

Selwood Housing

Alcock Crest, Warminster

Drainage Strategy

Drainage Strategy

Issue/Revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	Initial Issue			
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Checked by	Stuart Williamson			
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1 INTRODUCTION

Tumu Consulting Ltd have been appointed by Selwood Housing to prepare a Drainage Strategy for the erection of 14no. affordable residential units following demolition of existing flats and associated works.

1.1 Site Location

The site is located at Alcock Crest, Warminster, BA12 8ND. The grid reference for the site is 386620, 144510. The local planning authority is Wiltshire Council.



Figure 1-1 Site Location Plan

1.2 Existing Site Usage

The existing site usage is residential. The site comprises of two blocks of flats, with associated parking, garden and access. Both blocks are accessible from Alcock Crest, to the north of the site.

1.3 Topography

A topographic survey has been completed in January 2024 by TAG Surveys, with drawing reference T0526-1. The site falls from north to south, with the lowest levels found approximately 128.30mAOD. The highest levels found on site are 131.10mAOD. The levels fall away from the site, to the south, towards the playing fields adjacent to Brook Street.

The total site encompasses an area of 0.38ha, with a mix of hard and soft landscaping throughout.

1.4 Geology & Hydrogeology

According to the British Geological Survey (BGS) Viewer, the site is underlain with a bedrock geology of Shaftesbury Sandstone Formation.

The site is located approximately 180m south of the Zone 2 Outer Protection Source Protection Zone.

1.5 Hydrology

The nearest open watercourse is the Were (Swan River) which is located approximately 750m to the north east of the development.

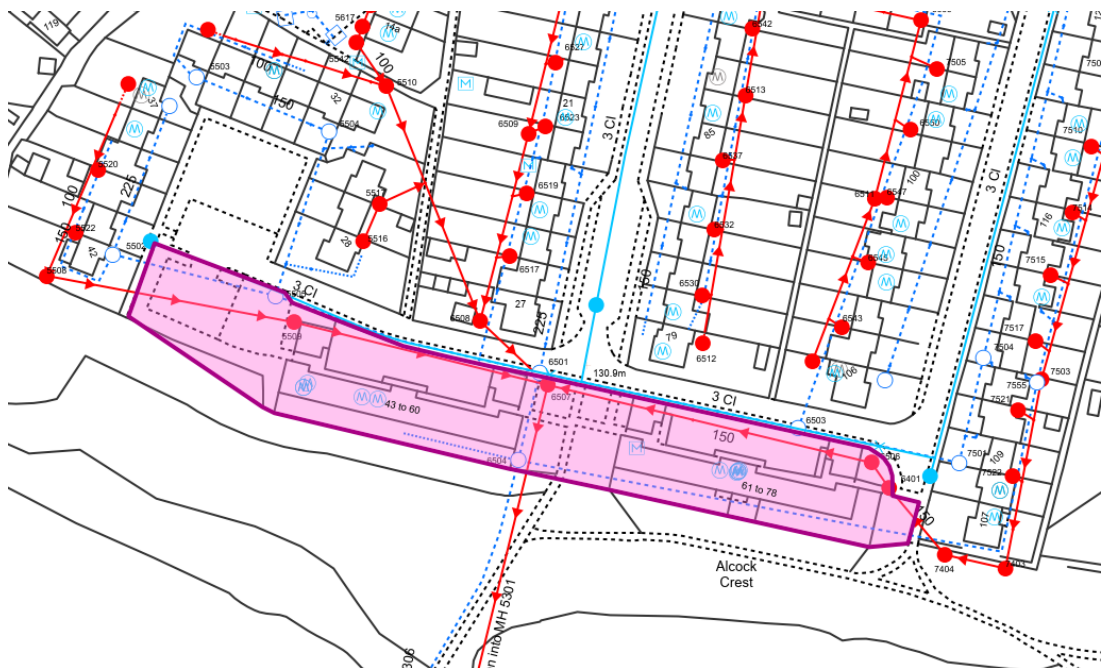
To the south of the site at the common, and running parallel to Brook Street, is a culverted watercourse. This is classified as an Environment Agency main river. This eventually discharges into the River Wye.

1.6 Existing Drainage

The Wessex Water Asset Maps in Figure 1-2 below highlight the presence of foul water sewers on site. Two separate runs join at chamber 6507 before discharging southwards, towards Brook Street. The foul sewer has been CCTV surveyed, to determine depths and the condition of the sewer. The existing foul sewer also passes beneath the block of flats located on site.

There are a number of private foul drains on site, which discharge into the public foul sewer at various locations throughout the network.

There is also a private surface water drain which serves the two blocks of flats, as well as the surrounding housing estate. This eventually discharges through the centre of the site, to the culverted river which runs parallel to Brook Street.



1.7 Existing Surface Water Runoff Rates

Runoff rates for the existing site have been estimated in accordance with current best practice and with consideration to the existing hard surfacing, identified in the topographic survey.

Brownfield Runoff Rates

The existing development and surrounding contributing areas encompass an area of 0.152ha. The brownfield runoff rate has been calculated using the Modified Rational Approach (Wallingford Procedure). This has been based upon the average rainfall intensity derived from a 15-minute storm for each return period, which is appropriate given the time of concentration that would be anticipated for the area associated with the site. The parameters used in the calculation and results are summarised in Table 1-1.

Parameter	Value	Units
Existing hardstanding area	0.152	ha
1-year rainfall intensity, i_1	28.110	mm/hr
2-year rainfall intensity, i_2	36.365	mm/hr
30-year rainfall intensity, i_{30}	68.836	mm/hr
100-year rainfall intensity, i_{100}	89.024	mm/hr
Q_1	11.9	l/s
Q_2	15.4	l/s
Q_{30}	29.1	l/s
Q_{100}	37.6	l/s

Table 1-1 Modified Rational Approach Calculation for Runoff from Existing Hardstanding Areas

These calculation shows that the total pre-development runoff response for a 100-year return period storm event would be approximately 37.6 litres/second, for the whole site.

2 DEVELOPMENT PROPOSALS

2.1 Description of the Proposed Works

The development comprises of the erection of 14no. affordable residential units following demolition of existing flats and associated works.

2.2 Flood Risk Vulnerability Classification

In accordance with table D2 of the NPPF, the development is predominantly classified 'more vulnerable' as Figure 2-1 shows below.

More vulnerable

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Figure 2-1 Annex 3 of the NPPF Flood Risk Vulnerability Classification

2.3 Design Life

As the nature of the redevelopment is residential, it is anticipated that the design life will be approximately 100 years.

2.4 Flood Risk

As the site area is less than 1.0ha and within Flood Zone 1, a flood risk assessment is not required for the site. However, the report will briefly detail any flood risk, for completeness using the readily available long term flood risk information from the EA:

- The risk of flooding from tidal and fluvial sources is <0.1% Annual Exceedance Probability (AEP) as the site is located in Flood Zone 1.
- Surface Water flood maps show the site to be at very low risk of flooding from surface water flows, ie less than 0.1% AEP.
- Low risk of groundwater flooding.
- Low risk of reservoir flooding.

Considering all the above, flooding on site is unlikely.

3 SURFACE WATER DRAINAGE STRATEGY

The surface water drainage strategy has been developed in accordance with the relevant design standard and guidance, including but not limited to; CIRIA C753 The SuDS Manual, The Approved Documents: Building Regulations 2010 Part H: Drainage and Waste Disposal, and the Non-Statutory Technical Standards for SuDS (NTSS).

The NTSS states that for a previously developed site, the rate of discharge should never exceed the rate pre redevelopment. The NTSS also states that flooding should not occur to any part of the site in the 1 in 30 year event, and no flooding to buildings or utility plant should occur in the 1 in 100 year event.

3.1 Surface Water Discharge Arrangement

The existing private surface water serving the development will be re-used as the discharge receptor. The current private surface water drain discharges to the culverted main river, to the south of the site. This arrangement will be maintained.

Surface water from roof and hardstanding areas will be intercepted and attenuated by permeable paving and the sub-base associated with it, before being conveyed via a flow control device to the existing private surface water drainage system. Refer to the Proposed Drainage Strategy in Appendix A and the Standard Drainage Details in Appendix B.

3.2 Post-Development Contributing Area

Post development, the area calculated to discharge to the surface water drainage system is 0.125ha, a 17% reduction from pre-development calculated areas.

3.3 Climate Change

As the site's usage is residential, a lifespan of 100 years should be considered. Therefore, when developed (approximately 2025), the end of life can be estimated as 2125. According to government guidance, a building with a lifespan beyond 2100 should use a 'upper end allowance' for a 2070s epoch when considering rainfall climate change allowances. For the Avon Bristol and North Somerset Streams Management Catchment area, the climate change allowance to consider is 40% and 45% as shown in Figure 3-1 below, for the 30 and 100 year return period storms.

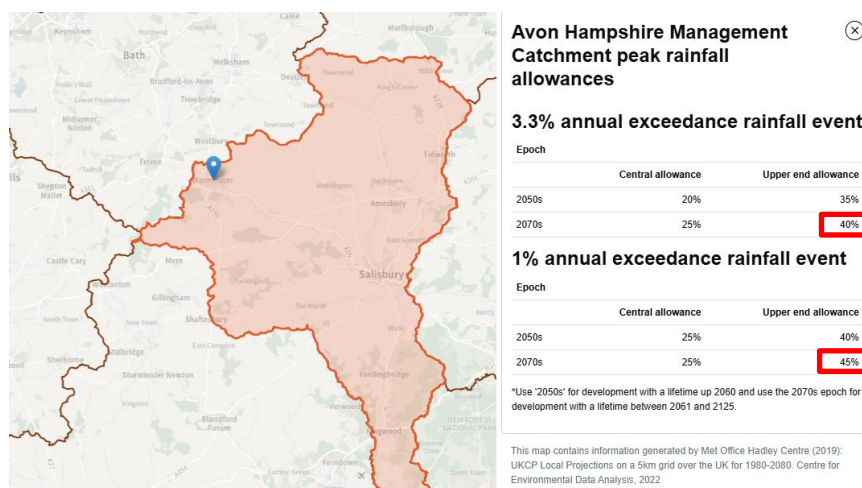


Figure 3-1 Avon Hampshire Management Catchment

3.4 Surface Water Discharge Rates

It is proposed to limit the discharge rate through a flow control device within the surface water network, to reduce the outflow further from pre-development brownfield discharge rates.

Parameter	Pre-Development Discharge (l/s)	Post-Development Discharge (l/s)	Betterment (%)
Q ₁	11.9	6.0	49%
Q ₂	15.4	6.0	61%
Q _{30+40%}	29.1	6.0	79%
Q _{100+45%}	37.6	6.0	84%

Table 3-1 Pre and Post Development Discharge Rates

Table 3-1 above shows a minimum of 49% betterment in comparison to pre-development rates, and an 84% betterment in comparison to the 1 in 100 year rainfall event.

The discharge rates have been proportionately split between the east and west side of the development, and their different connection points to the existing surface water network. Each side of the development will discharge at 3.0l/s.

3.5 Calculations

MicroDrainage network calculations have been undertaken using FSR rainfall data, for the 1 in 1, 30 and 100 year rainfall events with allowances for climate change. The calculations concluded that no flooding will occur for the 1 in 100 rainfall event with a 45% allowance for climate change. Refer to the MicroDrainage Network calculations within Appendix C.

3.6 SuDS Mitigation Indices

In order to clarify that the proposed SuDS sufficiently remove pollutants in order to achieve water quality goals, a Simple Index Approach has been undertaken. Each form of SuDS has its own mitigation indices, which can be combined. The indices are based on TSS (Total Suspended Solids), Metals and Hydrocarbons. To prove sufficient, the mitigation indices must be higher than the pollution indices for the associated land use of the proposed development. The pollution and mitigation indices used are described in CIRIA 753 The SuDS Manual, Tables 26.2 and 26.3, and below.

Land Use	Pollution Hazard Level	TSS	Metals	Hydrocarbons
General low traffic access roads.	Low	0.5	0.4	0.4

Table 3-2 CIRIA 753 Table 26.2 Pollution Hazard Indices for General Low Traffic Access Roads

Land Use	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Total	0.7	0.6	0.7

Table 3-3 CIRIA 753 Table 26.3 Mitigation Indices for a Filter Drain and Swale.

As it is shown in Table 3-2 & 3-3, the SuDS mitigation indices are higher than the pollution indices for the associated land use. Therefore, the proposed SuDS successfully mitigate against the anticipated pollutants of the site.

3.7 Flood Exceedance

Levels fall away from the site to the south. If the capacity of the surface water system was exceeded or the drainage system failed, flows would discharge southwards away from the development. Or northwards, onto Alcock Crest, where the site is raised above the road. Here it will pond before eventually draining away through the gully network serving Alcock Crest, or the private permeable paving serving the site. The Proposed Drainage Strategy shows the flood exceedance routing, in Appendix A.

3.8 Maintenance Arrangements

All surface water drainage pipework will be privately managed and maintained by the maintenance company selected by Selwood Housing. Operation and maintenance will be undertaken in accordance with the recommendations outlined in the SuDS Manual (CIRIA C753), provided in Tables 3-4 & 3-5.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect surface structures, removing obstructions and silt as necessary. Check there is no physical damage.	Monthly
	Remove cover and inspect, ensuring water is flowing freely and that the exit route for water is unobstructed. Remove any debris and silt	Annually
	Undertake inspection after leaf fall in autumn.	
	Jet the pipes leading from overflow structures and check water is going through the overflow	Annually
Remedial Actions	Repair physical damage	As required

Table 3-3 Operation and Maintenance Requirements for Inlets, Outlets, Controls and Inspection Chambers

Maintenance schedule	Required action	Typical frequency
Regular inspections	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 manufacturers 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	Removal of weeds	As required – once per year on less frequently used pavements.
Remedial action	Remedial 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 reduced due to significant clogging)
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, 48h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Table 3-4 Operation and Maintenance Requirements for Permeable Pavement

4 FOUL WATER DRAINAGE STRATEGY

As described in section 1.6, there is an existing Wessex Water foul sewer which crosses the development. The existing private foul drainage discharges to chamber 6507, and this arrangement will be maintained as part of the development.

A pre-planning enquiry was submitted to Wessex Water, to confirm capacity within the foul system for the development. Wessex Water confirmed the sewerage infrastructure will have capacity for the proposed development. Refer to Appendix D for the pre-planning enquiry.

5 FOUL SEWER DIVERSION

The existing foul sewer runs beneath the existing block of flats. In order to provide access to the foul sewer, it is proposed to divert the sewer through Alcock Crest. Wessex Water will be consulted post planning regarding the S185 sewer diversion proposals. However, it is stated on the pre-planning enquiry, that Wessex Water would prefer a diversion to a build over agreement. Refer to Appendix E for the proposed Sewer Diversion Drawings.

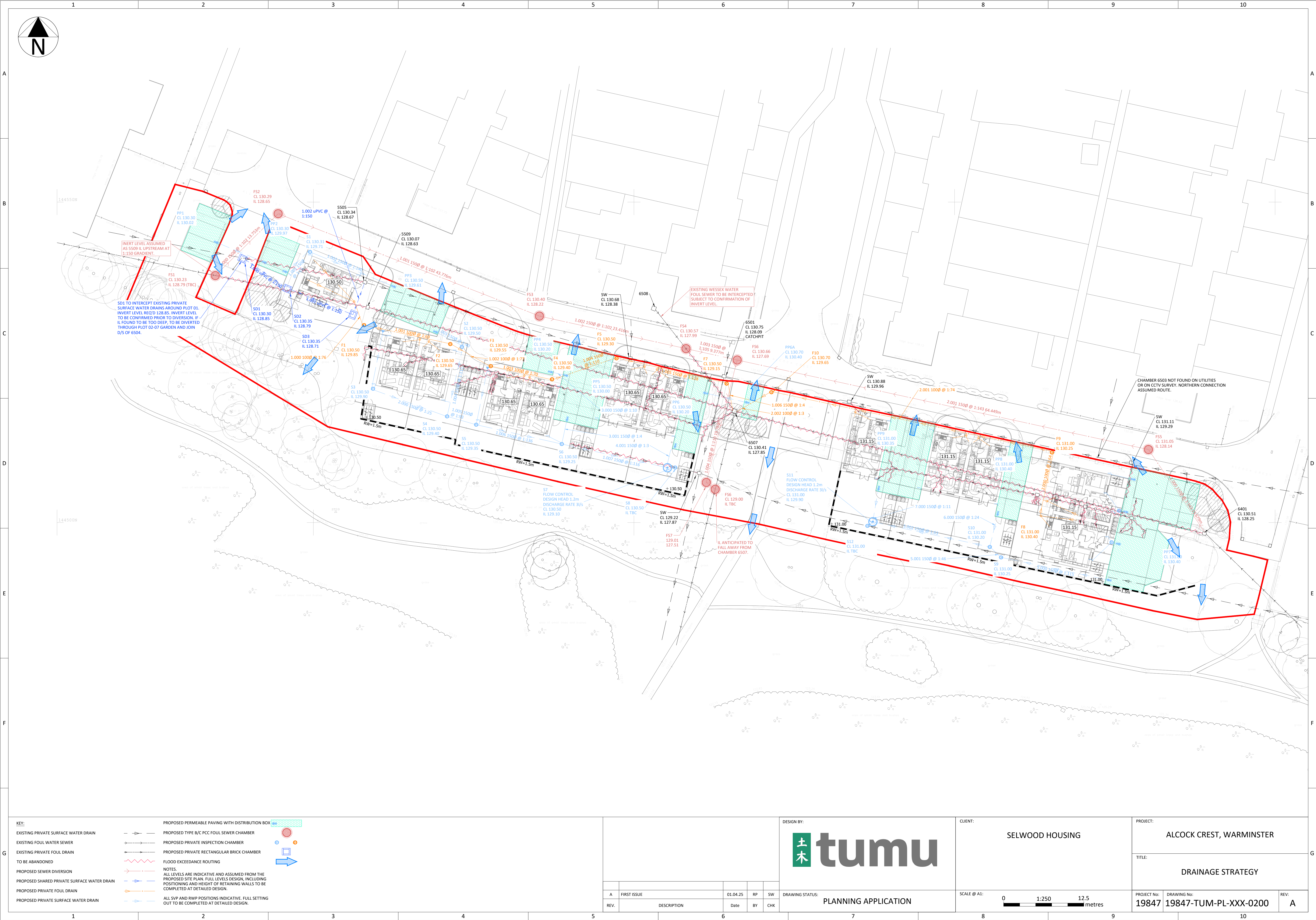
6 CONCLUSION

- The site is at low flood risk and less than 1.0ha, therefore and FRA is not required.
- The dwellings will discharge rainwater permeable paving where the sub-base will act as storage as well as SuDS treatment. The surface water will discharge to the existing private surface water network, which eventually discharges to the culverted river which runs parallel to Brook Street.
- The new drainage system will restrict surface water outfall to 6l/s in the 1 in 100 year return period storm with a 45% allowance for climate change. A betterment on existing rates.
- The foul discharge will discharge to the existing Wessex Water foul sewer on site. A pre-application enquiry has been approved by Wessex Water.
- A S185 sewer diversion will be required, to divert the existing foul sewer through Alcock Crest. This remediates the existing buried sewer, as well as allows development on site.

It is concluded that the development can be undertaken in a sustainable manner without increasing the flood risk to the proposed development or to existing properties/systems.

Appendix A

Proposed Drainage Strategy



- KEY:**
- EXISTING PRIVATE SURFACE WATER DRAIN
 - EXISTING FOUL WATER SEWER
 - EXISTING PRIVATE FOUL DRAIN
 - TO BE ABANDONED
 - PROPOSED SEWER DIVERSION
 - PROPOSED SHARED PRIVATE SURFACE WATER DRAIN
 - PROPOSED PRIVATE FOUL DRAIN
 - PROPOSED PRIVATE SURFACE WATER DRAIN
- PROPOSED PERMEABLE PAVING WITH DISTRIBUTION BOX
- PROPOSED TYPE B/C PCC FOUL SEWER CHAMBER
- PROPOSED PRIVATE INSPECTION CHAMBER
- PROPOSED PRIVATE RECTANGULAR BRICK CHAMBER
- FLOOD EXCEEDANCE ROUTING
- NOTES:
ALL LEVELS ARE INDICATIVE AND ASSUMED FROM THE PROPOSED SITE PLAN. FULL LEVELS DESIGN, INCLUDING POSITIONING AND HEIGHT OF RETAINING WALLS TO BE COMPLETED AT DETAILED DESIGN.
- ALL SVP AND RWP POSITIONS INDICATIVE. FULL SETTING OUT TO BE COMPLETED AT DETAILED DESIGN.

REV.	A	FIRST ISSUE	01.04.25	RP	SW
		DESCRIPTION	Date	BY	CHK



DESIGN STATUS: PLANNING APPLICATION

CLIENT: SELWOOD HOUSING

SCALE @ A1: 0 1:250 12.5 metres

PROJECT: ALCOCK CREST, WARMINSTER

TITLE: DRAINAGE STRATEGY

PROJECT No: 19847 DRAWING No: 19847-TUM-PL-XXX-0200

REV: A

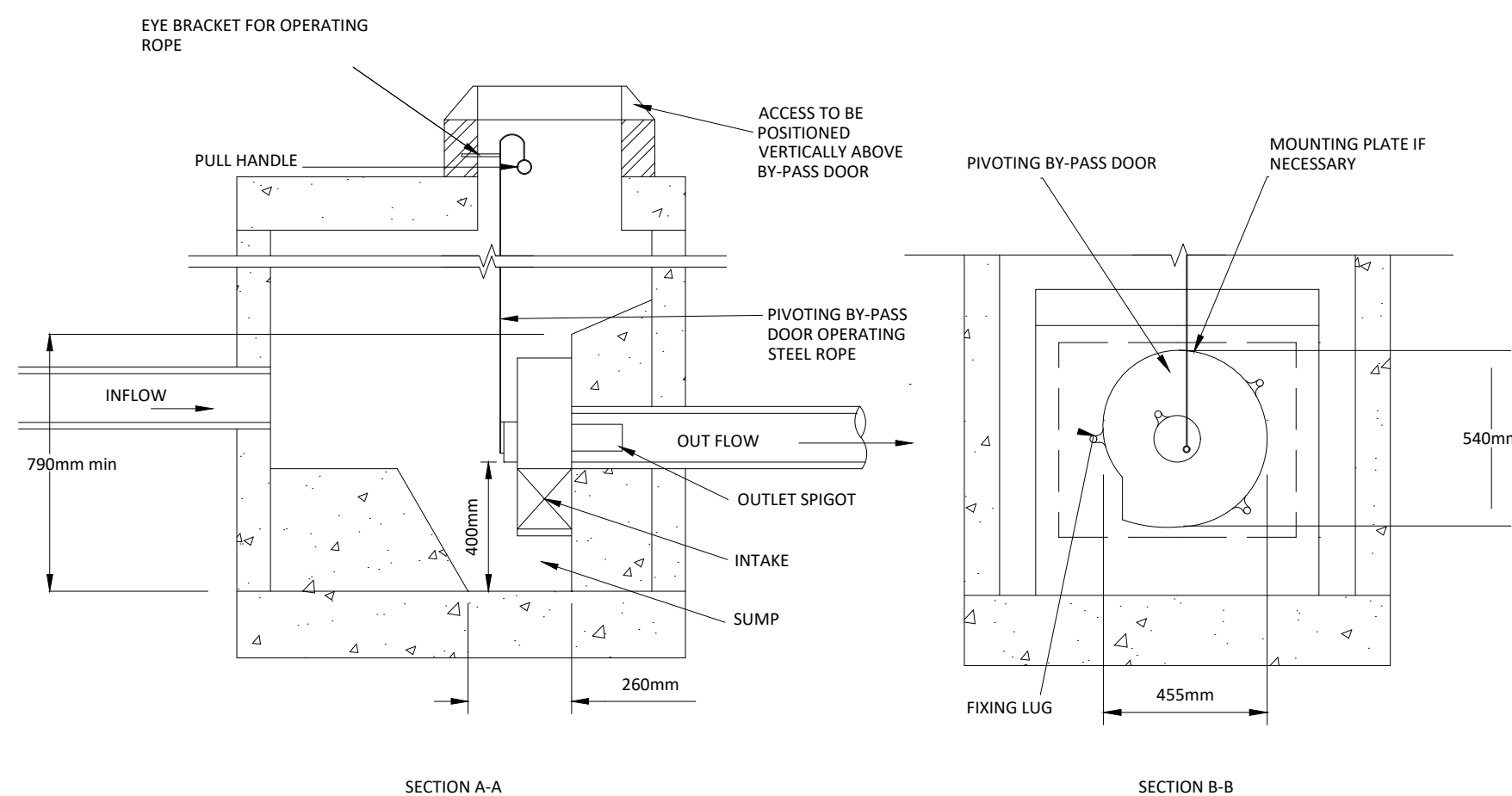
Appendix B

Standard Drainage Details

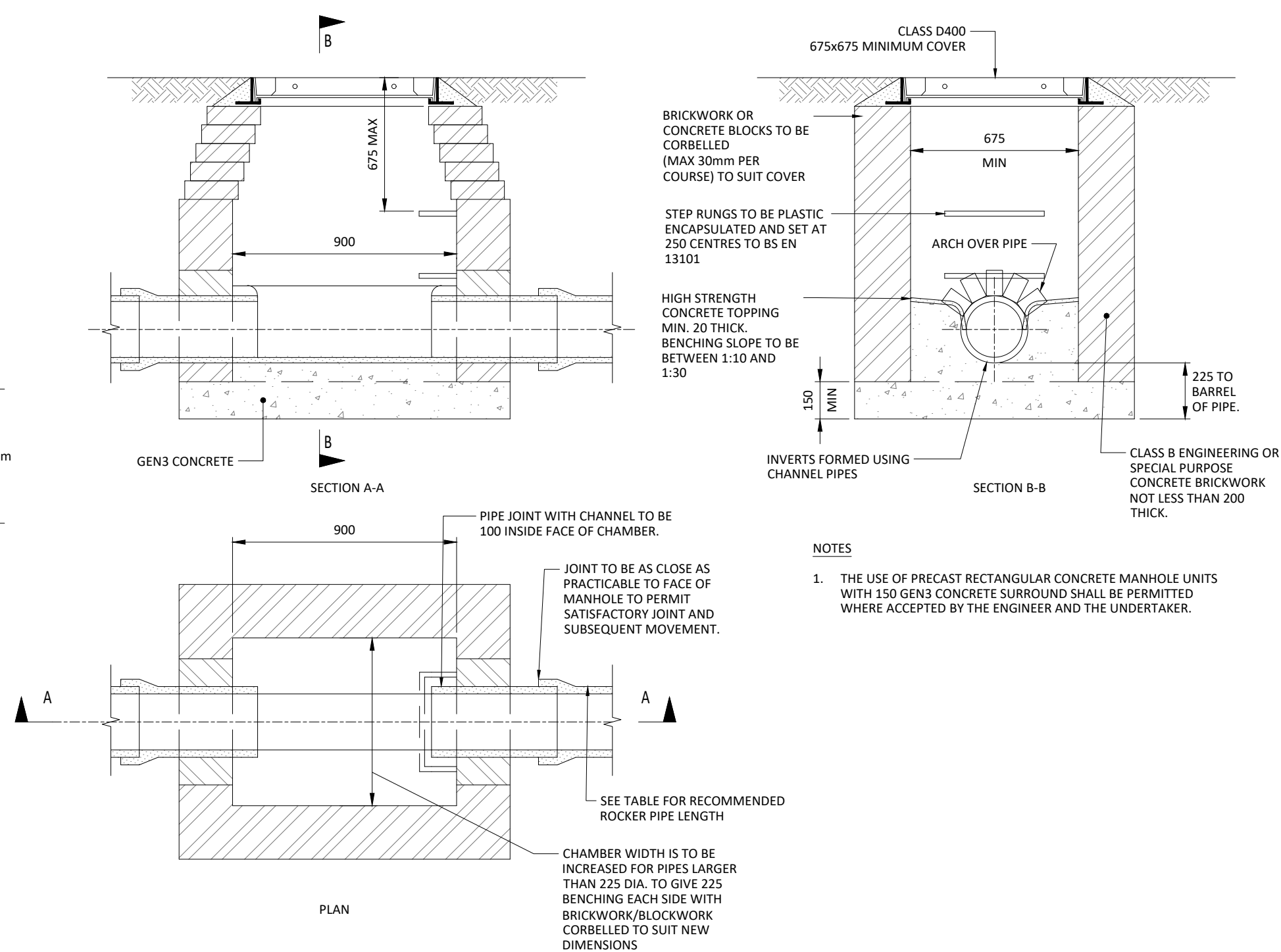
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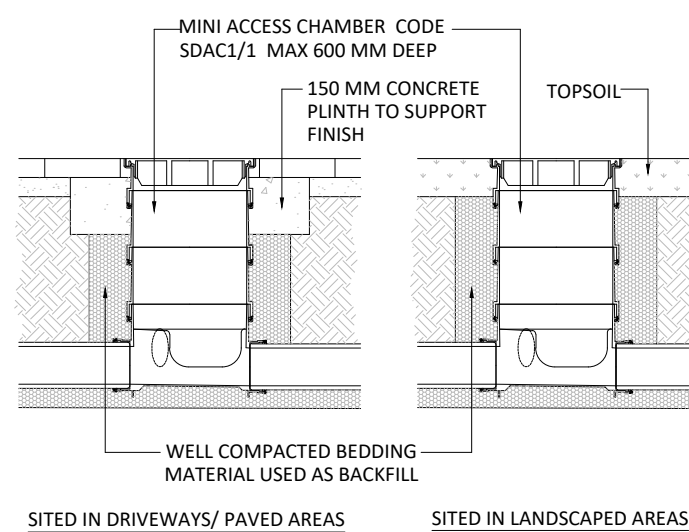
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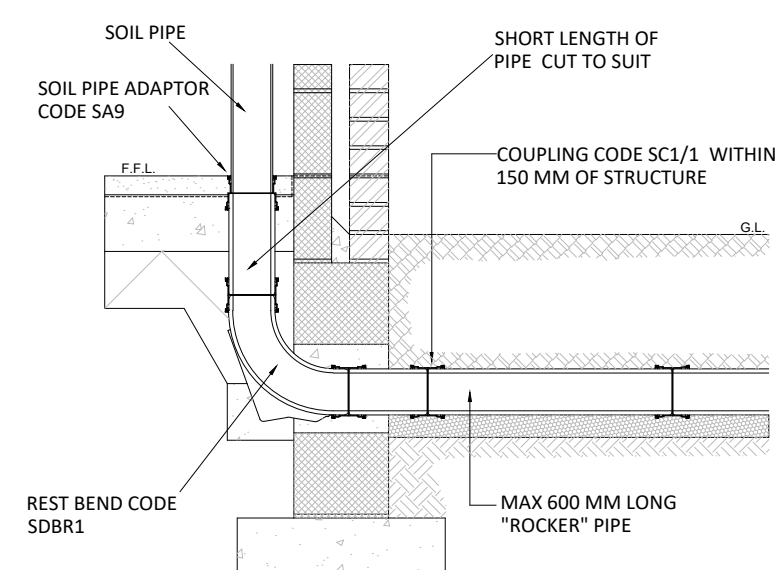
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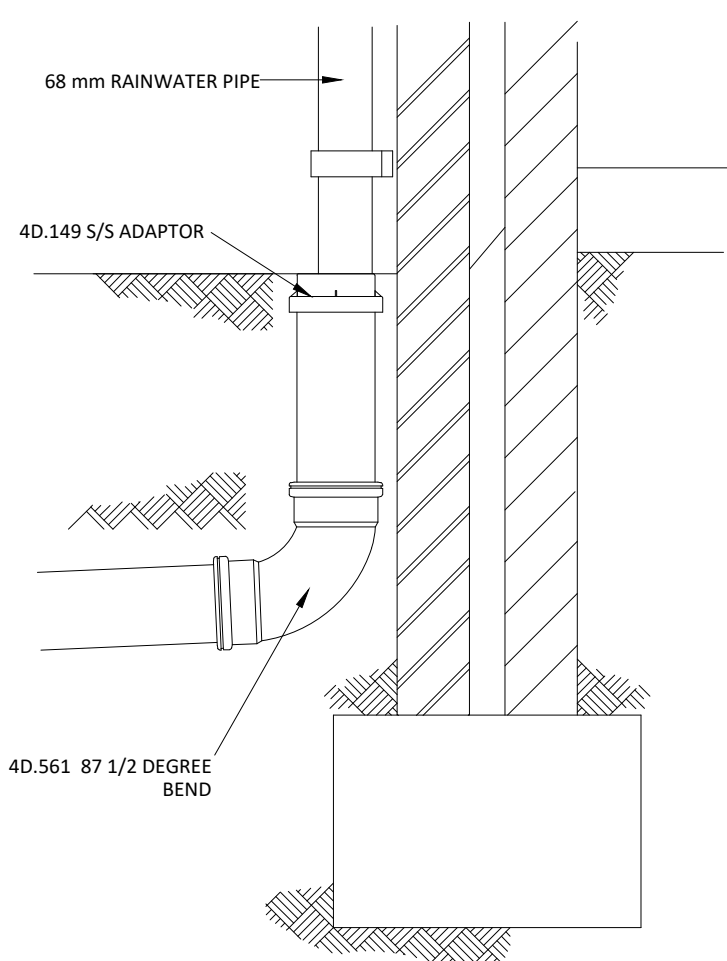
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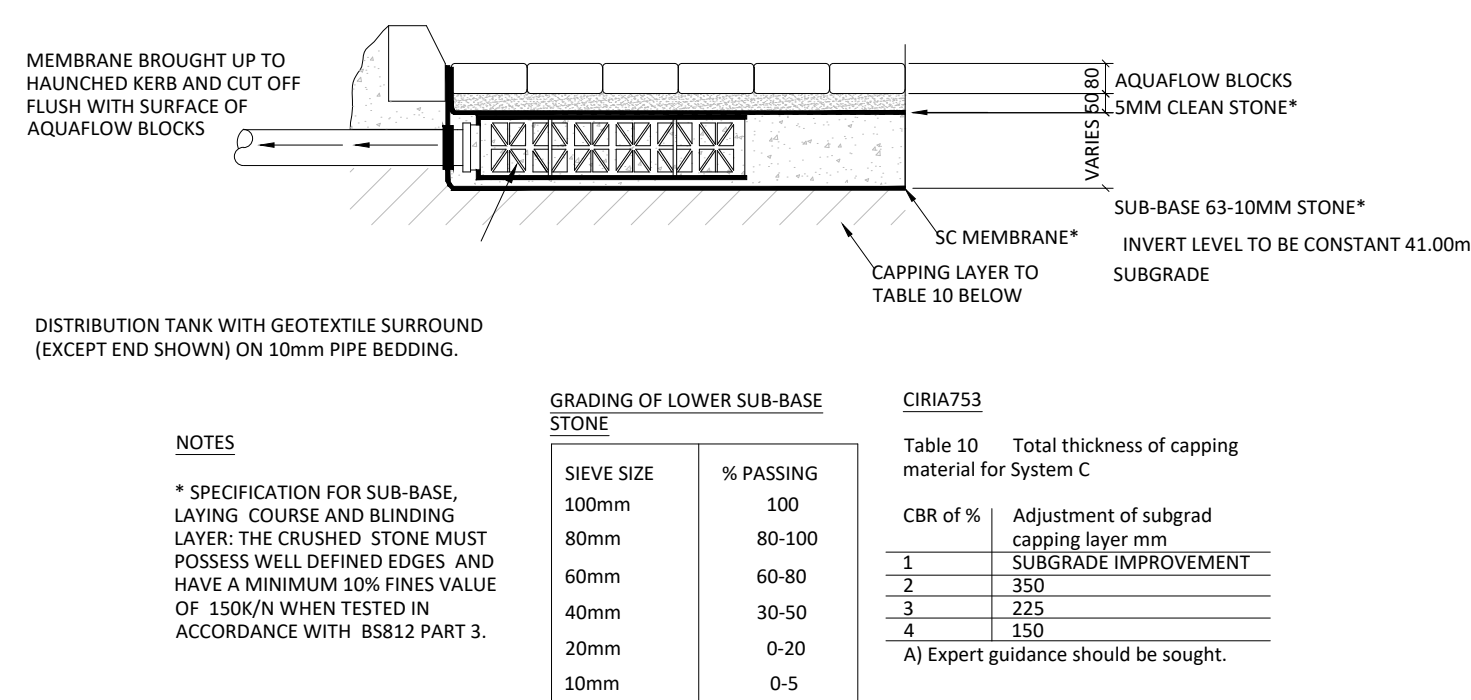
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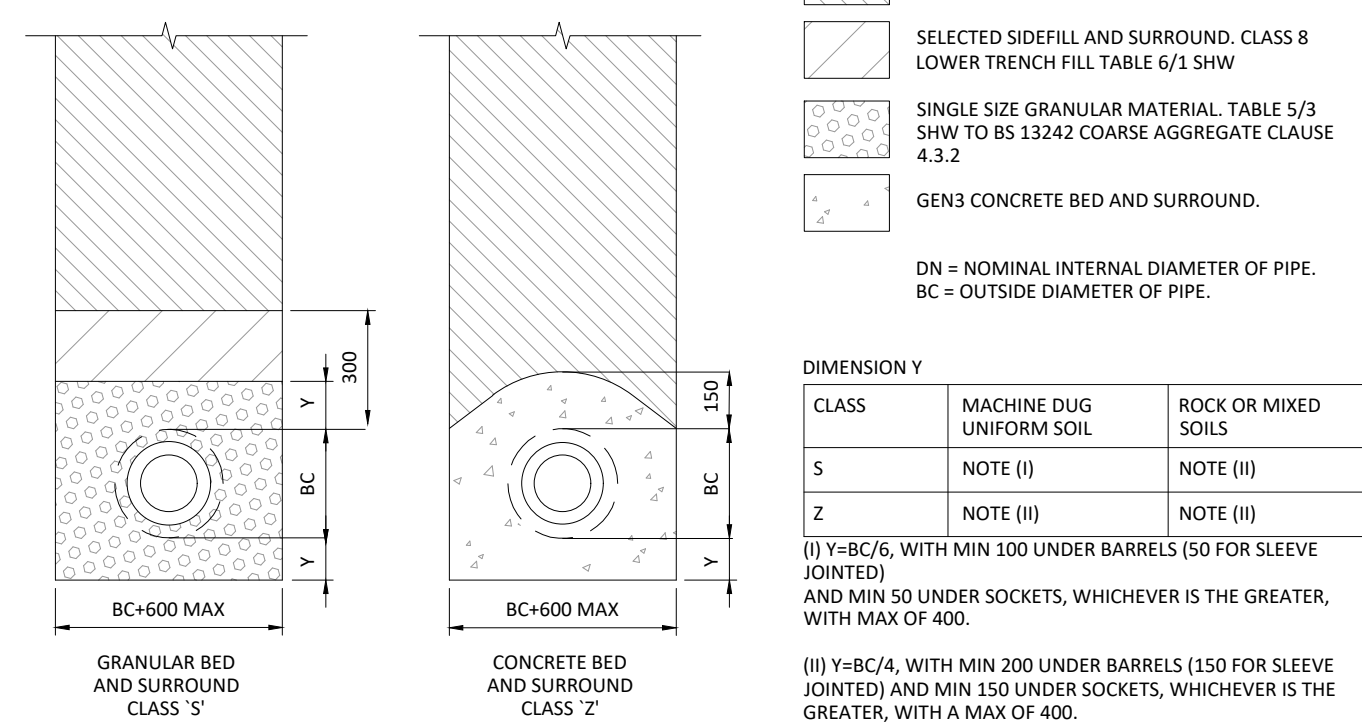
SCALE 1:20



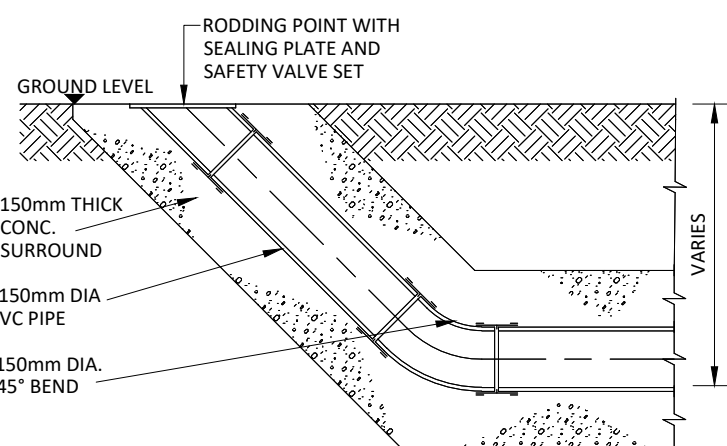
PARKING AREAS SUBJECT TO TRAFFICKING BY CARS AND VANS ONLY
NTS



SCALE 1:20



SCALE 1:20

DESIGN BY:

CLIENT:

SELWOOD HOUSING

DRAWING STATUS:

PLANNING APPLICATION

SCALE @ A1:

AS SHOWN

PROJECT:

ALCOCK CREST, WARMINSTER

TITLE:

TYPICAL PRIVATE DRAINAGE DETAILS

PROJECT No:	DRAWING No:	REV:
19821	19847-TUM-PL-XXX-0210	A

Appendix C

MicroDrainage Network Calculations

Tumu Consulting		Page 1
20 East Sands	19847	
Burbage Marlborough	TUM-PL-XXX-0001	
Wiltshire SN8 3AN	SW Network Calculations	
Date 01/04/2025	Designed by RP	
File 19847-MD-XXX-PL-0001 MicroDra...	Checked by SW	
Micro Drainage	Network 2018.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes UKPartH Manhole Sizes UKPartH

FSR Rainfall Model - England and Wales			
Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.106	4-8	0.019

Total Area Contributing (ha) = 0.125

Total Pipe Volume (m³) = 3.839

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	9.842	0.050	196.8	0.004	4.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	5.983	0.260	23.0	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	14.041	0.100	140.4	0.004	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	14.213	0.110	129.2	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.004	11.114	0.100	111.1	0.004	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	12.346	0.500	24.7	0.004	4.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	4.654	0.050	93.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.006	13.562	0.100	135.6	0.004	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	4.23	130.020	0.004	0.0	0.0	0.0	0.71	12.6	0.5
1.001	50.00	4.28	129.970	0.007	0.0	0.0	0.0	2.11	37.3	0.9
1.002	50.00	4.55	129.710	0.011	0.0	0.0	0.0	0.85	15.0	1.5
1.003	49.38	4.82	129.610	0.016	0.0	0.0	0.0	0.88	15.6	2.1
1.004	48.58	5.02	129.500	0.020	0.0	0.0	0.0	0.95	16.8	2.6
2.000	50.00	4.10	129.900	0.004	0.0	0.0	0.0	2.03	36.0	0.5
1.005	48.29	5.09	129.400	0.024	0.0	0.0	0.0	1.04	18.4	3.1
1.006	47.27	5.35	129.350	0.028	0.0	0.0	0.0	0.86	15.2	3.6

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20 East Sands	19847	
Burbage Marlborough	TUM-PL-XXX-0001	
Wiltshire SN8 3AN	SW Network Calculations	
Date 01/04/2025	Designed by RP	
File 19847-MD-XXX-PL-0001 MicroDra...	Checked by SW	
Micro Drainage	Network 2018.1	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
3.000	5.506	0.200	27.5	0.004	4.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	7.285	0.750	9.7	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.007	17.414	0.150	116.1	0.002	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.000	9.253	0.200	46.3	0.002	4.00	0.0	0.600	o	150	Pipe/Conduit	
4.001	4.820	1.100	4.4	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.008	5.003	1.230	4.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.000	17.289	0.150	115.3	0.033	4.00	0.0	0.600	o	150	Pipe/Conduit	
5.001	4.272	0.050	85.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
6.000	5.973	0.200	29.9	0.010	4.00	0.0	0.600	o	150	Pipe/Conduit	
5.002	16.514	0.300	55.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
7.000	5.557	0.450	12.3	0.019	4.00	0.0	0.600	o	150	Pipe/Conduit	
5.003	28.153	2.130	13.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.009	4.448	0.154	28.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.000	50.00	4.05	130.200	0.004	0.0	0.0	0.0	1.93	34.0	0.5
3.001	50.00	4.08	130.000	0.021	0.0	0.0	0.0	3.25	57.5	2.8
1.007	46.12	5.67	129.250	0.051	0.0	0.0	0.0	0.93	16.5	6.4
4.000	50.00	4.10	130.400	0.002	0.0	0.0	0.0	1.48	26.2	0.3
4.001	50.00	4.12	130.200	0.012	0.0	0.0	0.0	4.85	85.7	1.6
1.008	46.06	5.68	129.100	0.063	0.0	0.0	0.0	5.03	88.9	7.9
5.000	50.00	4.31	130.400	0.033	0.0	0.0	0.0	0.94	16.5	4.5
5.001	50.00	4.37	130.250	0.033	0.0	0.0	0.0	1.09	19.2	4.5
6.000	50.00	4.05	130.400	0.010	0.0	0.0	0.0	1.85	32.7	1.4
5.002	50.00	4.58	130.200	0.043	0.0	0.0	0.0	1.36	24.0	5.8
7.000	50.00	4.03	130.350	0.019	0.0	0.0	0.0	2.88	50.9	2.6
5.003	49.71	4.74	129.900	0.062	0.0	0.0	0.0	2.79	49.2	8.3
1.009	45.92	5.72	127.870	0.125	0.0	0.0	0.0	1.88	33.2	15.5

Manhole Schedules for Storm											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
PP1	130.300	0.280	Open Manhole	450	1.000	130.020	150				
PP2	130.300	0.330	Open Manhole	450	1.001	129.970	150	1.000	129.970	150	
S1	130.310	0.600	Open Manhole	450	1.002	129.710	150	1.001	129.710	150	
PP3	130.500	0.890	Open Manhole	450	1.003	129.610	150	1.002	129.610	150	
S2	130.500	1.000	Open Manhole	450	1.004	129.500	150	1.003	129.500	150	
S3	130.500	0.600	Open Manhole	450	2.000	129.900	150				
S4	130.500	1.100	Open Manhole	450	1.005	129.400	150	1.004	129.400	150	
								2.000	129.400	150	
S5	130.500	1.150	Open Manhole	450	1.006	129.350	150	1.005	129.350	150	
PP4	130.500	0.300	Open Manhole	450	3.000	130.200	150				
PP5	130.500	0.500	Open Manhole	450	3.001	130.000	150	3.000	130.000	150	
S6	130.500	1.250	Open Manhole	450	1.007	129.250	150	1.006	129.250	150	
								3.001	129.250	150	
PP6A	130.700	0.300	Open Manhole	450	4.000	130.400	150				
PP6	130.500	0.300	Open Manhole	450	4.001	130.200	150	4.000	130.200	150	
S7	130.500	1.400	Open Manhole	450	1.008	129.100	150	1.007	129.100	150	
								4.001	129.100	150	
PP7	131.000	0.600	Open Manhole	450	5.000	130.400	150				
S9	131.000	0.750	Open Manhole	450	5.001	130.250	150	5.000	130.250	150	
PP8	131.000	0.600	Open Manhole	450	6.000	130.400	150				
S10	131.000	0.800	Open Manhole	450	5.002	130.200	150	5.001	130.200	150	
								6.000	130.200	150	
PP9	131.000	0.650	Open Manhole	450	7.000	130.350	150				
S11	131.000	1.100	Open Manhole	450	5.003	129.900	150	5.002	129.900	150	
								7.000	129.900	150	
ExMH	129.220	1.450	Open Manhole	450	1.009	127.870	150	1.008	127.870	150	
								5.003	127.770	150	
	129.000	1.284	Open Manhole	0		OUTFALL		1.009	127.716	150	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	PP1	130.300	130.020	0.130	Open Manhole	450
1.001	o	150	PP2	130.300	129.970	0.180	Open Manhole	450
1.002	o	150	S1	130.310	129.710	0.450	Open Manhole	450
1.003	o	150	PP3	130.500	129.610	0.740	Open Manhole	450
1.004	o	150	S2	130.500	129.500	0.850	Open Manhole	450
2.000	o	150	S3	130.500	129.900	0.450	Open Manhole	450
1.005	o	150	S4	130.500	129.400	0.950	Open Manhole	450
1.006	o	150	S5	130.500	129.350	1.000	Open Manhole	450
3.000	o	150	PP4	130.500	130.200	0.150	Open Manhole	450
3.001	o	150	PP5	130.500	130.000	0.350	Open Manhole	450
1.007	o	150	S6	130.500	129.250	1.100	Open Manhole	450
4.000	o	150	PP6A	130.700	130.400	0.150	Open Manhole	450
4.001	o	150	PP6	130.500	130.200	0.150	Open Manhole	450
1.008	o	150	S7	130.500	129.100	1.250	Open Manhole	450
5.000	o	150	PP7	131.000	130.400	0.450	Open Manhole	450
5.001	o	150	S9	131.000	130.250	0.600	Open Manhole	450
6.000	o	150	PP8	131.000	130.400	0.450	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	9.842	196.8	PP2	130.300	129.970	0.180	Open Manhole	450
1.001	5.983	23.0	S1	130.310	129.710	0.450	Open Manhole	450
1.002	14.041	140.4	PP3	130.500	129.610	0.740	Open Manhole	450
1.003	14.213	129.2	S2	130.500	129.500	0.850	Open Manhole	450
1.004	11.114	111.1	S4	130.500	129.400	0.950	Open Manhole	450
2.000	12.346	24.7	S4	130.500	129.400	0.950	Open Manhole	450
1.005	4.654	93.1	S5	130.500	129.350	1.000	Open Manhole	450
1.006	13.562	135.6	S6	130.500	129.250	1.100	Open Manhole	450
3.000	5.506	27.5	PP5	130.500	130.000	0.350	Open Manhole	450
3.001	7.285	9.7	S6	130.500	129.250	1.100	Open Manhole	450
1.007	17.414	116.1	S7	130.500	129.100	1.250	Open Manhole	450
4.000	9.253	46.3	PP6	130.500	130.200	0.150	Open Manhole	450
4.001	4.820	4.4	S7	130.500	129.100	1.250	Open Manhole	450
1.008	5.003	4.1	ExMH	129.220	127.870	1.200	Open Manhole	450
5.000	17.289	115.3	S9	131.000	130.250	0.600	Open Manhole	450
5.001	4.272	85.4	S10	131.000	130.200	0.650	Open Manhole	450
6.000	5.973	29.9	S10	131.000	130.200	0.650	Open Manhole	450

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.002	o	150	S10	131.000	130.200	0.650	Open Manhole	450
7.000	o	150	PP9	131.000	130.350	0.500	Open Manhole	450
5.003	o	150	S11	131.000	129.900	0.950	Open Manhole	450
1.009	o	150	ExMH	129.220	127.870	1.200	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.002	16.514	55.0	S11	131.000	129.900	0.950	Open Manhole	450
7.000	5.557	12.3	S11	131.000	129.900	0.950	Open Manhole	450
5.003	28.153	13.2	ExMH	129.220	127.770	1.300	Open Manhole	450
1.009	4.448	28.9		129.000	127.716	1.134	Open Manhole	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.009		129.000	127.716	0.000	0	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 10 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region England and Wales		Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S7, DS/PN: 1.008, Volume (m³): 0.6

Unit Reference	MD-SHE-0079-3000-1200-3000
Design Head (m)	1.200
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	79
Invert Level (m)	129.100
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	3.0	Kick-Flo®	0.707	2.4
Flush-Flo™	0.348	2.9	Mean Flow over Head Range	-	2.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.3	0.800	2.5	2.000	3.8	4.000	5.2	7.000	6.8
0.200	2.8	1.000	2.8	2.200	4.0	4.500	5.5	7.500	7.0
0.300	2.9	1.200	3.0	2.400	4.1	5.000	5.8	8.000	7.3
0.400	2.9	1.400	3.2	2.600	4.3	5.500	6.1	8.500	7.5
0.500	2.8	1.600	3.4	3.000	4.6	6.000	6.3	9.000	7.7
0.600	2.7	1.800	3.6	3.500	4.9	6.500	6.6	9.500	7.9

Hydro-Brake® Optimum Manhole: S11, DS/PN: 5.003, Volume (m³): 0.5

Unit Reference	MD-SHE-0079-3000-1200-3000
Design Head (m)	1.200
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	79
Invert Level (m)	129.900
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	3.0	Kick-Flo®	0.707	2.4
Flush-Flo™	0.348	2.9	Mean Flow over Head Range	-	2.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.3	0.300	2.9	0.500	2.8	0.800	2.5	1.200	3.0
0.200	2.8	0.400	2.9	0.600	2.7	1.000	2.8	1.400	3.2

Hydro-Brake® Optimum Manhole: S11, DS/PN: 5.003, Volume (m³): 0.5

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
1.600	3.4	2.400	4.1	4.000	5.2	6.000	6.3	8.000	7.3
1.800	3.6	2.600	4.3	4.500	5.5	6.500	6.6	8.500	7.5
2.000	3.8	3.000	4.6	5.000	5.8	7.000	6.8	9.000	7.7
2.200	4.0	3.500	4.9	5.500	6.1	7.500	7.0	9.500	7.9

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Storage Structures for Storm

Porous Car Park Manhole: PP1, DS/PN: 1.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.4
Membrane Percolation (mm/hr)	1000	Length (m)	7.8
Max Percolation (l/s)	11.7	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	130.020	Membrane Depth (mm)	130

Porous Car Park Manhole: PP2, DS/PN: 1.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.4
Membrane Percolation (mm/hr)	1000	Length (m)	5.0
Max Percolation (l/s)	7.5	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	129.970	Membrane Depth (mm)	130

Porous Car Park Manhole: PP3, DS/PN: 1.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	9.6
Membrane Percolation (mm/hr)	1000	Length (m)	5.0
Max Percolation (l/s)	13.3	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	129.610	Membrane Depth (mm)	130

Porous Car Park Manhole: PP4, DS/PN: 3.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.9
Membrane Percolation (mm/hr)	1000	Length (m)	5.3
Max Percolation (l/s)	7.2	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	130.200	Membrane Depth (mm)	130

Porous Car Park Manhole: PP5, DS/PN: 3.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	7.0
Membrane Percolation (mm/hr)	1000	Length (m)	11.8
Max Percolation (l/s)	22.9	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	130.000	Membrane Depth (mm)	130

Porous Car Park Manhole: PP6A, DS/PN: 4.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.4
Membrane Percolation (mm/hr)	1000	Length (m)	5.3
Max Percolation (l/s)	3.5	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	130.200	Membrane Depth (mm)	130

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Porous Car Park Manhole: PP6, DS/PN: 4.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.5
Membrane Percolation (mm/hr)	1000	Length (m)	11.7
Max Percolation (l/s)	11.4	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	129.900	Membrane Depth (mm)	130

Porous Car Park Manhole: PP7, DS/PN: 5.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	8.4
Membrane Percolation (mm/hr)	1000	Length (m)	19.7
Max Percolation (l/s)	46.0	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	130.400	Membrane Depth (mm)	130

Porous Car Park Manhole: PP8, DS/PN: 6.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.5
Membrane Percolation (mm/hr)	1000	Length (m)	12.2
Max Percolation (l/s)	11.9	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	130.400	Membrane Depth (mm)	130

Porous Car Park Manhole: PP9, DS/PN: 7.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.8
Membrane Percolation (mm/hr)	1000	Length (m)	6.8
Max Percolation (l/s)	12.8	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	130.350	Membrane Depth (mm)	130

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000

Additional Flow - % of Total Flow 0.000

Hot Start (mins) 0

MADD Factor * 10m³/ha Storage 2.000

Hot Start Level (mm) 0

Inlet Coeffiecient 0.800

Manhole Headloss Coeff (Global) 0.500

Flow per Person per Day (l/per/day) 0.000

Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0

Number of Offline Controls 0

Number of Time/Area Diagrams 0

Number of Online Controls 2

Number of Storage Structures 10

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model

FSR M5-60 (mm) 19.000

Cv (Summer) 0.750

Region England and Wales

Ratio R 0.350

Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)

300.0

Analysis Timestep 2.5

Second Increment (Extended)

DTS Status

OFF

DVD Status

ON

Inertia Status

ON

Profile(s)

Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440

Return Period(s) (years) 1, 30, 100

Climate Change (%) 0, 40, 45

									Water	Surcharged		
	US/MH			Return	Climate	First (X)		First (Y)	First (Z)	Overflow	Level	Depth
PN	Name	Storm	Period	Change		Surcharge		Flood	Overflow	Act.	(m)	(m)
1.000	PP1	120 Winter	100	+45%							130.119	-0.051
1.001	PP2	120 Winter	100	+45%							130.118	-0.002
1.002	S1	120 Winter	100	+45%	30/15	Winter					130.124	0.264
1.003	PP3	120 Winter	100	+45%	30/15	Summer					130.124	0.364
1.004	S2	120 Winter	100	+45%	30/15	Summer					130.243	0.593
2.000	S3	60 Winter	100	+45%	100/15	Summer					130.278	0.228
1.005	S4	120 Winter	100	+45%	30/15	Summer					130.282	0.732
1.006	S5	60 Summer	100	+45%	30/15	Summer					130.329	0.829
3.000	PP4	15 Winter	100	+45%							130.229	-0.121
3.001	PP5	120 Winter	100	+45%							130.121	-0.029
1.007	S6	120 Winter	100	+45%	30/15	Summer					130.336	0.936
4.000	PP6A	120 Winter	100	+45%							130.406	-0.144
4.001	PP6	60 Winter	100	+45%							130.227	-0.123
1.008	S7	120 Winter	100	+45%	30/15	Summer					130.426	1.176
5.000	PP7	120 Winter	100	+45%	100/30	Summer					130.635	0.085
5.001	S9	120 Summer	100	+45%	30/15	Summer					130.799	0.399
6.000	PP8	60 Winter	100	+45%	100/15	Winter					130.631	0.081
5.002	S10	240 Summer	100	+45%	30/15	Summer					130.815	0.465
7.000	PP9	60 Winter	100	+45%	30/30	Winter					130.633	0.133
5.003	S11	240 Winter	100	+45%	1/30	Winter	100/60	Winter			130.952	0.902
1.009	ExMH	240 Winter	100	+45%							127.919	-0.101

		Flooded			Pipe		
PN	US/MH Name	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	Level Exceeded
1.000	PP1	0.000	0.07		0.8	FLOOD RISK	
1.001	PP2	0.000	0.05		1.4	FLOOD RISK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Flow (l/s)			
1.002	S1	0.000	0.14	1.9	FLOOD RISK		
1.003	PP3	0.000	0.39	5.6	SURCHARGED		
1.004	S2	0.000	0.34	5.2	FLOOD RISK		
2.000	S3	0.000	0.04	1.3	FLOOD RISK		
1.005	S4	0.000	0.32	4.5	FLOOD RISK		
1.006	S5	0.000	0.29	4.0	FLOOD RISK		
3.000	PP4	0.000	0.08	2.3	FLOOD RISK		
3.001	PP5	0.000	0.08	4.1	OK		
1.007	S6	0.000	0.23	3.6	FLOOD RISK		
4.000	PP6A	0.000	0.01	0.2	FLOOD RISK		
4.001	PP6	0.000	0.02	1.6	FLOOD RISK		
1.008	S7	0.000	0.04	2.9	FLOOD RISK		
5.000	PP7	0.000	0.18	2.7	SURCHARGED		
5.001	S9	0.000	0.20	2.8	FLOOD RISK		
6.000	PP8	0.000	0.06	1.6	SURCHARGED		
5.002	S10	0.000	0.13	3.0	FLOOD RISK		
7.000	PP9	0.000	0.07	2.8	SURCHARGED		
5.003	S11	0.000	0.06	2.9	FLOOD RISK		
1.009	ExMH	0.000	0.23	5.8	OK		

Appendix D

Wessex Water Pre-Application Enquiry

From: Planning Liaison <planning.liaison@wessexwater.co.uk>
Sent: 17 March 2025 09:43
To: robbie.parnham@tumuconsulting.com
Cc: 'Josiah Jones'
Subject: WW Resp DEV ST84SE/ 378 - Pre-Planning Enquiry, Alcock, Warminster
Attachments: ST84SE_ 378 Asset Map.pdf

Dear Robbie

Location: Alcock, Warminster, BA12 8NF
Proposal: Demolition of existing 34 flats and erection of 10 dwellings and four flats

Thank you for submitting your predevelopment enquiry.

Layout Conflict

Wessex water would require a S185 diversion of the 150mm diameter public foul sewer to prevent a conflict between the proposed new dwellings and the existing assets.

Foul Drainage

Wessex Water will accommodate domestic type foul flows in the public foul sewer with connections made on a size for size basis, Developers fund the cost of connecting to the nearest 'size for size' sewer. The minimum diameter receiving sewer to meet size for size principles for a development of this magnitude is 150mm.

Capacity is available to accommodate the proposed foul flows. Your chargeable point of connection is to either of the 150mm diameter public foul sewers that pass through the site.

The point of connection to the public network is by application and agreement with Wessex Water.

Please Note: Wessex Water will not accept any surface water runoff, land drainage or ground water discharge to the public sewer network, either directly or indirectly.

Surface Water Drainage (rainwater falling onto, and running off, impermeable surfaces)

We note there are three private surface water sewers that pass through the site, should you wish to discharge surface water runoff from the development to either of these sewers you will need to make a private agreement with the riparian owner.

Please Note: Wessex Water will not accept any surface water runoff, land drainage or ground water discharge to the public sewer network, either directly or indirectly.

Water Infrastructure

Wessex Water will provide a point of connection for new water mains to be laid into the development site, either through a Section 41 agreement or a self-lay arrangement.

Developers may connect to our water network on a size for size basis at their cost and Wessex Water will undertake any network reinforcement that may be required to accommodate granted development, this is funded through our infrastructure charging arrangements. Upon grant of planning Wessex Water will undertake a modelling exercise to determine the impact on our network and manage any necessary improvements.

A connection can be made to the 3" supply main located on the northern boundary of the site as per the existing connection. On site private storage and pump systems will be required for buildings greater than

2 storeys high. No guarantee can be given on a specific pressure or to maintaining that pressure. Normally it will be no less than 10m head of water. (1 bar pressure at 9 litres a minute) on the property boundary

For more details and guidance for applying to connect to our networks please see our website:
<https://www.wessexwater.co.uk/services/building-and-developing/building-multiple-properties-or-large-developments>

Kind regards
Ann-marie

Note: These comments are based upon known circumstances prevailing at the time of writing. A review of the contents of this email is required where 18 months or more have elapsed since issue or in the light of significant changes likely to impact upon the response (e.g. changes in development numbers or phasing). Please email review requests to planning.liaison@wessexwater.co.uk

Ann-marie Wood
Planning Liaison Manager



Wessex Water
Operations Centre, Claverton Down, Bath BA2 7WW

Web ytl.com | wessexwater.co.uk



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This email is being sent to you on behalf of Wessex Water Limited, a company registered in England and Wales with number 02366633. Its registered office is Wessex Water Operations Centre, Claverton Down Road, Claverton Down, Bath, BA2 7WW.

From: robbie.parnham@tumuconsulting.com <robbie.parnham@tumuconsulting.com>

Sent: 07 March 2025 14:27

To: Planning Liaison <planning.liaison@wessexwater.co.uk>

Cc: 'Josiah Jones' <josiah.jones@tumuconsulting.com>

Subject: ST84SE/ 378 - Pre-Planning Enquiry, Alcock, Warminster

Good Afternoon,

Please could is submit a pre-planning enquiry for a proposed development at Alcok, Warminster for the discharge of foul flows, BA12 8NF.

There is a total of 10 dwellings and 4 flats.

This development is to replace an anticipate 34 existing flats.

The existing flats are positioned on top of the foul sewer, the proposals will also clash with a sewer. Would a S185 sewer diversion be preferable here? Or would a build-over, as is the existing arrangement be preferred.

Kind Regards,
Robbie Parnham
Infrastructure Engineer
tel: 07508 945099
email: robbie.parnham@tumuconsulting.com
web: www.tumuconsulting.com

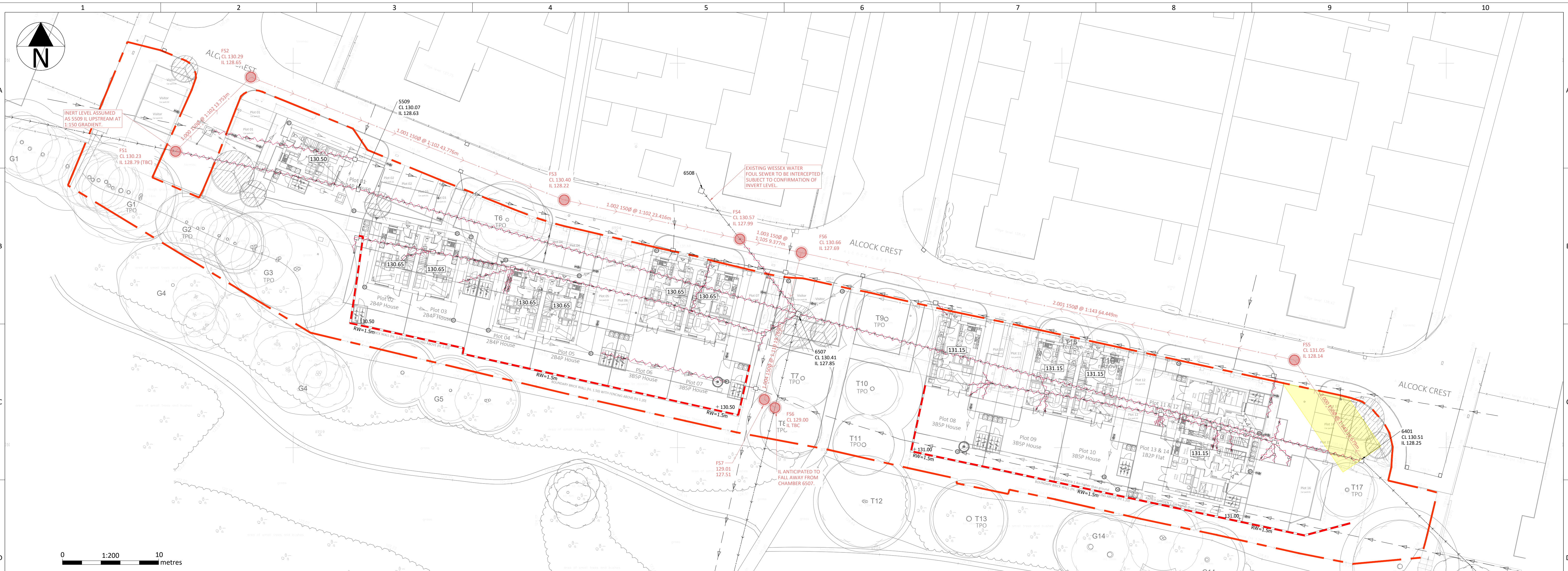


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This email is being sent to you on behalf of Wessex Water Services Limited, a company registered in England and Wales with number 02366648. The registered office is Wessex Water Operations Centre, Claverton Down Road, Claverton Down, Bath, BA2 7WW.

Appendix E

Foul Sewer Diversion



PIPE BEDDING DETAILS

NOTES

- ALL WORKS TO BE IN ACCORDANCE WITH THE RELEVANT PROVISIONS OF THE SPECIFICATION DOCUMENT SEWERS FOR ADOPTION 7TH EDITION.
- PIPE BEDDING CLASSIFICATIONS ARE DERIVED FROM T.R.R.L. DOCUMENT 'SIMPLIFIED TABLE OF EXTERNAL LOADS ON BURIED PIPELINES'
- TOP SOIL THICKNESS TO BE AS EXISTING, BUT NOT LESS THAN 150

KEY

- SUITABLE BACKFILL MATERIAL
- SELECTED SOFFIT AND SURROUND: CLASS B LOWER TRENCH FILL TABLE 6/1 SHW
- SINGLE SIZE GRANULAR MATERIAL TABLE 5/7 SHW TO BS 1342 COARSE AGGREGATE CLASS 4.3.2
- GEN3 CONCRETE BED AND SURROUND

DN = NOMINAL INTERNAL DIAMETER OF PIPE
BC = OUTSIDE DIAMETER OF PIPE

CLASS	MACHINE DUG UNDERSOIL	ROCK OR MIXED SOILS
S	NOTE (i)	NOTE (ii)
Z	NOTE (iii)	NOTE (iv)

(i) 1/4-BC/L WITH MIN 100 UNDER BARRELS (50 FOR SLEEVE JOINTED) AND MIN 50 UNDER SOCKETS, WHICHEVER IS THE GREATER, WITH MAX OF 400.

(ii) 1/4-BC/L WITH MIN 200 UNDER BARRELS (150 FOR SLEEVE JOINTED) AND MIN 150 UNDER SOCKETS, WHICHEVER IS THE GREATER, WITH A MAX OF 400.

(iii) 1/4-BC/L WITH MIN 200 UNDER BARRELS (150 FOR SLEEVE JOINTED) AND MIN 150 UNDER SOCKETS, WHICHEVER IS THE GREATER, WITH A MAX OF 400.

MANHOLE DETAIL - TYPE C

(DEPTH TO SOFFIT LESS THAN 1.5M. MAX PIPE SIZE 450MM Ø)

1220x685 MULTIPLE DUCTILE IRON COVER, COVER COMPLYING WITH CLAUSE E2.33

MORTAR BEDDING AND HAUNCHING TO COVER AND FRAME TO CLAUSE E6.7

BRICKWORK OR CONCRETE BLOCKS TO BE CORBELLED CONCRETE COVER FRAME SEATING RINGS 675 MM MAXIMUM TO FIRST STEP RUNS FROM COVER LEVEL

PRECAST CONCRETE CHAMBER SECTIONS COMPLYING WITH CLAUSE E2.29 JOINTED WITH MORTAR, ELASTOMERIC OR PLASTOMERIC SEALS. CHAMBER WALL TO BE MINIMUM 125MM

HIGH STRENGTH CONCRETE TOPPING MIN. 20 THICK COMPLYING WITH CLAUSE E4.3 AND E6.5 NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS. CONCRETE BENCHING SLOPE TO BE BETWEEN 1:10 AND 1:30.

IN-SITU GEN3 CONCRETE COMPLYING WITH CLAUSE E4.1 AND BRE SPECIAL DIGEST 1

INVERT TO BE FORMED USING CHANNEL PIECES

JOINT TO BE AS CLOSE AS POSSIBLE TO FACE OF MANHOLE TO PERMIT SATISFACTORY JOINT AND SUBSEQUENT MOVEMENT.

MINIMUM WIDTH OF BENCHING TO BE 225MM

DOUBLE STEP RUNS COMPLYING WITH CLAUSE E2.33

450MM MIN FROM EDGE OF STEPPING (SEE CLAUSE BS 2.29)

SEE FIGURE B.13 AND CLAUSE E6.6.2 FOR ROCKER PIPE DETAILS

NOTE

- INTERNAL DIMENSIONS OF MANHOLE NORMALLY 1350MM BUT MANHOLE DIAMETER SHOULD BE INCREASED OR PIPES LARGER THAN 450MM DIAMETER TO ONE 225MM BENCHING IN ACCORDANCE WITH BS 2.29.
- THE USE OF PRECAST CONCRETE CHAMBER UNITS TO E2.29 WITH 150MM GEN3 IN-SITU CONCRETE COMPLYING WITH E4.1 AND BRE SPECIAL DIGEST 1 IN PLACE OF BRICKWORK CONSTRUCTION IS PERMITTED

MANHOLE DETAIL - TYPE B

(DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.5 M TO 3.0 M)

COVER COMPLYING WITH CLAUSE E2.32, 600 MM X 600 MM CLEAR OPENING

PRECAST CONCRETE SLAB COMPLYING WITH E2.30

MINIMUM CLEAR ACCESS 600 MM

PRECAST CONCRETE CHAMBER SECTIONS COMPLYING WITH CLAUSE E2.29 JOINTED WITH MORTAR, ELASTOMERIC OR PLASTOMERIC SEALS. CHAMBER WALL TO BE MINIMUM 125MM

150 MM CONCRETE SURROUND

CHAMBER HEIGHT (NOT LESS THAN 900 MM)

BENCHING SLOPE TO BE 1:10 TO 1:30

THE BOTTOM PRECAST MANHOLE RING TO BE BUILT INTO BASE CONCRETE MINIMUM 75 MM

DISTANCE BETWEEN TOP OF PIPE AND UNDERSIDE OF PRECAST SECTION TO BE MINIMUM 50 MM TO MAXIMUM 300 MM

IN-SITU GEN3 CONCRETE COMPLYING WITH E4.1 AND BRE SPECIAL DIGEST 1

225 MM TO UNDERSIDE OF CHANNEL

SEE FIGURE B.13 AND CLAUSE E6.6.2 FOR ROCKER PIPE DETAILS

MINIMUM WIDTH OF BENCHING TO BE 225 MM

MINIMUM FROM EDGE OF STEPPING (SEE CLAUSE BS 2.29)

GENERAL NOTES

- ACCESS COVER GRADES (DEPTH OF FRAME TO SUIT LOCATION AND HIGHWAY CATEGORY). BS EN 124 CLASS D2400 - CARRIAGEWAY AND PARKING AREAS CLASS B 125 - FOOTWAYS ETC
- ACCESS COVERS FOR TYPE A AND B MANHOLES TO HAVE A MINIMUM CLEAR OPENING OF 675mm G.O.
- PERMISSIBLE CHAMBER DIAMETERS FOR MANHOLE TYPES A AND B

DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	CHAMBER SECTION DIAMETER (mm)
LESS THAN 375	1200
375 - 700	1500
700 - 900	1800
975 - 1050	2100
1200 - 1350	2400
1400 - 1500	2700
1600 - 1800	3000

NOMINAL DIAMETER (mm) EFFECTIVE LENGTH (m)

150 - 600	0.60
601 - 750	1.00
OVER 750	1.25

- ALL PIPES ENTERING AT THE BOTTOM OF THE MANHOLE TO HAVE SAME SOFFIT LEVEL
- THE CHANNEL MAY BE PERFORMED HALF ROUND CHANNEL
- WHERE A FUTURE CONNECTION IS SHOWN IN THE MANHOLE SCHEDULE THE PIPE SHALL BE SUPPLIED WITH A STOPPED
- MANHOLES WITH OUTGOING PIPES GREATER THAN OR EQUAL TO 600mm DIA SHALL HAVE HOOKS FITTED FOR REMOVABLE SAFETY CHAIN. REFER TO DWS 270/202
- REDUCTION SHAFT IS OPTIONAL FOR MANHOLES GREATER THAN 300mm DEPTH. REDUCTION SHAFT ONLY ON MANHOLES 1800 OR GREATER DIAMETER
- ROCKERS SHALL BE EITHER STAINLESS STEEL OR GRP. FIXINGS TO BE STAINLESS
- STEP RUNS SHALL BE DOUBLE POLYPROPYLENE ENCAPSULATED.
- ALL IN-SITU CONCRETE TO HAVE 50-75mm SLUMP AND TO BE VIBRATED TO FORM DENSE WATER TIGHT SEAL WITH PRECAST SECTIONS
- BENCHING TO BE C28/35 OR GRANULITIC TO FORM DENSE SMOOTH FINISH
- IN-FILL COVERS OF ANY TYPE SHALL NOT BE USED, WHERE COVER IS LOCATED IN AN AREA OF BLOCK PAVING THE FRAME SHALL BE 150mm DEEP
- FRAMES FOR MANHOLE COVERS SHALL BE BEDDED IN A POLYESTER RESIN BEDDING MORTAR IN ALL SITUATIONS WHERE COVERS ARE SITED IN INNSWA ROAD CATEGORIES 1, 2 OR 3
- DOUBLE RING STEP RING ALSO ACCEPTABLE
- ACCESS OPENING TO BE LOCATED CENTRALLY OVER 900mm SHAFT, AND OFFSET APPROX 100mm FOR 1500mm SHAFT WITH RUNGS/LADDER

NOT TO SCALE

KEY:

- EXISTING PRIVATE SURFACE WATER DRAIN
- EXISTING FOUL WATER SEWER
- EXISTING PRIVATE FOUL DRAIN
- TO BE ABANDONED
- PROPOSED SEWER DIVERSION
- PROPOSED SHARED PRIVATE SURFACE WATER DRAIN
- PROPOSED PRIVATE FOUL DRAIN
- PROPOSED PRIVATE SURFACE WATER DRAIN

DESIGN BY:

tumu

CLIENT:

SELWOOD HOUSING

PROJECT:

ALCOCK CREST, WARMINSTER

TITLE:

SEWER DIVERSION

DRAWING STATUS:

PLANNING APPLICATION

SCALE @ A1:

AS SHOWN

PROJECT No:

19847

DRAWING No:

19847-TUM-PL-XXX-0220

REV:

A

REV.	DESCRIPTION	Date	BY	CHK
A	FIRST ISSUE	01.04.25	RP	SW