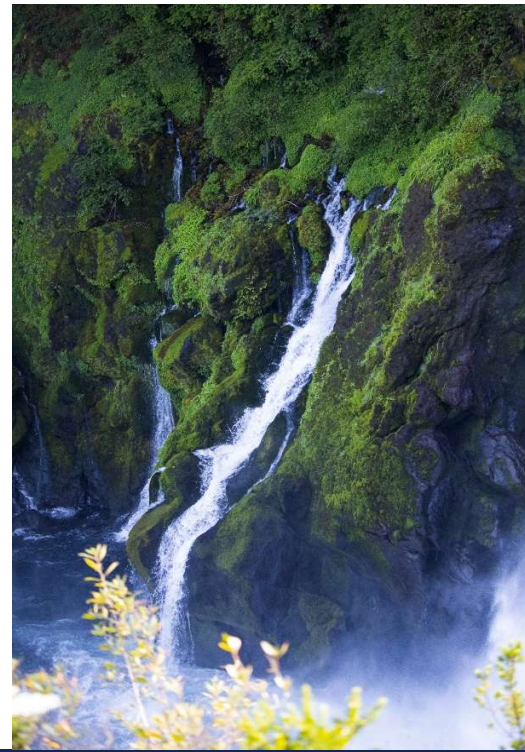




2 Cotswold Road, Worthing

Surface Water Drainage Strategy

degadea
water, civils and environment

Site Address: 2 Cotswold Road
Worthing
West Sussex
BN13 2LA

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

degadea
water, civils and environment

Document Issue Record

Project: Surface Water Drainage Strategy

Prepared for: Manorwood Construction Limited

Reference: 9434_BN13_Cotswold Road_07_SWDS

Site Location: 2 Cotswold Road, Worthing, West Sussex, BN13 2LA

Issue	Date	Author	Check	Authorised	Comments
1	17/12/25	Alix Rouvrais	Victoria Walker	James Mahoney	First issue
2	26/02/26	Alix Rouvrais	Victoria Walker	James Mahoney	Drainage Calculations updated

Please Note:

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Table of Contents

1. Introduction.....	1
Site Overview.....	1
Development Proposals.....	2
2. Surface Water Drainage Strategy.....	3
Existing Drainage System	3
SuDS Hierarchy.....	4
Existing Brownfield and Proposed Runoff Rates	4
Proposed Drainage Strategy	4
3. Future Maintenance Strategy	6
Permeable Paving (Tanked)	7
SuDS/Bioretention Planter.....	8
Hydro-Brake (Vortex Flow Control)	8
4. Pollution Prevention & Water Quality Management.....	9
SuDS Mitigation Indices.....	9
Appendix A - Topographical Survey	11
Appendix B - Southern Water Sewer Records	12
Appendix C - Proposed Development Plans	13
Appendix D - Existing Brownfield Runoff Calculations.....	14
Appendix E - Proposed Surface Water Drainage Strategy	15
Appendix F - Proposed Surface Water Drainage Calculations	16

1. Introduction

- 1.1. Aegaea were commissioned by Manorwood Construction Limited to prepare a Surface Water Drainage Strategy to support the discharge of Conditions 7 and 8 associated with the planning consent (ref. AWDM/0607/25) at the below address.

Site Overview

- 1.2. The site of the proposed development is 2 Cotswold Road, Worthing, West Sussex, BN13 2LA.



Figure 1: Site Location

- 1.3. The site is located to the east side of Cotswold Road within a predominantly residential area and within the defined planning boundary for Worthing.
- 1.4. The site measures 151 sq.m (0.0151 ha) and includes a small single storey asymmetric pitched roofed timber building measuring approximately 4.65m wide x 5.4m deep x 3.6m high to the ridge and set back approximately 2m from the pavement.
- 1.5. The property was last in use as a shoe repair business which has relocated to a new premises and the building is currently vacant.
- 1.6. A topographical survey has been undertaken at the site, which is contained in Appendix A.

- 1.7. Worthing Borough Council is the Local Planning Authority (LPA) for the site.
- 1.8. West Sussex County Council is the designated Lead Local Flood Authority (LLFA).
- 1.9. Southern Water is the Sewerage Undertaker for the area. A copy of Southern Water's sewer records is included in Appendix B.

Development Proposals

- 1.10. The development comprises of the demolition of an existing shop and replacement with 2 no. Class E (commercial/business/service) units.
- 1.11. The proposed development plans are included within Appendix C, an extract of which is provided in Figure 2 below.



Figure 2: Extract of Proposed Site Layout

2. Surface Water Drainage Strategy

Existing Drainage System

- 2.1. Southern Water's sewer records, extract in figure 3 below and included in Appendix B, indicates an existing 600mm diameter public surface water sewer located in Cotswold Road.

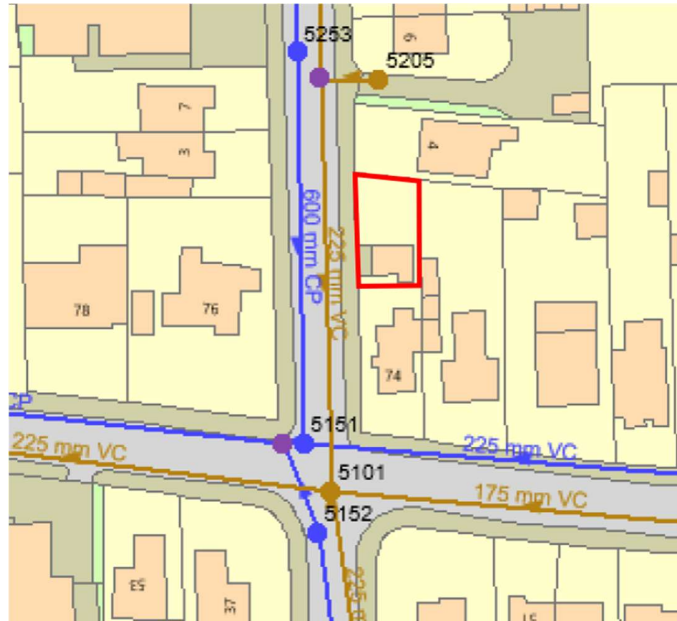


Figure 3: Extract of Proposed Site Layout

- 2.2. It is understood that surface water flows from the site currently discharges to the existing public surface water sewer mentioned above.
- 2.3. A survey of the existing drainage network to the site would need to be undertaken to confirm the location of existing assets and the connection to the public sewer.

SuDS Hierarchy

- 2.4. Current guidance indicates that the following surface water disposal options should be considered, listed in order of preference:
- i. **Disposal via on-site infiltration systems:** Traditional soakaways could not be sited with the adequate distances from the dwelling and site boundaries, therefore an alternative strategy in accordance with the SuDS hierarchy will be required.
 - ii. **Disposal to a watercourse:** There are no watercourses located within the vicinity of the site.
 - iii. **Disposal to surface water sewer:** As mentioned above, it is understood that surface water runoff from the site currently discharges to a Southern Water surface water sewer located in Cotswold Road.
 - iv. **Disposal to combined sewer:** It is understood that there are no combined sewers within the vicinity of the site.

Existing Brownfield and Proposed Runoff Rates

- 2.5. The brownfield runoff rate for the existing site, based on an impermeable area of 151 sq.m, is 1.47 l/s.
- 2.6. The existing brownfield runoff calculations are included in Appendix D.

Proposed Drainage Strategy

- 2.7. In accordance with the SuDS hierarchy, it is proposed that surface water flows from the development are to discharge to the existing on-site private surface water drainage network, as per the existing arrangement, subject to relevant approvals.
- 2.8. Alternatively, if it is not feasible to utilise the existing private surface water drainage network, a connection will be made to the existing Southern Water surface water sewer located in Cotswold Road.
- 2.9. It is considered that a 1.0 l/s discharge rate is the lowest acceptable discharge rate that can be incorporated into the proposed drainage strategy without unnecessarily increasing the risk of blockage and sedimentation.
- 2.10. Therefore, a peak discharge rate from the proposed development of 1.0 l/s is proposed, restricted via a flow control device, which equates to a betterment of 32% on the existing scenario.

- 2.11. It is proposed that surface water runoff generated from proposed impermeable areas will be managed via SUDS/bioretention planters located below rainwater downpipes (RWP) and permeable paving located within hard paved areas to attenuate flows exceeding the discharge rate.
- 2.12. These source control features will be implemented to slow the surface water flows and treat runoff prior to discharge to the existing drainage network.
- 2.13. The proposed SuDS features will provide water quality benefits by filtering any potential pollutants from the surface water flows, and the bioretention planters, permeable sub-base, attenuation tank and flow control, will manage water quantity by limiting the discharge rate and storing excess flows to be released at a gradual rate.
- 2.14. The proposed surface water drainage strategy and details is shown in Appendix E.
- 2.15. The proposed surface water drainage calculations, to include all storm events up to and including the 1 in 100-year event, plus an allowance of 45% for climate change, can be found in Appendix F.
- 2.16. It is considered that the proposed strategy is proportionate to the nature and scale of the development.

3. Future Maintenance Strategy

General Management

- 3.1. The surface water drainage network will be managed throughout the lifetime of the development by a Private Management Company setup by the Client.
- 3.2. All drainage, whether piped or SuDS require regular maintenance. The tables below provide an overview of general maintenance tasks and frequency of which they need to be undertaken.

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Inspect for sediment and debris in catchpit manholes and gullies. Clean out as required	Twice Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional Maintenance	Remove sediment and debris in catchpits, gullies, attenuation devices and inside concrete manhole rings.	As required, based on inspections.
Remedial actions	Reconstruct and/or replace components, if performance deteriorates or failure/blockage occurs.	As required
	Replacement of clogged components (flow restriction)	As required
Monitoring	Inspect silt traps/gullies/catchpits and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check attenuation devices	Annually

General maintenance for Surface Water Drainage Systems as per CIRIA C753.

- 3.3. The required maintenance for each component making up the drainage system is scheduled in the tables below, based on CIRIA report C753 – The SuDS manual.

Permeable Paving (Tanked)

General maintenance for permeable paving as per CIRIA C753.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements
Remedial Maintenance	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
	Remediate work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action.	Three-monthly, 48 hr after large storms in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

SuDS/Bioretention Planter

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Inspection of the tank for debris and sediment build-up, inlets/outlets/withdrawal device, overflow areas, filters.	Annually (and following poor performance)
	Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and other debris	Annually (and following poor performance)
Occasional Maintenance	Cleaning and/or replacement of any filters	Three monthly (or as required)
Remedial Actions	Repair of overflow erosion damage or damage to tank	As required

- 3.1. Many of the specific maintenance activities can be undertaken as part of general property maintenance/cleaning i.e. cleaning gutters and downpipes, inspecting and cleaning filters, checking the storage tank for leaks and debris, maintaining overflow pipes, and occasionally cleaning the entire tank to remove sediment buildup; the frequency of these tasks depends on factors like local climate and debris accumulation.

Hydro-Brake (Vortex Flow Control)

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove sediment and debris from flow control chambers and upstream manholes. Check for signs of damage, wear and tear. Check any visible fixing bolts.	Monthly (for the first 12 months, then 6 monthly).
Remedial Actions	Replace or clean hydrobrake if performance deteriorates or failure occurs. In the event of the blockage, the blockage/foreign material should be manually removed	As necessary.
Monitoring	Check flow control to ensure emptying is occurring.	Quarterly and post high intensity storm event.

4. Pollution Prevention & Water Quality Management

SuDS Mitigation Indices

- 4.1. Chapter 26 of the CIRIA C753 The SuDS Manual provides design advice to meet water quality standards by adopting the SuDS train treatment mechanism and thereby reduce the risk of pollution by evaluating potential pollution hazards at the outset.
- 4.2. The proposed site layout provides the opportunity to introduce SuDS into the scheme to reduce potential contaminant risk further.
- 4.3. Runoff from residential roofs is generally viewed as very low risk (as per Table 26.2 of C753). Refer to the tables below.

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05

Pollutant Hazard Indices

	Mitigation Indices				Indices for Calculation		
	TSS	Metals	Hydrocarbons		TSS	Metals	Hydrocarbons
Bioretention Systems	0.8	0.8	0.8	100%	0.8	0.8	0.8
Permeable Paving	0.7	0.6	0.7	50%	0.35	0.3	0.35
Total Mitigation Indices score					1.0	1.0	1.0
Sufficiency of Pollution Mitigation Indices					Sufficient (No additional mitigation required)		

SuDS Mitigation Indices

SuDS Mitigation Indices

- 4.4. The mitigation indices offered by the proposed bioretention planters and permeable sub-base exceed the hazard indices from residential roofs and therefore provides adequate mitigation.
- 4.5. Runoff from individual property driveways is generally viewed as low risk (as per Table 26.2 of C753). Refer to the tables below.

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Individual property driveways	Low	0.5	0.4	0.4

Pollutant Hazard Indices

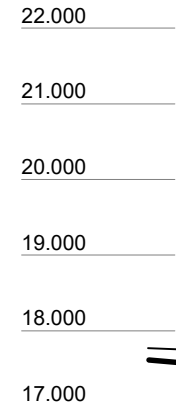
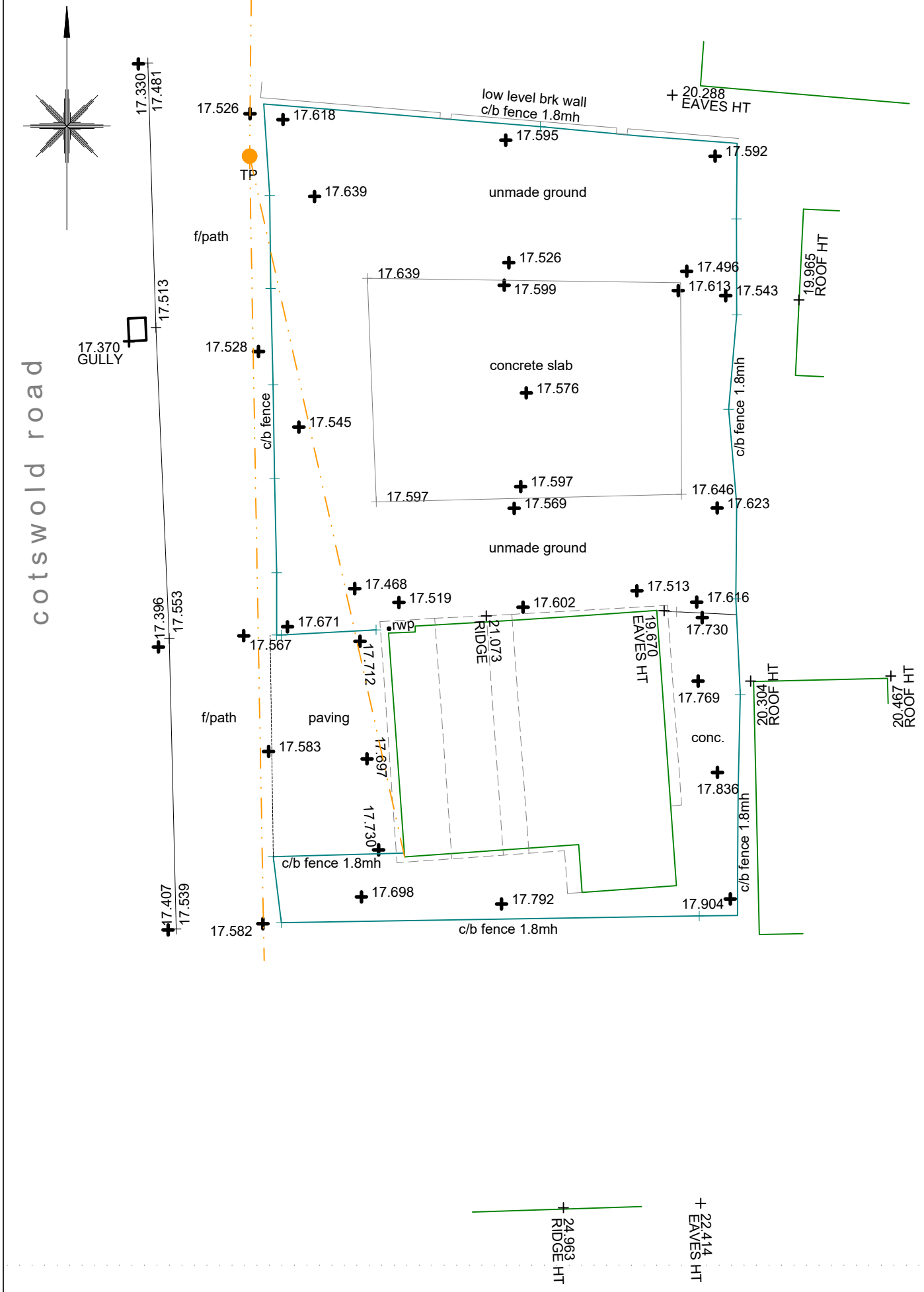
	Mitigation Indices				Indices for Calculation		
	TSS	Metals	Hydrocarbons		TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7	100%	0.7	0.6	0.7
Total Mitigation Indices score					0.7	0.6	0.7
Sufficiency of Pollution Mitigation Indices					Sufficient (No additional mitigation required)		

SuDS Mitigation Indices

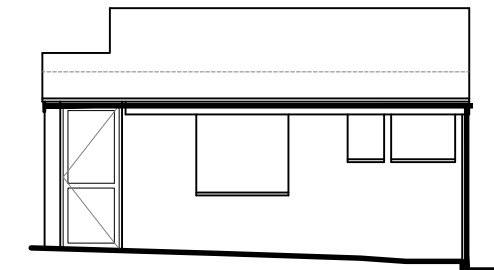
- 4.6. It is therefore considered that the proposed SuDS features on site are appropriate and acceptable in terms of water quality.

Appendix A - Topographical Survey

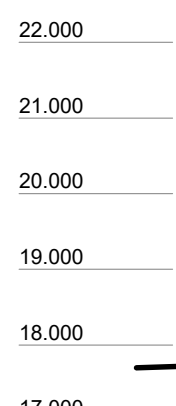
cotswold road



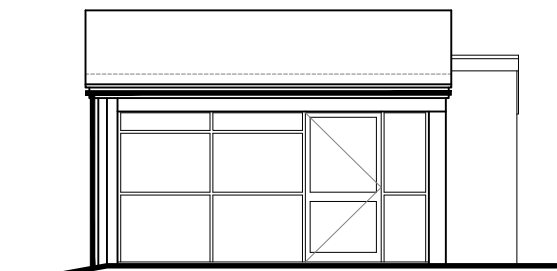
north elevation 1:100



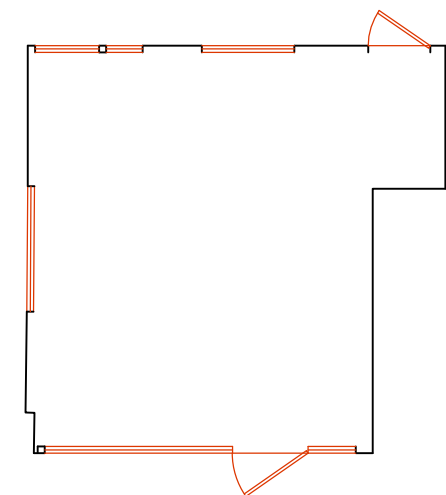
east elevation 1:100



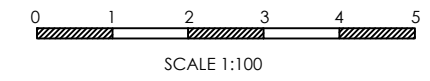
south elevation 1:100



west elevation 1:100



external floor plan 1:100



NOTES

Survey accurate at time of site attendance. Do not scale from printed drawings except for planning purposes.

Grid is based on ordnance survey national grid fixed by GPS satellite active network. Levels are related to the ordnance survey GPS active Network and transformed using the OSGM15 & OSTN15 model.

Although this is a digital survey the accuracy and amount of detail shown is only commensurate with the graphical scale of mapping as specified. Care should be exercised when working to larger scales.

Visible features in the vicinity of the boundaries as shown above, may not represent the extent of legally conveyed ownership.

Whilst every effort has been made to achieve accuracy on this plan, CRUCIAL clearance dimensions, levels and invert levels should be checked prior to design and construction.

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project:	2 Cotswold Road, Worthing, BN13 2LA		
client:	Manorwood	job ref:	S3086
title:	Measured Survey	scale:	1:100@A3
date:	March 2025	dwg no:	EX01
		rev:	-

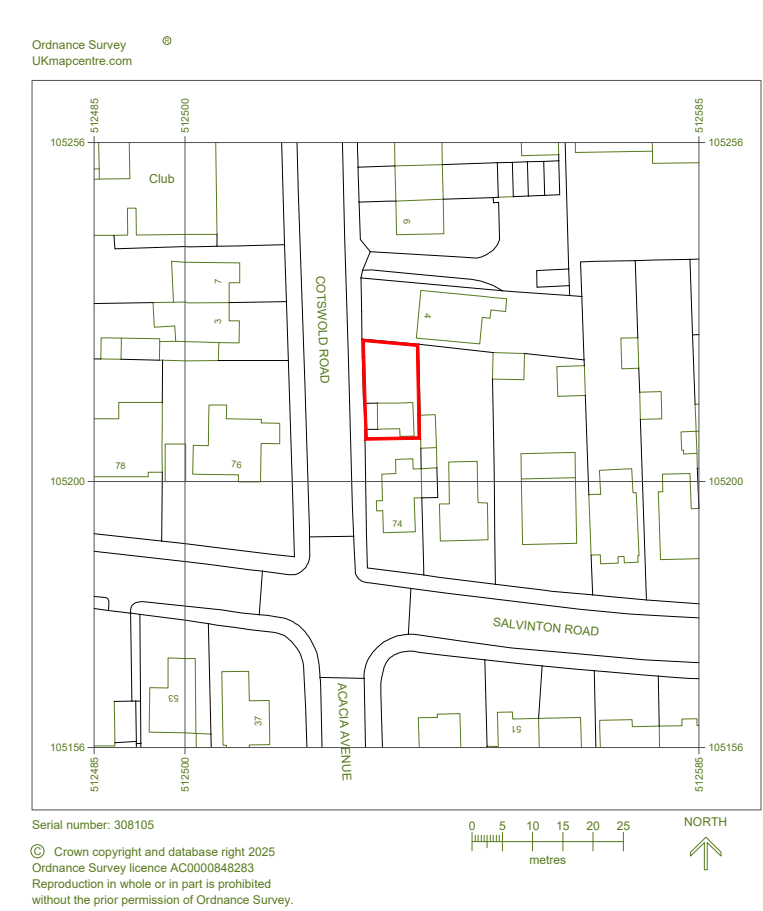
Appendix B - Southern Water Sewer Records

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0001	F	13.43	10.42	
0002	F	13.57	10.54	
0003	F	12.71	10.95	
0003	F	0.00	18.23	
0004	F	12.85	11.06	
0005	F	12.72	11.11	
0006	F	0.00	0.00	
0007	F	0.00	0.00	
0101	F	13.53	0.00	
0101	F	20.54	18.23	
0103	F	0.00	0.00	
0104	F	0.00	0.00	
0105	F	0.00	0.00	
0201	F	0.00	0.00	
0201	F	17.36	15.83	
0202	F	14.20	11.90	
0203	F	14.33	12.19	
0204	F	14.20	11.90	
0205	F	0.00	0.00	
0207	F	0.00	0.00	
0208	F	0.00	0.00	
0301	F	24.10	21.77	
0301	F	19.09	16.82	
0302	F	17.63	16.07	
0401	F	20.85	19.16	
0506	F	27.00	24.87	
0901	F	13.50	10.88	
0902	F	13.93	11.57	
0903	F	13.75	11.38	
0904	F	13.63	11.13	
0905	F	13.68	11.36	
1001	F	14.15	12.20	
1002	F	0.00	0.00	
1101	F	13.61	12.20	
1102	F	0.00	0.00	
1103	F	13.51	11.96	
1104	F	13.57	0.00	
1105	F	0.00	0.00	
1106	F	0.00	0.00	
1107	F	0.00	0.00	
1108	F	0.00	0.00	
1155	F	0.00	0.00	
1201	F	17.12	14.69	
1202	F	14.38	12.48	
1203	F	14.26	12.34	
1204	F	0.00	0.00	
1205	F	0.00	0.00	
1207	F	0.00	0.00	
1209	F	0.00	0.00	
1301	F	18.51	16.55	
1401	F	22.42	20.60	
1402	F	23.51	21.70	
1403	F	0.00	0.00	
1404	F	20.13	18.91	
1801	F	14.18	12.97	
1901	F	14.56	11.94	
1902	F	0.00	0.00	
2001	F	50.07	48.47	
2002	F	15.14	12.96	
2003	F	0.00	0.00	
2004	F	0.00	0.00	
2005	F	0.00	0.00	
2006	F	0.00	0.00	
2007	F	0.00	0.00	
2008	F	0.00	0.00	
2009	F	0.00	0.00	
2101	F	14.89	13.14	
2102	F	0.00	0.00	
2103	F	0.00	0.00	
2104	F	0.00	0.00	
2201	F	17.02	15.39	
2202	F	16.94	15.45	
2203	F	0.00	0.00	
2204	F	15.08	13.81	
2205	F	14.71	12.73	
2206	F	16.10	14.59	
2301	F	18.84	16.41	
2302	F	19.07	16.51	
2303	F	17.98	16.03	
2401	F	20.80	17.96	
2901	F	15.47	12.63	
2902	F	15.16	12.24	
2903	F	0.00	0.00	
2904	F	0.00	0.00	
2905	F	0.00	0.00	
3001	F	0.00	0.00	
3002	F	0.00	0.00	
3101	F	15.32	0.00	
3201	F	16.80	15.68	
3202	F	0.00	0.00	
3301	F	18.19	16.88	
3303	F	0.00	0.00	
3304	F	0.00	0.00	
3401	F	0.00	0.00	
3402	F	25.10	23.34	
3403	F	25.38	23.29	
3404	F	24.82	23.22	
3405	F	25.56	23.13	
3406	F	25.82	23.11	
3407	F	0.00	0.00	
3408	F	21.53	19.82	
3409	F	0.00	0.00	
3411	F	0.00	0.00	
4101	F	16.24	0.00	
4102	F	0.00	0.00	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
4103	F	0.00	0.00	
4104	F	0.00	0.00	
4105	F	0.00	0.00	
4106	F	0.00	0.00	
4107	F	0.00	0.00	
4108	F	0.00	0.00	
4201	F	16.59	14.92	
4202	F	0.00	0.00	
4203	F	0.00	0.00	
4204	F	0.00	0.00	
4205	F	0.00	0.00	
4206	F	0.00	0.00	
4207	F	0.00	0.00	
4208	F	0.00	0.00	
4209	F	0.00	0.00	
4301	F	17.81	16.49	
4302	F	18.25	16.24	
4303	F	20.66	18.06	
4304	F	21.30	18.66	
4305	F	0.00	0.00	
4306	F	0.00	0.00	
4307	F	0.00	0.00	
4308	F	0.00	0.00	
4310	F	0.00	0.00	
4311	F	0.00	0.00	
4313	F	0.00	0.00	
4314	F	0.00	0.00	
4401	F	0.00	0.00	
4402	F	22.20	20.25	
4403	F	22.14	20.77	
4405	F	22.33	20.45	
4406	F	0.00	0.00	
4408	F	0.00	0.00	
4409	F	0.00	0.00	
4410	F	0.00	0.00	
4411	F	0.00	0.00	
4412	F	0.00	0.00	
4413	F	0.00	0.00	
4504	F	26.55	25.87	
4901	F	16.27	15.44	
4902	F	17.16	15.88	
4903	F	0.00	0.00	
4904	F	0.00	0.00	
4905	F	0.00	0.00	
4906	F	0.00	0.00	
4907	F	0.00	0.00	
4908	F	0.00	0.00	
4909	F	0.00	0.00	
4910	F	0.00	0.00	
4911	F	0.00	0.00	
5001	F	17.05	0.00	
5003	F	0.00	0.00	
5004	F	0.00	0.00	
5005	F	0.00	0.00	
5006	F	0.00	0.00	
5101	F	17.65	14.75	
5102	F	17.95	15.35	
5103	F	0.00	0.00	
5104	F	0.00	0.00	
5105	F	0.00	0.00	
5201	F	17.67	15.96	
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5205	F	0.00	0.00	
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6308	F	0.00	0.00	
6401	F	0.00	0.00	
6402	F	0.00	0.00	
6403	F	21.30	19.25	
6404	F	21.20	19.00	
6405	F	25.87	23.77	
6804	F	16.47	15.25	
6901	F	17.08	15.97	
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6904	F	0.00	0.00	
7001	F	17.20	15.97	

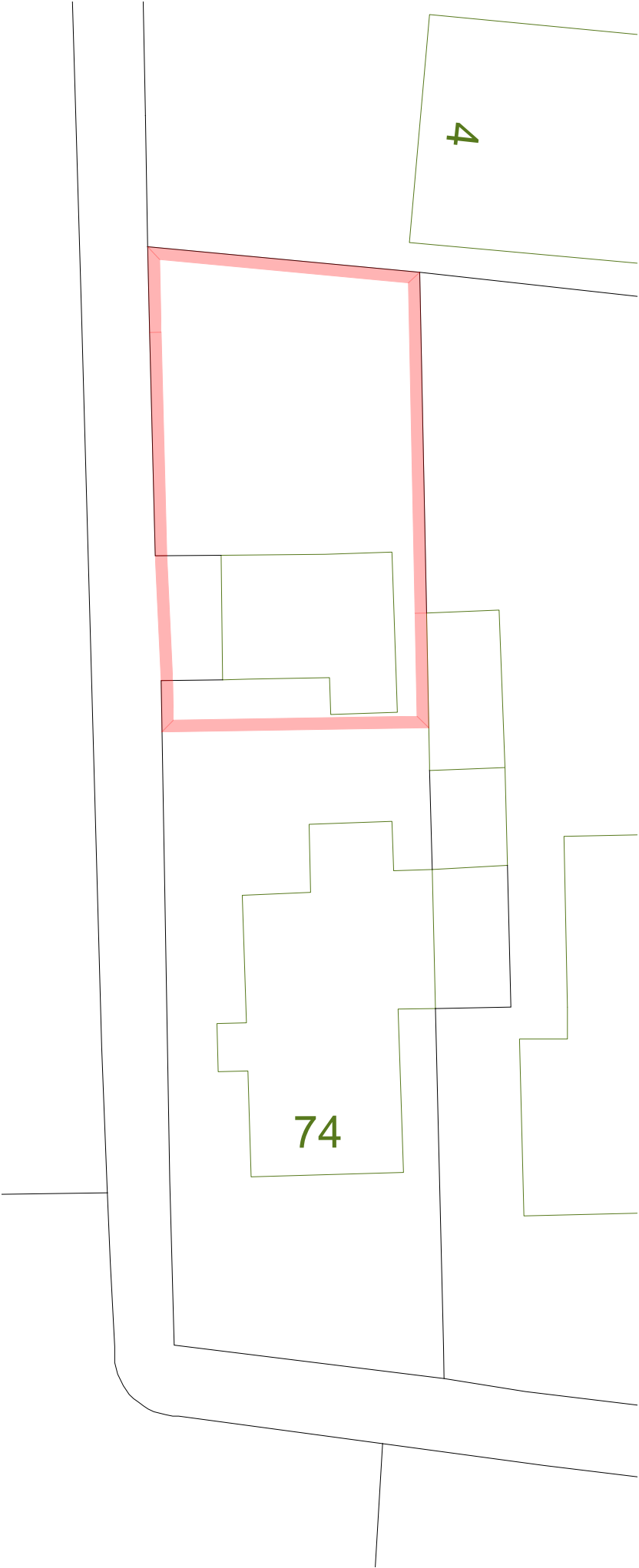
Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
7002	F	0.00	0.00	
7003	F	0.00	0.00	
7004	F	0.00	0.00	
7005	F	18.24	17.63	
7006	F	18.25	17.37	
7007	F	18.32	0.00	
7101	F	18.28	0.00	
7102	F	0.00	0.00	
7103	F	18.24	17.83	
7104	F	18.46	17.73	
7201	F	19.57	18.60	
7202	F	19.95	18.83	
7203	F	0.00	0.00	
7204	F	0.00	0.00	
7205	F	0.00	0.00	
7301	F	21.10	19.27	
7302	F	20.52	19.70	
7401	F	0.00	0.00	
7402	F	28.13	0.00	
7501	F	28.89	27.46	
7901	F	17.62	15.42	
8001	F	17.96	15.83	
8101	F	18.29	0.00	
8102	F	18.34	16.33	
8103	F	18.81	16.89	
8104	F	19.32	17.33	
8201	F	19.73	18.34	
8202	F	19.32	0.00	
8203	F	19.47	17.86	
8301	F	20.02	18.18	
8302	F	19.91	18.04	
8401	F	27.76	25.80	
8402	F	26.64	24.57	
8403	F	22.32	19.81	
8901	F	17.61	15.30	
8902	F	17.37	15.01	
8903	F	0.00	0.00	
8904	F	0.00	0.00	
9001	F	19.27	16.24	
9002	F	19.02	16.09	
9003	F	19.17	16.36	
9004	F	18.61	15.93	
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9008	F	19.08	16.54	
9009	F	0.00	0.00	
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9102	F	20.06	19.04	
9103	F	0.00	0.00	
9201	F	0.00	0.00	
9202	F	21.66	0.00	
9203	F	20.91	19.59	
9204	F	20.85	20.03	
9301	F	22.71	0.00	
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9402	F	26.53	24.93	
9403	F	0.00	0.00	
9501	F	36.89	35.87	
9904	F	0.00	0.00	
9905	F	18.51	15.79	
0051	S	13.43	10.92	
0052	S	0.00	0.00	
0053	S	13.51	11.04	
0054	S	13.23	0.00	
0055	S	12.81	0.00	
0056	S	12.75	11.27	
0151	S	12.93	0.00	
0151	S	20.62	0.00	
0251	S	22.26	20.77	
0251	S	17.36	15.61	
0252	S	13.83	12.29	
0253	S	14.33	0.00	
0351	S	24.07	21.99	
0351	S	19.07	17.10	
0352	S	17.58	15.86	
0451	S	21.04	19.17	
0951	S	13.48	11.18	
0952	S	13.93	11.67	
0952	S	18.59	17.29	
0953	S	18.38	17.20	
0953	S	13.78	11.50	
0954	S	18.28	17.05	
0954	S	13.60	11.34	
0955	S	13.70	12.40	
1051	S	14.70	13.13	
1052	S	14.62	13.06	
1053	S	14.01	12.51	
1054	S	14.20	12.72	
1055	S	13.92	12.37	
1056	S	13.64	12.19	
1057	S	13.69	11.99	
1151	S	13.76	12.63	
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1153	S	13.53	12.16	
1154	S	0.00	0.00	
1251	S	16.94	14.48	
1252	S	14.69	12.17	
1253	S	14.40	11.89	
1254	S	14.35	11.74	
1351	S	18.64	16.25	
1451	S	23.88	22.06	
1452	S	23.04	20.87	
1453	S	20.23	18.46	
1951	S	14.53	12.09	

Appendix C - Proposed Development Plans



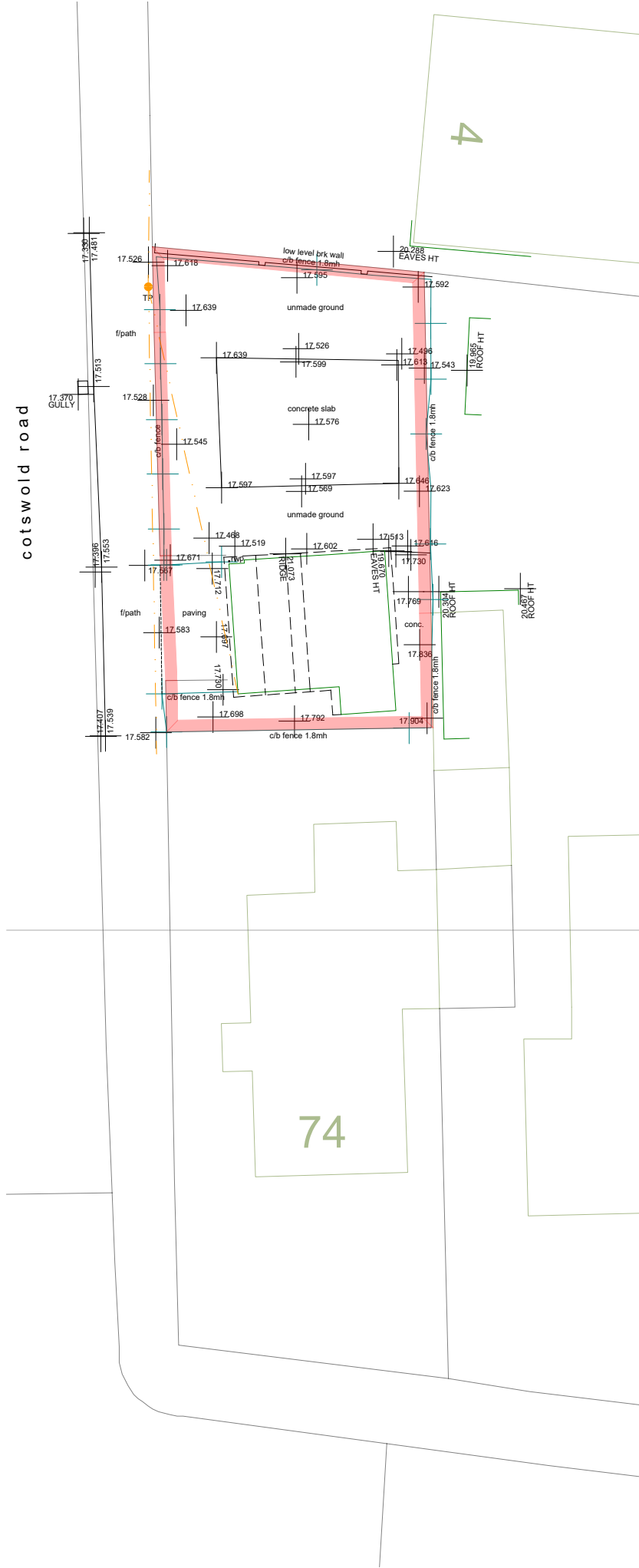
Location Plan

1:1250 | EXISTING



Block Plan

1:200 | EXISTING



Survey

1:200 | EXISTING

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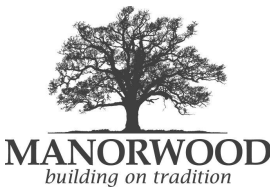
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Drawing No. 2508CO_000

Scale @ A3 As Indicated

Job No. 2508CO

Drawn By MD

Checked By BK

Drawn On 15.08.2025

Issued On 15.08.2025

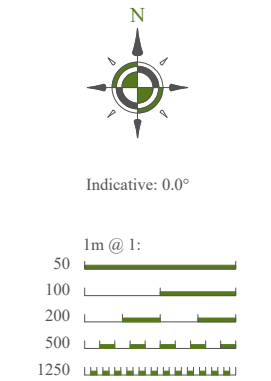
Status Existing

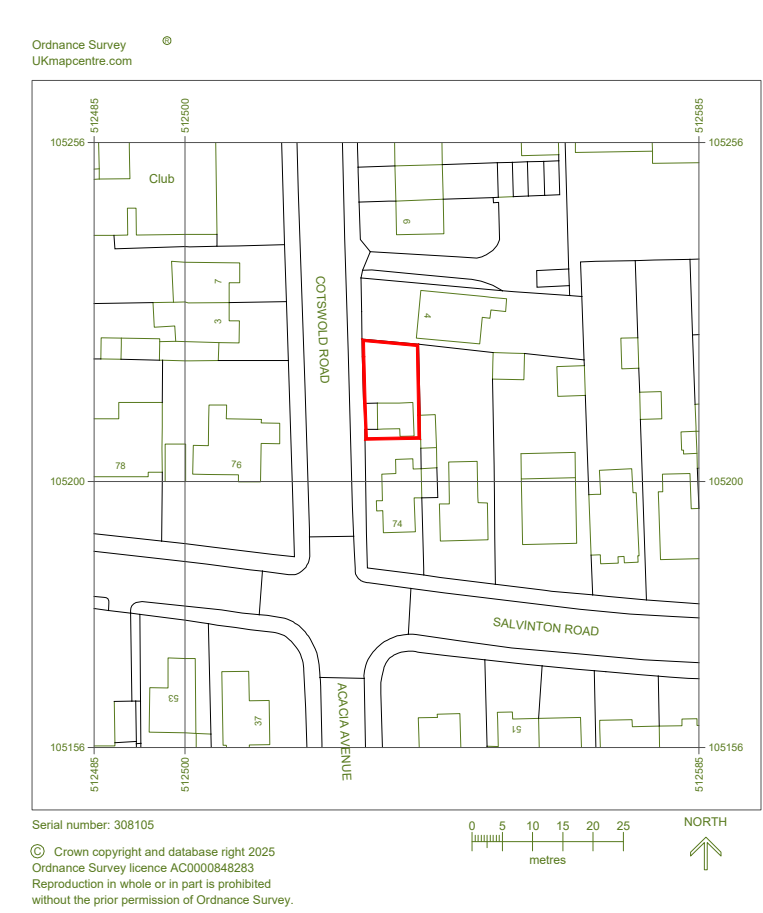
Drawing Location + Blocks

Submission Planning

Revision 000

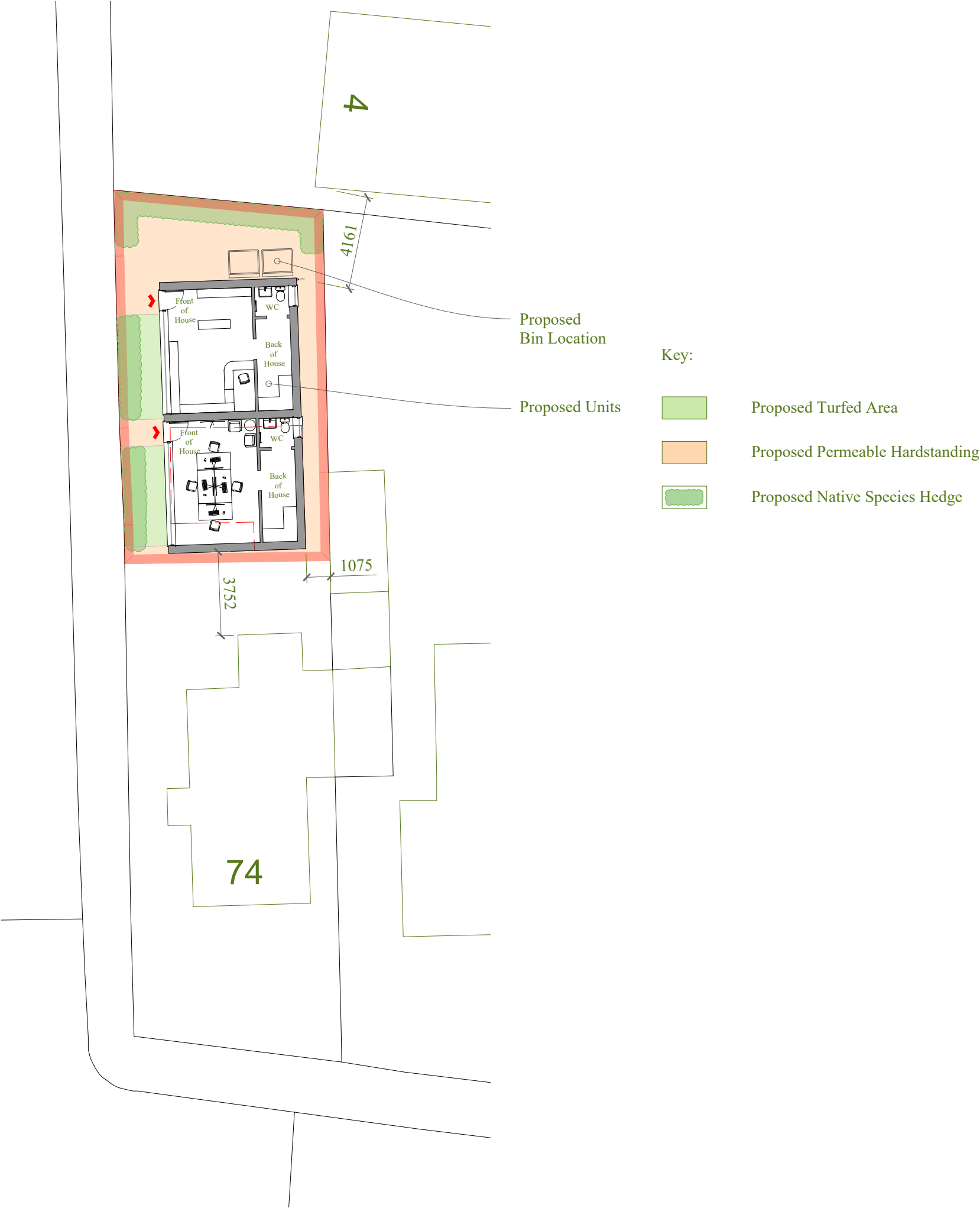
Application Area: 151 m²





Location Plan

1:1250 | EXISTING



Block Plan

1:200 | PROPOSED

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Drawing No. 2508CO_001

Scale @ A3 As Indicated

Job No. 2508CO

Drawn By MD

Checked By BK

Drawn On 15.08.2025

Issued On 15.08.2025

Status Existing + Proposed

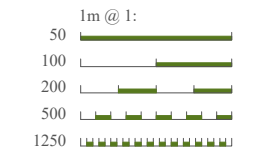
Drawing Location + Block

Submission Planning

Revision 02

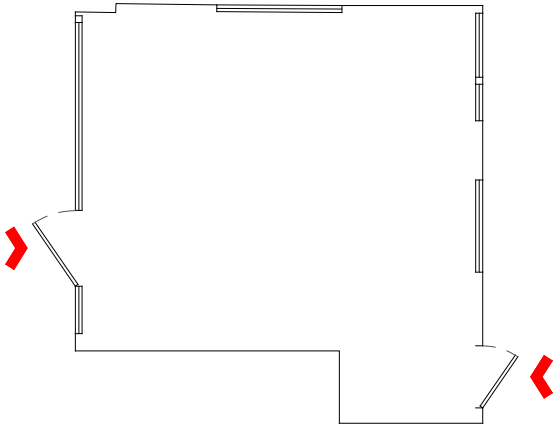
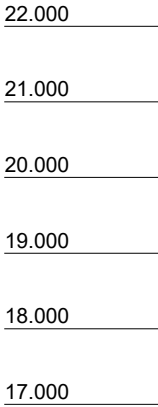


Indicative: 0.0°



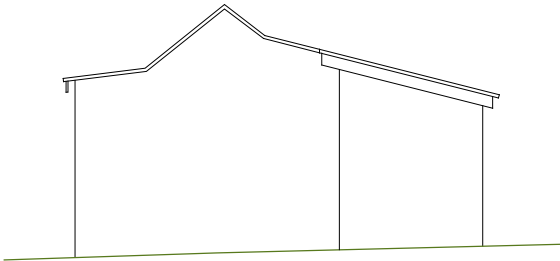
NOTES:

Existing internal
unable to be surveyed



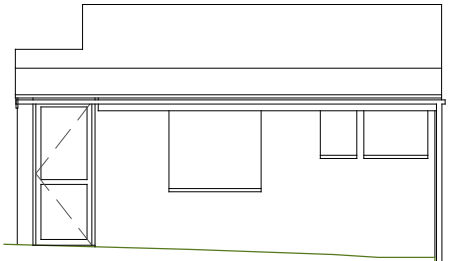
Ground Floor Plan

1:100 | EXISTING



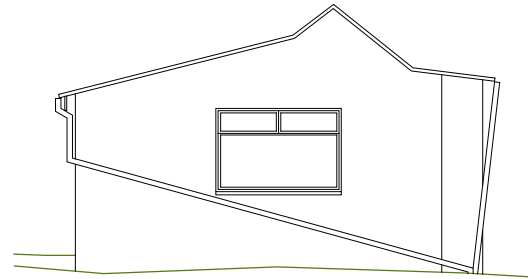
South

1:100 | EXISTING



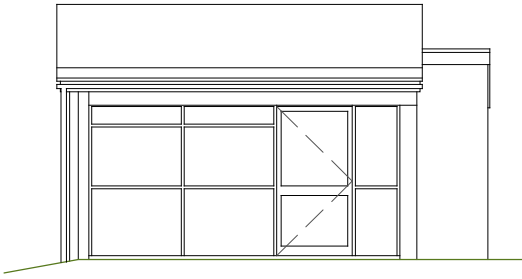
East

1:100 | EXISTING



North

1:100 | EXISTING



West

1:100 | EXISTING

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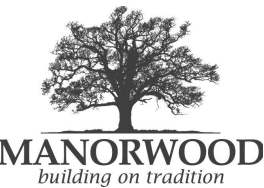
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Drawing No. 2508CO_100

Scale @ A3 1:100

Job No. 2508CO

Drawn By MD

Checked By BK

Drawn On 15.08.2025

Issued On 15.08.2025

Status Existing

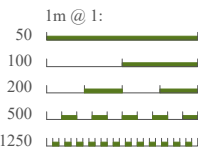
Drawing Plan + Elevations

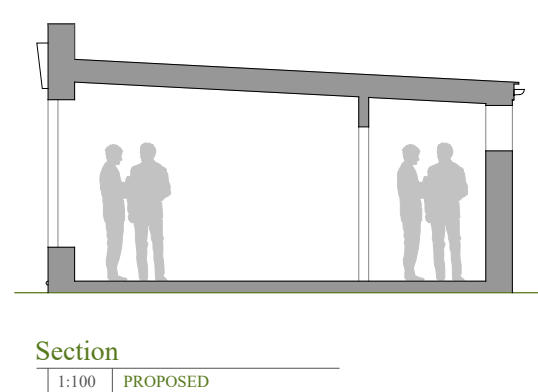
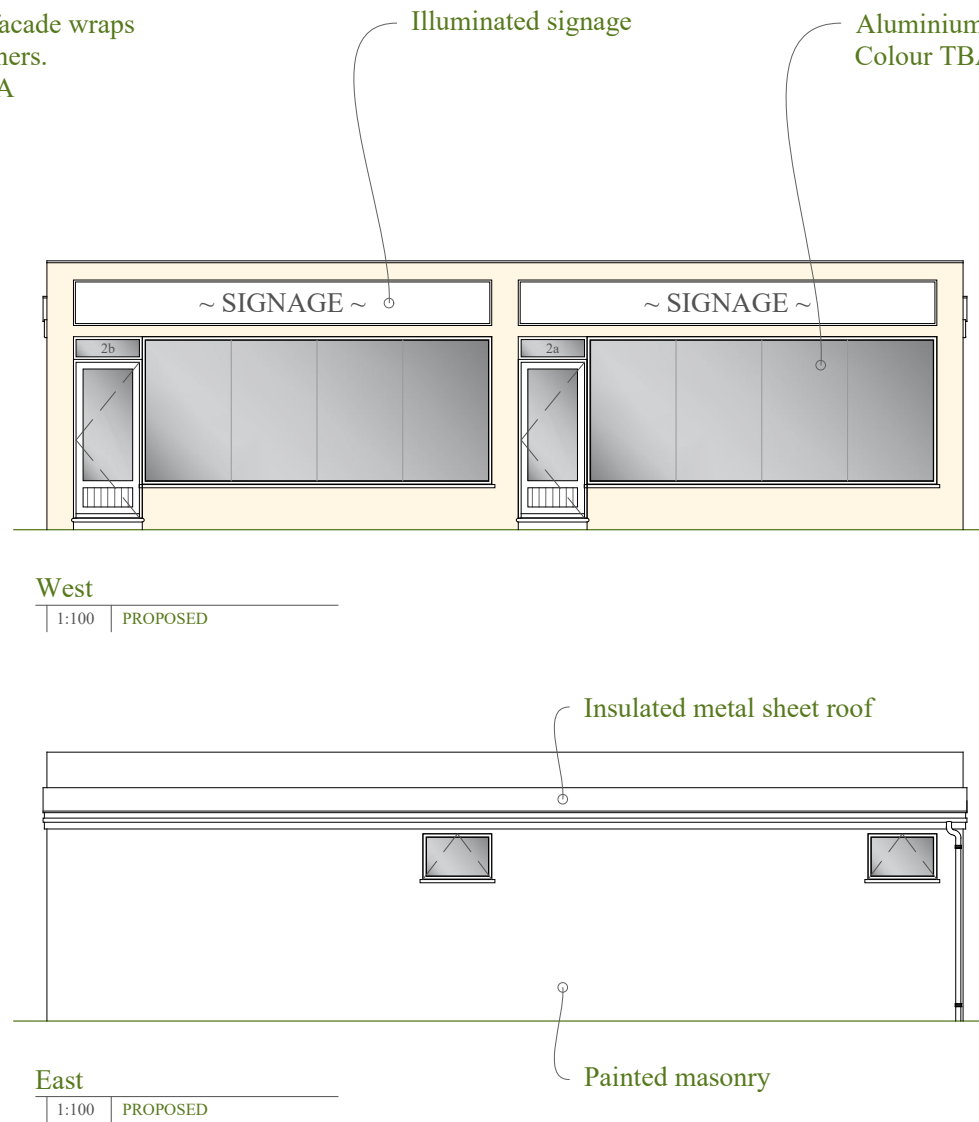
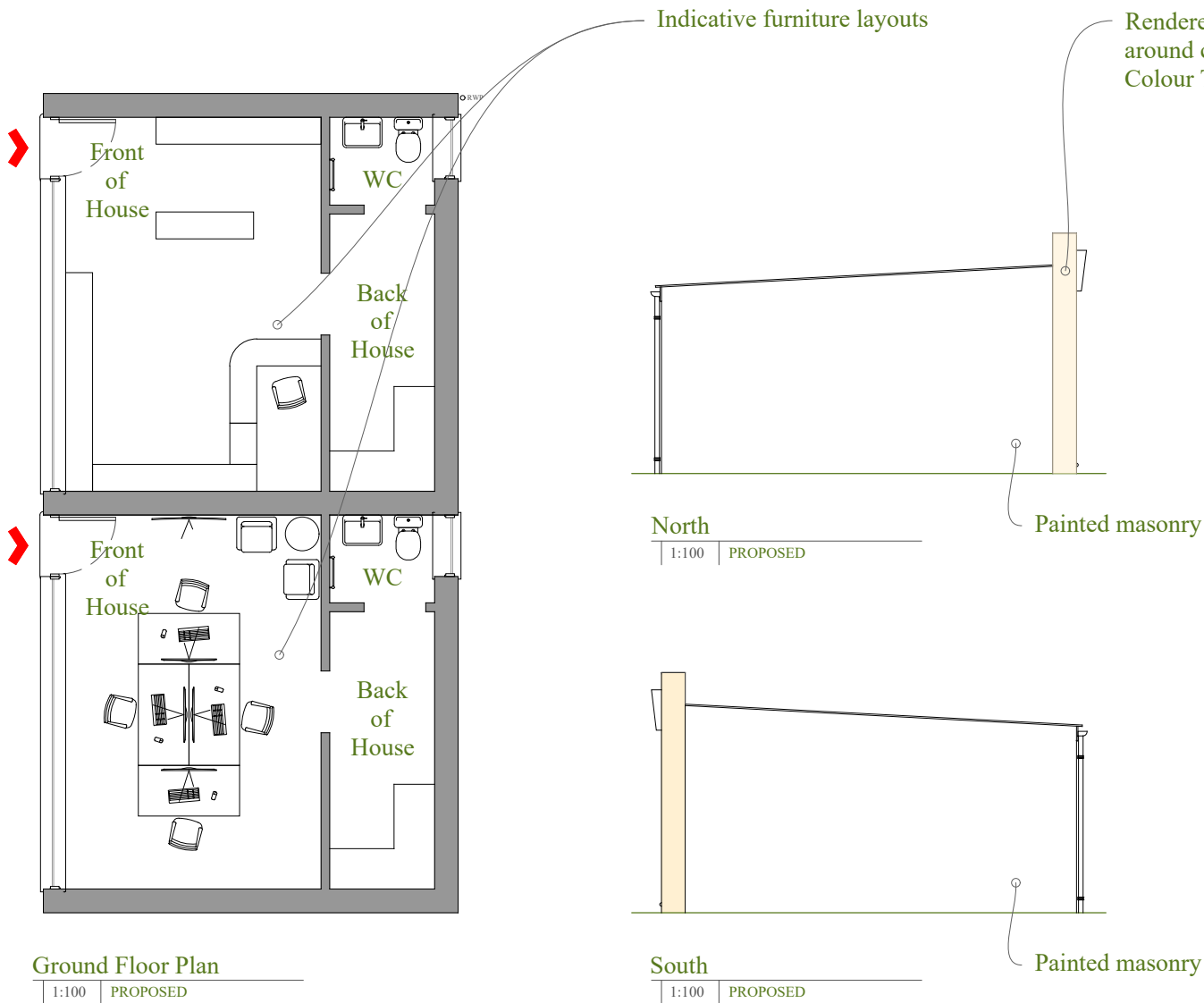
Submission Planning

Revision 000



Indicative: 358.0°

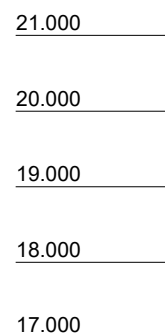




NOTES:

Existing
Unit GIA: 20.98 m²
Footprint: 26.39 m²

Proposed
Unit GIA: 30.11 m²
Building GIA: 62.12 m²
Footprint: 74.42 m²



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Drawing No. 2508CO_200

Scale @ A3 1:100

Job No. 2508CO

Drawn By MD

Checked By BK

Drawn On 15.08.2025

Issued On 15.08.2025

Status Proposed

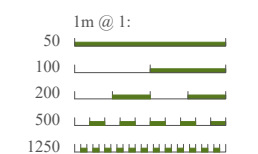
Drawing Plan + Elevations

Submission Planning

Revision 000



Indicative: 358.0°



Appendix D - Existing Brownfield Runoff Calculations

 water, civils and environment	Project		AEG9434 2 Cotswold Road		Job Ref.		AEG9434		
	Client		Manorwood Construction Limited		Sheet		1		
	Element		Existing Brownfield Runoff Calculations		Date				
						Rev.		A01	
						Calc by		JM	
						Check by		VW	
Ref	Calculations						Output		
	Using the Modified Rational Method (as set out in CIRIA C753) to calculate the Brownfield runoff rate. $Q = 2.78 \times C \times i \times A$ (EQ. 24.5) i = Average rainfall intensity of the design storm in millimetres per hour, mm/hr. A = Effective impermeable area of the existing site in hectares, ha. = 151 m² = 0.0151 ha Q = Rainfall runoff rate in litres per second, l/s. C = Dimensionless Runoff Coefficient * = 1.0 2.78 = Conversion factor to address the rainfall unit being in mm/hr. *Ciria C753 (Section 24.6.2), volumetric and routing coefficients CV & CR (CV of the order 0.6 and the routing coefficient, CR of the order of 1.3) the two coefficients are usually incorporated into a single term with a value of between 0.8 and 1.0 depending on how effectively the catchment is drained. A constant rainfall intensity of 35 mm/hr has been assumed # # C753 24.6.2 – Rainfall intensity - For the design of pipework (pipe full flow), a constant rainfall intensity of 35mm/hr can be assumed, or 50mm/hr may be required by some approving bodies for a more conservative solution (May and Kellagher 2004.) The estimated brownfield rainfall rate has been based on the existing drainage systems draining a total area of 0.0151 ha. $Q = 2.78 \times 1.0 \times 35 \times 0.0151 = \mathbf{1.47}$ l/s The above calculation demonstrates that the development currently drains to the existing sewer network unrestricted at 1.47 l/s								
enquiries@aegaea.com - civils@aegaea.com - www.aegaea.com									

Appendix E - Proposed Surface Water Drainage Strategy



DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
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3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AND CHECKED AGAINST ALL: ENGINEERING DETAILS, SPECIFICATIONS, GEOTECHNICAL AND OTHER RELEVANT DOCUMENTATION PROVIDED.
4. THIS DRAWING IS SCHEMATIC FOR CLARITY ONLY. POSITIONS OF PIPE RUNS AND MANHOLES MAY VARY ON SITE DUE TO SITE CONDITIONS.
5. WHERE EXISTING OR PROPOSED TREES ADJACENT TO HIGHWAYS OR DRAINAGE ARE PROPOSED, ROOT BARRIERS (TYPE TO BE APPROVED) ARE REQUIRED TO PREVENT STRUCTURAL DAMAGE.
6. ANY ANOMALY OR CONTRADICTIONS BETWEEN ANY OF THE ABOVE IS TO BE REPORTED IMMEDIATELY.
7. THE CONTRACTOR IS TO COMPLY IN ALL ASPECTS WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND BUILDING LEGISLATION ETC.
8. FURTHER SURVEYS REQUIRED TO DETERMINE EXACT LOCATION, DIMENSIONS AND LEVELS OF EXISTING SEWERS.
9. DRAINAGE LAYOUT IS SUBJECT TO CHANGE AND DEPENDANT ON RECEIPT OF LEVELS OF EXISTING SURFACE AND FOUL WATER SEWER.

LEGEND

- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED FOUL DRAINAGE
- PROPOSED TYPE-C LINED PERMEABLE PAVING
- PERFORATED 150mm DIAMETER PIPE. REFER TO CONSTRUCTION DETAILS
- EXISTING SURFACE WATER SEWER
- EXISTING FOUL SEWER
- SUDS / BIO RETENTION PLANTER

A01	17.12.25	FIRST ISSUE	AR
Rev	Date	Description	By

Client
**BEN KIRK
MANORWOOD**

Project
**2 COTSWOLD ROAD
BN13 2LA**

Title
DRAINAGE STRATEGY

Project No.	Drawing No.	Revision
AEG9434	CIV-001	A01

Drawn	Checked	Approved	Date	Scale @ A1
AR	JM	JM	DEC 2025	1:50

Drawing Status
PLANNING

aegaea
water, civils and environment

0m 1 2 3 4 5
SCALE : 50

FIGURE B18
TYPICAL INSPECTION CHAMBER DETAIL - TYPE D (FLEXIBLE MATERIAL DETAIL)

MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE
IN AREAS SUBJECT TO VEHICLE LOADING 2M, NON-ENTRY

PLASTIC CHAMBERS AND RINGS SHALL COMPLY WITH BS EN 13598-1 AND
BS EN 13598-2 OR HAVE EQUIVALENT INDEPENDENT APPROVAL

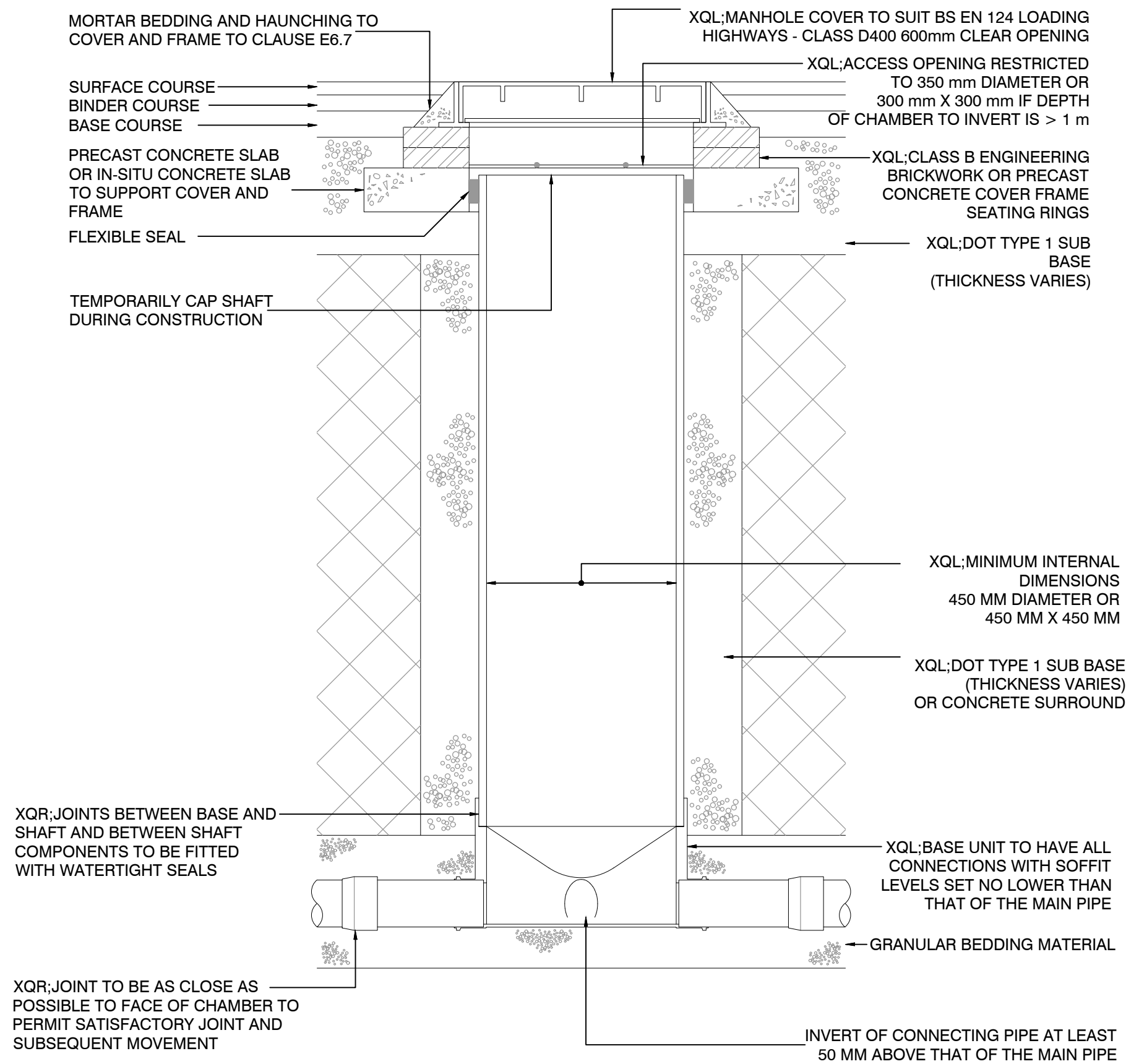
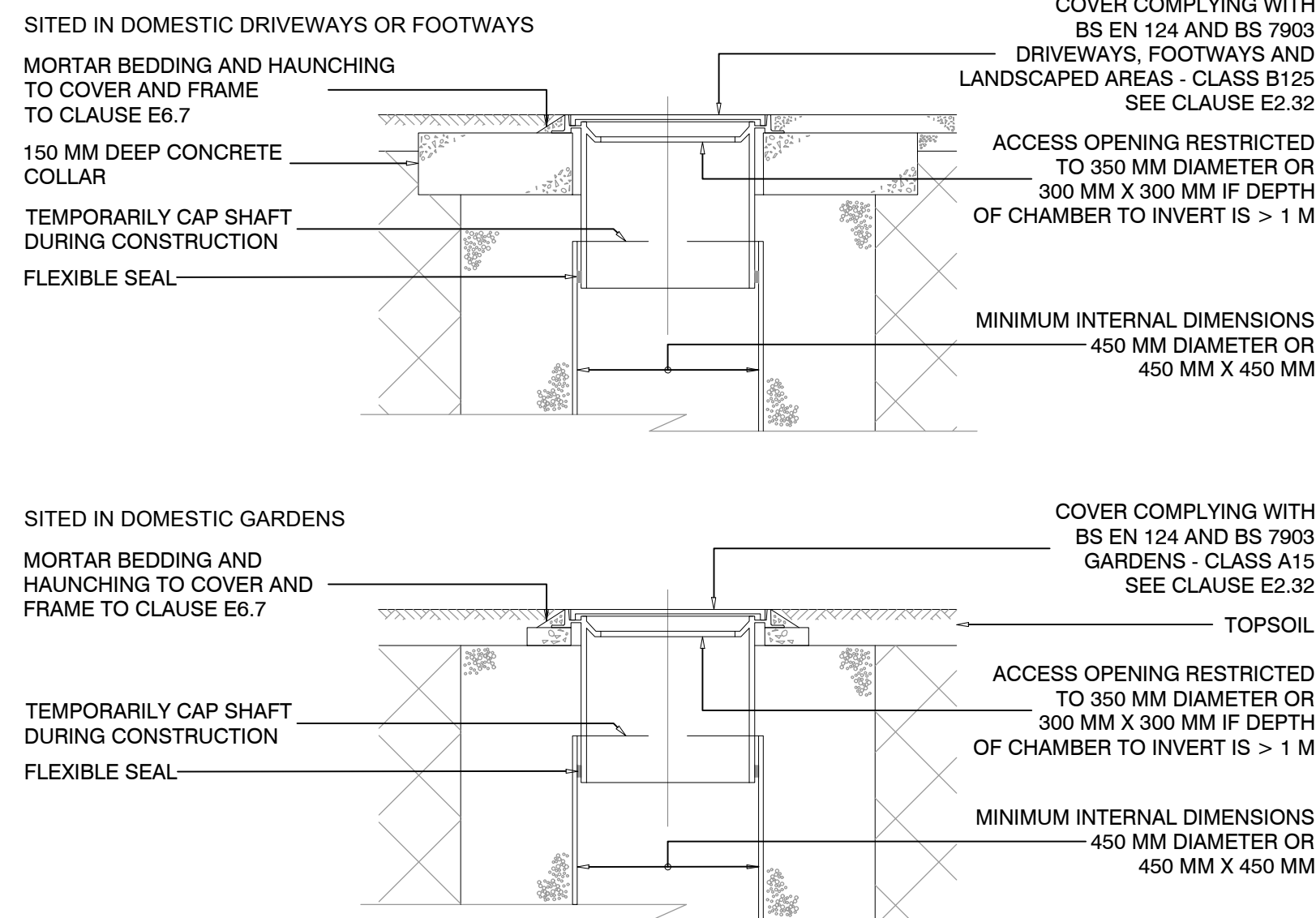


FIGURE B19
ALTERNATIVE TOP DETAILS FOR LIGHT VEHICLE LOADING
AND LANDSCAPED AREAS - TYPE D

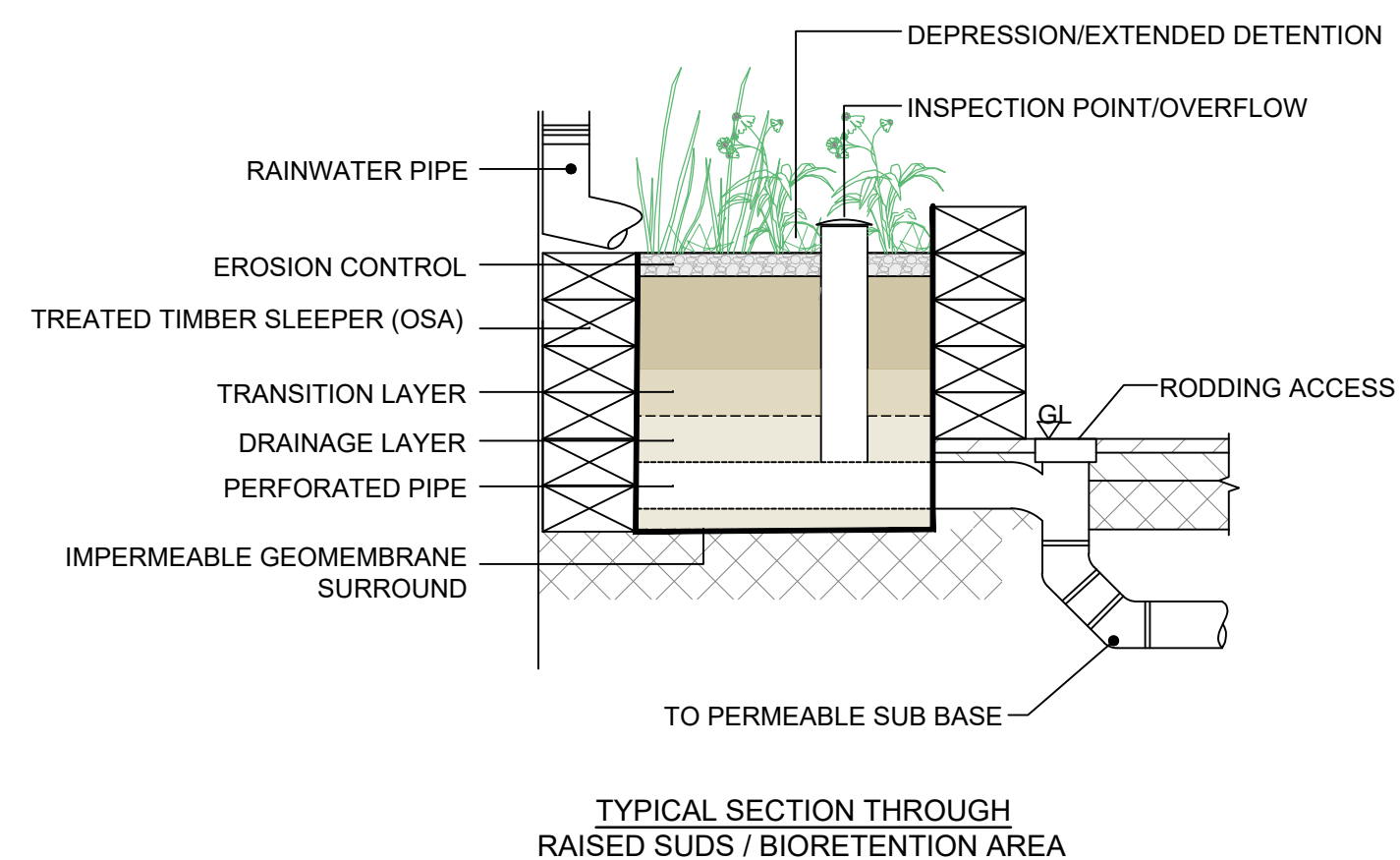
PLASTIC CHAMBERS AND RINGS SHALL COMPLY WITH BS EN 13598-1 AND
BS EN 13598-2 OR HAVE EQUIVALENT INDEPENDENT APPROVAL



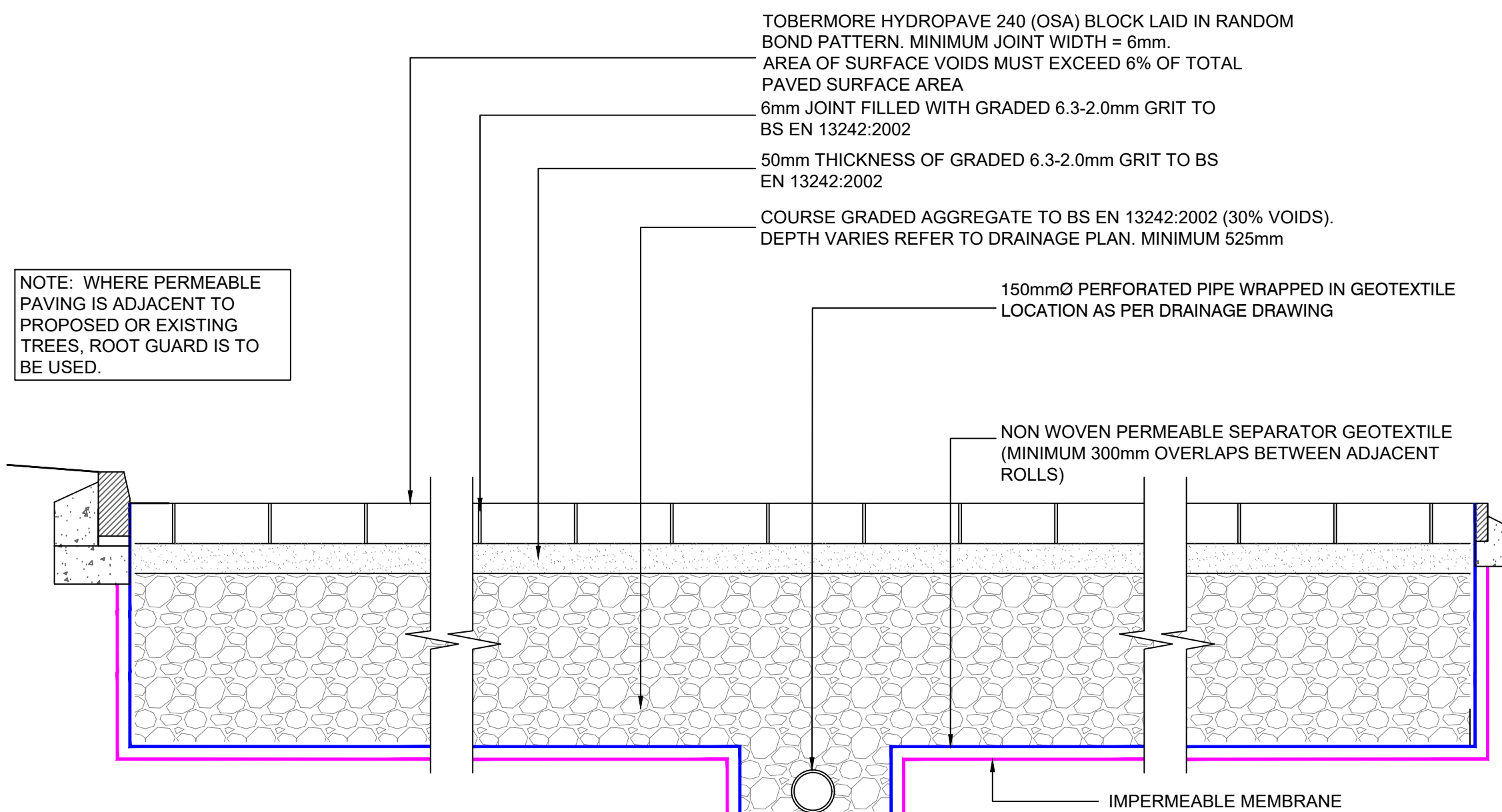
NOTE: WHERE THE ACCESS CHAMBER IS IN THE HIGHWAY THE
HIGHWAY AUTHORITY CAN HAVE SPECIFIC REQUIREMENTS

NOT TO SCALE

NOTE: WHERE PERMEABLE
PAVING IS ADJACENT TO
PROPOSED OR EXISTING
TREES, ROOT GUARD IS TO
BE USED.

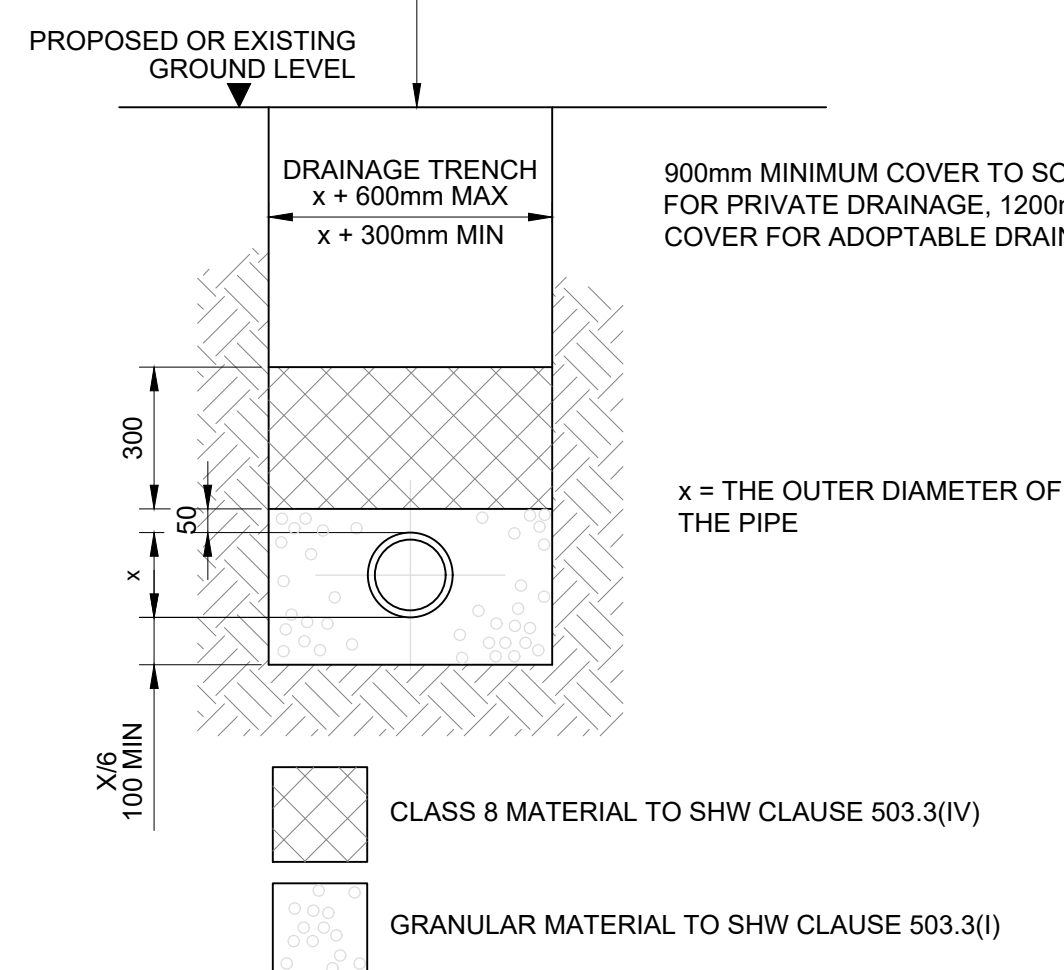


TYPICAL SECTION THROUGH
RAISED SUDS / BIORETENTION AREA



TYPICAL PERMEABLE BLOCK PAVED DETAIL
WITH PERFORATED PIPE DRAINAGE TRENCH
(SCALE 1:20)

FOR SURFACE FINISH TO DRAINAGE EXCAVATION REFER TO THE EXTERNAL
FINISHES PLAN AND THEN RELEVANT HIGHWAY DETAILS. NOTE THAT
REINSTATEMENT FOR WORKS IN EXISTING ADOPTED HIGHWAYS ARE TO BE
AGREED BY THE CONTRACTOR WITH THE RELEVANT HIGHWAY AUTHORITY.



CLASS 8 MATERIAL TO SHW CLAUSE 503.3(IV)
GRANULAR MATERIAL TO SHW CLAUSE 503.3(I)

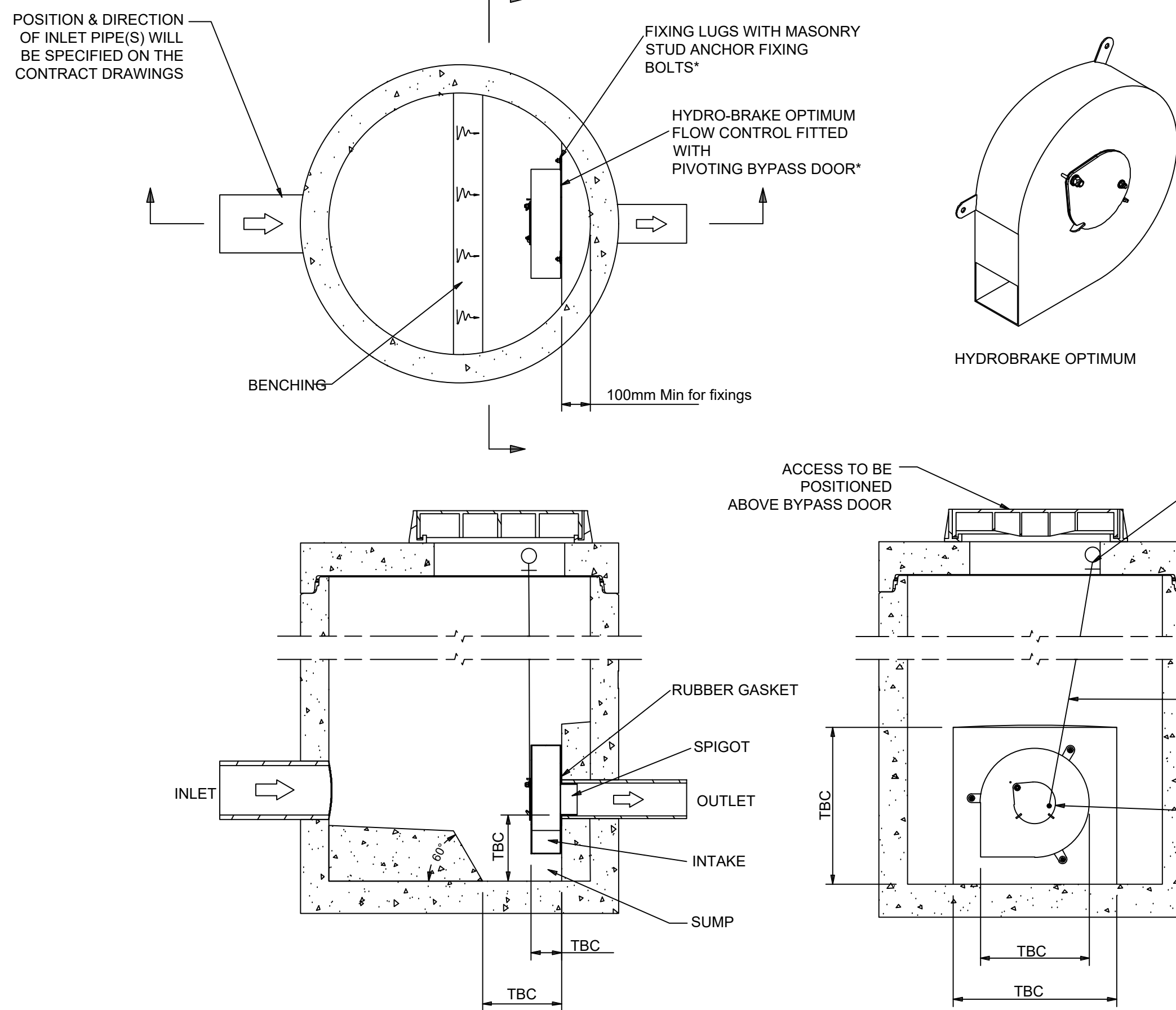
NOTE: CLASS 'S' BEDDING FOR USE WITH ALL ADOPTABLE DRAINAGE WITH COVER TO SOFFIT OF PIPE
GREATER THAN 1200mm. PRIVATE DRAINAGE WITHIN LANDSCAPED AND OTHER NON-TRAFFICKED AREAS
WITH COVER GREATER THAN 1000mm TO THE PIPE SOFFIT MAY USE PIPE BEDDING CLASS 'T' REFER TO
DRAWING F1 (SHW) HIGHWAY CONSTRUCTION DETAILS.

CLASS 'S' PIPE BEDDING

CONCRETE TO S.H.W CLAUSE 503.3 (II).
ST2 CONCRETE WITH COMPRESSIBLE FILLER BOARD AT 3m MAXIMUM
CENTRES AND ALL PIPE JOINTS. FILLER BOARD SHALL CONSIST OF
BITUMEN IMPREGNATED INSULATION BOARD TO B.S. EN 622, AND B.S. EN
317. THICKNESS OF COMPRESSIBLE BOARD AS TABLE ABOVE.

NOTE: CLASS 'Z' BEDDING FOR USE WITH ALL ADOPTABLE DRAINAGE WITH COVER TO
SOFFIT OF PIPE LESS THAN 1200mm.

CLASS 'Z' PIPE BEDDING



TYPICAL FLOW CONTROL CHAMBER - HYDROBRAKE OR SIMILAR APPROVED
REFER TO HYDROBRAKE DOCUMENTATION
TOP HALF OF CHAMBER TO BE CONSTRUCTED AS TYPE B MANHOLE

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9. DRAINAGE LAYOUT IS SUBJECT TO CHANGE AND DEPENDANT ON RECEIPT OF LEVELS OF EXISTING SURFACE AND FOUL WATER SEWER.

A01	17.12.25	FIRST ISSUE	AR
Rev	Date	Description	By
Client			
BEN KIRK MANORWOOD			
Project			
2 COTSWOLD ROAD BN13 2LA			
Title			
DRAINAGE DETAILS			
Project No.	Drawing No.	Revision	
AEG9434	CIV-005	A01	
Drawn	Checked	Approved	Date
AR	JM	JM	DEC 2025
Scale @ A1			
N/A			
Drawing Status			
PLANNING			

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Appendix F - Proposed Surface Water Drainage Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

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)	20.0		

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 %)
2	0	0	0
30	0	0	0
100	45	0	0

Node S2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	16.650	Product Number	CTL-SHE-0047-1000-1000-1000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node S1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	17.100	Slope (1:X)	250.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	47	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	5.000		

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	S1	10	17.066	0.016	1.7	0.0074	0.0000	OK
15 minute summer	S2	13	16.887	0.237	1.7	0.2677	0.0000	SURCHARGED
30 minute summer	EXTG SW	22	16.638	0.019	0.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	1.7	0.750	0.024	0.0237	
15 minute summer	S2	1.001	EXTG SW	0.8	0.590	0.035	0.0025	0.7

Results for 30 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
30 minute summer	S1	25	17.204	0.154	4.2	0.7786	0.0000	SURCHARGED
30 minute summer	S2	25	17.204	0.554	3.7	0.6270	0.0000	SURCHARGED
15 minute summer	EXTG SW	42	16.638	0.019	0.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	S1	1.000	S2	3.7	1.123	0.051	0.0449	
30 minute summer	S2	1.001	EXTG SW	0.8	0.590	0.035	0.0025	2.6

Results for 100 year +45% CC 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
60 minute winter	S1	50	17.434	0.384	4.2	2.6034	0.0000	FLOOD RISK
60 minute winter	S2	50	17.433	0.783	2.4	0.8860	0.0000	FLOOD RISK
60 minute winter	EXTG SW	50	16.639	0.020	0.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	S1	1.000	S2	2.4	0.975	0.034	0.0449	
60 minute winter	S2	1.001	EXTG SW	0.9	0.602	0.038	0.0027	6.1