

Flood Risk Assessment and Drainage Strategy (FRADS)

Boreham Mill, Warminster

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AUTHOR:	Leonardo Costa BEng
REVIEWED BY:	Steven Jeffreys IEng MICE FIHE MInstLM MInstRE
COMPANY DETAILS:	Enviren Ltd, Programme, The Pithay, Bristol, BS1 2NB
ISSUED TO:	The Applicant
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Executive Summary

This report has been prepared by Enviren Ltd solely for use as part of a planning application associated with the conversion of an office building to up to 6 dwelling units (Address: Boreham Mill, Bishopstrow Road, Warminster, Wiltshire, BA12 9HQ, Grid reference: ST 89095 44130). This report shall analyse the existing site use, flood risk potential and vulnerability classification and then discuss suitable flood protection measures where appropriate, as well as a suitable on-site drainage strategy with due consideration to flood risk, vulnerability classification and water quality.

This report is compliant with the NPPF and the associated Planning Practice Guidance as well as the Wiltshire Council Level 1 Strategic Flood Risk Assessment. This report demonstrates that the proposals shall not be at unacceptable risk of flooding, providing the identified mitigation measures are implemented. This includes installing an interception swale along the western boundary, lifting proposed slab levels, fitting flood doors, installing appropriate air bricks and sealing below ground infrastructure.

Providing the flood mitigation strategies outlined in this document are implemented flood risk should not prevent approval being granted to this development.

The site is partially situated within Flood Zone 2 and Flood Zone 3 (high risk of flooding from rivers and the sea); however, the proposed building footprint lies within Flood Zone 1. In addition, the site is located in the vicinity of areas identified as being at high risk of groundwater flooding and medium risk of reservoir flooding, according to Wiltshire Council SFRA Data Explorer mapping. However as far as the applicant is aware of, the Mill has never flooded since their ownership commenced in 1966. Therefore, an appropriate assessment will be required to determine the design flood extents, and suitable mitigation measures should be incorporated where a flood risk is identified to ensure that the development is safe.

The proposed mitigation measures include the installing a fully detailed waterproofing system and flood doors, raising electric circuits above the maximum design storm level, elevating kitchen electricals and white goods above the maximum design storm level, utilising of impermeable floors and tiled, impermeable walls up to the maximum design storm level to ensure that the property can be redeemed after stormwater ingress and sealing entry points with an impermeable sealant.

The proposed development shall not result in an increase in impermeable surface area as the proposals are a conversion of an existing building. Surface water runoff should discharge to ground where possible and where not runoff rates should be constrained to as close as greenfield runoff rate as possible. A review of British Geological Survey (BGS) mapping and borehole records indicates that the strata underlying the site likely has poor infiltration rates as well as high groundwater levels. As such a discharge shall be pursued to the neighbouring watercourse. Foul water from the properties shall discharge to the neighbouring watercourse after being treated through an onsite Package Treatment Plant.

In accordance with flood risk planning guidance, the PFRA and the Non-statutory technical standards¹ there should be no increase in peak discharges from the site and discharge rates and discharge volumes should be constrained as close as reasonably practicable to greenfield runoff rates and volumes, but never exceed the existing discharge rate and volume. Where achieving greenfield runoff rates is not reasonably practicable a 30% betterment over brownfield runoff rates could reasonably be specified, providing confirmation is received from the council, with the volume of water not exceeding previous brownfield conditions. Where a betterment cannot be incorporated then the development must provide wider benefits to the downstream water network in line with the other three core pillars of SuDS (see **Figure 5.1**), being water quality, biodiversity and amenity. In compliance with the requirements of the National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Additionally the development will not increase flood risk to the wider catchment area owing to suitable management of surface water runoff.

¹ Department for Environment, Food and Rural Affairs – Sustainable Drainage Systems – Non-statutory technical standards for sustainable drainage systems (March 2015)

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1. Introduction

- 1.1. This report has been prepared for the applicant to support a planning application for the conversion of an office building to up to 6 dwelling at Boreham Mill, Bishopstrow Road, Warminster, Wiltshire, BA12 9HQ. This Flood Risk Assessment and Drainage Strategy (FRADS) is compliant with the requirements of the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance along with other regional and national guidance.

Sources of Information

- 1.2. This report has been based on the following sources of information (this list is not exhaustive and comprises the major sources of background documentation):

Table 1.1 – Sources of Information	
Client Supplied Information	➤ Site Location Plan. ➤ Site Layout Plan. ➤ Topographical Survey Information.
GIS Mapping Data	➤ SCALGO Live GIS Modelling.
Local Authority Flood Information	➤ Local Authority Flood Mapping. ➤ Wiltshire Council Local Flood Risk Management Strategy. ➤ Wiltshire Council Strategic Flood Risk Assessment. ➤ Wiltshire Council Preliminary Flood Risk Assessment. ➤ The Local Flood Risk Management Plan (FRMP).
Regional Flood Information	➤ West of England Sustainable Drainage Developer Guide.
Central Government Information	➤ Environment Agency Surface Water Flood Maps. ➤ Environment Agency Fluvial and Thalassic Flood Maps. ➤ Environment Agency Reservoir Flood Maps.
River/Coastal Management Information	➤ The Wylfe (Middle) Catchment Flood Management Plan (CFMP).
Catchment Data	➤ FEH Catchment Boundary Information.
Soil Data	➤ British Geological Survey (BGS) Drift & Geology Maps.

- 1.3. The existing site currently houses a large brick building in the form of Boreham Mill serving as an office. Topographical analysis shows that runoff flows to the west, north and east and into the River Wylfe which runs southwest towards Salisbury. Access is present from the northeast off Bishopstrow Road.

Table 1.2 – Site Specific Information

Category		Site Specific Information	
Site Name		Boreham Mill, Warminster	
Site Location		Warminster, Wiltshire	
Local Authority			
Overall Site Area		0.245 Hectares	
Existing NPPF Vulnerability		Less Vulnerable – Buildings used for professional services.	
Proposed NPPF Vulnerability		More Vulnerable - Dwellings	
Design Return Period		100 years for on-site flooding	
Climate Change Allowance		45% - Rainfall intensity 38% - Peak river flow	
Flood Zone (Rivers and Sea)		High risk (Surrounding area shown as Flood Zone 2 (FZ2) & Flood Zone 3 (FZ3) on flood map for planning)	
Risk of Surface Water Flooding		Very low risk	
Risk of Reservoir Flooding		Medium risk	
Risk of Groundwater Flooding		High Risk	
Risk of Sewer Flooding		Very low risk	
Critical Drainage Status		Not believed to be within a Critical Drainage Area	
High risk	Medium risk	Low risk	Very low risk

2. Background Information

Site Location

- 2.1. The site is located on the eastern edge of Bishopstrow on the southeast side of Warminster. The application site is located 28.30 kilometres northwest of Salisbury City centre and approximately 12.00 kilometres southeast of Frome. The exact location can be found in **Figure 2.1**:



Figure 2.1 – Site Location

Outline Site Hydrology

- 2.2. Interrogation of local topographical information around the development parcel identifies that a watercourse runs to the east, west and north of the development. This watercourse runs in a southwest direction initially until it meets the River Nadder, then River Avon at Salisbury, and then heads south and ultimately discharges into the sea at Christchurch.
- 2.3. Statutory Undertaker mapping (see **Appendix 1**) also indicates that there are private foul water sewers around the site parcel to the west in Bishopstrow Road, which run to the Warminster WwTW which discharge to the River Wyle. The current runoff from the site flows east, west and north into the River Wyle.

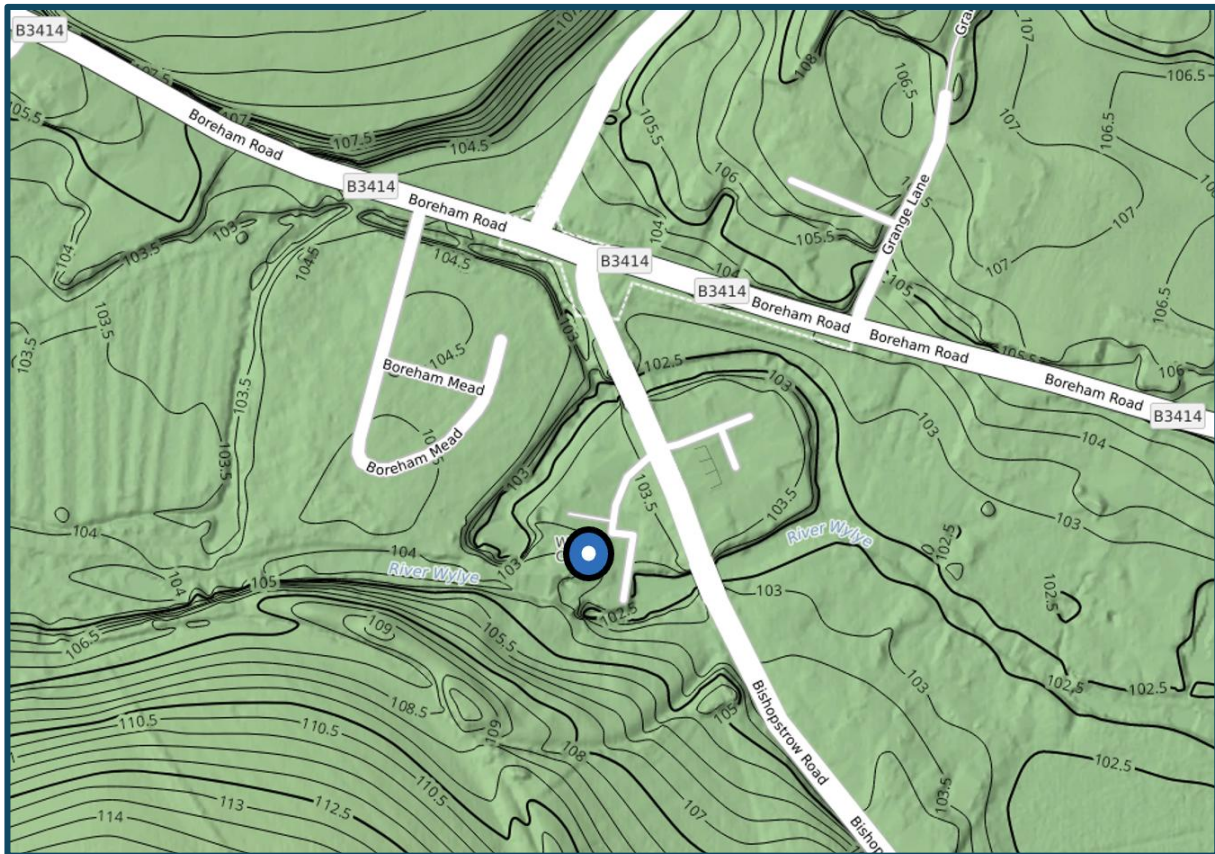


Figure 2.2 – SCALGO Topographic Data – Site Hydrology

Site Description

- 2.4. The area to be developed currently constitutes Boreham Mill, comprising multiple offices. The site is approximately 0.245 hectares in size when considering the areas in the site plan (see [Appendix 2](#)). The site parcel is bordered on all sides greenspace and the River Wylfe.



Figure 2.3 – Aerial Reconnaissance Photography

Geotechnical/Geological

- 2.5. BGS Mapping² indicates that the development is largely underlain by Sandstone of the Shaftesbury Sandstone Member, described typically as Sedimentary bedrock formed between 113 and 100.5 million years ago during the Cretaceous period. Details of the bedrock are found in **Figure 2.4**. Local BGS Borehole Records³ confirm the maps findings.

² BGS Surface Geology – Geology of Britain Viewer

³ BGS – GeoIndex Onshore

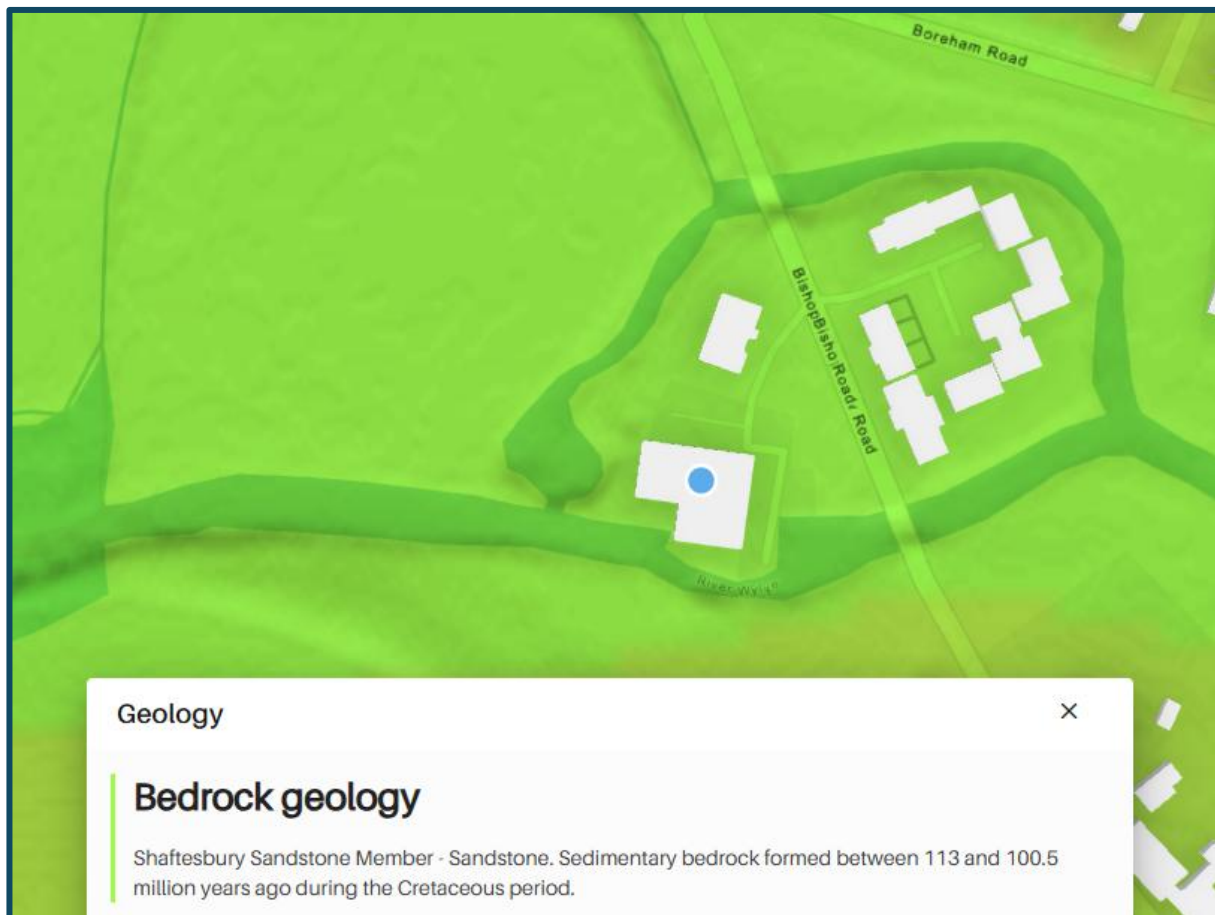


Figure 2.4 – BGS Geological Mapping

Table 2.1 – Geological Stratum	
Underlying Geology	Description
Made Ground/Topsoil	Superficial made ground/topsoil to an anticipated depth of circa 0.3-0.5m.
Shaftesbury Sandstone Member	The member is an alternating succession of fine- to medium-grained glauconitic sand and sandstone. At the top, a massive, 2 to 3m-thick, shelly calcareous sandstone called the Ragstone is present in some areas.

3. Flood Risk Requirements

- 3.1. An inspection of EA and Local Authority mapping as well as SCALGO GIS mapping⁴ demonstrates that the development site is at risk of flooding from fluvial, reservoir and groundwater sources. The implications of these on development proposals is discussed in more detail in latter stages of this report. This chapter examines the following sources of flooding:
- Thalassic flooding.
 - Fluvial flooding.
 - Pluvial flooding
 - Groundwater flooding.
 - Sewer flooding.
 - Reservoir flooding and flooding from artificial sources.
- 3.2. A review of the flood risk compatibility information contained within government guidance has been presented in **Table 3.1** which demonstrates that the vulnerability classification of the development is compatible with the identified flood risk zone.

Table 3.1 – Flood Zone Compatibility					
Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone 1	✓	✓	✓	✓	✓
Flood Zone 2	✓	Exception Test required	✓	✓	✓
Flood Zone 3a†	Exception Test required†	✗	Exception Test required	✓	✓
Flood Zone 3b*	Exception Test required*	✗	✗	✗	✓*
Key:					
✓	Development is appropriate.		✗	Development should not be permitted.	
Notes:					
†	In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.				
*	In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water-compatible uses, should be designed and constructed to: • remain operational and safe for users in times of flood; • result in no net loss of floodplain storage; • not impede water flows and not increase flood risk elsewhere.				

⁴ SCALGO Live – Interactive GIS Mapping

Notes of the Sequential Test

- 3.3. As the majority of the proposals constitute change of use, this aspect of the development is exempt from the Sequential Test, as outlined in Government guidance and Wiltshire Council guidance.
- 3.4. To accord with the Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government guidance "*Flood risk and coastal change*" it is recommended that additional mitigation measures are implemented in the building to provide a betterment to the facility and further alleviate flood risk. The guidance states under the 'The flood risk issues raised by changes of use' section that:

"Changes of use can increase the vulnerability of the development or result in occupation or use by people who are more vulnerable than the previous occupants/users to risks from flooding. Older existing properties may not previously have been subject to a flood risk assessment and appropriate mitigation measures, or the nature or severity of the flood risk may have changed over time, requiring more appropriate mitigation. Even if a development's vulnerability is not increasing, change of use can often present an opportunity to improve the flood resilience of existing development."

4. Flood Risk Assessment

Table 4.1 – Flood Risk Assessment												
Flood source	Potential risk					Post mitigation risk					Further actions	Flood risk reference
	Description of risk	Uncontrolled risk rating				Risk control measures	Risk rating with controls					
		High	Med	Low	Very Low		High	Med	Low	Very Low		
Fluvial	The danger of rivers overflowing their banks during high rainfall or runoff events, potentially flooding surrounding land.	✓	✓			The site is situated within Flood Zone 2 and Flood Zone 3 with the exception of the building footprint.			✓	✓	Flood mitigation measures will be implemented to enhance the dwelling's resilience and protect it from significant flood events.	Figure 5.1
Thalassic	The danger of flooding from exceptionally high tides, storm surges, or coastal water level rises overtopping or breaching coastal defences.				✓	N/A				✓	N/A	Figure 1
Pluvial	The danger of flooding caused by intense rainfall overwhelming surface drainage systems, leading to water pooling and flowing overland.				✓	N/A				✓	N/A	Figure 2
Canals	The potential for flooding caused by overtopping, breaches, or structural failures in canal systems, leading to uncontrolled water release into surrounding areas				✓	N/A				✓	N/A	Figure 3
Groundwater	The danger of flooding that occurs when the water table rises to or above ground level, often after prolonged rainfall or saturated conditions.		✓			A site survey confirms that the finished floor levels of the proposed conversion are at least 270mm above the surrounding ground level.				✓	N/A	Figure 5.3
Reservoirs/ Waterbodies	The danger of sudden or uncontrolled water release caused by overtopping, structural failure, or emergency drawdown of a reservoir.		✓			Reservoirs are heavily managed structures which are frequently maintained and therefore the likelihood of reservoir flooding effecting the site is nominal.				✓	N/A	Figure 5.4
Sewers	The danger of flooding caused when foul or surface water sewer systems become overloaded or blocked, forcing water to back up and discharge at the surface.				✓							Figure 4

Source of increase flood risk		Potential risk				Post Mitigation Risk				Further actions		Flood risk reference		
		Description of risk	Uncontrolled risk rating				Risk control measures	Risk rating with controls						
			High	Med	Low	Very Low		High	Med				Low	Very Low
Effect of development on the wider catchment		New development can increase flood risk by adding hard surfaces that reduce natural infiltration, causing faster and higher volumes of runoff to enter drainage systems and nearby watercourses.				✓	N/A					Does not apply as the development is a change of use.	NA	
Flood Risk Determination							Additional notes							
I x P		Impact												
		Very low	Low	Medium	High	Very High								
Probability	Very likely													
	Likely													
	Possible													
	Unlikely													
	Very unlikely													

5. Further Discussions

Fluvial and Thalassic Flood Risk

- 5.1. The LPA/Environment Agency mapping identifies areas that are potentially at risk from fluvial or thalassic flooding without taking account the presence of flood defence structures, climate change, minor watercourses or structures such as weirs, sluices and culverts. Inspection of the Wiltshire Explorer mapping and the EA Flood Map for Planning reveal that the area surrounding the proposed conversion sits within Flood Zones 2 and 3 (see **Figure 5.1**); however, the building itself is outside of the flood extents.

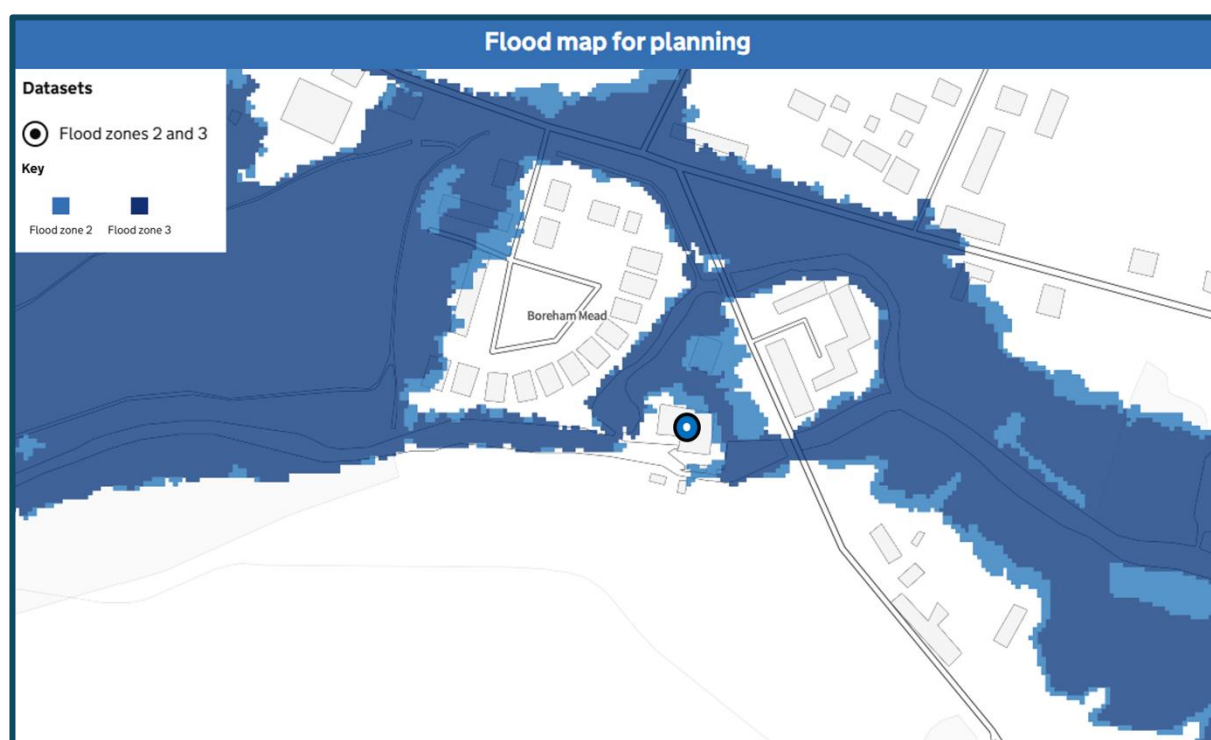


Figure 5.1 – Fluvial Flood Risk Extents

Additional Local Evidence

- 5.2. Local evidence substantially supports the premise that the building is safe from flooding. The applicant has owned the building since 1966 with no flooding occurring. Upstream for a considerable length of the river on the north side are low lying ancient water meadows.
- 5.3. As well as this upstream of the mill sluice gates are present which can all be opened. When fully opened it is possible to divert the whole river north, around the Mill, which allows the diverted waters to flow into the main river on the other side of the island to the north, below the Mill reach.
- 5.4. If the river gets too full and the sluices are not opened there are drainage ditches that allow water to rejoin the main river below the Mill downstream. Additionally, downstream of the Mill is a vast expanse of water meadows for a significant extent (miles) which sit either side of the river.

Environment Agency Product 4 Information

- 5.5. Beyond a review of the LPA/EA flood mapping, EA Product 4 information has been obtained (see **Appendix 3**). The Product 4 information confirms through JFLOW modelling that the site is at risk of flooding during the defended and undefended scenarios.

Climate Change Allowances

- 5.6. The EA Product 4 information does not provide climate change allowances, therefore, to accommodate the increase in flows/levels owing to climate change the 1 in 1000 year event data has been used for design purposes.

Table 5.1 – Fluvial Flood Level Information	
Defended	
Category	Site Specific Information
1% Probability Flood Level	103.220mAOD (No Flooding)
1% Probability Flood Depth	0.000m (No Flooding)
0.1% Probability Flood Level	103.420mAOD (No Flooding)
0.1% Probability Flood Depth	0.000m (No Flooding)
0.1% Probability Flood Level + 300mm Freeboard	103.720mAOD (Flooding)
0.1% Probability Flood Depth + 300mm Freeboard	0.100m (Flooding)
Approximate Lowest Level of Access/Egress	103.000mAOD
Existing Minimum Ground Floor Level	103.620mAOD
Proposed First Floor Level	106.220mAOD
Undefended	
Category	Site Specific Information
1% Probability Flood Level	103.160mAOD (No Flooding)
1% Probability Flood Depth	0.000m (No Flooding)
0.1% Probability Flood Level	103.430mAOD (No Flooding)
0.1% Probability Flood Depth	0.000m (No Flooding)
0.1% Probability Flood Level + 300mm Freeboard	103.730mAOD (Flooding)
0.1% Probability Flood Depth + 300mm Freeboard	0.110m (Flooding)
Approximate Lowest Level of Access/Egress	103.000mAOD
Existing Minimum Ground Floor Level	103.620mAOD
Proposed First Floor Level	106.220mAOD

- 5.7. Onsite flooding to the dwelling can be demonstrated to occur in the defended and undefended fluvial scenario; with flooding potentially occurring to a depth of approximately 730 mm along the access/egress route in the undefended fluvial scenario. As part of the new proposals the development shall be kept safe through:

- Locating all sleeping accommodation above the design flood level.
 - Implementing resilience measures in areas to likely be effected by flood water, such that the property is largely recoverable after a flood.
 - Placing non-return valves in soil vent pipes and surface water drains.
 - Preparing a Flood Evacuation and Management plan for the development (example in [Appendix 4](#)).
 - Subscribing to the EA flood warning service.
- 5.8. The onset of flooding could be quick in the event of the breaching of flood defences. As such suitable flood mitigation measures should be implemented to protect the dwelling from flooding.

Further Discussion

- 5.9. Appropriate mitigation measures are discussed in [Section 6](#). The flood map for planning and the Environment Agency Product 4 information both demonstrate that safe access and egress cannot be maintained from the site onto Bishopstrow Road.
- 5.10. The pedestrian access from the site is subject to flood depths of 730 mm when considering EA Product 4 data. With due consideration to the Environment Agency/DEFRA report "*Flood Risk Assessment Guidance for New Development Phase 2 Framework and Guidance for Assessing and Managing Flood Risk for New Development*" (R&D Technical Report FD2320/TR2), it can be reasonably shown that the access/egress route would likely fall into the "Danger for most" category with respect to flooding from rivers and sea (see [Table 5.2](#)), this being based on a flood depth of between 0.60-0.80m and a velocity of 0.50m/s as per SCALGO Live mapping (see [Figure 5.2](#)).

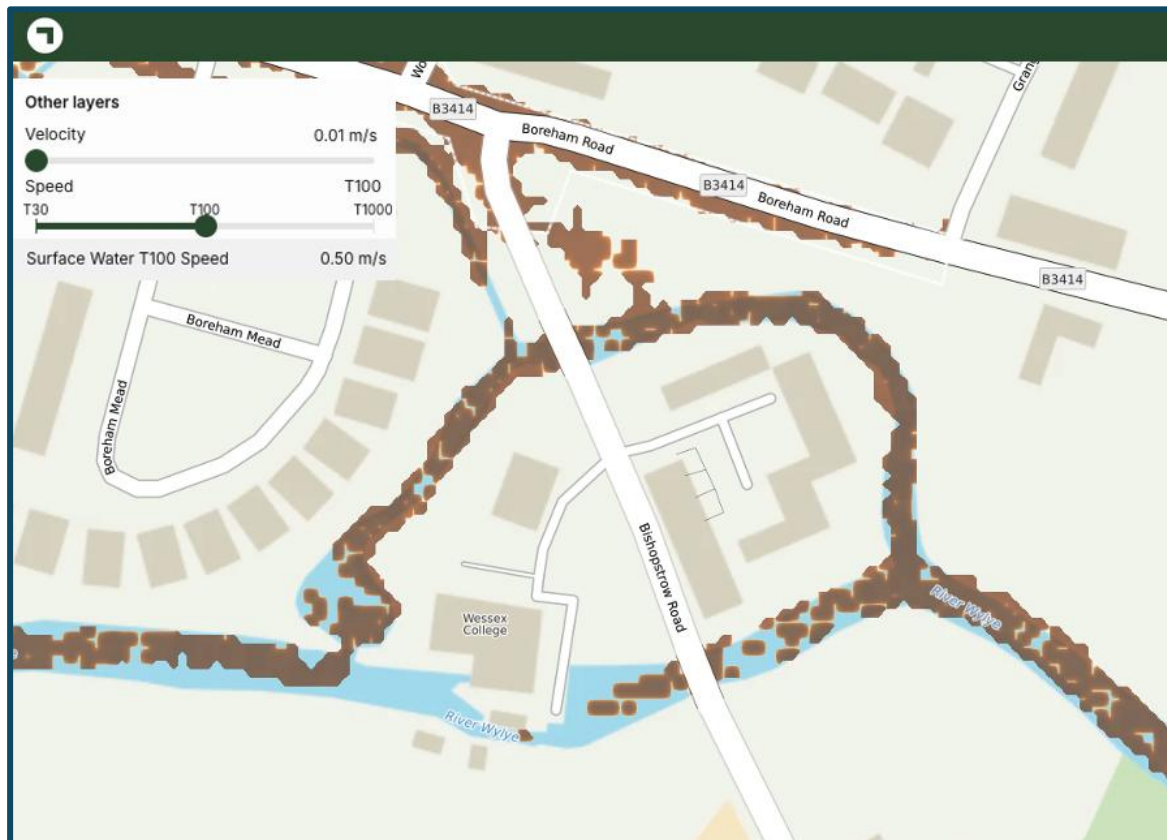


Figure 5.2 – Expected Velocities in Locality

Table 5.2 – Danger to people for different combinations of depth and velocity

HR	Depth of flooding (m)												
Velocity (m/s)	Debris Factor = 0.5				Debris Factor = 1.0								
	0.05	0.10	0.20	0.25	0.30	0.40	0.50	0.60	0.80	1.00	1.50	2.00	2.50
0.00	0.53	0.55	0.60	0.63	1.15	1.20	1.25	1.30	1.40	1.50	1.75	2.00	2.25
0.10	0.53	0.56	0.62	0.65	1.18	1.24	1.30	1.36	1.49	1.60	1.90	2.20	2.55
0.30	0.54	0.58	0.65	0.69	1.23	1.30	1.38	1.45	1.60	1.75	2.13	2.50	2.88
0.50	0.55	0.60	0.70	0.75	1.30	1.40	1.50	1.60	1.80	2.00	2.50	3.00	3.50
1.00	0.58	0.65	0.80	0.88	1.45	1.60	1.75	1.90	2.20	2.50	3.25	4.00	4.75
1.50	0.60	0.70	0.90	1.00	1.60	1.80	2.00	2.20	2.60	3.00	4.00	5.00	6.00
2.00	0.63	0.75	1.00	1.13	1.75	2.00	2.25	2.50	3.00	3.50	4.75	6.00	7.25
2.50	0.65	0.80	1.10	1.25	1.90	2.20	2.50	2.80	3.40	4.00	5.50	7.00	8.50
3.00	0.68	0.85	1.20	1.38	2.05	2.40	2.75	3.10	3.80	4.50	6.25	8.00	9.75
3.50	0.70	0.90	1.30	1.50	2.20	2.60	3.00	3.40	4.20	5.00	7.00	9.00	11.00
4.00	0.73	0.95	1.40	1.63	2.35	2.80	3.25	3.70	4.60	5.50	7.75	10.00	12.25
4.50	0.75	1.00	1.50	1.75	2.50	3.00	3.50	4.00	5.00	6.00	8.50	11.00	13.50
5.00	0.78	1.10	1.60	1.88	2.65	3.20	3.75	4.30	5.40	6.50	9.25	12.00	14.75
Flood Hazard Rating (HR)	Colour Code				Hazard to People Classification								
Less than 0.75					Very low hazard - Caution								
0.75 to 1.25					Danger for some – includes children, the elderly and the infirm								
1.25 to 2.00					Danger for most – includes the general public								
More than 2.00					Danger for all – includes the emergency services								

- 5.11. As such, using the classifications outlined in FD2320/TR2, the flooding along the access route presents a danger to most:
- Danger for some – includes children, the elderly and the infirm.
 - **Danger for most – includes the general public**
 - Danger for all – includes emergency services.
- 5.12. This is acceptable as per the hierarchy outlined in Section 13.3 of the EA DEFRA report “Flood Risk Assessment Guidance for New Development Phase 2 – Framework and Guidance for Assessing and Managing Flood Risk for New Development – Full Documentation and Tools R&D Technical Report” (Reference: FD2320/TR2FD2320/TR210) which states that the acceptable preferential access/egress pathways should be:
1. Safe dry route for people and vehicles
 2. Safe dry route for people
 3. If a dry route for people is not possible, a route for people where the flood hazard (in terms of depth and velocity of flooding) is low and should not cause a risk to people.
 4. **If a dry route for vehicles is not possible, a route for vehicles where the flood hazard (in terms of depth and velocity of flooding) is low to permit access for emergency vehicles. However, the public should not drive vehicles in floodwater.**
- 5.13. The access/egress point is located on the northern border of the site, where the flooding is at a significant *depth and a danger to most*. Therefore, the access/egress of site serves as a safe route for emergency vehicles but may not be for the general public.

Groundwater Flood Risk

- 5.14. Wiltshire County Council has produced a series of flood maps in conjunction with their Level 1 Strategic Flood Risk Assessment⁵. The map confirms that development site is susceptible to groundwater flooding (see **Figure 5.3**). A site survey confirms that the finished floor levels of the proposed conversion are at least 270mm above the surrounding ground level in accordance with Approved Document C⁶. On this basis groundwater flooding has not been considered a significant risk.

⁵ Wiltshire Explorer – Strategic Flood Risk Assessment mapping – Groundwater susceptibility to flooding

⁶ The Building Regulations 2010 – Approved Document C – Site preparation and resistance to contaminants and moisture

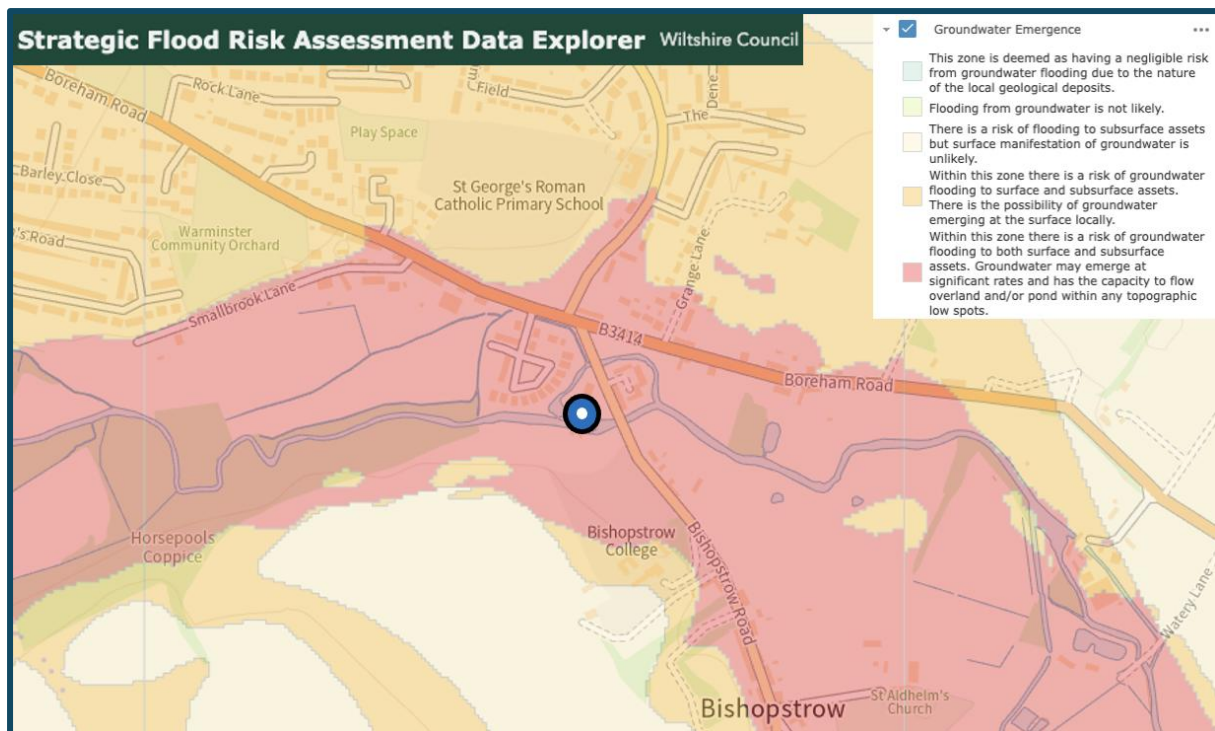


Figure 5.3 – Groundwater Flood Risk Extents

Reservoir Flood Risk & Flood Risk from Artificial Bodies

- 5.15. An inspection of Wiltshire Explorer reservoir flood risk mapping reveals that the site is in an area at risk of flooding from reservoirs/artificial water bodies (see **Figure 5.4**). The nearest reservoir upstream of the site is the Longleat Shear Water, a considerable distance from the site. Reservoirs are heavily managed structures which are frequently maintained and therefore the likelihood of reservoir flooding affecting the site is nominal. On this basis reservoir flooding need not be considered further.

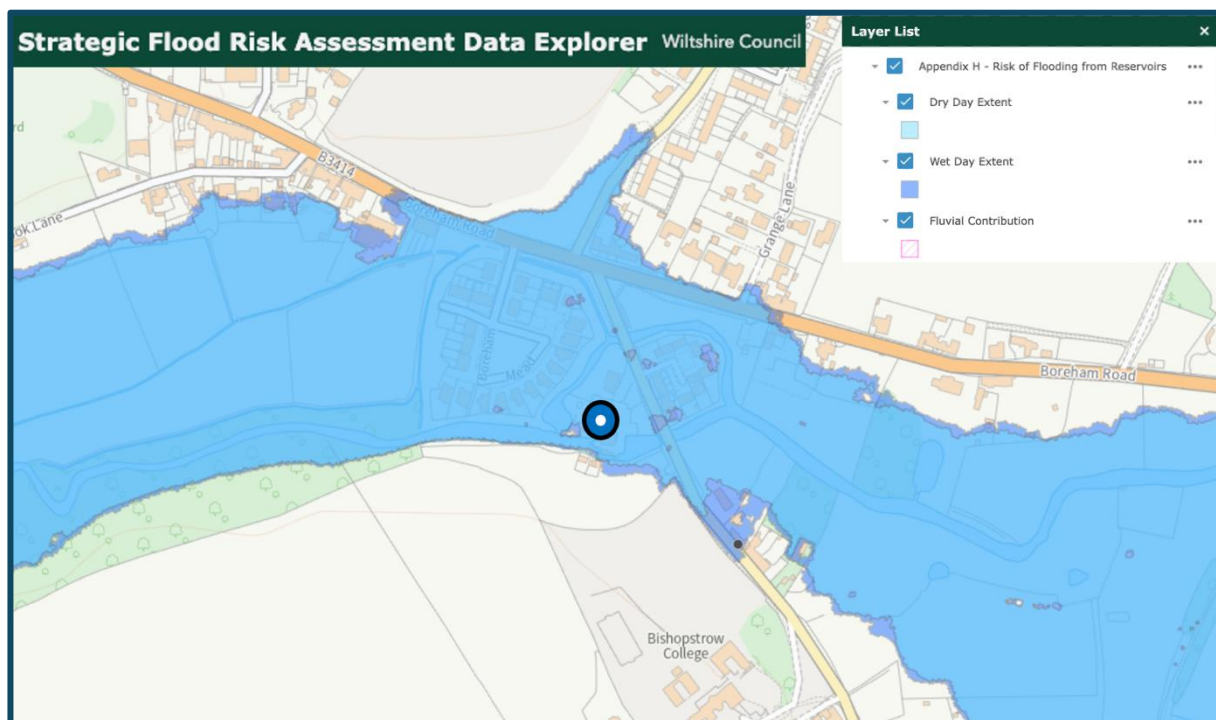


Figure 5.4 – Reservoir Flood Risk Extents

Effect of development on the wider catchment

- 5.16. The proposed conversion shall not result in an increase of impermeable areas, and therefore there should be no impact on the wider catchment as a result of the proposals.

6. Proposed Mitigation Measures

- 6.1. To ensure that the development provides betterment from a flood risk perspective beyond the proposed development baseline and to ensure that future occupants are appropriately protected from flooding it is recommended that mitigation measures are incorporated to deal with the identified flood risk.

Freeboard Calculation

- 6.2. When designing flood risk mitigation measures it is essential to accommodate Freeboard. Freeboard is typically defined as an allowance that seeks to assure the present day performance of the chosen means of managing flood risk by accounting for uncertainties that have not been explicitly addressed elsewhere in the planning, appraisal, design, or implementation process; whether qualitatively or quantitatively.
- 6.3. With due consideration to the Environment Agency/DEFRA report "Accounting for residual uncertainty: updating the freeboard guide" (Report – SC120014), the freeboard allowance for the development can be determined. The report discusses how to consider freeboard allowances and the type and certainty of information required to determine the appropriate freeboard depth. Given the design flood depth is based on detailed hydrological modelling information supplied by the Environment Agency, and given that accommodations have been made for any future reasonable increase in peak river flow and rainfall intensity, it is recommended that a 5 star confidence rating is adopted.
- 6.4. A review of the associated criteria for risk scoring has been undertaken as outlined in SC120014, which is presented in **Table 6.1**.

Table 6.1 – Flood Risk Scoring			
Consideration	Applicability	Score	Reasons
How appropriate is the flood risk analysis?	Yes	1	Uses the most up to date EA flood modelling data with appropriate climate change allowances.
How well is the flood plain modelled?	Yes	1	Good local representation of floodplain pathways using recent EA LIDAR data.
How well has the potential for defence failure been modelled?	Yes	2	EA modelling includes a simulation of the overtopping of flood defences.
What is the confidence in the hydrology?	Yes	1	EA Flood model data used.
How good is the coastal/estuarine/ tidal boundary	Yes	1	Robust embankment and flood defence network present. The defences are monitored and regulated.

How have fluvial threats been represented?	Yes	1	The EA model considers both fluvial and thalassic flooding.
How have coastal threats been represented?	Yes	1	The EA model considers both fluvial and thalassic flooding.
How has surface water runoff been represented?	Yes	1	Information has been based on the detailed EA Risk of Flooding from Surface Water (RoFSW) map.
How have groundwater hazards been represented?	Yes	1	Groundwater flood risk extents are well documented within the Wiltshire Council Strategic Flood Risk Assessment Data Explorer mapping website.
What is the strength of evidence?	Yes	1	Based on comprehensive EA modelling of potential flood sources.

Table 6.2 – Flood Risk Scoring						
		Worst topic 1 score				
		10	5	3	2	1
Worst topic 2 score	10	1 star			2 star	3 star
	5	1 star		2 star	3 star	4 star
	3	1 star	2 star	3 star	4 star	
	2	2 star	3 star	4 star		5 star
	1	3 star	4 star		5 star	

- 6.5. The conclusion that a 5 star rating can be adopted has been determined based on the appendices to Report SC120014, specifically the methodology outlined in the case studies as well as the Pro forma – Assessment template. On this basis, as per Table 3.4 of the Report SC120014, the minimum freeboard allowance should be either 5% of the design flood depth or 300mm, whichever is the greater. The design flood depth is a maximum of 0.110m against the side of the building, therefore, 5% of this depth would be 0.006m (5.500mm), given this a freeboard allowance of 300mm has been adopted.

Table 6.3 – Flood Risk Scoring

Confidence rating	Confidence description	Proportion of design flood depth	Minimum depth (mm)
1 star	Very unlikely to be locally reliable	40%	900
2 star	Unlikely to be locally reliable	30%	750
3 star	Likely to be locally reliable	20%	600
4 star	Very likely to be locally reliable	10%	450
5 star	Highly likely to be locally reliable	5%	300

Detail on Flood Resistance Measures

- 6.6. It is recommended that all external doors to the building are flood doors (such as Stormguard flood doors) to ensure that standing water is retained and does not enter the property directly. It is also recommended that occupants of the dwellings are issued a flood plan and are cognisant of what measures to take in the event of flooding.
- 6.7. Further details on flood resistance and resilience measures are presented in **Appendix 5**. The measures are briefly outlined in **Table 6.4**. Further flood protection measures that must be incorporated, in case of an event that exceeds the maximum design storm or in case of unexpected water ingress include:
- A fully detailed waterproofing system (Newton Waterproofing or similar approved) designed by a C SSW surveyor and installed by an approved contractor (Stonehouse waterproofing or similar approved).
 - Raised electric circuits above the maximum design storm level.
 - Protection of any vents to ensure that water ingress is not permitted.
 - Elevated kitchen electricals and white goods above the maximum design storm level.
 - Utilisation of impermeable floors and tiled, impermeable walls up to the maximum design storm level to ensure that the property can be redeemed after stormwater ingress.
 - All service entry points should be sealed with an impermeable sealant or an expanding impermeable foam.
 - Any existing wooden finishes should be coated with an impermeable covering.

Table 6.4 – Flood Mitigation Measures

Measure	Max Flood Depth	Recommended Manufacturer	Description
Storm Doors	0.6m	Stormguard	Flood doors to be installed to protect against fast onset storms.
Impermeable Sealant	N/A	CT1	The sealant is to be applied around all fixtures and fittings.
Non-return Valves	N/A	Althon	PTP-K Flap Valves should be installed on the surface water network where the system discharges to the southern drain.
	N/A	TT Pumps	Floaway non-return valves should be installed on a final, single pipe connecting to the public foul network.
Site-specific Alarm	Alarm to activate in rising water	Unique	A Protect 800 alarm, or suitable, similar approved alarm to be fitted to provide advanced warning of rising water.

- 6.8. Residents and future residents should be fully aware of the necessary evacuation procedures; where evacuation is possible. This should include drawing their attention to the site specific flood action plan, which should be produced in accordance with the EA Personal Flood Plan (LIT 4112), the EA "Would you know what to do in a flood?" 3 point plan. The emergency plan should be further discussed with the emergency services so that they can understand the extent of flooding and advise on what further procedures should be followed. It is also recommended that the dwelling subscribes to the EA's flood warning service as a method of mitigation for anticipated storms.
- 6.9. Site users should be advised to prepare an evacuation bag in case of a flood event. This should be prepared with due consideration to the National Flood Forum Emergency Flood Kit⁷.

⁷ National Flood Forum – Emergency Flood Kit ([Link-to-source](#))

Table 6.5 – Flood Warning Codes			
Flood Warning Code	What it means	When it is used	What to do
	Flooding possible. Be prepared.	Two hours to two days in advance of flooding.	Be prepared to act on your flood plan.
			Prepare a flood kit of essential items.
			Monitor local water levels and the flood forecast on our website.
	Flooding expected. Immediate action required.	Half an hour to one day in advance of flooding.	Move family, pets and valuables to a safe place.
			Turn off gas, electricity and water supplies if safe to do so.
			Put flood protection equipment in place.
	Severe flooding. Danger to life.	When flooding poses a significant threat to life.	Stay in a safe place with a means of escape.
			Be ready should you need to evacuate from your home.
			Co-operate with the emergency services.
			Call 999 if you are in immediate danger.
	No further flooding is currently expected in your area.	When river or sea conditions begin to return to normal.	Be careful. Flood water may still be around for several days.
			If you've been flooded, ring your insurance company as soon as possible.

Structural Integrity of Walls and Structural Design of Walls and Floors

- 6.10. A structural survey will be required of the building to analyse the suitability of the external walls and of the entirety of the structure to confirm that it is of a sufficient construction to withstand standing and moving flood waters, with

associated debris. This assessment should be completed by a suitably qualified engineer to the satisfaction of the local Building Control department. Any construction below the flood level should be completed using masonry walls, that have been structurally designed to withstand flood waters.

7.Outline Surface Water Drainage Strategy

- 7.1. As described in the Level 1 Strategic Flood Risk Assessment, the Preliminary Flood Risk Assessment, the National Planning Policy Framework as well as the accompanying technical standards and planning policy guidance; new development should embrace the sustainability goals of SuDS, accommodating SuDS in development proposals where possible, particularly for major development as per policy 169 of the NPPF.

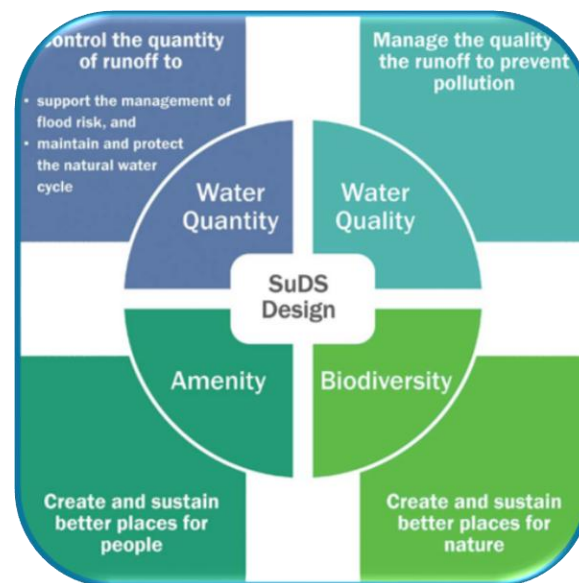


Figure 7.1 – Multiple benefits of SuDS

- 7.2. Proposed surface water drainage systems should also seek to provide a betterment in runoff rates and volumes when compared to existing conditions. Surface water arisings should be infiltrated to ground as far as reasonably practical; however, where this is not possible as per the non-statutory technical standards, post development runoff rates should be limited to the existing runoff rate for all events between the 1 in 1 year and the 1 in 100 year events, including an allowance for climate change.
- 7.3. However, for previously developed sites (brownfield sites), runoff rates should be limited to the equivalent greenfield runoff rates for all events between the 1 in 1 year and the 1 in 100 year events, including a suitable allowance for climate change. Where this is not practical a betterment over the existing situation is expected for all return period events (usually 30%). However, should betterment not be achievable this can be offset by improvements in relation to the other 'pillars of SuDS'.
- 7.4. To achieve the policy goals of both the NPPF and the PFRA a discharge method should be sought that is compliant with the surface water discharge hierarchy which specifies discharge preferability. The hierarchy states that discharge should be:
- Into the ground (infiltration);
 - To a surface water body;
 - To a surface water sewer, highway drain, or another drainage system; or
 - To a combined sewer

Discharge to Ground

- 7.5. A review of local borehole records indicates groundwater levels within approximately 2m of ground level (see [Appendix 6](#)). Additionally, the site is identified as being within an area at high risk of groundwater flooding and is located in close proximity to the adjacent watercourse. As such, strategies involving infiltration have been deemed to be highly unlikely of being ineffective. On this basis, infiltration strategies have not been considered further.

Discharge to Watercourse

- 7.6. As infiltration is not a viable method of discharge of surface water disposal, surface water will need to be discharged to the wider water network.
- 7.7. The River Wylfe runs along the southern border of the site (see [Figure 7.2](#)) and would serve as an appropriate point of discharge. Land drainage consent will be required for such a connection with the Lead Local Flood Authority (LLFA) with attention to the requirements of any Internal Drainage Board (IDB) where appropriate. Based on this evidence, discharge of surface water to a watercourse is likely a viable method of surface water disposal and no other point of discharge need be explored further.

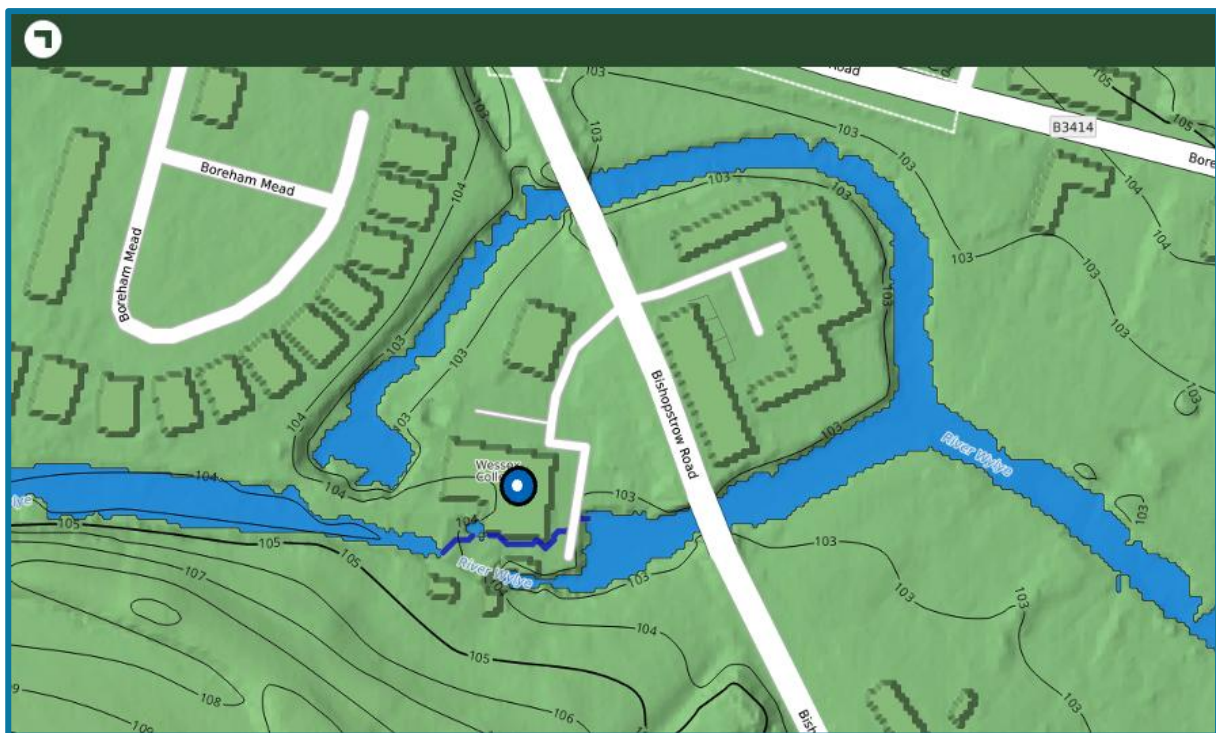


Figure 7.2 – SCALGO Surface Water Flow Pathways

Table 7.1 – Discharge Hierarchy Fulfilment

Discharge Method	Viability
Discharge to ground	Unviable
Discharge to watercourse	Viable
Discharge to surface water sewer	Not considered
Discharge to combined sewer	Not considered

Existing Hydraulic Flow Regime – Conveyance

- 7.8. To ensure that the development achieves maximum benefit to the surrounding catchment the development shall constrain discharge rates as close as practical to greenfield runoff rate (QBAR). Greenfield runoff rates (see **Appendix 7**) are presented in **Table 7.2** as are brownfield runoff rates (see **Appendix 8**):

Table 7.2 – Existing Development Runoff Rates

Storm Event	QBAR	1:2 year event	1:30 year event	1:100 year event + 45% Climate Change
Greenfield Runoff Rates (l/s)	1.5	1.3	3.6	6.96 (4.8 + 45%)
Brownfield Runoff Rates (l/s)	NA	2.3	5.8	10.58 (7.2+45%)

- 7.9. The Interim Code of Practice for Sustainable Drainage Systems (ICP SUDS) method has been used to calculate the greenfield runoff rate; which is suitable for catchments below 50 hectares. The method uses linear interpolation to calculate likely flow conditions for smaller site areas.
- 7.10. As per Industry Guidance (see CIRIA C753 Section 3.3.2) where target discharge rates are too low there is an increased risk of blockage of the flow control device, endangering onsite flooding, therefore a minimum discharge rate of 2l/s shall be used as per sewerage sector best practice (as specified in CIRIA C753). To ensure this discharge rate can be achieved a suitable quantity of attenuation should be provided.

Sustainable Drainage Systems

- 7.11. As per UK government flood risk and coastal change guidance⁸, the NPPF, the Regional SuDS Guidance (West of England Sustainable Drainage Developer

⁸ Development for Levelling Up, Housing and Communities and Ministry of Housing Communities and Local Government – Flood risk and coastal change 25 August 2022.

Guide⁹) and Wiltshire Council guidance¹⁰ Sustainable Drainage Systems (SuDS) should be considered as part of new development, particularly major development. SuDS can provide various benefits, as outlined in **Figure 7.1**. As well as providing storage, SuDS can also provide pollution control at source (Source Control) and in some instance Interception, leading to significant water quality benefits. Potential SuDS options, with respect to the geophysical properties of the site parcel, are outlined in **Table 7.3**:

Table 7.3 – Sustainable Drainage Systems										
Constraint	Topography			Geological		Develop ment		Maintainability	Commercial Desirability	Suitability
Characteristic	Slope	Outfall Depth	Contaminated	Permeability	Groundwater	Area	Density			
Site Specific Result	1:117	Moderate	Low risk	Unviavle	<2.0m	0.194 Ha	Moderate			
Recharging										
Infiltration Trench	✓	✓	✓	✗	✗	✗	✗	✓	✗	✗
Porous Pavement	✓	✓	✓	✗	✓*	✓	✓	✓	✓	✓
Soakaway	✓	✓	✓	✗	✗	✓	✓	✓	✗	✗
Infiltration Basin	✓	✓	✓	✗	✗	✗	✗	✓	✗	✗
Swale	✓	✓	✓	✗	✗	✗	✗	✓	✗	✗
Recycling										
Rainwater Harvesting	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗
Green Roof	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗
Discharging										
Filtration	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pond/Wetland	✓	✓	✓	✓	✓	✗	✗	✓	✗	✗
Detention Basin	✓	✓	✓	✓	✓	✗	✗	✓	✗	✗
Subsurface Storage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Notes:										
✓* Type C Porous Pavement										

7.12. With due regard to the geophysical characteristics of the application site a drainage strategy could be pursued which utilises porous pavement, filtration or subsurface storage serving the proposed driveway and roof. However, a

⁹ West of England – Sustainable Drainage Developer Guide Section 1 (March 2015 – Issue Version 1)

¹⁰ Wiltshire Council – Sustainable Drainage Systems

review will need to be undertaken on the delivery of amenity, biodiversity and water quality benefits.

Treatment Design

7.13. Sustainable Drainage Systems (SuDS) can be designed to maximise water treatment through creating a SuDS treatment train which incorporates the key pollutant removal mechanisms. A list of key removal mechanisms is tabulated in **Table 7.4**:

Table 7.4 – Pollutant Removal Mechanisms	
Removal Mechanism	Description
Sedimentation	Sedimentation is one of the primary removal mechanisms in SuDS. Most pollution in runoff is attached to sediment particles, and so removal of sediment results in a significant reduction in pollutant loads. Sedimentation is achieved by reducing flow velocities to a level at which the sediment particles fall out of suspension (finer particles requiring lower velocities) or by encouraging flocculation (which increases particle size). Very fine particles may remain in suspension and essentially be characterised as dissolved. Sediment requires periodic removal to permit the effective functioning of SuDS components. Care also has to be taken in design to minimise the risk of resuspension when extreme rainfall events occur.
Filtration and Biofiltration	Pollutants that are conveyed in association with sediment may be filtered from runoff. This may occur through trapping within the soil or aggregate matrix, on plants or on geotextile layers within the construction. The location of any filtration will depend on the internal structure of the particular SuDS component. There will generally be a need to balance removal efficiency with the potential risk of blockage of the filtration component (and associated maintenance needs of the component, e.g. filter removal and replacement) although planting can often be used to help minimise blockage risks and lead to systems that are relatively self-maintaining.
Separation	Many hydrocarbons and some other pollutants (e.g. pollens) float on the surface of water as an immiscible “skin”. Such pollutants can be skimmed off using separation processes, or can be trapped by vegetation, allowing subsequent degradation, for example by volatilisation and photolysis.
Adsorption	Adsorption occurs when pollutants attach or bind to the surface of sediment, soil, sand, aggregate or artificial material. The actual process is complex but tends to be a combination of surface reactions. Change in acidity of runoff can either increase (higher pH) or decrease (lower pH) the adsorption of pollutants. Similarly, the winter use of de-icing salts can encourage the release of metals from the surface. Eventually, the materials onto which pollutants adsorb will become saturated and so this method of treatment will cease to be effective unless mechanisms for regeneration are available.
Biodegradation	In addition to the physical and chemical processes that may occur on and within a SuDS component, biological treatment may also occur. Microbial communities are likely to be established within the

	soil or aggregate matrix, using the oxygen within the free-draining materials and the nutrients supplied with the inflows, to degrade organic pollutants such as oils and grease. The level of activity of such bioremediation will be affected by the environmental conditions such as temperature and the supply of oxygen and nutrients. It also depends on the physical conditions, such as the suitability of the materials for colonisation. Ammonia and ammonium ions can be oxidised by bacteria in the ground to form nitrate, which is a highly soluble form of nitrogen. Nitrate is readily used as a nutrient by plants. In oxygen-limiting conditions, anaerobic bacteria can facilitate denitrification, in which the participation of several species of bacteria can eventually result in the complete reduction of nitrate to molecular nitrogen. This is an important process where excessive nitrate production threatens groundwater quality or eutrophication in surface waters.
Volatilisation	Volatilisation involves the transfer of a compound from the solid or solution phase to the atmosphere. The conversion to a gas or vapour is influenced by temperature, reducing pressure, chemical reaction or a combination of these processes. The rate of volatilisation of a compound is dependent on its vapour pressure, as well as the characteristics of the surrounding soil. In SuDS systems, volatilisation is primarily concerned with organic compounds associated with petroleum products and pesticides.
Precipitation	This process is the most common mechanism for removing soluble metals. Precipitation involves chemical reactions between pollutants and compounds in the soil or aggregate matrix that transform dissolved constituents into particles of insoluble precipitates. Metals are precipitated as hydroxides, sulphides and carbonates, depending on which precipitants are present and the pH level. Precipitation can remove most metals (e.g. arsenic, cadmium, Chromium, copper, iron, lead, mercury, nickel, zinc) and many anionic species (e.g. phosphates, sulphates, fluorides), although to different levels according to the applied conditions.
Uptake by plants	In ponds and wetlands, uptake by plants (specifically via the biofilm growth around the plant structure) is an important removal mechanism for nutrients (phosphorous and nitrogen). Metals can also be removed in this manner, although intermittent maintenance may be required to remove the plants, otherwise there is the possibility that metals will be returned to the water when the plants die. Die-back can also be accompanied by a release of nutrients. Plants also create suitable conditions for deposition of metals, such as sulphides, in the root zone and also provide a microbiological environment that supports the biodegradation of organic pollutants.
Photolysis	The breakdown of surface-held organic pollutants by exposure to UV light.
Hydrolysis	The chemical breakdown of a compound due to reaction with water.
Oxidation	The combination of a compound with oxygen.
Reduction	The loss of oxygen from a compound.
Substitution	The replacement of one functional group in a compound with another.

7.14. A comparison between potential SuDS features outlined in **Table 7.3** and the removal mechanisms in **Table 7.4** is presented in **Table 7.5**, with a recommendation of a complimentary treatment train for the development:

Table 7.5 – Treatment Capacity of Sustainable Drainage Systems														
SuDS Component	Treatment Mechanism													
	Sedimentatio	(Bio) Filtration	Separation	Adsorption	Biodegradati	Volatilisation	Precipitation	Plant Uptake	Photolysis	Hydrolysis	Oxidation	Reduction	Substitution	Treatment Eligibility
Infiltration Trench	✓	✓	✗	✓	✓	✓	✓	✗	✓	✗	✓	✓	✓	✗
Porous Pavement	✓	✓	✓	✓	✓	✗	✓	✗	✗	✗	✓	✓	✓	✓
Soakaway	✓	✓	✗	✓	✓	✓	✓	✗	✓	✗	✓	✓	✓	✗
Infiltration Basin	✓	✓	✗	✓	✓	✓	✓	✗	✓	✗	✓	✓	✓	✗
Swale	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✗
Green Roof	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
Filtration	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✓	✓	✗
Pond/Wetland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
Detention Basin	✗	✓	✗	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗
Subsurface Storage	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓
Proprietary Tank	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
Notes:														
✓	Dependent on component specific design													
✓	Dependent on manufacturers details													

7.15. With due regard to the water quality, biodiversity and amenity conditions of the application site, as well as the geophysical characteristics, a drainage strategy shall be pursued which utilises porous paving and subsurface storage serving the proposed driveway and roof.

7.16. This should be provided as a minimum and the development should look to achieve source control and interception through the incorporation of localised green SuDS features such as: tree pits, rain gardens and bioretention beds. The components must be designed such that cleansing can be provided for the frequent, high pollutant runoff events or “first flush” events, this is typically defined as the 1 in 1 year return period events.

Source Control Measures and Rainwater Harvesting

7.17. To aid towards water security it is recommended that water butts are provided. This should consist of a single butt located on a well-drained downpipe and placed in the garden or other shielded location.

7.18. Source control measures are defined in CIRIA C753¹¹ as the control of runoff at or near its source, so that it does not enter the drainage system or is delayed and attenuated before it enters the drainage system. Typical source control components include:

¹¹ CIRIA C753 – The SuDS Manual – Chapter 26

- Green roofs
- Permeable surfaces
- Rainwater harvesting
- Water butts
- Rain gardens
- Filter strips
- Filter trenches

7.19. As described in this chapter the development shall incorporate porous paving which shall act as source control/interception for surface water runoff. However, the developer should consider the use of other source control components as part of the detailed design such as rain gardens and filter trenches for increased amenity, biodiversity and water quality benefits.

Hydraulic Design

7.20. The results of the calculations for the proposed onsite network are presented in **Table 7.6**. The proposed drainage network is to consist of porous paving and subsurface storage serving the proposed driveway and roof. This shall then be connected to a flow control chamber fitted with a Hydro International Hydrobrake Optimum flow control unit.

Notes on Surcharging

7.21. The results show that the onsite system does not surcharge during sub 1-2 year events, with the exception of the flow control device which surcharges as designed to (see **Appendix 9**).

Urban Creep

7.22. A 10% allowance for urban creep has been made as per Wiltshire Council guidance.

FEH Rainfall Data

7.23. FEH (rather than FSR) rainfall data has been used in the hydraulic model to more accurately reflect current rainfall rates, owing to the updated dataset.

Table 7.6 – Development Proposed Discharge Rates			
Storm Event	1:1 year event	1:30 year event	1:100 year event + 45% Climate Change
Proposed Discharge Rate (l/s)	1.7	1.7	2.0
Greenfield Runoff Rate (l/s)	1.3	3.6	6.96 (4.8 + 45%)
Existing Brownfield Runoff Rate (l/s)	2.3	5.9	10.59 (7.3+45%)

7.24. The proposed surface water drainage solution will provide a significant betterment over existing discharge rates for all storms whilst protecting the

development from flooding onsite through avoiding blockages (see **Appendix 10**).

Notes on Construction

- 7.25. Temporary attenuation will be required during construction works to ensure that surface water arisings during construction do not exacerbate flood risk further downstream. It is recommended that a temporary sump is installed upstream of the flow control device to attenuate these arisings and the flow control device should be installed as a priority as part of the construction works.
- 7.26. To mitigate silt arisings during construction suitable silt control measures, such as silt fences, will need to be implemented prior to the final point of discharge. Straw bales should be avoided owing to the potential for nutrient loadings through biodegradation.

Notes on Existing Watercourse

- 7.27. Land Drainage Consent will be required from the LLFA for the placement of a headwall in the banks of the existing watercourse through the Lead Local Flood Authority (LLFA) post planning permission. Further discussion may also be needed from the internal Drainage Board (IDB).

8. Wider Water Quality Assessment

- 8.1. To ensure that the surface water arisings from the proposed development do not detrimentally effect water resources downstream an analysis has been undertaken to demonstrate that the proposed SuDS measures will be sufficient to provide the necessary cleansing.

Simple Index Water Quality Assessment

- 8.2. The analysis has been carried out in accordance with the Simple Index Approach as described in CIRIA C753¹². The Simple Index Approach compares the combined pollutant index from a site to the SuDS mitigation index provided through the treatment train(s). This is a qualitative approach based on the observed effectiveness of similar systems. The approach relies on the SuDS components being designed to the criteria outlined in the SuDS Manual. To ensure that the SuDS treatment train is adequate the total SuDS Mitigation Index must exceed or be equal to the Pollutant Hazard Index:

$$\textit{Total SuDS Mitigation Index} \geq \textit{Pollution Hazard Index}$$

- 8.3. Firstly, one must consider Table 26.2 of the SuDS Manual which generates a Pollution Hazard Index based on proposed land use:

¹² CIRIA C753 – The SuDS Manual – Chapter 26

Table 8.1 – Pollution Hazard Indices for Different Land Use Classifications

Land use	Pollution hazard level	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.20	0.20	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.30	0.20 (up to 0.8)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day.	Low	0.50	0.40	0.40
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways.	Medium	0.70	0.60	0.70
Sites with heavy pollution (eg 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	0.80	0.80	0.90

- 8.4. The development proposal is for a change of use of a mill to 7 flats served by a roof and driveway. The total pollution hazard index needs to consider the proposed porous paving and subsurface storage. The Total Pollution Hazard Index is displayed in **Table 8.2**.

Table 8.2 – Total Pollution Hazard Index

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.20	0.20	0.05
Individual property driveways	Low	0.50	0.40	0.40

8.5. One must then consider Table 26.4 of the SuDS Manual which generates a SuDS Mitigation Index dependent on SuDS components utilised when discharging to watercourse:

Table 8.3 – SuDS Mitigation Index

Type of SuDS component	Mitigation indices		
	TSS	Metals	Hydrocarbons
Filter strip	0.40	0.40	0.50
Filter drain	0.40	0.40	0.40
Swale	0.50	0.60	0.60
Bioretention system	0.80	0.80	0.80
Permeable pavement	0.70	0.60	0.70
Detention basin	0.50	0.50	0.60
Pond	0.70	0.70	0.50
Wetland	0.80	0.80	0.80

Proprietary treatment system	<i>These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.</i>
-------------------------------------	---

8.6. The mitigation indices for the proposed onsite treatment train are presented in **Table 8.4:**

Table 8.4 – Individual SuDS Mitigation Indices			
SuDS Component	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Permeable pavement	0.70	0.60	0.70

8.7. Therefore, the combined SuDS Mitigation Index and the Pollutant Hazard Index can be tabulated to prove that the specific SuDS treatment train is acceptable:

Table 8.5 – Total SuDS Mitigation Index			
Scenario	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	0.20	0.20	0.05
Individual property driveways	0.50	0.40	0.40
Total Pollution Index	0.70	0.60	0.45
Porous Pavement	0.70	0.60	0.70

8.8. As can be shown in this section the SuDS components are more than capable of mitigating potential contaminant arisings when compared to the relevant assessment criteria currently issued for the water industry.

9. Maintenance of Attenuation/SuDS Measures

Adoption of drainage network

- 9.1. The following SuDS components are capable of being adopted by the statutory undertaker as outlined in the Sewerage Sector Guidance (SSG) with the necessary design requirements contained in the Design and Construction Guidance (DCG):

Table 9.1 – Eligible SuDS Components for Adoption	
SuDS Component	Capable of Adoption
Infiltration Trench	✓
Porous Pavement	✗
Soakaway	✓
Infiltration Basin	✓
Swale	✓
Green Roof	✗
Filtration	✓
Pond/Wetland	✓
Detention Basin	✓
Subsurface Storage	✓
Proprietary Tank	✓
Infiltration Trench	✓

- 9.2. It is understood the applicant shall not pursue adoption of the eligible SuDS components through the sewerage undertaker; Therefore, the applicant shall pursue management as detailed below.

Management Company Custodianship

- 9.3. As the applicant has opted not to proceed with the adoption, the suggested drainage network will be maintained privately and funded by the owners or

occupiers of the development, who will be registered under the following details:

Address:
Boreham Mill,
Bishopstrow Road,
Warminster,
Wiltshire,
BA12 9HQ

- 9.4. The maintenance schedules outlined in this report shall be forwarded to future owners/occupants to make them aware of the associated liabilities of the onsite drainage network. This document should be forwarded onto any successive management company so that they may understand their liabilities.

Maintenance of SuDs Components

- 9.5. The Porous Paving should comprise upstream silt traps on all inlets which should be monitored every six months for signs of sediment build up with deposits disposed of appropriately. The minimum maintenance expectations are provided in Table 9.3 which are as per Table 20.15 of the SuDS Manual.

Table 9.2 – SuDS Maintenance Requirements – Soakaway
CIRIA C753 Maintenance Requirement

Maintenance schedule	Typical Frequency	Required action
Regular Maintenance	Annually	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings
	Annually (or as required)	Cleaning of gutters and any filters on downpipes
	Annually (or as required)	Trimming any roots that may be causing blockages
Occasional maintenance	As required, based on inspections	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings
	As required	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs
	As required	Replacement of clogged geotextile (will require reconstruction of soakaway)
Monitoring	Monthly in the first year and then annually	Inspect silt traps and note rate of sediment accumulation
	Annually	Check soakaway to ensure emptying is occurring

10. Foul Water Drainage Strategy

Discharge to Package Treatment Plant to Watercourse

- 10.1. The development is to consist of a conversion of a mill to 6 new dwelling units. The foul water drainage from the proposed dwellings will discharge firstly to an existing Package Treatment Plant (PTP) located a minimum of 7m away from any property, beyond this the effluent from the units shall be discharged to the River Wylfe (see **Appendix 10**).

Building Control Restrictions

- 10.2. Approved Document H¹³ places spatial requirements on the use of package treatment plants. The outlet from package treatment plants should be 10m away from any habitable parts of dwellings, where discharge is to a watercourse. The tank should be located at least 7m from any building. Any tank should be located within 30m of vehicle access if they are to be emptied by a tanker with a clear access for the suction hose without passing through any dwelling. Package treatment plants should have adequate capacity for the population equivalent that they serve.

Likely Flows

- 10.3. The conversion shall discharge approximately 1,200 litres per day (based on British Water Chapter 4 – Flows and Loads). This shall mean an additional flow of 0.016 litres per second, 0.050 litres per second when considering the peak flow outlined in the Sewerage Sector Guidance (SSG).

Review of General Binding Rules

- 10.4. The use of a Package Treatment Plant discharging to a watercourse complies with the EA's general binding rules¹⁴ as evidenced in **Appendix 11**.

¹³ The Building Regulations 2010 – Approved Document H – Drainage and waste disposal

¹⁴ EA – General binding rules: small sewage discharge to a surface water

11. Conclusion

- 11.1. This report is compliant with the NPPF and the associated Planning Practice Guidance as well as the Wiltshire Council Level 1 Strategic Flood Risk Assessment. This report demonstrates that the proposals shall not be at unacceptable risk of flooding, providing the identified mitigation measures are implemented. This includes installing an interception swale along the western boundary, lifting proposed slab levels, fitting flood doors, installing appropriate air bricks and sealing below ground infrastructure.
- 11.2. Providing the flood mitigation strategies outlined in this document are implemented flood risk should not prevent approval being granted to this development.

Figures

For convenience – press “Alt + Left Arrow” to return to the section of the report

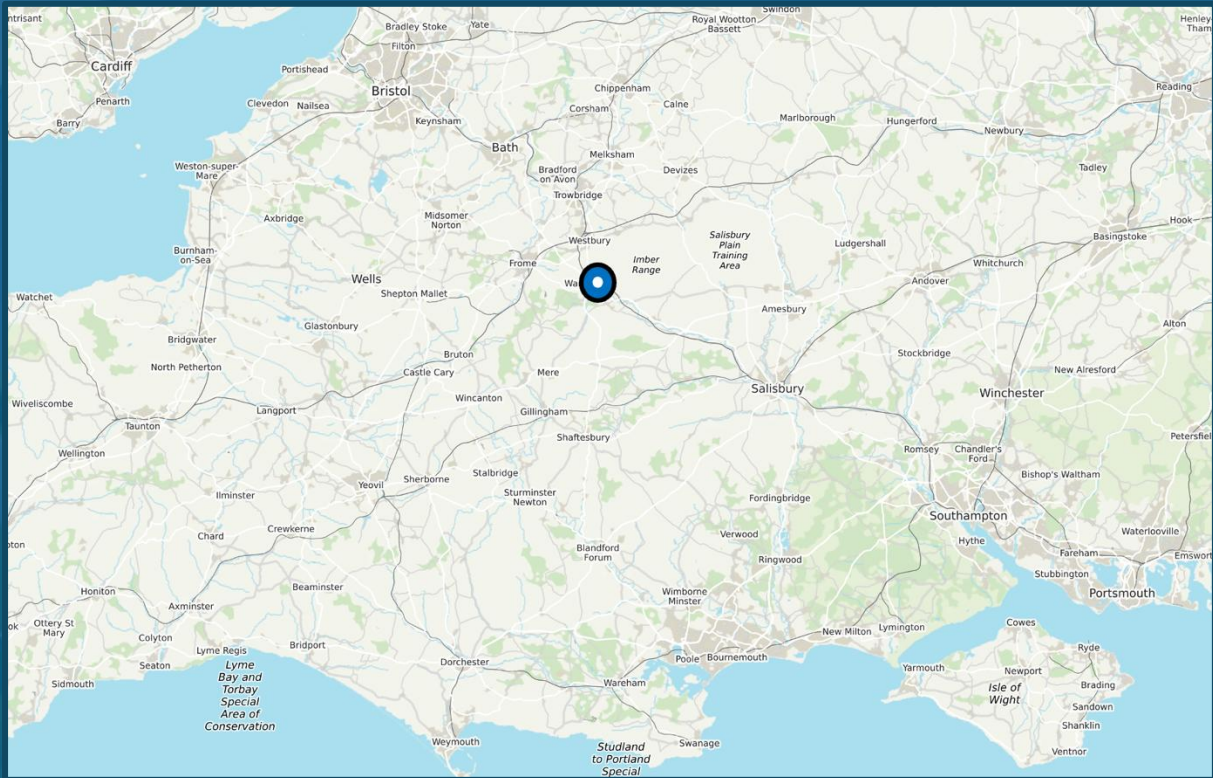
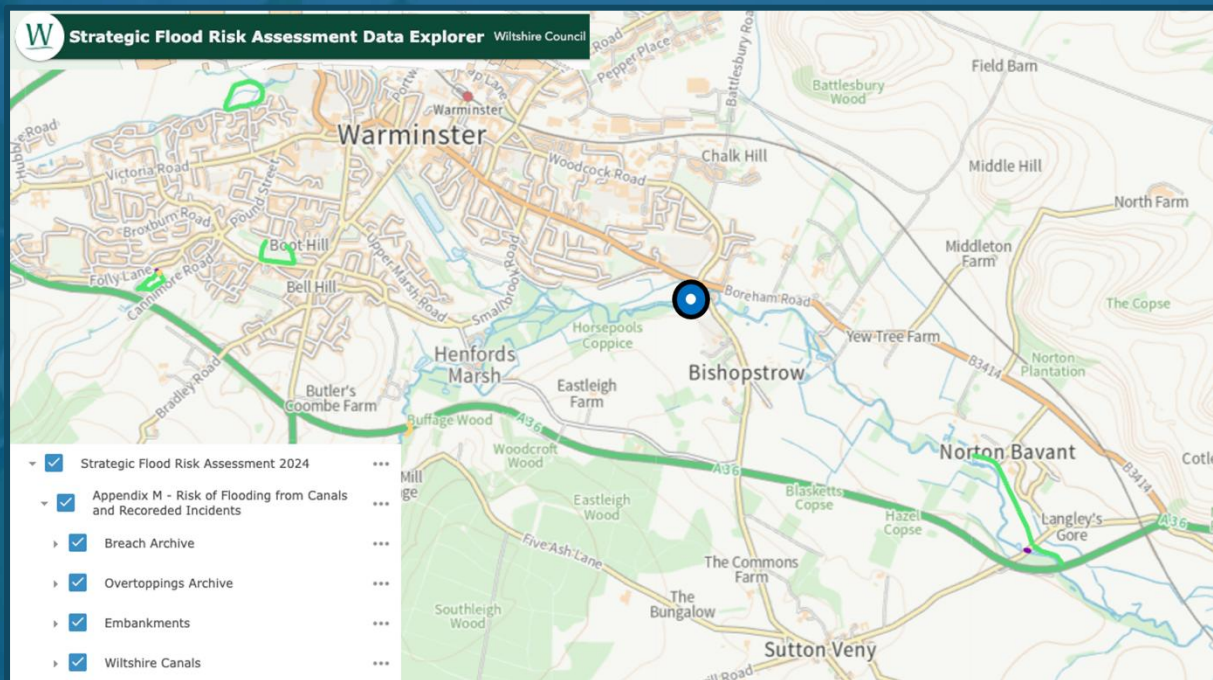
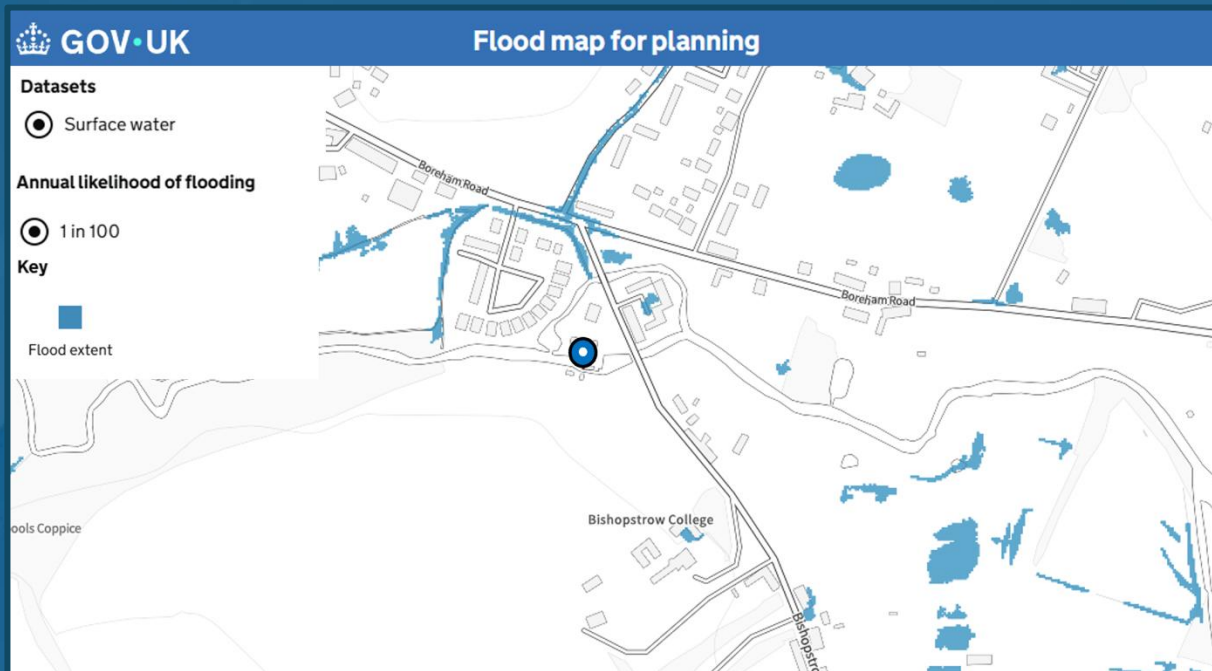


Figure 1 – Site Location in Relation to the Coast



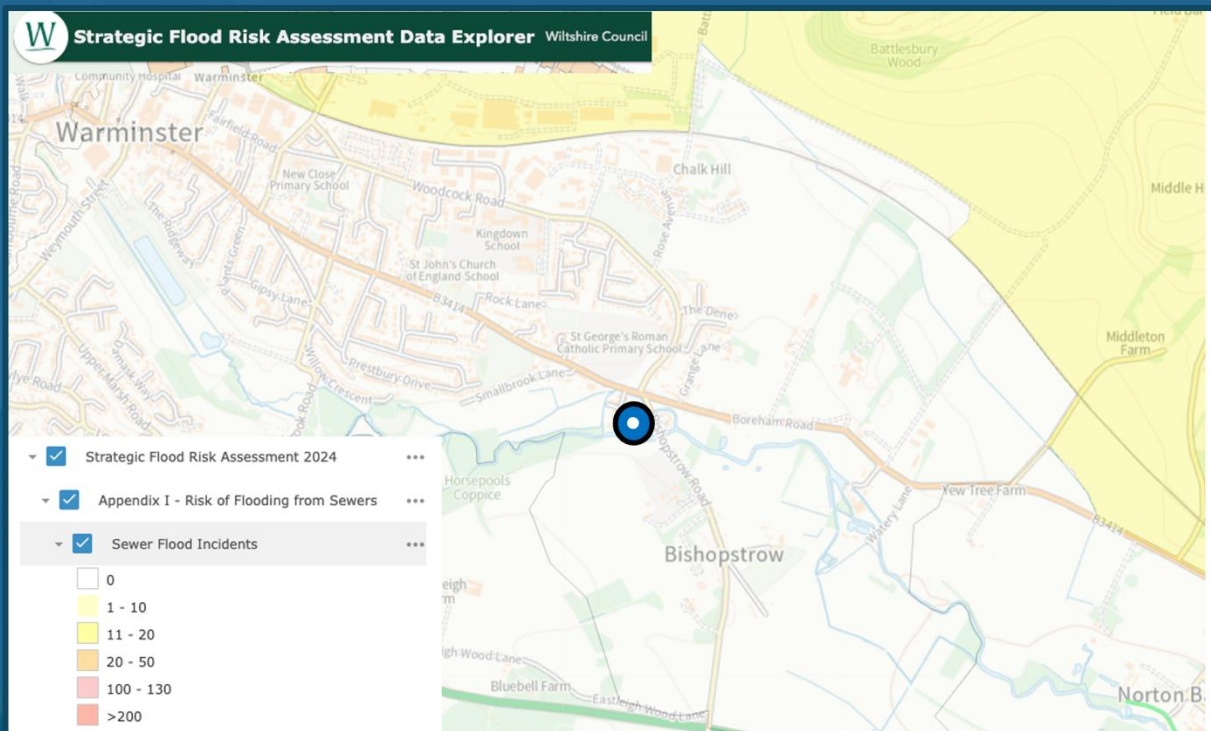


Figure 4 – Sewer Flood Risk Extent

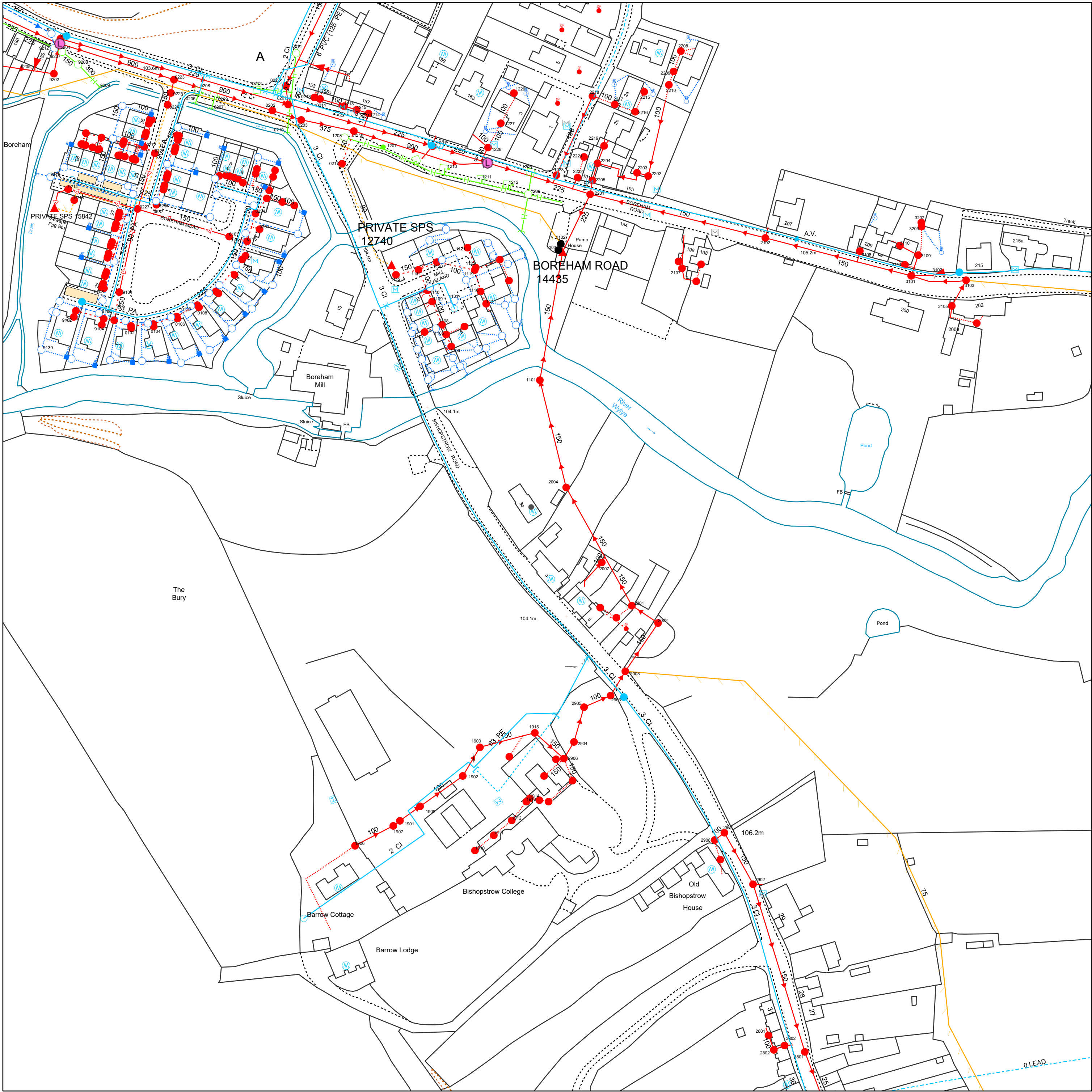
Appendix 1

Wessex Water Mapping

For convenience – press “Alt + Left Arrow” to return to the section of the report



VW MAP PL 53566 Consider converting office buildings into 6 apartments



Reproduced from the Ordnance Survey map with the permission of the Controller of His Majesty's Stationery Office. © Crown copyright and database rights (2025) OS AC0000848304

WATER MAINS		SEWERS		PUBLIC PRIVATE SECTION 104		OTHER WESSEX PIPES		NON-WESSEX / UNKNOWN	
	Distribution Main		Foul		Public		Rising Mains		Private Rising Mains
	Washout Main		Surface		Private		Standby Rising Mains		Culverted Watercourse
	Raw Water Main		Combined		Section 104		Effluent Disposal		Highway Drain
	Abandoned Main		Abandoned				Overflow		Use Unknown
	Private Main						Syphon		Status Unknown
SITES		STRUCTURES		OTHER WESSEX PIPES		OTHER STRUCTURES		OTHER STRUCTURES	
	Source		Manhole - Foul		Pumping Station - Surface		Attenuation Tank		Chamber
	Reservoir		Manhole - Surface		Pumping Stn - Foul/Combined		Storage Tank		Tunnel
	Pump		Manhole - Combined		Gully				Interceptor
	Treatment Works		Outfall		Vent Column				
FITTINGS			Inlet		Rodding Eye				
	Valve - Open		Lamphole		Catchpit				
	Valve - Closed		Bifurcation - Foul		Flushing Chamber				
	Fire Hydrant		Bifurcation - Surface		Soakaway				
	Pressure Reducing Valve		Bifurcation - Combined		Non Return Valve				
	Meter		Combined Sewage Overflow		Washout				
					Air Valve				
					Hatch Box				

Colours generally indicate the use of the sewer/drain (i.e Red - Foul, Dark Blue - Surface, Magenta - Combined/Dual Use, Light Green - Highway Drain, Mid Green - Overflow) styles of line are shown on the key in sample/typical colours.

Information in this plan is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. Building over or near Wessex Water's apparatus is not normally permitted.

Date: 17/11/2025

Centre: 389193E, 144057N

Scale: 1:1,250
(when printed at A2 size)

Our ref: WW DEV RESP PL 53566

Site address: Boreham, Bishopstrow Road, Warminster, BA12 9HQ

Development description: Consider Converting Office Buildings into 6 Apartments

Thank you for your online pre planning enquiry submission. Please find attached a map showing the approximate location of our services near the site.

Wessex Water can advise the following.

Surface water drainage

Surface water must be disposed of via the SuDS Hierarchy which is subject to Building Regulations and NPPF.

No surface water runoff, land drainage or ground water will be accepted into a public sewer that carries sewerage, either directly or indirectly. Our rainwater drainage policy can be found on our [website](#).

The National Planning Policy Framework (NPPF) mandates that Sustainable Drainage Systems (SuDS) must be incorporated into new developments to manage surface water runoff, mitigate flood risks, and provide additional benefits, including enhanced water quality and green spaces.

In line with the drainage hierarchy outlined in Approved Document H of the Building Regulations, Planning Practice Guidance, and the necessity to address water scarcity, all surface water runoff should aim to be discharged as high up the surface water discharge hierarchy as feasible.

Defra have announced new national standards for SuDS. The national surface water hierarchy has been updated and runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

- collected for non-potable use (water re-use)
- infiltrated to ground
- discharged to an above ground surface water body
- discharged to a surface water sewer, or another piped surface water drainage system
-

Note: To utilise a lesser priority final destination, appropriate evidence shall be provided that demonstrates all higher priority final destinations have been utilised to the maximum extent practicable. Higher cost alone shall not be a reason to utilise lower priority final destinations.

If you are offering the shared drainage for Section 104 adoption please refer to the Sewerage Sector Guidance [Sector guidance on sewerage and water adoption agreements](#)

Review of our mapping indicates presence of land drainage features therefore they should be used for surface water discharge. Discharge rate and connection point to be agreed with LLFA.

Foul drainage

Review of our mapping indicates that all the foul sewers in the area are in private ownership.

It is not in our gift to offer you connection to any of the private sewers. You would need to seek an arrangement with any of the private sewers owners to discharge via their sewers.

Separated systems of drainage are required: Wessex Water will not accept surface water or land drainage flows to the public foul sewer and treatment works, either directly or indirectly.

Please consider installation of Private Sewage Treatment Plant. Please consult Environment Agency.

Water supply

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.

There is 3" Water distribution main located in Bishopstrow Road from which a suitable point of connection could be made.

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.

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-largedevlopments>

For further assistance please contact Planning Liaison via
planning.liaison@wessexwater.co.uk

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

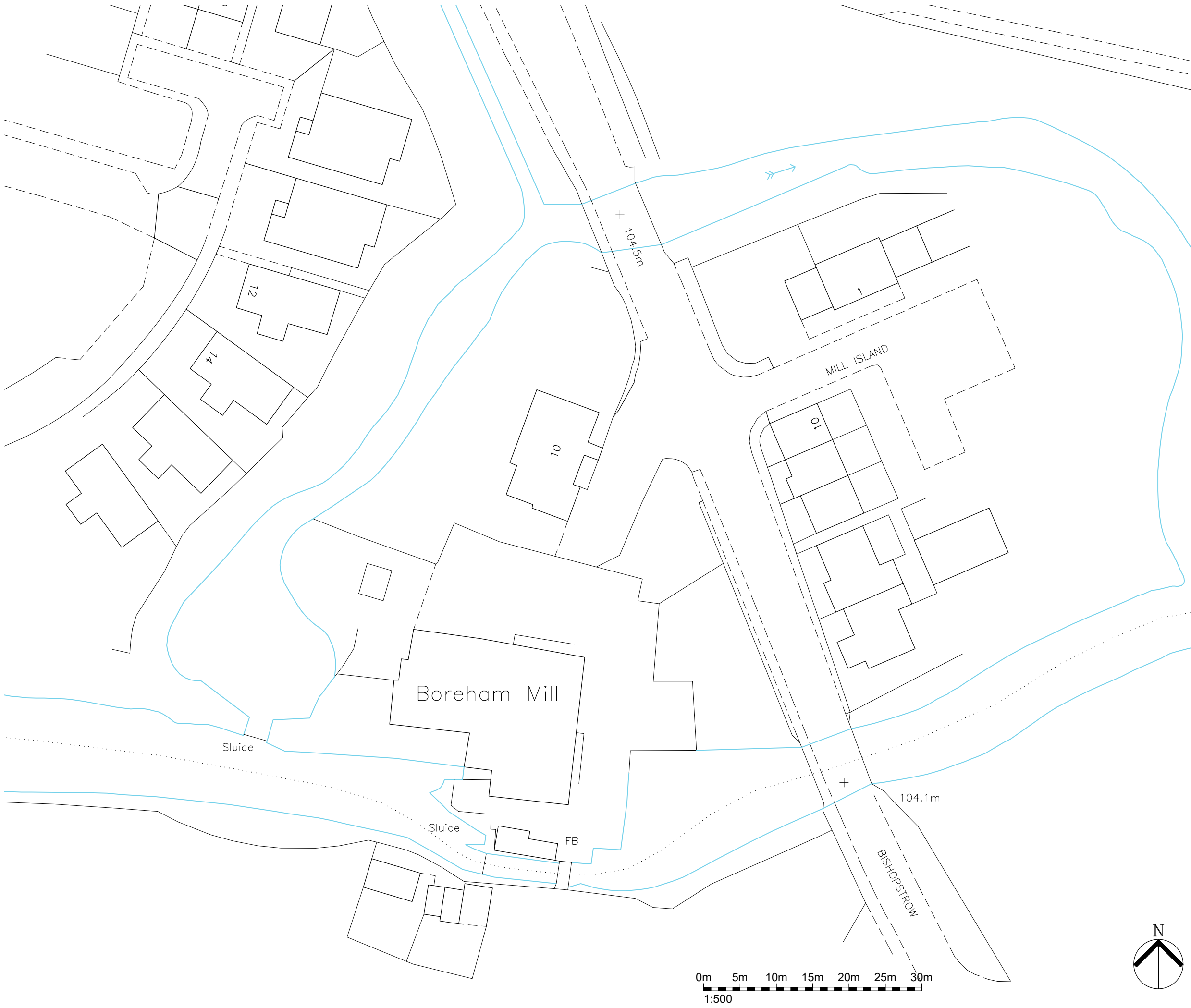
Kind regards

Appendix 2

Proposed Site Plan

For convenience – press “Alt + Left Arrow” to return to the section of the report





This drawing is copyright and owned by Greenslade Taylor Hunt, and is for use on this project and site only, unless contractually stated otherwise.

DO NOT SCALE from this drawing (printed or electronic versions) other than for planning purposes. Contractors must check all dimensions on site.

Any other design team elements other than architectural, where indicated, have been imported from the consultant's drawings and reference should be made to the individual consultant's drawings for exact setting out, size and type of component.

Discrepancies and / or ambiguities within this drawing, between it and information given elsewhere, must be reported immediately to the architect for clarification prior to proceeding with works on site.

All works are to be carried out in accordance with the latest British Standards and Codes of Practice, unless specifically directed otherwise in the specification.

Responsibility for the reproduction of this drawing in paper form, or if issued in electronic format, lies with the recipient to check that all information has been replicated in full and is correct when compared to the original paper or electronic image. Graphical representations of equipment on this drawing have been co-ordinated, but are approximations only. Please refer to the specifications and / or details for actual sizes and / or specific contractor construction information.

This original document is issued for the purpose indicated below and contains information of confidential nature.

This document is issued for the party which commissioned it and for specific purposes connected with the project detailed below in the project title.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by others.

GIA'S have been measured in accordance with international property measurement standards (as incorporated within RICS Property Measurement - 2nd Edition 2018)

Areas are given in m2 unless otherwise stated.
Measurements are given in mm unless otherwise stated.
Levels are given in meters unless otherwise stated.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

Refer to the relevant Construction (Design and Management) documentation where applicable.

It is assumed that all works on this drawing will be carried out by a competent contractor, working where appropriate to an approved method statement.

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Rev	Description	Date	By

gth

GREENSLADE TAYLOR HUNT

DEVELOPMENT LAND AND PLANNING
WINCHESTER HOUSE
DEANE GATE AVENUE
TAUNTON SOMERSET
TA1 2UH
TEL: 01823 334466

PROJECT TITLE

Boreham Mill
Bishopstrow Road, Warminster,
Wiltshire, BA12 9HQ

DRAWING TITLE

STATUS **SKETCH**

SCALE 1:500

SHEET SIZE **A3**

DATE June 25 DRAWN HS CHECKED

DWG NO. **3467-SK-02** REV

Appendix 3

EA's Product 4 Information

For convenience – press “Alt + Left Arrow” to return to the section of the report



Ciani Walsh
ciani.walsh@enviren.co.uk

Our ref: EIR2025/07032
Date: 14th May 2025

Dear Ciani Walsh,

Thank you for your enquiry which was received on 29th April 2025. We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Abstract

Name	Product 4
Description	Detailed Flood Risk Assessment Map for Wessex College, Boreham Mill, Bishopstrow Road, Warminster, BA12 9HQ NGR: ST8910344132
Licence	Open Government Licence
Information Warnings	<i>The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply.</i>
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2025 Ordnance Survey AC0000807064.

Open Data

Environment Agency published datasets are available on the weblink below as part of the Government's 'Open Data' project and are available for you to download free of charge.

Environment Agency published datasets: [Find open data - data.gov.uk](#)

Examples of datasets you may require:

- Flood Map for Planning
- Recorded Flood Outlines
- Historic Flood Map
- Surface Water for Spatial Planning extents

You can also access the Flood Map for Planning here: <https://flood-map-for-planning.service.gov.uk/>

You can also access the Risk of Flooding from Surface Water maps and Risk of Flooding from Reservoirs information here: <https://check-long-term-flood-risk.service.gov.uk/>

If you have requested this information to help inform a development proposal, then you should also note the detail in the attached advisory text on the use of Environment Agency Information and Further Guidance for FRAs.

Recorded Historic Flood Events

We no longer produce pdf copies of the Historic Flood Map. This information is available to search select, and download free of charge as part of the Government's 'Open Data' project as

- Recorded Flood Outlines
- Historic Flood Map

These are GIS layers and can be downloaded from: [Environment Agency - Publishers - data.gov.uk](https://data.gov.uk/publishers/environment-agency)

Our historic records show a record of possible flooding pre 2012 for the area, however we are currently unable to confirm the date and source of this.

Please note: we cannot guarantee that this is an exhaustive list of all past flood events in this location. All reasonable care has been taken to ensure that the historical flood event data is as accurate as possible. The Environment Agency will update it's records if new evidence emerges.

Strategic Flood Risk Assessment (SFRA)

When preparing a FRA to support a development proposal in this location you should refer to Wiltshire Council's SFRA Reports Level 1 which is available to download via the following link:

https://www.wiltshire.gov.uk/media/14497/SD67-Wiltshire-Level-1-Strategic-Flood-Risk-Assessment-2024/pdf/SD67_Wiltshire_Level_1_Strategic_Flood_Risk_Assessment_2024.pdf?m=1733141632550

The Wiltshire Council Local Plan is available via this link: <https://www.wiltshire.gov.uk/planning-policy-local-plan-review-consultation>. Please contact Wiltshire Council for further information about their latest SFRA.

Planning Advice

We now charge for aspects of discretionary planning advice including pre-application enquiries. This approach provides advice to developers in two ways. Firstly, there is the provision of 'free' high level advice available to everyone where we give a preliminary opinion on a proposed development. This sets out the environmental constraints together with any issues this raises for us. Should you wish us to obtain more detailed advice, we may be able to provide this through our discretionary chargeable scheme aimed at recovering our costs. If you have questions regarding elements of your enquiry related to Planning and Development, please contact our Sustainable Places team on wx.sp@environment-agency.gov.uk.

2D Modelled Flood Plain Water Levels (Warminster 2020 model)

Please see below for maximum 2D level information for your site for a range of return periods. This information is taken from the Warminster Integrated Model 2020.

Maximum 2D modelled water levels for the investigation area:

Undefended Levels

1% AEP (100yr) undefended:	103.16 mAOD
0.1% AEP (1000yr) undefended:	103.43 mAOD

Defended Levels

1% AEP (100yr) defended:	103.22 mAOD
--------------------------	-------------

0.1% AEP (1000yr) defended:	103.42 mAOD
-----------------------------	--------------------

Undefended Depths

1% AEP (100yr) undefended:	1.17 m
0.1% AEP (1000yr) undefended:	1.44 m

Defended Depths

1% AEP (100yr) defended:	1.23 m
0.1% AEP (1000yr) defended:	1.43 m

N.B. 0.00 (m or mAOD) indicates the data does not reach the site

N.B. Levels and depths have been extracted based upon the site boundary plan provided

N.B. Please note not all models contain climate change runs.

Updates to National Modelling

Please note – The Environment Agency has carried out a National project to update our flood risk information for the whole of England. We have updated our flood risk information in 2025 as part of the new National Flood Risk Assessment (NaFRA2). This includes the data displayed on the Check Your Long-Term Flood Risk service and the data displayed in the Flood Map for Planning (Rivers and Sea). The Risk of Flooding from Rivers and Sea (RoFRS), and Risk of Flooding from Surface Water (RoFSW) was updated on 28th January 2025 using NaFRA2 information. The Flood Map for Planning update took place on 25th March 2025.

This should result in improvements to our mapping products, especially where we do not currently have any detailed local modelling. This means there will be some changes to our flood risk information in many areas when the new data is published.

The flood zone extent may have changed for your area of interest, but the flood levels provided in this Product 4 have not. There is no need to contact us again to request flood risk data. You can visit our Flood Map for Planning service now and download the map showing the new flood zone (Product 1).

You can find further information on the NaFRA2 project here: <https://www.gov.uk/guidance/updates-to-national-flood-and-coastal-erosion-risk-information>

If you intend undertaking a FRA for a planning application using climate change flood level information supplied in this letter, you should consider whether it is appropriate in light of a range of potential allowances for fluvial flood flow now advised in current planning guidance on 'Flood risk assessments: climate change allowances'. The relevant guidance is available at the following website address: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>.

Please be aware that this information is subject to change, please check the guidance regularly. Our Sustainable places team would be happy to discuss the issues around Climate Change and how this should be used.

Environmental Permit for Flood Risk Activities

customer service line 03708 506 506
[gov.uk/environment-agency](https://www.gov.uk/environment-agency)

In addition to any other permission(s) that you may have already obtained e.g. planning permission, you may need an environmental permit for flood risk activities (formerly known as Flood Defence Consent prior to 06 April 2016) if you want to do work:

- in, under, over or near a main river (including where the river is in a culvert)
- on or near a flood defence on a main river
- in the flood plain of a main river
- on or near a sea defence

For further information and to check whether a permit is required please visit:

<https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>.

For any further advice, please email Blandford.frap@environment-agency.gov.uk.

Flood Defences

We can confirm that this site is not located within 1 kilometre of any formal flood defences.

Further Information

We advise that you also contact Wiltshire Council by email: drainage@wiltshire.gov.uk, or by phone: 0300 456 0105, based at: Bythesea Road, Trowbridge, Wiltshire, BA14 8JN as they may be able to provide further advice with respect to localised flooding and drainage issues.

Further details about the Environment Agency information supplied can be found on our website:

<https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for FRAs:

<https://www.gov.uk/planning-applications-assessing-flood-risk>

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

We hope you find this information helpful. It is provided subject to the guidance below, which we strongly recommend you read.

Yours sincerely

Nicola Jess

Customer & Engagement, Wessex
Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS
Email: wessexenquiries@environment-agency.gov.uk

Enc: Use of Environment Agency Information for Flood Risk Assessments (below)

Use of Environment Agency Information for Flood Risk Assessments (FRAs)

Important

Use of Environment Agency data: you should note that

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk Assessment (FRA) where one is required, but the use of Environment Agency information does not constitute such an assessment on its own.
2. As part of your data request, we have provided all of the modelled data we hold for your location. Please note that some of our modelled information may have been produced for purposes other than for flood zone generation. This may mean that some of the modelled data you have been provided with has a lower confidence level, and has not been used in producing our flood map, nor definitively reflects the predicted flood water level at the property/development site scale. To check the suitability of the use of this information in your FRA please contact your local Partnership & Strategic Overview (PSO) team.
3. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or surface water runoff. The information produced by the Local Planning Authority and the Lead Local Flood Authority (LLFA) may assist in assessing other sources of flood risk.
4. Where a planning application requires a FRA and this is not submitted or deficient, the Environment Agency may well raise an objection.
5. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your Local Planning Authority.

Pre-Planning Advice from the Environment Agency

If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry using the form available from our website:

Pre-application Preliminary Opinion:

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

Pre-application Charged Service:

<https://www.gov.uk/government/publications/planning-advice-environment-agency-standard-terms-and-conditions>

Depending on the enquiry we may also provide advice on other issues related to our responsibilities, including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

Flood Risk Assessment (FRA) Guidance

You should refer to the Planning Practice Guidance of the National Planning Policy Framework (NPPF) and the Environment Agency's Flood Risk Standing Advice for information about Flood Risk Assessment (FRA) for new development in the different Flood Zones. These documents can be accessed via:

National Planning Policy Framework Planning Practice Guidance:

<http://planningguidance.planningportal.gov.uk/>

Environment Agency advice on FRAs:

customer service line 03708 506 506
gov.uk/environment-agency

<https://www.gov.uk/flood-risk-assessment-for-planning-applications#when-to-follow-standing-advice>

<https://www.gov.uk/government/publications/planning-applications-assessing-flood-risk>

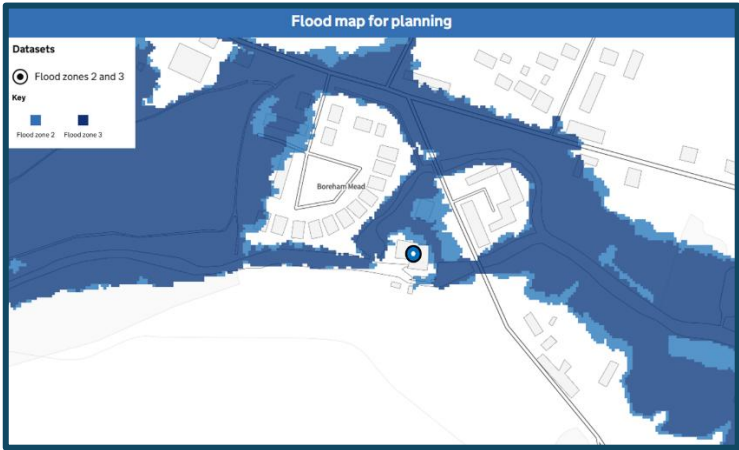
Appendix 4

Draft Flood Evacuation Plan

For convenience – press “Alt + Left Arrow” to return to the section of the report



Table A4.1 – Site Specific Information

Site Description	The site is to be used as a residential building containing 6 units served by a northern access drive which connects to a gravel access drive to the north which joins Bishopstrow Road.	
Situation	The access track to the north, along with the northern most peripheries of the site, is subject to flooding from the nearby river. 	
Evacuation Routes (site users)	In the event of flooding site users should seek to exit the site when alerted through the EA Flood Warning Service.	
Hazards	Several hazards have been identified which could prevent safe access and egress and cause issues in the event of flooding, these include: • Vehicles stationed in the access drive. • Vebris within the main access drive. • Overburdening of the foul drainage system and the discharge of untreated effluent. • Electric short circuiting causing a fire hazard.	
Flood Risk	The flood risk effected the development is outlined below. Reference should be made to the Enviren Flood Risk Assessment (2500351-ENV-S1-SW-TR-C-0001) and the end user of the site should be fully cognisant of its findings and recommendations.	
	Flood Source	Flood Risk
	Flood Zone (Rivers and Sea)	Flood Zone 1 (FZ1) – Building footprint Flood Zone 2 and Flood Zone 3 – Site grounds

	Risk of Surface Water Flooding		Very low risk	
	Risk of Reservoir Flooding		Medium risk	
	Risk of Groundwater Flooding		Medium risk	
	Risk of Sewer Flooding		Very low risk	
	Critical Drainage Status		Not believed to be within a Critical Drainage Area	
	High Risk	Medium Risk	Low Risk	Very Low Risk
Vulnerable Users	Vulnerable users of the site who should be given special consideration and priority including: • Disabled personnel • Pregnant women • Elderly persons • Infants			
Prevention, Protection & Preparation Measures in the event of flooding.	In the event that flooding does take place to the north of the development, end users of the site should undertake the following actions: Prevention Leave the site immediately on receipt of advice from the EA of incoming flood waters. Leave any unnecessary possessions behind and evacuate to a safe location. The nearest identified safe space with access to sanitary facilities is the Rose and Crown Public House in Warminster. Protection Flood waters should not impact the dwellings therefore any possessions will be safe within. Any vehicles parked on the northern access road should be removed and used as part of evacuation procedures, providing flood waters have not yet effected the northern drive. Preparation Each unit should be equipped with an emergency evacuation bag. This should be prepared with due consideration to the National Flood Forum Emergency Flood Kit. All units should contain a landline phone and be subscribed to the EA's flood warning service.			
Action on Alert	End users should leave the site immediately on receipt of forewarning from the EA's flood warning service. End users should leave any non-essential belongings behind and must not return to the units until flooding has subsided and even once flood waters have subsided caution should be taken. There may well be environmental hazards, loss of utilities and other such issues, which may have to be rectified before people are allowed back to premises.			

	If flood waters are already present then end users should not attempt to leave the site but should instead remain within the units where they will be safe. If an emergency does occur then the end users should contact the emergency services on 999; however, this should be used sparingly as the emergency services will be overwhelmed elsewhere. EA Stand-down Following confirmation from the Environment Agency, the decision can be taken to stand down the block. In this eventuality, the units should return to normal operation following the agreed re-occupation procedure.
Welfare facilities	Welfare facilities shall also be available should users become stranded and a WC is present onsite.
Briefing and Training	End users should be made aware of this plan and briefed/trained accordingly. Exercising of the plan is essential. Health & Safety records should be kept. The Plan will form part of the Health & Safety at Work Register maintained by the organisation.
Document Control	The Plan should be owned, maintained, and updated. All users should be reminded periodically to provide details of any changes that may materially affect the plan in any way. Details of changes should be recorded and the documentation updated. This should be completed either through a re-issue of the plan or via an amendments record. The plan should be reviewed at least every three years, or more regularly if required, for example, as a result of lessons identified after an activation event or exercise, following major changes of personnel or policy, or following any change to the flood risk or warning process. Documentation control procedures should be in place to ensure that only the current version of the plan is in circulation.

Appendix 5

Flood Mitigation Details

For convenience – press “Alt + Left Arrow” to return to the section of the report



1. Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and 'Design Manual for Roads and Bridges 4.2 Part 5' HA 104/09.
2. All Manhole Covers must be of non-rocking design. Covers that transfer the load to the frame at concentrated points shall not use cushion inserts between cover and frame.
3. Aluminium covers are not acceptable on any Adoptable Drainage.
4. Manhole Covers on foul-only sewers shall be of low leakage types in order to prevent excess surface water ingress.
5. All Manhole covers shall be non-ventilating type, with closed keyways and prising slot to facilitate removal.
6. Safety Grids where specified shall comply with BS9124. When lifted they shall be secure in the upright position. Aluminium Grids not to be used.
7. Manhole Cover Grades are to be as per Table 1.
8. Manhole Frame Depths are to be as per Table 2.

1. All works and materials to be in accordance with The Design and Construction Guidance contained within the Sewerage Sector Guidance 25th October 2019 and The Undertakers Requirements,
2. All drainage goods to be in accordance with relevant British Standards and Kite marked.
3. Concrete Design :- All in-situ concrete to be GEN3 with sulphate resisting cement unless agreed otherwise.
5. All manholes must be constructed such that the outside edge of the manhole is at least 0.5m from the kerb line. The sewer must be at least 1.0m from the kerb line.
6. First manhole upstream from the connection point to the public sewer should be fitted with a screen to prevent debris entering the public sewer.
7. To be read in conjunction with the Water Authorities Standard Details and Construction Notes

0001	Drainage Layout
0002	Flood Routing
0003	Flood Mitigation Details



Appendix 6

BCS Borehole Records

For convenience – press “Alt + Left Arrow” to return to the section of the report





SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Civil and Structural Engineers				DEPARTMENT OF TRANSPORT SOUTH WESTERN ROAD CONSTRUCTION UNIT A36 WARMINSTER BYPASS PRELIMINARY SITE INVESTIGATION				ST 84 SE/24 388985 144207		TRIAL PIT BOREHOLE No 122 DRILLHOLE																	
Field Work by: A. Monk & Company Limited				Coordinates: 88985 E 44207 N				Ground Level: 104.35 m OD		FIGURE A																	
Method: Mechanical Excavator										Sheet 1 of 1																	
Dates: 1st March 1979										Laboratory Testing by: A. Monk & Company Limited																	
Hole Dimensions: 3.0 x 1.0m										Dates: April 1979																	
Casing Dimensions:																											
Date	Depth of Casing (m)	Depth to Water (m)	Sample/In situ Test	Change of Strata	Depth (m)	Reduced Level	Description of Strata	Classification	Sample Number	Natural Moisture Content (%)	Natural Dry Density (kg/m ³)	Liquid Limit (%)	Plastic Limit (%)	Percentage passing													
1.3.79					0.20	104.16	Soft and firm brown sandy silty clay with gravel, cobbles and brick fragments and roots. FILL		J2	31		54	36	B3 2.30-2.40m													
					0.90		Soft, firm and stiff brown and greyish green mottled sandy silty clay with a little angular to sub-rounded fine medium and coarse gravel of mainly sandstone origin and occasional cobbles																				
					1.20	103.16	Lenses of grey silty clay																				
					1.30	103.05	Firm dark brown organic rich slightly sandy silty CLAY with dead grass at the top (original topsoil)																				
					1.50		Soft to firm dark grey and brown silty CLAY with black plant remains and a trace of angular coarse gravel and cobbles																				
					2.10	102.26	Light grey silty sandy clayey sub-angular to sub-rounded fine medium and coarse GRAVEL of flint origin with occasional cobbles and rare boulders																				
					2.30		A trace of plant remains																				
					2.40		Apparently loose																				
					3.10																						
					3.20																						
					3.30	101.06	Slow groundwater seepage at 1.2m, moderately fast at 2.9m + hour pumping. Vertical slides stable above 2.1m. Trial pit supported to 2.7m. Orientation: Long axis approximately perpendicular to road																				
					END																						
Disturbed Samples: J - Jar, S - SPT, B - Bulk, M - Maxi				Undisturbed Samples: Soil Sample				Insitu Tests: V C30 J - Vane shear strength in KN/m ²				Groundwater first struck				Core Cutter Density, Core Cutter Density/C.B.R.				Sand bottle Density, C.B.R.				Cor S - SPT cone or spoon (25) - N value			

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Civil and Structural Engineers

Field Work by: A. Wank & Company Limited

Method: Cable Percussion

Dates: 20.2.79 - 22.2.79

Hole Dimensions: 200mm

Casing Dimensions: 200mm

DEPARTMENT OF TRANSPORT
SOUTH WESTERN ROAD CONSTRUCTION UNIT
A36 WARMINSTER BYPASS
PRELIMINARY SITE INVESTIGATION

Coordinates: 89140 E
44077 N

Ground Level: 104.59 m OD.

ST 34 SE / 28
89140 44077

FIGURE A

Sheet 1 of 1

Laboratory Testing by: A. Wank & Company Limited

Dates: April 1979

Date	Depth of Casing (m)	Depth to Water (m)	Sample/Insitu Test		Change of Strata		Description of Strata	Classification	Sample Number	Natural Moisture Content (%)	Natural Dry Density (kg/m³)	Liquid Limit (%)	Plastic Limit (%)
			Depth (m)	Type & Number	Legend	Depth (m)							
20.2.79			0.40	J1		104.29	TOPSOIL	B3	31			54	39
			0.50	SJ2									
			0.95	(6)									
			1.00										
21.2.79	NIL	DRY	1.50	B3			Soft brown very sandy CLAY with some angular and sub-angular fine to coarse gravel, cobbles and concentrations of sand						
	NIL	DRY	2.00										
			2.00	B4		102.59							
			2.05	SJ5									
			2.50	(6)			Loose rapidly becoming very dense greenish grey, orange-brown and brown clayey silty fine SAND with occasional gravel and very weakly cemented zones						
			3.00	B6									
			3.300	J7									
			3.600	SJ8		101.39							
			4.90	(58 for 150mm)			Greenish grey partially cemented silty fine to coarse SANDSTONE with specks of glauconite						
			5.00										
			5.35										
			6.00										
	6.00	4.00	6.45	SJ9		98.24	Becomes green with depth						
				(60)									
				SJ1			32 hrs chiselling 3.3m - 4.8m Groundwater struck at 2m and remained at 2m after 20 mins Piezometer installed at 5.9m with sand filter below 5.3m Remainder of hole grouted						
				(100)									
					5.45	END							

Disturbed Samples: W - Groundwater

Undisturbed Samples: Soil Sample

Insitu Tests: V C30 - Vane shear strength in kN/m²

Groundwater first struck

Core Cutter Density

Core Cutter Density/C.B.R.

CLAY

FINE GRAINED SAND

SAND

Sandbottle Density

C.B.R.

Cor S - SPT cone or spoon

C30 - R value

ST 34 SE / 28
89140 44077

FIGURE A

Sheet 1 of 1

Laboratory Testing by: A. Wank & Company Limited

Dates: April 1979

Disturbed Samples: W - Groundwater

Undisturbed Samples: Soil Sample

Insitu Tests: V C30 - Vane shear strength in kN/m²

Groundwater first struck

Core Cutter Density

Core Cutter Density/C.B.R.

CLAY

FINE GRAINED SAND

SAND

Sandbottle Density

C.B.R.

Cor S - SPT cone or spoon

C30 - R value

Appendix 7

Greenfield Runoff Calculations

For convenience – press “Alt + Left Arrow” to return to the section of the report



Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)		100 year (l/s)	4.8
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	✓	Check Discharge Volume	x
Summer CV	0.750	Drain Down Time (mins)	240	2 year (l/s)	1.3		
Winter CV	0.840	Additional Storage (m³/ha)	0.0	30 year (l/s)	3.6		

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

Pre-development Discharge Rate

Site Makeup	Greenfield	Soil Index	5	Growth Factor 30 year	2.40	Q 2 year (l/s)	1.3
Greenfield Method	IH124	SPR	0.53	Growth Factor 100 year	3.19	Q 30 year (l/s)	3.6
Positively Drained Area (ha)	0.194	Region	7	Betterment (%)	0	Q 100 year (l/s)	4.8
SAAR (mm)	846	Growth Factor 2 year	0.88	QBar	1.5		

Appendix 8

Brownfield Runoff Calculations

For convenience – press “Alt + Left Arrow” to return to the section of the report



Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	100 year (l/s)	4.8	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	✓	Check Discharge Volume	x
Summer CV	0.750	Drain Down Time (mins)	240	2 year (l/s)	1.3		
Winter CV	0.840	Additional Storage (m³/ha)	0.0	30 year (l/s)	3.6		

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

Pre-development Discharge Rate

Site Makeup	Brownfield	PIMP (%)	100	Betterment (%)	0	Q 100 year (l/s)	7.3
Brownfield Method	MRM	CV	0.840	Q 2 year (l/s)	2.3		
Contributing Area (ha)	0.196	Time of Concentration (mins)	5.00	Q 30 year (l/s)	5.9		

Appendix 9

Surface Water Calculations

For convenience – press “Alt + Left Arrow” to return to the section of the report



Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	100	Maximum Rainfall (mm/hr)	550.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	0.840	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	499	1350	749	1500	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

Circular Link Type

Template	Freeform Carrier	Barrels	1	Follow Ground	x
Shape	Circular	Auto Increment (mm)	75		

Available Diameters (mm)

100 | 150

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1.1	0.010	5.00	103.600	1200	102.598	63.519	1.050
S1.2	0.020	5.00	103.300	1200	122.120	61.381	1.050
S1.3	0.041	5.00	103.000	1200	124.940	86.774	1.125
S1.4	0.050	5.00	103.500	1200	97.803	90.723	1.865
STORAGE			103.200	1200	97.691	95.041	1.775
CONTROL			103.200	1200	89.416	99.070	1.815

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
COMBINED			102.800	1200	82.867	96.810	1.465
DUMMY			102.600	1200	77.952	98.040	1.300

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S1.1	S1.2	19.639	0.600	102.550	102.250	0.300	65.5	150	5.26	144.2
1.001	S1.2	S1.3	25.549	0.600	102.250	101.950	0.300	85.2	150	5.65	141.0
1.002	S1.3	S1.4	27.423	0.600	101.875	101.710	0.165	166.2	225	6.11	137.4
1.003	S1.4	STORAGE	4.319	0.600	101.635	101.500	0.135	32.0	225	6.14	137.1
1.004	STORAGE	CONTROL	9.204	0.600	101.425	101.385	0.040	230.1	300	6.29	135.9
1.005	CONTROL	COMBINED	6.928	0.600	101.385	101.335	0.050	138.6	150	6.42	134.9
1.006	COMBINED	DUMMY	5.067	0.600	101.335	101.300	0.035	144.8	150	6.52	134.1

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.245	22.0	4.4	0.900	0.900	0.010	0.0	45	0.974
1.001	1.090	19.3	12.8	0.900	0.900	0.030	0.0	90	1.167
1.002	1.011	40.2	29.6	0.900	1.565	0.071	0.0	144	1.103
1.003	2.321	92.3	50.4	1.640	1.475	0.121	0.0	118	2.367
1.004	1.032	73.0	49.9	1.475	1.515	0.121	0.0	183	1.109
1.005	0.852	15.0	49.5	1.665	1.315	0.121	0.0	150	0.868
1.006	0.833	14.7	49.3	1.315	1.150	0.121	0.0	150	0.849

Pipeline Schedule

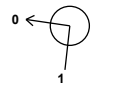
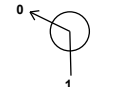
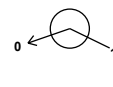
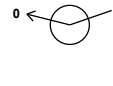
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	19.639	65.5	150	Circular	103.600	102.550	0.900	103.300	102.250	0.900
1.001	25.549	85.2	150	Circular	103.300	102.250	0.900	103.000	101.950	0.900
1.002	27.423	166.2	225	Circular	103.000	101.875	0.900	103.500	101.710	1.565
1.003	4.319	32.0	225	Circular	103.500	101.635	1.640	103.200	101.500	1.475
1.004	9.204	230.1	300	Circular	103.200	101.425	1.475	103.200	101.385	1.515
1.005	6.928	138.6	150	Circular	103.200	101.385	1.665	102.800	101.335	1.315
1.006	5.067	144.8	150	Circular	102.800	101.335	1.315	102.600	101.300	1.150

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1.1	1200	Manhole	Adoptable	S1.2	1200	Manhole	Adoptable
1.001	S1.2	1200	Manhole	Adoptable	S1.3	1200	Manhole	Adoptable
1.002	S1.3	1200	Manhole	Adoptable	S1.4	1200	Manhole	Adoptable
1.003	S1.4	1200	Manhole	Adoptable	STORAGE	1200	Manhole	Adoptable
1.004	STORAGE	1200	Manhole	Adoptable	CONTROL	1200	Manhole	Adoptable
1.005	CONTROL	1200	Manhole	Adoptable	COMBINED	1200	Manhole	Adoptable
1.006	COMBINED	1200	Manhole	Adoptable	DUMMY	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S1.1	102.598	63.519	103.600	1.050	1200		0	1.000	102.550	150
S1.2	122.120	61.381	103.300	1.050	1200			1	1.000	102.250
						0		1.001	102.250	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1.3	124.940	86.774	103.000	1.125	1200	 1	1.001	101.950	150
S1.4	97.803	90.723	103.500	1.865	1200	 1	1.002	101.875	225
						0	1.002	101.710	225
STORAGE	97.691	95.041	103.200	1.775	1200	 1	1.003	101.635	225
						0	1.003	101.500	225
CONTROL	89.416	99.070	103.200	1.815	1200	 1	1.004	101.425	300
						0	1.004	101.385	300
COMBINED	82.867	96.810	102.800	1.465	1200	 1	1.005	101.385	150
						0	1.005	101.335	150
DUMMY	77.952	98.040	102.600	1.300	1200	 1	1.006	101.335	150
						0	1.006	101.300	150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	100 year (l/s)	4.8	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	✓	Check Discharge Volume	x
Summer CV	0.750	Drain Down Time (mins)	240	2 year (l/s)	1.3		
Winter CV	0.840	Additional Storage (m³/ha)	0.0	30 year (l/s)	3.6		

Storm Durations

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

Pre-development Discharge Rate

Site Makeup	Brownfield	PIMP (%)	100	Betterment (%)	0	Q 100 year (l/s)	7.3
Brownfield Method	MRM	CV	0.840	Q 2 year (l/s)	2.3		
Contributing Area (ha)	0.196	Time of Concentration (mins)	5.00	Q 30 year (l/s)	5.9		

Node CONTROL Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	101.385	Product Number	CTL-SHE-0061-2000-1550-2000
Design Depth (m)	1.550	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node STORAGE Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	101.425
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	46.0	0.0	1.200	46.0	0.0	1.201	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	97.127	27.484	30 year 180 minute summer	54.982	14.149
2 year 15 minute winter	68.160	27.484	30 year 180 minute winter	35.739	14.149
2 year 30 minute summer	63.407	17.942	30 year 240 minute summer	43.499	11.495
2 year 30 minute winter	44.496	17.942	30 year 240 minute winter	28.900	11.495
2 year 60 minute summer	42.727	11.291	30 year 360 minute summer	33.114	8.521
2 year 60 minute winter	28.387	11.291	30 year 360 minute winter	21.525	8.521
2 year 120 minute summer	30.800	8.140	30 year 480 minute summer	25.955	6.859
2 year 120 minute winter	20.463	8.140	30 year 480 minute winter	17.244	6.859
2 year 180 minute summer	25.342	6.521	30 year 600 minute summer	21.151	5.785
2 year 180 minute winter	16.473	6.521	30 year 600 minute winter	14.452	5.785
2 year 240 minute summer	20.804	5.498	30 year 720 minute summer	18.763	5.029
2 year 240 minute winter	13.822	5.498	30 year 720 minute winter	12.610	5.029
2 year 360 minute summer	16.451	4.233	30 year 960 minute summer	15.286	4.025
2 year 360 minute winter	10.693	4.233	30 year 960 minute winter	10.126	4.025
2 year 480 minute summer	13.164	3.479	30 year 1440 minute summer	10.944	2.933
2 year 480 minute winter	8.746	3.479	30 year 1440 minute winter	7.355	2.933
2 year 600 minute summer	10.875	2.975	100 year +45% CC 15 minute summer	465.286	131.660
2 year 600 minute winter	7.431	2.975	100 year +45% CC 15 minute winter	326.517	131.660
2 year 720 minute summer	9.745	2.612	100 year +45% CC 30 minute summer	312.373	88.391
2 year 720 minute winter	6.549	2.612	100 year +45% CC 30 minute winter	219.209	88.391
2 year 960 minute summer	8.056	2.121	100 year +45% CC 60 minute summer	214.970	56.810
2 year 960 minute winter	5.336	2.121	100 year +45% CC 60 minute winter	142.821	56.810
2 year 1440 minute summer	5.886	1.578	100 year +45% CC 120 minute summer	130.472	34.480
2 year 1440 minute winter	3.956	1.578	100 year +45% CC 120 minute winter	86.683	34.480
30 year 15 minute summer	252.713	71.509	100 year +45% CC 180 minute summer	99.732	25.664
30 year 15 minute winter	177.343	71.509	100 year +45% CC 180 minute winter	64.828	25.664
30 year 30 minute summer	169.017	47.826	100 year +45% CC 240 minute summer	78.651	20.785
30 year 30 minute winter	118.608	47.826	100 year +45% CC 240 minute winter	52.254	20.785
30 year 60 minute summer	115.174	30.437	100 year +45% CC 360 minute summer	59.877	15.408
30 year 60 minute winter	76.519	30.437	100 year +45% CC 360 minute winter	38.921	15.408
30 year 120 minute summer	71.356	18.857	100 year +45% CC 480 minute summer	47.171	12.466
30 year 120 minute winter	47.407	18.857	100 year +45% CC 480 minute winter	31.339	12.466

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 600 minute summer	38.660	10.574	100 year +45% CC 960 minute summer	28.359	7.468
100 year +45% CC 600 minute winter	26.415	10.574	100 year +45% CC 960 minute winter	18.786	7.468
100 year +45% CC 720 minute summer	34.485	9.242	100 year +45% CC 1440 minute summer	20.543	5.506
100 year +45% CC 720 minute winter	23.176	9.242	100 year +45% CC 1440 minute winter	13.806	5.506

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 winter	S1.1	10	102.574	0.024	1.3	0.0276	0.0000	OK
15 minute winter	S1.2	11	102.295	0.045	3.8	0.0511	0.0000	OK
15 minute winter	S1.3	11	101.947	0.072	8.6	0.0814	0.0000	OK
15 minute winter	S1.4	11	101.704	0.069	14.5	0.0777	0.0000	OK
180 minute winter	STORAGE	132	101.624	0.199	4.7	8.9083	0.0000	OK
180 minute winter	CONTROL	132	101.624	0.239	1.6	0.2700	0.0000	SURCHARGED
180 minute winter	COMBINED	132	101.369	0.034	1.5	0.0386	0.0000	OK
180 minute winter	DUMMY	132	101.333	0.033	1.5	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 winter	S1.1	1.000	S1.2	1.3	0.414	0.057	0.0617	
15 minute winter	S1.2	1.001	S1.3	3.7	0.836	0.191	0.1125	
15 minute winter	S1.3	1.002	S1.4	8.6	0.800	0.213	0.2938	
15 minute winter	S1.4	1.003	STORAGE	14.5	1.551	0.157	0.0405	
180 minute winter	STORAGE	1.004	CONTROL	1.6	0.200	0.022	0.5045	
180 minute winter	CONTROL	Hydro-Brake®	COMBINED	1.5				
180 minute winter	COMBINED	1.006	DUMMY	1.5	0.525	0.104	0.0147	19.7

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1.1	10	102.589	0.039	3.3	0.0440	0.0000	OK
15 minute winter	S1.2	11	102.326	0.076	9.7	0.0865	0.0000	OK
180 minute winter	S1.3	176	102.030	0.155	5.8	0.1754	0.0000	OK
180 minute winter	S1.4	176	102.030	0.395	9.9	0.4469	0.0000	SURCHARGED
180 minute winter	STORAGE	176	102.030	0.605	11.2	27.1258	0.0000	SURCHARGED
180 minute winter	CONTROL	176	102.030	0.645	1.8	0.7295	0.0000	SURCHARGED
15 minute summer	COMBINED	61	101.369	0.034	1.5	0.0387	0.0000	OK
15 minute summer	DUMMY	61	101.333	0.033	1.5	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 winter	S1.1	1.000	S1.2	3.2	0.522	0.148	0.1238	
15 minute winter	S1.2	1.001	S1.3	9.5	1.072	0.492	0.2260	
180 minute winter	S1.3	1.002	S1.4	5.8	0.717	0.144	0.9455	
180 minute winter	S1.4	1.003	STORAGE	11.2	1.207	0.122	0.1718	
180 minute winter	STORAGE	1.004	CONTROL	1.8	0.223	0.025	0.6481	
180 minute winter	CONTROL	Hydro-Brake®	COMBINED	1.5				
15 minute summer	COMBINED	1.006	DUMMY	1.5	0.525	0.104	0.0148	15.9

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	S1.1	232	102.974	0.424	1.2	0.4797	0.0000	SURCHARGED
240 minute winter	S1.2	232	102.974	0.724	3.6	0.8189	0.0000	SURCHARGED
240 minute winter	S1.3	232	102.974	1.099	8.6	1.2427	0.0000	FLOOD RISK
240 minute winter	S1.4	232	102.974	1.339	14.0	1.5140	0.0000	SURCHARGED
240 minute winter	STORAGE	232	102.974	1.548	13.7	54.2132	0.0000	FLOOD RISK
240 minute winter	CONTROL	232	102.973	1.588	2.3	1.7965	0.0000	FLOOD RISK
240 minute winter	COMBINED	232	101.375	0.040	2.0	0.0448	0.0000	OK
240 minute winter	DUMMY	232	101.338	0.038	2.0	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)
240 minute winter	S1.1	1.000	S1.2	1.2	0.409	0.055	0.3457	
240 minute winter	S1.2	1.001	S1.3	3.6	0.821	0.187	0.4498	
240 minute winter	S1.3	1.002	S1.4	8.0	0.729	0.198	1.0906	
240 minute winter	S1.4	1.003	STORAGE	13.7	1.081	0.148	0.1718	
240 minute winter	STORAGE	1.004	CONTROL	2.3	0.233	0.032	0.6481	
240 minute winter	CONTROL	Hydro-Brake®	COMBINED	2.0				
240 minute winter	COMBINED	1.006	DUMMY	2.0	0.567	0.138	0.0181	45.3

Appendix 10

Drainage Layout

For convenience – press “Alt + Left Arrow” to return to the section of the report



Manhole Cover and Frame Notes:

- Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and 'Design Manual for Roads and Bridges 4.2 Part 5' HA 104/09.
- All Manhole Covers must be of non-rocking design. Covers that transfer the load to the frame at concentrated points shall not use cushion inserts between cover and frame.
- Aluminium covers are not acceptable on any Adoptable Drainage.
- Manhole Covers on foul-only sewers shall be of low leakage types in order to prevent excess surface water ingress.
- All Manhole covers shall be non-ventilating type, with closed keyways and prising slot to facilitate removal.
- Safety Grids where specified shall comply with BS9124. When lifted they shall be secure in the upright position. Aluminium Grids not to be used.
- Manhole Cover Grades are to be as per Table 1.
- Manhole Frame Depths are to be as per Table 2.

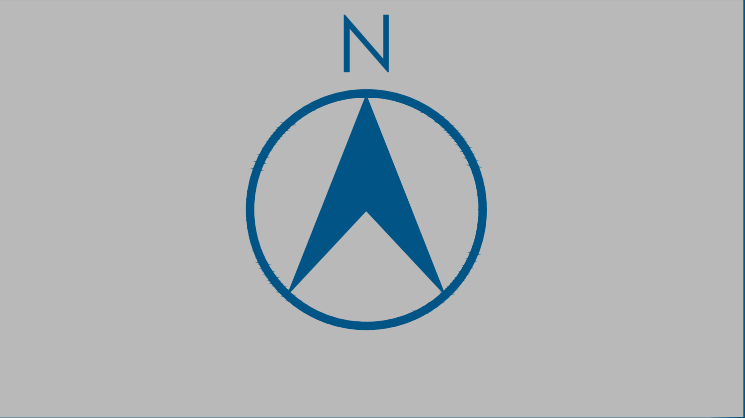
General Construction Notes:

- All works and materials to be in accordance with The Design and Construction Guidance contained within the Sewerage Sector Guidance 25th October 2019 and The Undertakers Requirements.
- All drainage goods to be in accordance with relevant British Standards and Kite marked.
- Concrete Design :- All in-situ concrete to be GEN3 with sulphate resisting cement unless agreed otherwise.
- All manholes must be constructed such that the outside edge of the manhole is at least 0.5m from the kerb line. The sewer must be at least 1.0m from the kerb line.
- First manhole upstream from the connection point to the public sewer should be fitted with a screen to prevent debris entering the public sewer.
- To be read in conjunction with the Water Authorities Standard Details and Construction Notes.

Drawing Reference Table

0001	Drainage Layout
0002	Flood Routing
0003	Flood Mitigation Details

Key	
	Proposed Foul Water Sewer
	Proposed Surface Water Sewer
	Proposed Perforated Pipe
	Proposed 450mm Plastic Inspection Chamber
	Proposed Hydrabrake
	Proposed Pumped Combined Sewer Manhole
	Proposed Non-Return Valve
	Proposed Type-C Porous Paving
	Proposed Subsurface Storage
	Proposed Raingarden

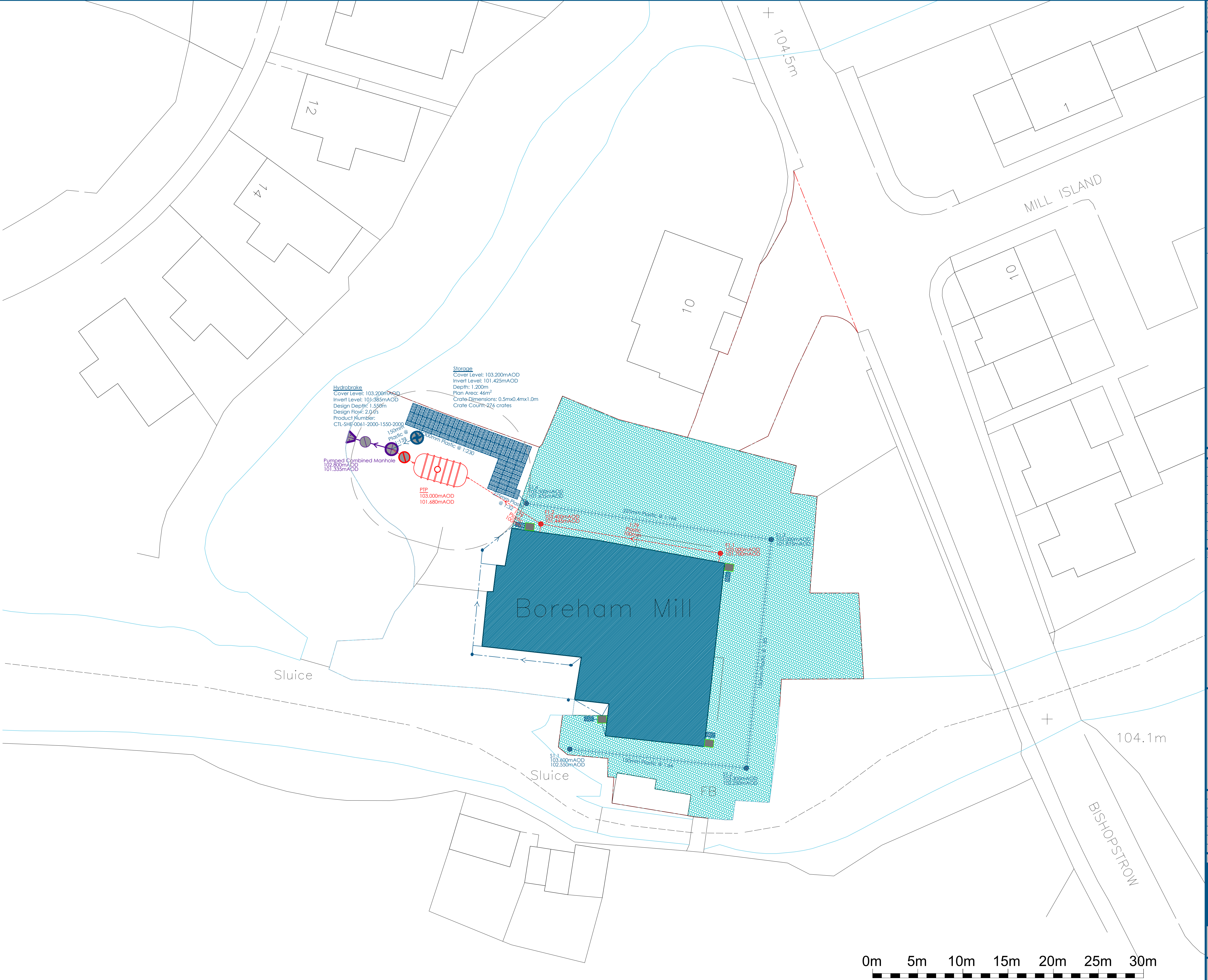


REV	REVISION DETAILS	DATE	INITIAL
1.1	First Issue	23.03.2026	LC

**Boreham Mill,
Warminster**

Drainage Layout

PLANNING	LC Drawn by
1:200 Drawing Scale	23.03.2026 First Issued
2500351-ENV-S1-SW-DR-C-0001 Drawing No.	1.1 Revision Letter



Appendix 11

General Binding Rules

For convenience – press “Alt + Left Arrow” to return to the section of the report



Table A6.1 – General Binding Rules					
Rule	Description	Discharge to Surface Water	Discharge to Ground	Compliance	Justification
Pre 2015 Rules					
Rule 1	The discharge must be 2 cubic metres or less per day in volume.	x	✓	N/A	N/A
Rule 2	The discharge must be 5 cubic metres or less per day in volume.	✓	x	✓	The discharge shall be 5 cubic metres or less per day in volume.
Rule 3	The sewage must only be domestic.	✓	✓	✓	Only domestic sewage.
Rule 4	The discharge must not cause pollution of surface water or groundwater.	✓	✓	✓	The new tank shall ensure that no pollution is caused.
Rule 5	The sewage must receive treatment from a septic tank and infiltration system (drainage field) or sewage treatment plant and infiltration system.	x	✓	N/A	N/A
Rule 6	The sewage must receive treatment from a sewage treatment plant.	✓	x	✓	BS EN 12566 compliant PTP to be installed.
Rule 7	The discharge must not be within a groundwater source protection	x	✓	N/A	N/A

	zone 1 or within 50 metres from any well, spring or borehole that is used to supply water for domestic or food production purposes.				
Rule 8	For discharges in tidal waters, the discharge outlet must be below the mean spring low water mark.	✓	✗	✓	Not discharged within tidal waters
Rule 9	All works and equipment used for the treatment of sewage effluent and its discharge must comply with the relevant design and manufacturing standards, meaning the British Standard that was in force at the time of the installation, and guidance issued by the appropriate authority on the capacity and installation of the equipment.	✓	✓	✓	BS EN 12566 compliant PTP to be installed.
Rule 10	The system must be installed and operated in accordance with the manufacturer's specification.	✓	✓	✓	The system shall be maintained as per the fabricator's instructions.
Rule 11	Maintenance must be undertaken by someone who is competent.	✓	✓	✓	Service contract to be entered into with competent professional.

Rule 12	Waste sludge from the system must be safely disposed of by an authorised person.	✓	✓	✓	Waste sludge shall be suitably disposed of by a qualified professional.
Rule 13	If a property is sold, the operator must give the new operator a written notice stating that a small sewage discharge is being carried out, and giving a description of the waste water system and its maintenance requirements.	✓	✓	✓	This will be undertaken on sale of the property.
Rule 14	The operator must ensure the system is appropriately decommissioned where it ceases to be in operation so that there is no risk of pollutants or polluting matter entering groundwater, inland fresh waters or coastal waters.	✓	✓	✓	This will be undertaken.
Post 2015 Rules					
Rule 15	Discharges must not be within 30 metres of a public foul sewer.	✓	✓	N/A (Discharge Pre-2015)	N/A
Rule 16	For discharges, the operator must ensure that the necessary planning and building control approvals for the treatment system are in place.	✓	✓	N/A (Discharge Pre-2015)	N/A
Rule 17	Discharges must not be in or within:	✓	✗	N/A	N/A

	500 metres of a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site, biological Site of Special Scientific Interest (SSSI), freshwater pearl mussel population, designated bathing water, or protected shellfish water; 200 metres of an aquatic local nature reserve; 50 metres of a chalk river or aquatic local wildlife site.			(Discharge Pre-2015)	
Rule 18	Discharges must not be in, or within 50 metres of, a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site, or biological Site of Special Scientific Interest (SSSI), and must not be in an Ancient Woodland.	✗	✓	N/A (Discharge Pre-2015)	N/A
Rule 19	Discharges must be made to a watercourse that normally has flow throughout the year.	✓	✗	N/A (Discharge Pre-2015)	N/A
Rule 20	For discharges, any partial drainage field must be installed within 10 metres of the bank side of the watercourse.	✓	✗	N/A (Discharge Pre-2015)	N/A

Rule 21	Discharges must not be made to an enclosed lake or pond.	✓	✗	N/A (Discharge Pre-2015)	N/A
Post 2023 Rules					
Rule 22	A new discharge shall not use the same outlet as any other discharge if the combined volume of those discharges would exceed the volumetric general binding rules thresholds for groundwater or surface water.	✓	✓	N/A (Discharge Pre-2015)	N/A
Rule 23	A new discharge shall not be made to a discharge point within 50 metres of any other exempt groundwater activity or water discharge activity.	✓	✓	N/A (Discharge Pre-2015)	N/A

Appendix 12

Foul Drainage Assessment

For convenience – press “Alt + Left Arrow” to return to the section of the report



Foul Drainage Assessment Form (FDA)

Please note: You should only use this form for planning related queries. You cannot use it to apply for an Environmental Permit but you may submit a copy of the information you have provided for planning purposes in support of your Environmental Permit application. Further information on [how to apply for an environmental permit](#) and [general binding rules applicable to small discharges of domestic sewage effluent](#) is available on the gov.uk website.

APPLICANT DETAILS	
Name	David Ashcroft (completed on their behalf by Leonardo Costa)
Address	Boreham Mill, Bishopstrow Road, Warminster, Wiltshire, BA12 9HQ
Telephone No	██████████
e-mail	technical@enviren.co.uk

We will use the information you provide on this form to establish whether non-mains drainage, either a new system or connection to an existing system, would be acceptable. It is important that you provide full and accurate information. Failure to do this will delay the processing of your application.

You must provide evidence that a connection to the public sewer is not feasible.

Other than in very exceptional circumstances, we will not allow the use of non-mains drainage as part of your Planning or Building Regulation application unless you can prove that a connection to the public sewer is not feasible. We do not consider non-mains drainage systems to be environmentally acceptable in locations where it is feasible to connect to a public sewer. Please note that a lack of capacity in, or other operating problems with, the public sewer are not valid reasons to use a non-mains drainage system where it is otherwise feasible to connect to a public sewer.

Where connection to the public sewer is feasible, you may need to get the agreement of either the owners of any land through which the drainage will run or, if you intend to connect via an existing private drain, the owner of that private drain.

The National Planning Practice Guidance and [Building Regulations Approved Document H](#) give a hierarchy of drainage options that must be considered and discounted in the following order:

- 1 Connection to the public sewer
- 2 Package sewage treatment plant (which can be offered to the Sewerage Undertaker for adoption)
- 3 Septic Tank
- 4 If none of the above are feasible a cesspool

You must respond to all the following questions. If you wish to submit additional information please do so, marked clearly "Additional Information". **In some cases you will be required to provide further information in order to demonstrate that any non-mains foul drainage system proposed is acceptable.**

Feasibility of mains foul sewer connection	YES	NO
Have you provided a written explanation of why it is not feasible to connect to the public foul sewer with this form? <i>This must include a scaled map showing the nearest public foul sewer connection point - check with your local sewerage undertaker.</i>	✓	
Is the distance from your site to the closest connection point to the public foul sewer less than the number of properties to be built on the site multiplied by 30m? (see Guidance Note 2)		✓
Does your proposal form part of a phased development or planned development of a wider area? <i>If YES, please provide further details including references of any planning permissions already granted.</i>		✓

Non-mains connection

Please provide a plan with dimensions that clearly shows the location of the whole system in relation to the proposed development and the position of the key elements e.g. septic tank, drainage fields and points of discharge.

1. Existing system	YES	NO
Do you intend to use an existing non-mains foul drainage system?		✓
If YES, does the system already have an Environmental Permit issued by the Environment Agency? (In the case of a cesspool write N/A)		✓
If YES, please provide Environmental Permit reference number.....		

2. Discharge	YES	NO
Do you propose to use a package treatment plant?	✓	
Do you propose to use a septic tank?		✓
Do you propose to use a cesspool? <i>If YES go to Q4</i>		✓
Have you considered having your system adopted by the sewerage undertaker? (see Guidance Note 7).		✓
Will all, or any part of, the discharge go to a drainage field or soakaway? (see Guidance Note 3) - this includes systems that combine a drainage field with a high level overflow to watercourse <i>If YES go to Q3.</i>		✓
Do you intend to use a system that discharges solely to watercourse? (see Guidance Note 3) <i>If YES go to Q9.</i>	✓	

3. Water abstraction	YES	NO
Do you receive your water from the public mains supply?	TBC	TBC
If not, where do you get your water supply from?	TBC	TBC

4. Cesspools (For methods other than cesspools write N/A)	YES	NO
Have you provided written justification for the use of a cesspool in preference to more sustainable methods of foul drainage disposal? (see Guidance Note 4)	N/A	N/A

5. Drainage field design (For cesspools write N/A)	YES	NO
Will the system discharge to a drainage field designed and constructed in accordance with British Standard BS6297:2007?	N/A	N/A
If not, why not?		
Will the discharge from the system be located in a Source Protection Zone 1 (SPZ1) ?	N/A	N/A

6. Ground Conditions <i>(For cesspools write N/A)</i>	YES	NO
6a. Have you submitted a copy of the percolation test results with this form <i>(see Guidance Note 6)</i> ?		✓
6b. If NO please explain the justification for not undertaking or submitting these tests.		
6c. Is any part of the system in land which is marshy, water logged or subject to flooding?	✓	
6d. Will the soakaway be located on artificially raised, made-up ground or ground likely to be contaminated? <i>If YES please provide details as additional information.</i>	N/A	
6e. Have you submitted the results of a trial hole at the site to establish that the proposed drainage field will be above any standing groundwater <i>(see Guidance Note 6)</i> ?	N/A	

7. Available Land	YES	NO
Is the application site plus any available area for a soakaway less than 0.025 hectares (250m ²)?	N/A	N/A

8. Siting of drainage field/soakaway discharge from a septic tank or package treatment plant or other secondary treatment. <i>You may need to make local enquiries to get a full answer to these questions.</i>	YES	NO
Will it be at least 10m from a watercourse, permeable drain or land drain?	N/A	N/A
Will it be at least 50m from any point of abstraction from the ground for a drinking water supply (e.g. well, borehole or spring)? <i>This includes your own or a neighbour's supply.</i>	N/A	N/A
Will the discharge be within a groundwater Source Protection Zone 1 ? <i>If yes, you will need to apply for an environmental permit</i>	N/A	N/A
Are there any drainage fields/soakaways within 50m ? <i>This includes any foul drainage discharge system (other than the subject of this application) or surface water soakaway on either your own or a neighbour's property.</i>	N/A	N/A
Will it be at least 15m from any building?	N/A	N/A
Will there be any water supply pipes or underground services within the disposal system, other than those required by the system? <i>(For cesspools write N/A)</i>	N/A	N/A
Will there be any access roads, driveways or paved areas within the disposal area? <i>(For cesspools write N/A)</i>	N/A	N/A

9. Siting of treatment plant, septic tank or cesspool	YES	NO
Is it at least 7m from the habitable part of a building?	✓	
Will there be vehicular access for emptying within 30m ?	✓	
Can the plant, tank or cesspool be maintained or emptied without the contents being taken through a dwelling or place of work?	✓	

10. Expected flow

Please estimate the total flow in litres per day <i>(see Guidance Note 5)</i> .	1,200 litres
---	---------------------

11. General Binding Rules for Small Sewage Discharges	YES	NO
Does the system meet the requirements of the General Binding Rules for small sewage discharges ?	✓	

12. Maintenance

How do you propose to maintain the system? The system shall be maintained to the manufacturers' recommendations.
--

13. Declaration

I declare that the above information is factually correct.

Name	Signature	Date
David Ashcroft (completed on their behalf by Leonardo Costa)		23/03/2026

GUIDANCE NOTES:

- 1) This form is for use with the [National Planning Practice Guidance](#), British Standard BS6297:2007 and [Building Regulations Approved Document H](#). It is intended to help Local Planning Authorities establish basic information about your non-mains drainage system and decide whether you need to submit a more detailed site assessment. If a detailed site assessment is requested but not submitted, your planning application might be refused.
- 2) Where the distance from a site to the closest point of connection to the foul sewer is less than the number of properties that are proposed to be built on that site multiplied by 30m an Environmental Permit will be required and an applicant will need to demonstrate as part of any application for such a permit why connection to the public foul sewer is not feasible.

Number of domestic properties served by the sewage treatment system x 30 metres = Answer metres
- 3) In addition to Planning Permission and Building Regulation approval **you may also require an Environmental Permit from the Environment Agency (EA). Please note that the granting of Planning Permission or Building Regulation approval does not guarantee the granting of an Environmental Permit. Upon receipt of a correctly filled in application form the EA will carry out an assessment. It can take up to 4 months before the Agency is in a position to decide whether to grant a permit or not.**
- 4) The use of cesspools is an option of last resort as set out in the non-mains drainage hierarchy of preference in [Building Regulations Approved Document H](#). In principle, a properly constructed and maintained cesspool, being essentially a holding tank with no discharges, should not lead to environmental, amenity or public health problems. However, in practice, it is known that such problems occur as a result of frequent overflows due to poor maintenance, irregular emptying, lack of suitable vehicular access for emptying and even through inadequate capacity. In addition to this the requirement for frequent emptying is usually carried out by a contractor involving road transport with associated environmental costs. For these reasons, the use of cesspools will not normally be considered to be a long-term foul sewage disposal solution. In view of the environmental risks associated with their use, any proposal to use cesspools must be fully justified to the Local Planning Authority
- 5) Package treatment plants and septic tanks should be designed and sized according to the advice given in the current edition of [Flows and Loads](#), published by British Water. Volumes for larger systems should be calculated based on expected flows arising from the development.
- 6) You should refer to [Building Regulations Approved Document H2](#) with regard to the general requirements for construction of non mains sewerage systems. **Sections 1.33 to 1.38** deal with the test requirements for trial holes and percolation tests and for convenience the text of these sections is repeated below:

- 1.33 *A trial hole should be dug to determine the position of the standing groundwater table. The trial hole should be a minimum of 1m² in area and 2m deep, or a minimum of 1.5m below the invert of the proposed drainage field pipework. The ground water table should not rise to within 1m of the invert level of the proposed effluent distribution pipes. If the test is carried out in summer, the likely winter groundwater levels should be considered. A percolation test should then be carried out to assess the further suitability of the proposed area.*
- 1.34 *Percolation test method – A hole 300mm square should be excavated to a depth 300mm below the proposed invert level of the effluent distribution pipe. Where deep drains are necessary the hole should conform to this shape at the bottom, but may be enlarged above the 300mm level to enable safe excavation to be carried out. Where deep excavations are necessary a modified test procedure may be adopted using a 300mm earth auger. Bore the test hole vertically to the appropriate depth taking care to remove all loose debris.*
- 1.35 *Fill the 300mm square section of the hole to a depth of at least 300mm with water and allow it to seep away overnight.*
- 1.36 *Next day, refill the test section with water to a depth of at least 300mm and observe the time, in seconds, for the water to seep away from 75% full to 25% full level (i.e. a depth of 150mm). Divide this time by 150mm. The answer gives the average time in seconds (V_p) required for the water to drop 1mm.*
- 1.37 *The test should be carried out at least three times with at least two trial holes. The average figure from the tests should be taken. The test should not be carried out during abnormal weather conditions such as heavy rain, severe frost or drought.*
- 1.38 *Drainage field disposal should only be used when percolation tests indicate average values of V_p of between 12 and 100 and the preliminary site assessment report and trial hole tests have been favourable. This minimum value ensures that untreated effluent cannot percolate too rapidly into groundwater. Where V_p is outside these limits effective treatment is unlikely to take place in a drainage field. However, provided that an alternative form of secondary treatment is provided to treat the effluent from the septic tanks, it may still be possible to discharge the treated effluent to a soakaway.*

N.B. When determining whether a discharge may be made under statutory General Binding Rules one of the requirements is that any drainage field must be designed and constructed in accordance with BS6297:2007. This specifies that the minimum percolation rate under that standard is 15s/mm and any discharge made to ground where the percolation rate is less than 15s/mm is subject to the granting of an Environmental Permit.

- 7) Developers may requisition a sewer from the Sewerage Undertaker to connect their development to the public sewer. Should this not be feasible on the grounds of cost and practicability, on site treatment in the form of package plants and their associated sewers (if constructed to an acceptable standard) can be offered to the sewerage undertaker for adoption. This approach is in support of advice from the Government contained in the [National Planning Practice Guidance](#) Developers are urged to discuss their requirements with the Sewerage Undertaker at the earliest possible opportunity.
- 8) Glossary

Package treatment plant

A package treatment plant is a system which offers varying degrees of biological sewage treatment and involves the production of an effluent which can be disposed of to ground via a drainage field or direct to a watercourse. There are many varieties of package treatment plant but all involve settling the solids before and/or after a biological treatment stage and almost all use electricity. Package treatment plants usually treat sewage to a higher standard than septic tanks but are vulnerable in the event of power failures and require more regular servicing and maintenance to ensure that they work effectively. The type of system chosen should be appropriate to the type of development proposed and take account of variations in flow and periods of inactivity, for example where the system will serve holiday accommodation where occupation and maintenance may be more irregular.

Septic tank

A septic tank is a two or three chamber system, which retains sewage from a property for sufficient time to allow the solids to form into sludge at the base of the tank, where it is partially broken down. The remaining liquid in the tank then drains from the tank by means of an outlet pipe.

Effluent from a septic tank is normally disposed of to ground via a drainage field and receives further treatment in the soils surrounding that drainage field, so that it does not generate a pollution risk to surface waters or groundwater resources (underground water). The most commonly used form of drainage field is a subsurface irrigation area, comprising a herringbone pattern of interconnecting dispersal pipes laid in shallow, shingle filled trenches. The dispersal pipes within the drainage field should be located at as shallow a depth as possible, usually within 1 metre of the ground surface. A septic tank typically needs to be desludged at least once a year in order to ensure that it continues to work effectively.

Cesspool

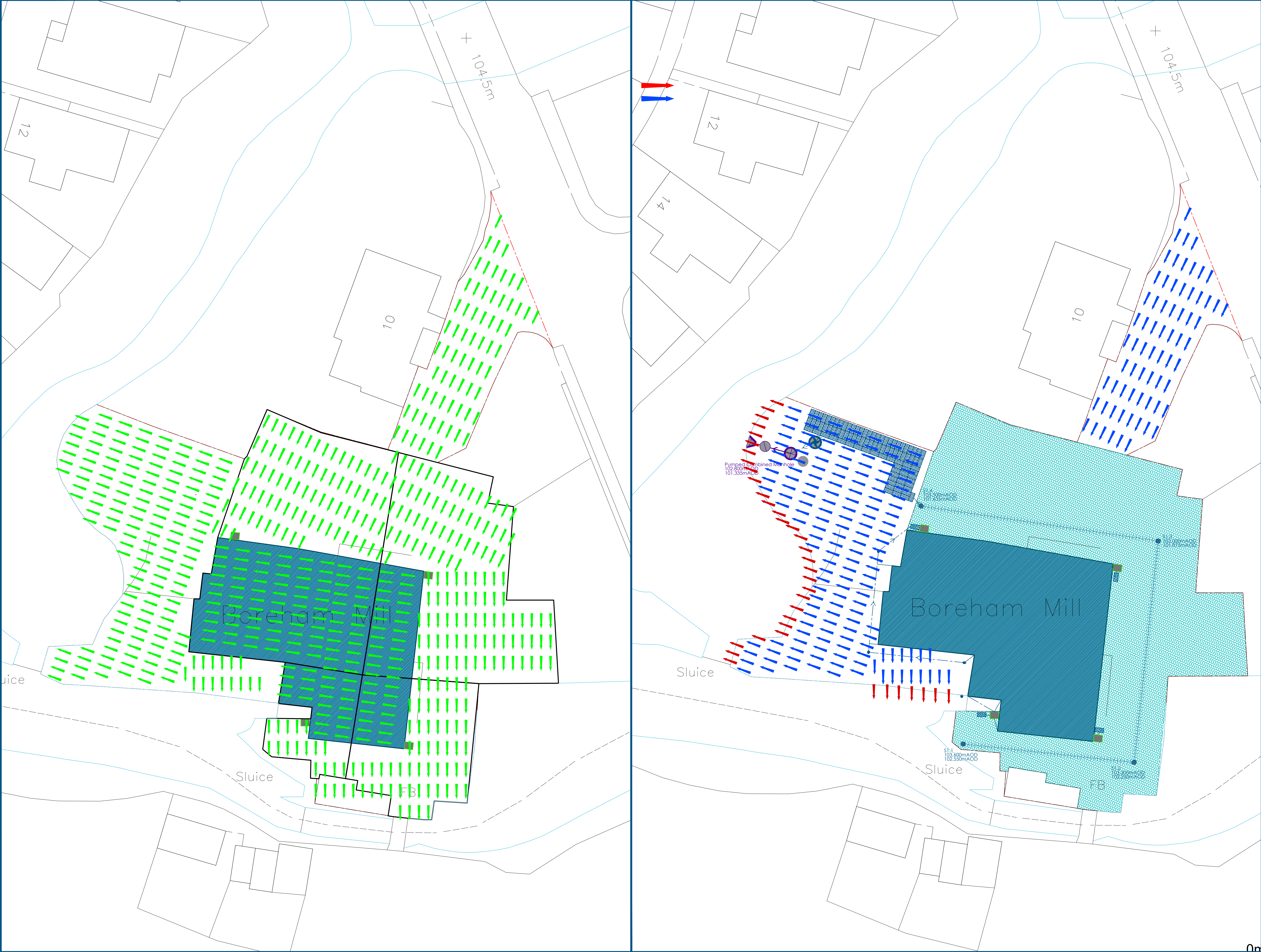
A cesspool is a covered watertight tank used for receiving and storing sewage and has no outlet. It relies on road transport for the removal of raw sewage and is therefore the least sustainable option for sewage disposal. It is essential that a cesspool is, and remains, impervious to the ingress of groundwater or surface water.

Appendix 13

Flood Routing

For convenience – press “Alt + Left Arrow” to return to the section of the report





All dimensions are to be checked on site prior to manufacture of prefabricated items. Any discrepancy or query to be reported and clarified before associated work proceeds. All construction to be in accordance with relevant Trade and Professional Standards and Guidelines. Statutory requirements and product manufacturers' specifications. This drawing must be read in conjunction with the relevant up to date associated specifications, drawings issued and details.

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Manhole Cover and Frame Notes:

- Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and 'Design Manual for Roads and Bridges 4.2 Part 5' HA 104/09.
- All Manhole Covers must be of non-rocking design. Covers that transfer the load to the frame at concentrated points shall not use cushion inserts between cover and frame.
- Aluminium covers are not acceptable on any Adoptable Drainage.
- Manhole Covers on foul-only sewers shall be of low leakage types in order to prevent excess surface water ingress.
- All Manhole covers shall be non-ventilating type, with closed keyways and prising slot to facilitate removal.
- Safety Grids where specified shall comply with BS9124. When lifted they shall be secure in the upright position. Aluminium Grids not to be used.
- Manhole Cover Grades are to be as per Table 1.
- Manhole Frame Depths are to be as per Table 2.

General Construction Notes:

- All works and materials to be in accordance with The Design and Construction Guidance contained within the Sewerage Sector Guidance 25th October 2019 and The Undertakers Requirements.
- All drainage goods to be in accordance with relevant British Standards and Kite marked.
- Concrete Design :- All in-situ concrete to be GEN3 with sulphate resisting cement unless agreed otherwise.
- All manholes must be constructed such that the outside edge of the manhole is at least 0.5m from the kerb line. The sewer must be at least 1.0m from the kerb line.
- First manhole upstream from the connection point to the public sewer should be fitted with a screen to prevent debris entering the public sewer.
- To be read in conjunction with the Water Authorities Standard Details and Construction Notes.

Drawing Reference Table

0001	Drainage Layout
0002	Flood Routing
0003	Flood Mitigation Details

Key

- Proposed Surface Water Flow Route
- Proposed Surface Water Escape Route
- Existing Surface Water Flow Route



1,1	First Issue	23.03.2026	LC
REV	REVISION DETAILS	DATE	INITIAL

Enviren

Boreham Mill,
Warminster
Flood Routing

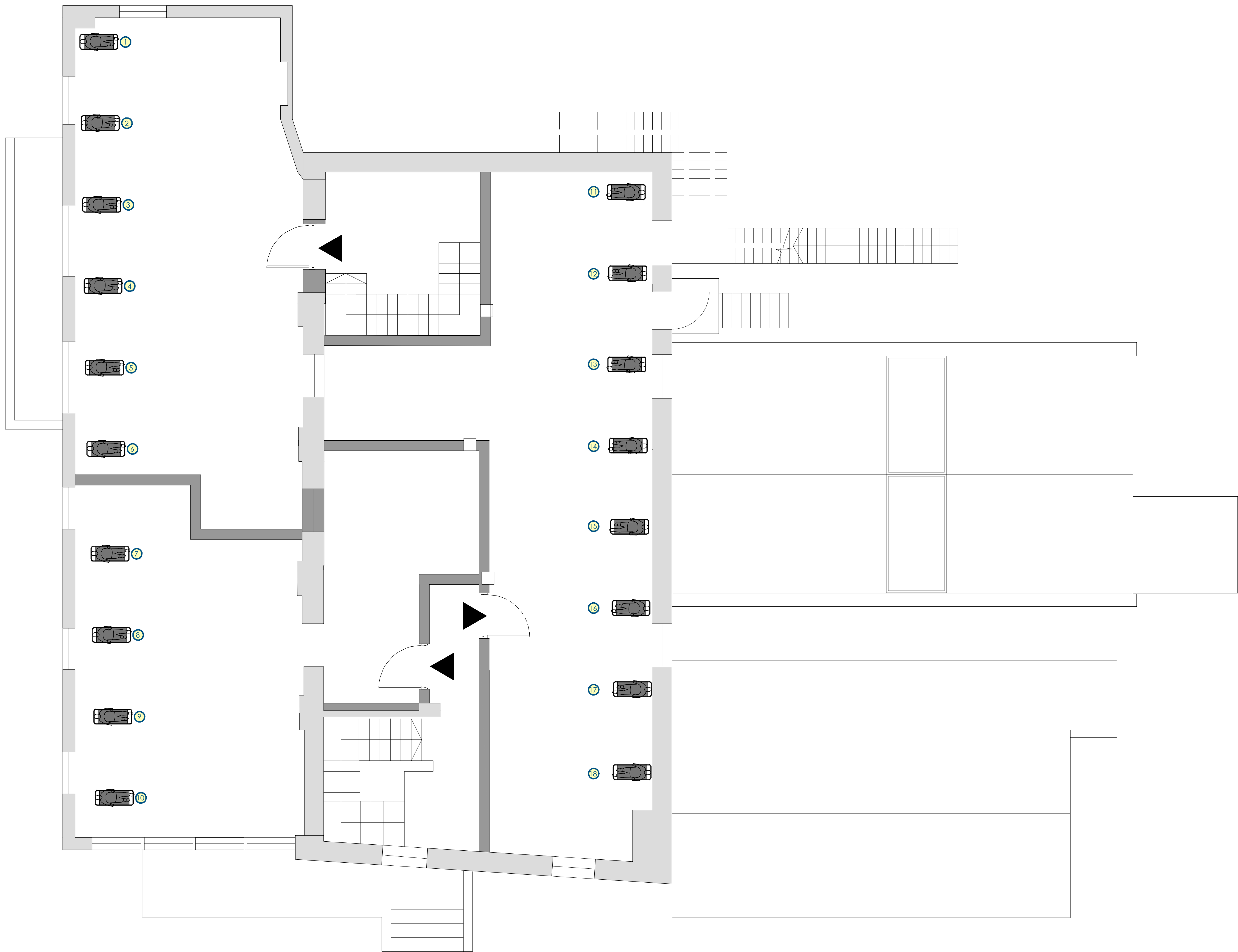
PLANNING	LC Drawn by
1:200 Drawing Scale	23.03.2026 First Issue
2500351-ENV-S1-SW-DR-C-0002 Drawing No.	1.1 Revision Letter

Appendix 14

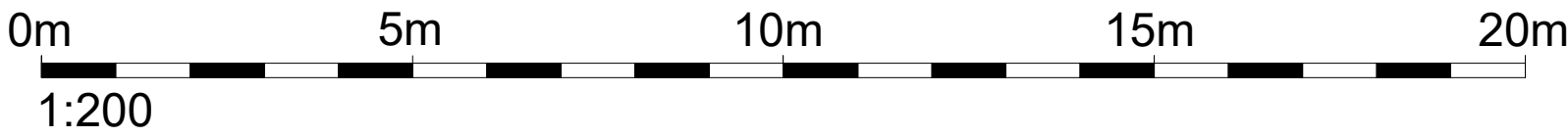
Safe Refuge Plan

For convenience – press “Alt + Left Arrow” to return to the section of the report





Schematic First Floor



Manhole Cover and Frame Notes:

1. Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and 'Design Manual for Roads and Bridges 4.2 Part 5' HA 104/09.
2. All Manhole Covers must be of non-rocking design. Covers that transfer the load to the frame at concentrated points shall not use cushion inserts between cover and frame.
3. Aluminium covers are not acceptable on any Adoptable Drainage.
4. Manhole Covers on foul-only sewers shall be of low leakage types in order to prevent excess surface water ingress.
5. All Manhole covers shall be non-ventilating type, with closed keyways and prising slot to facilitate removal.
6. Safety Grids where specified shall comply with BS9124. When lifted they shall be secure in the upright position. Aluminium Grids not to be used.
7. Manhole Cover Grades are to be as per Table 1.
8. Manhole Frame Depths are to be as per Table 2.

General Construction Notes:

1. All works and materials to be in accordance with The Design and Construction Guidance contained within the Sewerage Sector Guidance 25th October 2019 and The Undertakers Requirements.
2. All drainage goods to be in accordance with relevant British Standards and Kite marked.
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7. To be read in conjunction with the Water Authorities Standard Details and Construction Notes

Drawing Reference Table

0001	Drainage Layout
0002	Flood Routing
0003	Flood Mitigation Details
0004	Safe Refuge Plan

1,1	First Issue	23.03.2026	LC
REV	REVISION DETAILS	DATE	INITIAL



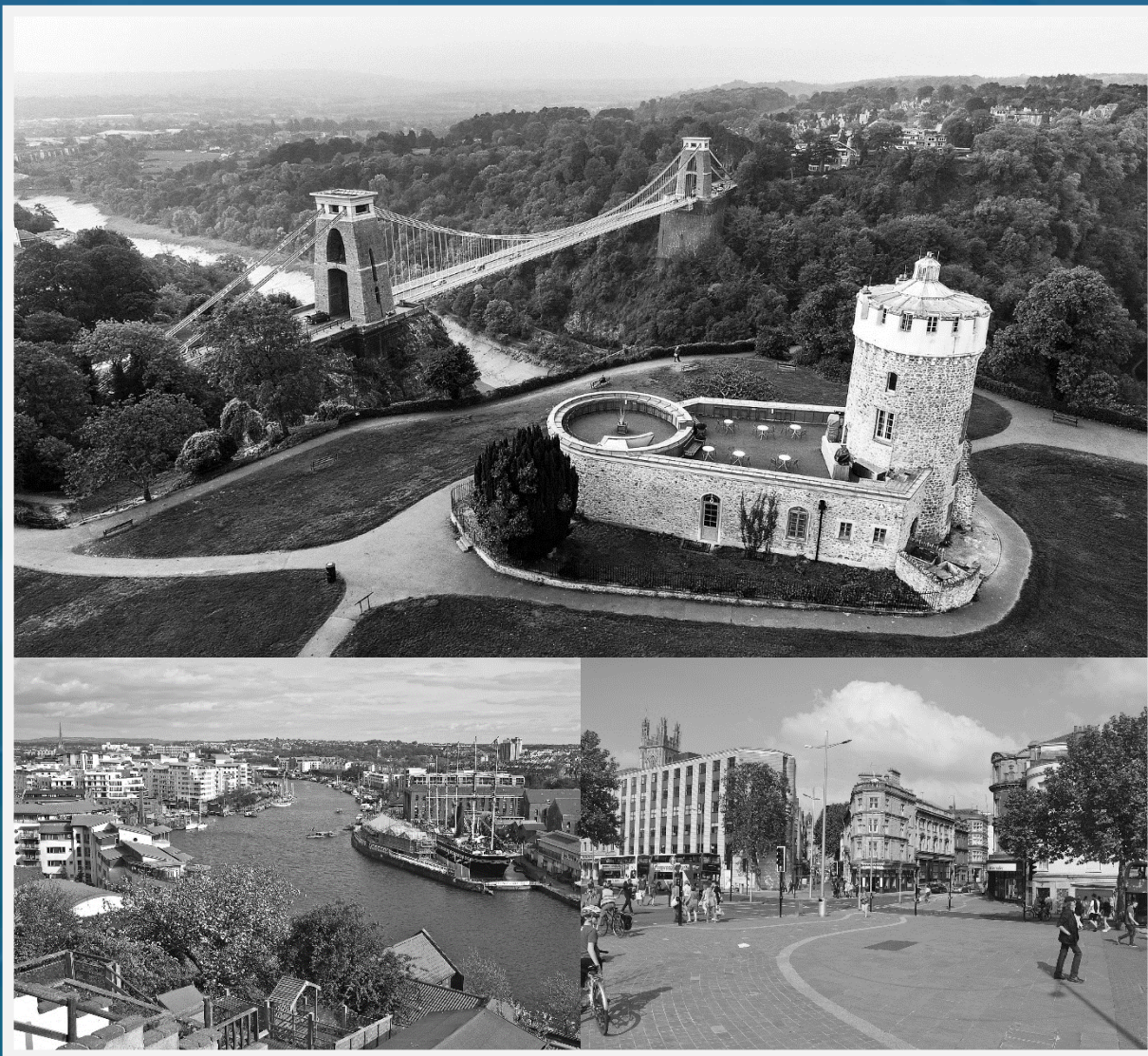
**Boreham Mill,
Warminster**

Flood Routing

PLANNING	LC Drawn by
1:100 Drawing Scale	23.03.2026 First Issued
2500351-ENV-S1-SW-DR-C-0004 Drawing No.	1.1 Revision Letter

ISO 19650 Filing Notation

Project	
0XXX	Project Number
Originator	
ENV	Enviren
Functional Breakdown	
S1	Planning submission
S2	Technical submission
S3	Construction Information
S4	As built details
Spatial Breakdown	
SW	Southwest
EE	East of England
SE	South East
WM	West Midlands
EM	East Midlands
YO	Yorkshire
NW	North West
NE	North East
LO	London
OT	Other
Form	
DR	Drawing
GR	Diagram
TR	Textual Report
Discipline (relevant)	
C	Civil Engineering
E	Environmental Engineering
G	Ground Engineering
O	Other Discipline
T	Town and Country Planning and Building Control
W	Water Engineering
Z	Multiple Discipline
Number	
000X	Report number



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