road gullies and channel drains should be free from obstruction at all times to allow free flow through the SuDS
- Inspection Chambers and Rodding Eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.

Inlet Structures and Inspection Chambers	
Regular Maintenance	Frequency
Inlet Structures Inspect rainwater downpipes, channel drains and road gullies, removing obstructions and silt as necessary. Check that there is no physical damage. Strim vegetation 1m min surround to structures and keep area free from silt and debris	Monthly
Inspection Chambers and below ground control chambers. Remove cover and inspect, ensuring that the water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in Autumn	Annually
Occasional Maintenance Check topsoil levels are 20mm above edges of chambers to avoid mower damage.	As necessary
Remedial Work Repair physical damage if necessary	As required

1.4.2 Below ground drainage pipes

- Below ground drainage pipes convey water to the SuDS system. They should always be free from obstruction to allow free flow.

Below Ground Drainage Pipes	
Regular Maintenance	Frequency
Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months then annually
Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
Remove sediment from pre-treatment inlet structures and inspection chambers.	Annually or as required
Maintain vegetation to designed limits within the vicinity of below ground drainage pipes and tanks.	Monthly or as required
Remedial Work	
Repair physical damage if necessary	As required
Monitoring	
Inspect all inlets, outlets and vents to ensure that they are in good conditions and operating as designed.	Annually
Survey inside of pipe runs for sediment build up and remove if necessary.	Every 5 years or as required