



MTD CONSULTING

BEVAN TRANSPORT HAULAGE

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

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1. INTRODUCTION

Introduction

- 1.1. MTD Consulting has been commissioned by the client to provide a Flood Risk Assessment & Drainage Strategy report to support a planning application relating to a new warehouse and yard area. This report has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF), the associated Planning Policy Guidelines (PPG) and local policy requirements.
- 1.2. The main purpose of this site-specific Flood Risk Assessment & Drainage Strategy report is to provide sufficient flood risk information and drainage strategy work to support a planning application, as such the level of detail included is commensurate and subject to the nature of the proposals.

Objectives & Scope

- 1.3. The objective of this report is:
- Review all sources of flood risk and the sequential location of the site.
 - Assess applicability of the development proposals against flood risk.
 - Determine the pre and post development conditions for surface water runoff.
- 1.4. The scope of this Flood Risk Assessment & Drainage Strategy is to support a planning application.

Limitations

- 1.5. The general limitations of this report are that:
- MTD Consulting Ltd has prepared this Report for the sole use of the Client in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by MTD Consulting Ltd. This Report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of MTD Consulting Ltd.
 - A number of data sources have been used in compiling this report. Whilst MTD Consulting believe them to be trustworthy; it is unable to guarantee the accuracy of the information that has been provided by others.
 - This report is based on information available at the time of preparation. There is potential for further information to become available, which may create a need to modify conclusions drawn in this report.
 - The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by MTD Consulting Ltd has not been independently verified by MTD Consulting Ltd, unless otherwise stated in the Report.



MTD Consulting Ltd disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to MTD Consulting Ltd's attention after the date of the Report.



2. SITE CONTEXT

Development Proposals

- 2.1. The development proposals, in which this Flood Risk Assessment & Drainage Strategy (FRADS) is written for comprises a new warehouse and yard area at Bevan Transport Ltd, Downfield Farm, The Pry, Purton, SN5 4JP.
- 2.2. Refer to the development proposals in **Appendix A**.

Site Location

- 2.3. The site is located as per **Figure 1**.

Figure 1 : Site Location Plan



Topography

- 2.4. Refer to **Appendix B** for a topographical survey of the site.
- 2.5. The site falls to the north towards the watercourse. Land to the south, in the vicinity of the proposed building, is at a level of 83.600m AOD, and the top bank of the watercourse is 83.100m AOD.

Hydrology

- 2.6. The site falls within the catchment of the River Ray which is located approximately 400m to the east of the site.
- 2.7. An un-named ordinary watercourse is located on the northern boundary of the site and flows in an easterly direction where it has confluence with the River Ray

Geology

- 2.8. The British Geological Survey (BGS) mapping indicates the site to be underlain by solid geology of the Oxford Clay Formation. The site is not underlain by superficial deposits
- 2.9. No specific site investigation has been undertaken to inform the geology of the site.

Infiltration Potential

- 2.10. BGS mapping indicates that the site is underlain by Oxford Clay. Clay based strata are impermeable and would prevent the effective operation of infiltration based SuDS.

Existing Drainage

- 2.11. The site is not served by Thames Water sewers
- 2.12. Existing foul and surface water drainage serving the existing buildings and yard discharge to the watercourse to the north of the site. Foul drainage discharges through a septic tank / sewage treatment works located to the south of the application site.



3. FLOOD RISK

- 3.1. Inappropriate development in flood risk areas could pose significant risks in terms of personal safety and damage to the property for the occupiers of the development or for people elsewhere. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional and local planning policy and associated guidance. This section summarises the key policies and guidance relevant to the proposed development.

Planning Policy

National Planning Policy Framework (NPPF)

- 3.2. The National Planning Policy Framework (NPPF) was first published in 2012, with a subsequent revision by the Ministry of Housing, Communities and Local Government amended in July 2018, February 2019, July 2021 and September 2023 with the most recent update being made in August 2026.
- 3.3. The new National Planning Policy Framework sets out the government's policies for plan-making and for making decisions on development proposals in England and how these are expected to be applied.
- 3.4. The planning system should be genuinely plan-led. Preparing and maintaining up-to-date development plans should be seen as a priority for providing housing and other development in a sustainable manner. The plan-making policies in the Framework must be taken into account in preparing any part of the development plan.
- 3.5. 'Section 18: Managing flood risk and coastal change' is set out with the objective of the policies to minimise risks to development arising from all sources of flooding and coastal change, taking into account the impacts of climate change, by steering development away from areas of risk, ensuring that development will be safe for its lifetime without increasing flood risk elsewhere, and incorporating sustainable drainage systems where appropriate.

Wiltshire Core Strategy

- 3.6. The Wiltshire Core Strategy Development Plan Document ('the plan') was formally adopted on 20 January 2015. The plan provides a positive and flexible overarching planning policy framework for Wiltshire for the period up to 2026.
- 3.7. Relevant Core Policies identified in relation to the proposed development include -

Core Policy 67 – Flood Risk

Development proposed in Flood Zones 2 and 3 as identified within the Strategic Flood Risk Assessment will need to refer to the Strategic Housing Land Availability Assessment when providing evidence to the local planning authority in order to apply the sequential test in line with the requirements of national policy and established best practice.

All new development will include measures to reduce the rate of rainwater run-off and improve rainwater infiltration to soil and ground (sustainable urban drainage) unless site or environmental conditions make these measures unsuitable.



Wiltshire Council Strategic Flood Risk Assessment Level 1 – May 2019

- 3.8. Planning Authorities are responsible for the production of Strategic Flood Risk Assessments (SFRAs). These are studies that allow more detailed examination of the likely appropriateness of developing sites within a planning area.
- 3.9. JBA Consulting was commissioned by Wiltshire Council to undertake a Level 1 Strategic Flood Risk Assessment (SFRA). The SFRA forms part of a comprehensive and robust evidence base for the Local Plan which will set out a vision and framework for development in Wiltshire up to 2036 and used to guide the sequential test and decisions on the location of future development. The SFRA will also be used to assess planning applications, and flood risk mapping information will be made available for developers for carrying out flood risk assessments.
- 3.10. The purpose of the SFRA is to assess and map all forms of flood risk from groundwater, surface water, impounded water bodies, sewer and river sources, taking into account future climate change predictions, to allow the Councils to use this as an evidence base to locate future development primarily in low flood risk areas

Wiltshire Council Betterment Strategy (2024)

- 3.11. Section 2.1 of the Wiltshire Council Betterment Strategy (June 2024) identifies the requirements for greenfield sites and states –

Where full disposal of surface water via infiltration is not viable, the LLFA expect to see that the discharge rates restricted to provide betterment over the greenfield conditions.

- *With regards the control of surface water discharges from new development, Wiltshire Council requires post development discharges from greenfield sites to provide 30% betterment over pre-development discharges for all storm events between the 1 in 1year and 1 in 100year return period events.*
- *For greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.*

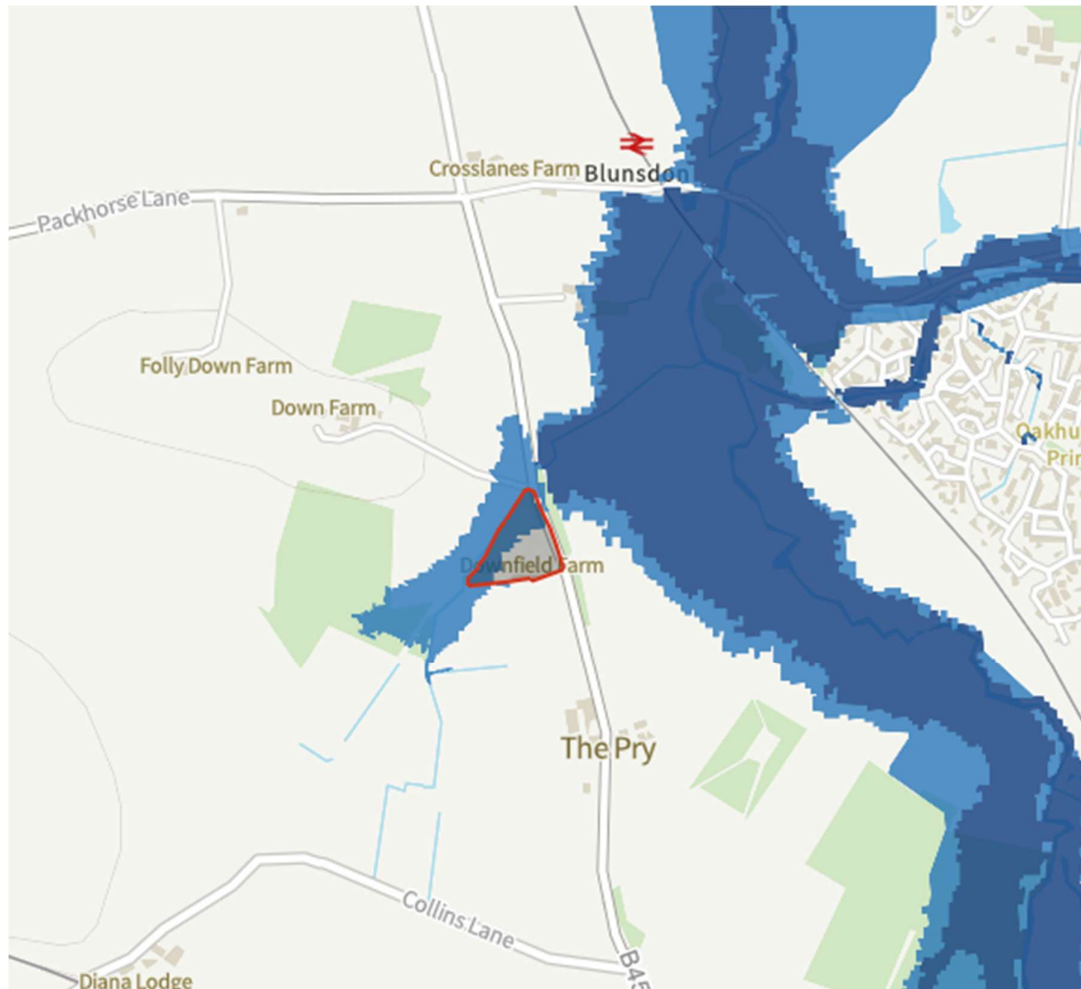
Sources of Flood Risk

Fluvial Flooding

- 3.12. **Figure 2** provides an extract of the Flood Risk Map for planning which identifies that the site is located in Flood Zone 2 & 1. The boundary depicted is the land in which the client owns up to the watercourse.
- 3.13. Section 4 of the report will review fluvial flood risk further.



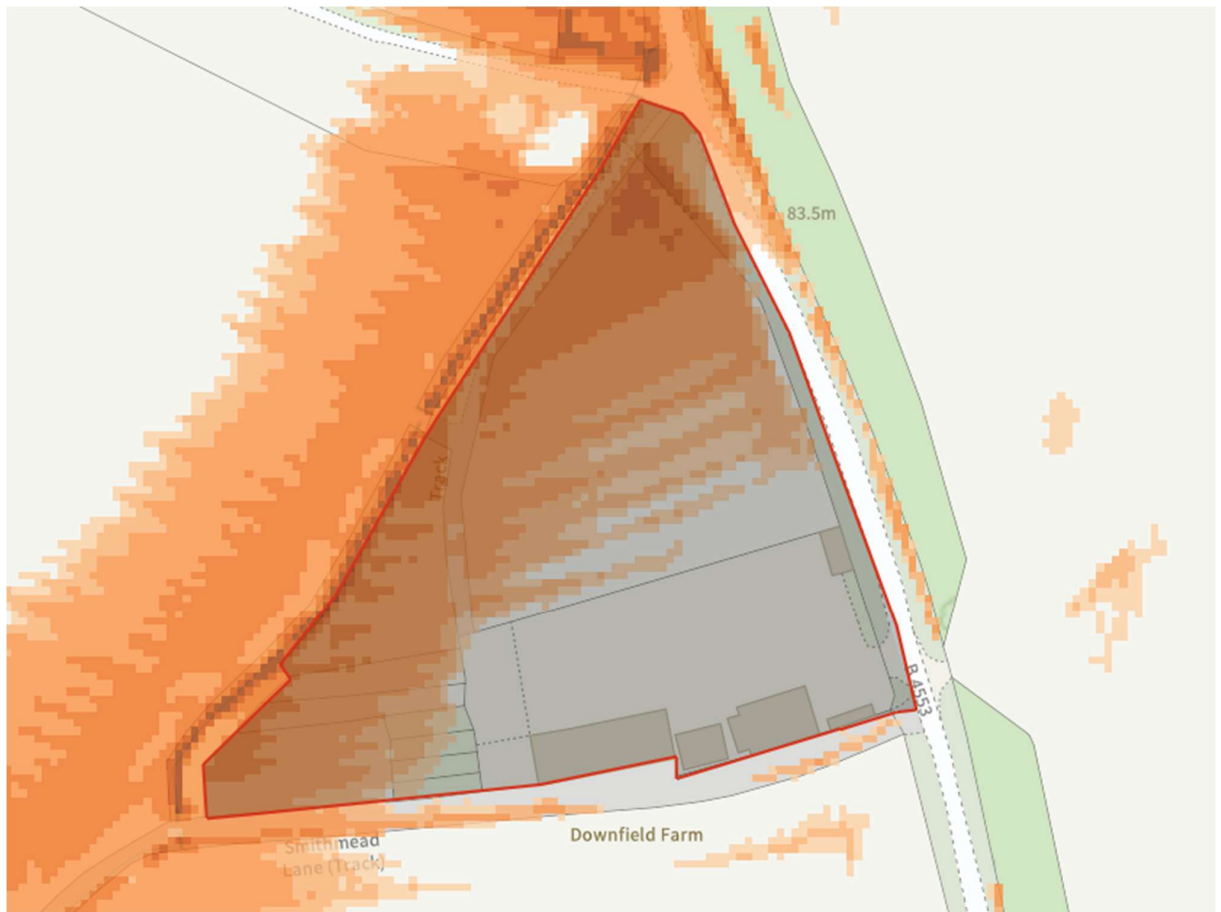
Figure 2: Environment Agency's Flood Map for Planning



Pluvial Flooding

- 3.14. The Environment Agency's Risk of Flooding from Surface Water Map indicates where surface water may be expected to flood or pond. Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead.
- 3.15. **Figure 3** shows the extent of surface water flood risk as per the Environment Agency mapping. The mapping identifies that the site is subject to surface water flood risk attributed to the watercourse.
- 3.16. The southern extent of the site is shown to have between 0 and 300mm depth of flooding based upon the LiDAR information of the site.

Figure 3: Environment Agency - Risk of Flooding from Surface Water Map 1000yr



Flooding from Groundwater

- 3.17. There are no records of groundwater flooding in the site or the surrounding area.
- 3.18. The Wiltshire Council SFRA explorer identifies that the site has negligible risk from groundwater flooding.

Flooding from Overwhelmed Sewers and Drainage Systems

- 3.19. There are no recorded flooding incidents of sewer flooding.

Flooding from Artificial Sources

- 3.20. Flooding from reservoirs occur when there is a dam breach or reservoir failure. The EA flood maps for reservoirs show how far flood water from a breach would spread in a worst case

scenario so that emergency services and councils have all the information they need to put plans into place to protect people.

- 3.21. The site is not located in a flood risk area from artificial sources such as reservoirs or canals.



4. FLUVIAL FLOOD RISK REVIEW

Environment Agency Product 4 data

- 4.1. The Environment Agency flood information for the site area is contained within **Appendix C**.
- 4.2. Node locations are provided along the watercourse and specific flood points provided within the site boundary
- 4.3. Flood points 2 and 3 show a flood level of 83.45mAOD applicable to the site for the 0.1% AEP (1:1000 year) event. Model nodes 4 & 8 of the River Ray model show the parallel nodes to the location of the site. All flood levels as per the Product 4 data is shown in **Table A** below.

Table A – Flood levels for various node locations.

	Defended			Un defended		
	1% AEP (100yr)	100% AEP + 20% CC (100yr+20%cc)	0.1% AEP (1000yr)	1% AEP (100yr)	100% AEP + 20% CC (100yr+20%cc)	0.1% AEP (1000yr)
Flood point 2	No data	No data	No data	No data	No data	83.45
Flood point 3	No data	No data	No data	No data	No data	83.45
River Ray Node 4	83.3	83.38	83.52	83.28	83.36	83.47
River Ray Node 8	83.31	83.38	83.52	83.29	83.36	83.48

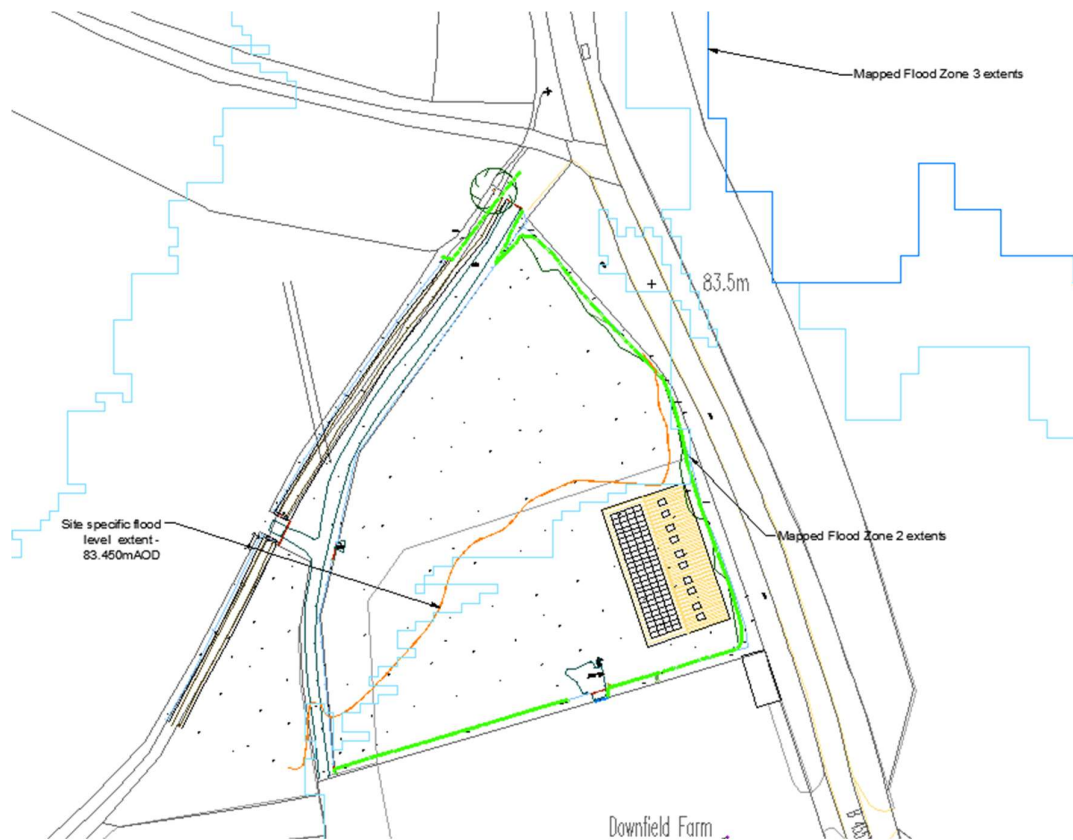
- 4.4. It is notable that the undefended flood levels show a lesser depth of flooding.
- 4.5. The top of bank level in the site is 83.100mAOD and is lower than that of the flood levels attributed to the flood model nodes on the River Ray. It is assumed that the culverted watercourse beneath the B453 road restricts the extent of the 1% AEP events.
- 4.6. The Product 4 data identifies that the site is only affected by the 0.1% AEP event. The 1%+20% CC AEP Hazard mapping identifies that the site is not affected by this event and as such lies outside of flood zone 3.



Review of site specific flood levels

- 4.7. The flood specific node points provide a 0.1% AEP level of 83.450m AOD. **Figure 4** provides the site specific topographical 0.1% AEP flood extent within the site – this broadly follows the mapped flood zone 2 extent.
- 4.8. The proposed warehouse building is located in Flood Zone 1.

Figure 4: Site specific flood extents



Flood Defences

- 4.9. The Environment Agency flood data does not identify any existing flood defences in the vicinity of the site but does provide the defended and undefended model data.

Historic Flooding

Environment Agency

- 4.10. Recorded flood events within the River Ray have not extended to the site.

SFRA

- 4.11. The Wiltshire Council SFRA recorded flood outlines do not show historic flooding at the site.

Fluvial Flood Risk conclusion

- 4.12. The Environment Agency published 1:1000yr (0.1% AEP) flood level within the site, for the purpose of this report, is 83.450m AOD. The site specific flood extent is defined for the site in which the development proposals are to be determined from.

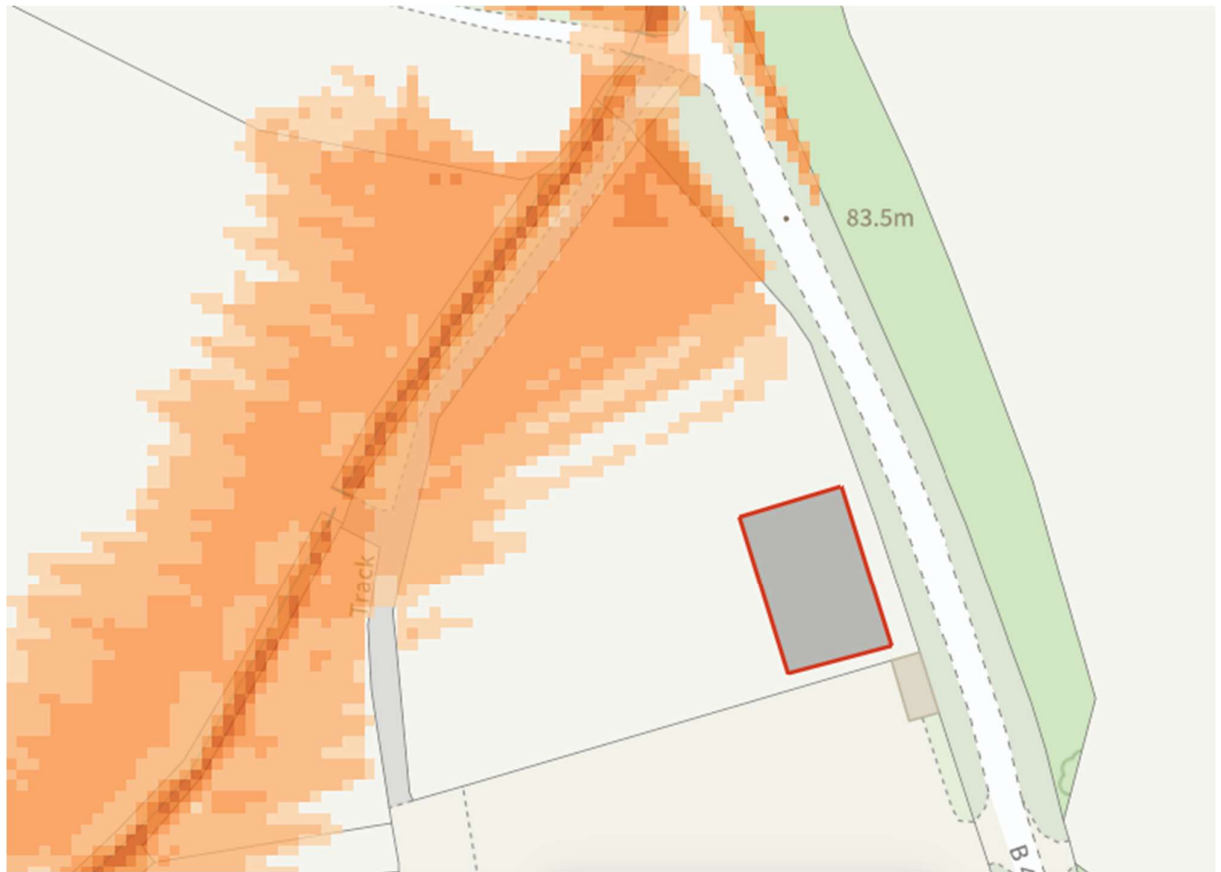
5. PLUVIAL FLOOD RISK REVIEW

1:30 year RoFSW

5.1. **Figure 5** identifies the RoFSW mapped extent and flood depth within the vicinity of the site. The red marked area is the approximate location of the proposed warehouse building.

5.2. **Figure 5** identifies that the 1:30 year RoFSW event does not impact the development.

Figure 5: 1:30 year RoFSW extents

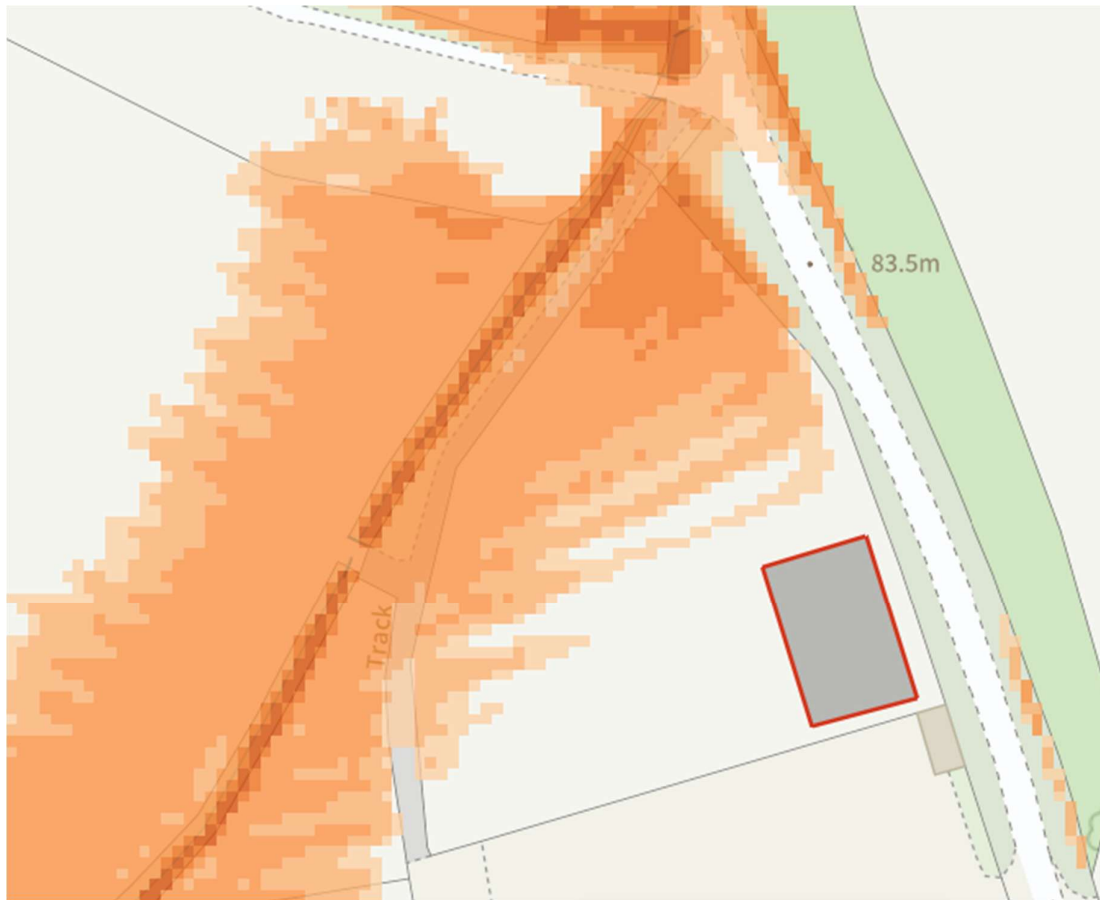


1:100 year RoFSW

5.3. **Figure 6** identifies the RoFSW mapped extent and flood depth within the vicinity of the site. The red marked area is the approximate location of the proposed warehouse building.

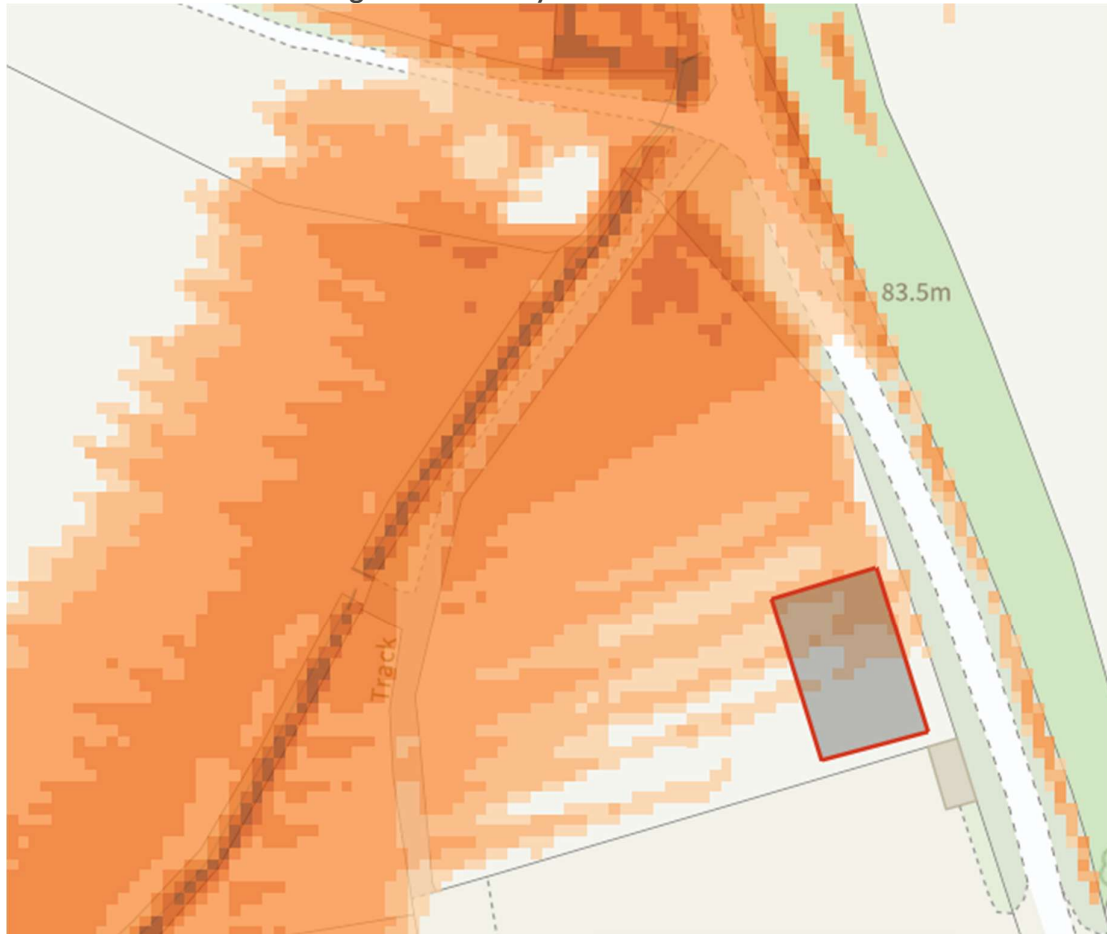
5.4. **Figure 6** identifies that the 1:100 year RoFSW event does not impact the development.

Figure 6: 1:100 year RoFSW extents



- 1:1000 year RoFSW**
- 5.5. **Figure 7** identifies the RoFSW mapped extent and flood depth within the vicinity of the site. The red marked area is the approximate location of the proposed warehouse building.
- 5.6. **Figure 7** identifies that the 1:1000 year mapped RoFSW event does encroach over the building footprint. The stated flood depths are less than 150mm (light orange) and 150-300mm in the darker orange area (on the building footprint).

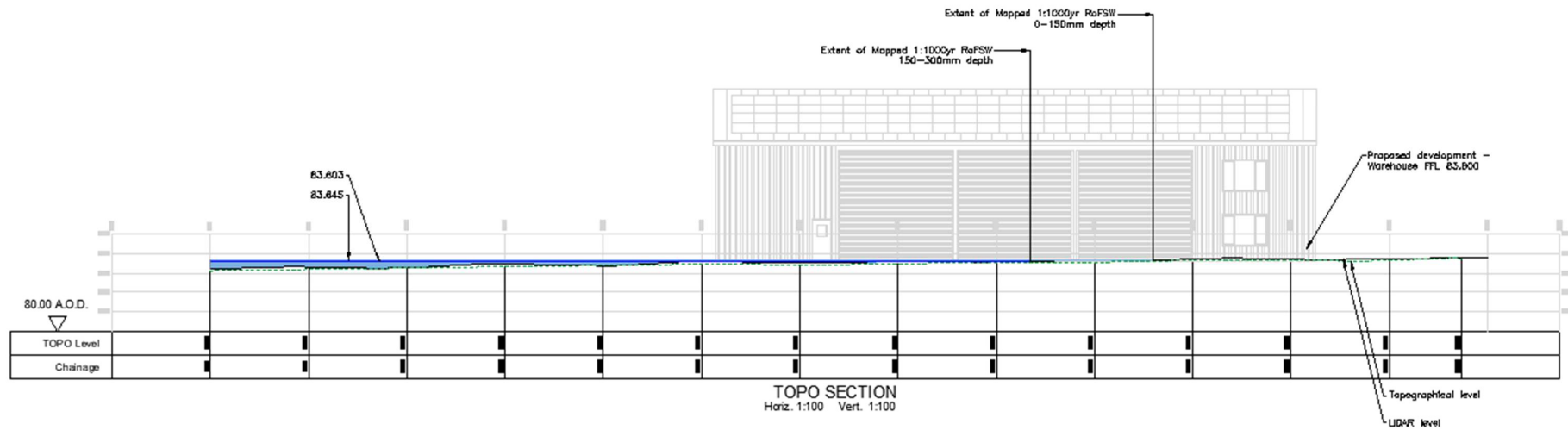
Figure 7: 1:1000 year RoFSW extents



5.7. **Figure 8** identifies the site section through the development proposals and the 1:1000 year low risk RoFSW extent. The section identifies the LiDAR levels and site specific topographical levels. Where interrogating **Figure 8**, the following points are concluded –

- The LiDAR levels for the site, in which flood mapping is based, identifies a number of ridges and furrows – these are not evident within the site as identified in the section provided and the topographical survey. This would entail that the extent / volume of RoFSW would not be realised as mapped due to increased volume in the site noting that the topo levels are lower than that of the LiDAR levels.
- The mapped extent of 1000 year RoFSW identifies that the 0-150mm depth of flooding in the vicinity of the building has a level of 83.645
- The mapped extent of 1000 year RoFSW identifies that the 150-300mm depth of flooding in the vicinity of the building has a level of 83.603
- The proposed FFL of the warehouse is 86.600mAOD (discussed in section 7 of this report). This would entail that the maximum depth of flooding from RoFSW within the building is 45mm should the mapped extents be realised.

Figure 8: 1:1000 year RoFSW extents - section



Fluvial Flood Risk conclusion

- 5.8. The Mapped RoFSW extents are shown to be in the location of the proposed development works during the low risk 1:1000 year RoFSW event. The RoFSW mapping identifies areas of 0 to 300mm depth of RoFSW flooding.
- 5.9. The LiDAR data identifies ridges and furrows which are not apparent on site or within the topographical survey. Should the ridges and furrows be removed, the available volume in the RoFSW hydraulic model is increased and as such would reduce the extent and spread of flows.
- 5.10. The depth of flooding within the warehouse, should the full extent and depth as mapped be realised is 45mm.
- 5.11. The Environment Agency note that the maps cannot definitively show that an area of land or property is, or is not, at risk of flooding, and the maps are not suitable for use at an individual property level.
- 5.12. The mapping identifies a potential for RoFSW to extend to the site should the mapped extent and depths be realised. The depth of flooding is minimal and can be suitably managed with flood resilient provisions.



6. SEQUENTIAL AND EXCEPTION TEST

6.1. Section 18 Policy F2 of the NPPF states:

1. *Development plans should take a risk-based approach when identifying suitable locations for development, taking into account all sources of flood risk and the current and future impacts of climate change. They should do this, and manage any residual risk, by:*
 - (a) *Applying the sequential test in policy F5 and, where relevant, policy F6;*
 - (b) *Safeguarding land that is, or is likely to be, required for current or future flood management;*
 - (c) *Using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and*
 - (d) *Where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.*

6.2. Section 18 Policy F5 of the NPPF states:

1. *The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Where the test applies, development proposals should not be located in areas at risk of flooding where alternative sites, appropriate for the development, are reasonably available in areas with a lower risk of flooding. The area to which the test is applied should not be greater than the anticipated catchment of the development in terms of its likely occupiers or users.*
 2. *The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, other than for:*
 - a) *Sites allocated in the development plan which were subject to the sequential test during plan preparation;*
 - b) *Sites where a site-specific flood risk assessment demonstrates clearly that:*
 - i. *No built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk); or*
 - ii. *Where the site would be at risk of surface water flooding only, the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development without increasing flood risk elsewhere in accordance with policy F7.*
- i. *For the following types of development:*
 - ii. *Householder development;*



- iii. *Small non-residential extensions (with a footprint of less than 250m²); and*
 - iv. *Changes of use, other than changes of use to a caravan, camping or chalet site, or to a mobile home or park home site.*
3. *The strategic flood risk assessment covering the area of the proposed development and the Flood Map for Planning should provide the evidential basis for applying the sequential test.*

Sequential Test Conclusion

- 6.3. The built form of the development is located wholly in Flood Zone 1.
- 6.4. The mapped RoFSW low risk 1:1000 year event is shown to extend to the built form should the mapped depths and extents be realised. In accordance with Section 18 Policy F5 paragraph 2, b, ii, the site is shown to be at risk of surface water flooding only therefore the sequential test is not applicable where suitable design and mitigation measures are implement in accordance with NPPF Policy F5 & F7.



7. FLOOD RISK MANAGEMENT

Summary of flood risk

- 7.1. A summary of the potential risk from all sources of flooding associated with development is shown in **Table E** below.

Table B: Flood Risk from All Sources of Flooding

Flood Source	Potential Risk				Description
	Very Low	Low	Medium	High	
Watercourses			X		The site is adjacent to Flood Zone 2, development is located in Flood one 1
Surface Water			X		Low risk RoFSW (1000 year) would reach the developed site are should mapped extents be realised.
Groundwater		X			There are no records of groundwater flooding
Overwhelmed Sewers		X			There are no records of existing issues
Artificial Sources		X			The site is not located in a reservoir flood risk area or near to an artificial body of water.

Flood Risk Vulnerability

- 7.2. The NPPF Annex F Table 2 identifies the Flood Risk Vulnerability Classification for different types of development according to their vulnerability to flood risk.

Figure 9: Extract of Annex F Table 2: Flood Risk Vulnerability Classification

LESS VULNERABLE

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for: shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
- Car parks.
- Land-raising (unless part of or enabling a development with a higher vulnerability classification).

- 7.3. With reference to Annex F Table 2, the warehouse development is classified to be less vulnerable.



- 7.4. With reference to NPPF Annex F Table 3, the development is appropriate in Flood Zone 1, 2 and Flood Zone 3a. It is noted that the warehouse is wholly located in Flood Zone 1.

Figure 9: Annex F Table 3: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Table 3: Flood risk vulnerability and flood zone 'incompatibility'

Flood zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception test required	✓	✓	✓
Zone 3a †	Exception test required †	X	Exception test required	✓	✓
Zone 3b *	Exception test required *	X	X	X	✓ *

Key:

✓ Exception test is not required

X Development should be refused

Minimum Ground Floor Levels

- 7.5. Preparing a flood risk assessment: standing advice recommends that floor levels are set at least 600 millimetres (mm) above the estimated flood level, this can be reduced to 300mm if there is a high level of certainty about the estimated flood level.
- 7.6. The development is wholly located in Flood zone 1 and adjacent to Flood Zone 2. The Environment Agency published 1:1000yr (0.1% AEP) flood level within the site, for the purpose of this report, is 83.450mAOD.
- 7.7. The warehouse FFL and surrounding ground is to be set at 86.600 whilst the office area is to have a FFL of 83.750mAOD. The office building area, located to the south and in the furthest location away from the flood zones, is set 300mm above the stated fluvial flood level for the site.

Flood Resistance and Resilience Measures

- 7.8. Low risk RoFSW (1000year event) is indicated to provide a maximum flood depth of 45mm in the warehouse should the mapped extent and depths be realised in the site. Where assuming the worst case scenario and the extent of the mapped RoFSW, the following mitigation measure are to be included in the development of the site:

- All storage within the warehouse is to be raised off the ground in racking or on pallets by a minimum of 50mm.



- All electric meters / outlets are to be a minimum of 150mm off the warehouse floor level
- A raised DPC is to be included around the perimeter of the warehouse.
- Sand bags are to be available for placement across roller shutter doors to limit the ingress of water.

Flood warning procedures

- 7.9. The site is not located within the 'River Ray and Swinbourne for West Swindon area to above Water Eaton' flood warning area. It is recommended that the site owner applies to be included in the flood warning area alerts.

Flood action plan

- 7.10. Should the site be subject to RoFSW flooding, the impact to the site is minimal in the area of the development. Flood depths to the south are minimal and would not pose a significant risk to the users of the site.
- 7.11. Should flood extents be realised as mapped, the south of the site (office area) is not affected and egress of the warehouse can occur to the south and into the existing yard and associated offices.



8. SURFACE WATER MANAGEMENT

Design Principles

- 8.1. Key design principles in the following guidance documents steer the approach to managing surface water runoff at sites:

- NPPF August 2026
- Building Regulations hierarchy of drainage (H3);
- Interim Code of Practice for SuDS; and
- CIRIA best practice guidance, including the use of the 'SUDS management train'

- 8.2. Building Regulations hierarchy of drainage outlines the preferred methods for the disposal of surface water with infiltration methods being the preferred option. If this is not possible the next favoured option is to drain to an existing watercourse. If neither of these options are feasible, the regulations state that rainwater discharge should be directed to a sewer.

- 8.3. The Interim Code of Practice for SUDS provides guidance about the hydraulic design criteria for Sustainable drainage systems. This in general refers to both peak rate of runoff and the volume of runoff, post development. Prior to mitigation measures such as the use of SuDS attenuation features, both the volume and peak rate of runoff may increase post development.

- 8.4. The design principles for surface water management extend beyond simple hydraulic criteria. CIRIA guidance promotes the use of the SUDS management train, a concept where SUDS techniques are used to treat, convey and store surface water runoff. This approach is considered as part of the SUDS selection methodology.

NPPF August 2026

- 8.5. Section 18 Policy F8 of the NPPF states:

F8: Sustainable drainage systems and watercourses

1. *Development proposals which could affect drainage on or around the development site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, in ways which are proportionate to the nature and scale of the proposal. The systems employed should provide multifunctional benefits where possible, facilitating improvements in water quality, biodiversity and amenity.*
2. *Sustainable Drainage Systems should:*
 - a) *Be designed in accordance with the National Standards for Sustainable Drainage Systems*
 - b) *Have maintenance arrangements in place to ensure an acceptable standard of operation for the anticipated lifetime of the development; and*
 - c) *In the case of proposals for major development, take account of advice from the Lead Local Flood Authority.*
3. *Development proposals should not enclose existing watercourses where this is not already the case, unless there are compelling reasons to do so; and should where possible remove existing culverts and renaturalise existing river channels, unless to do*



so would increase flood risk, result in other environmental harm or cause harm to heritage assets.

National Standards for Sustainable Drainage Systems (SuDS)

- 8.6. The new 2025 SuDS standards replace the narrower, hydraulics-focused 2015 guidance with a broader, multifunctional framework. The updated approach introduces seven national standards that give greater weight to water quality, amenity, biodiversity, and long-term maintenance, reflecting SuDS' wider role in shaping sustainable, resilient places.
- 8.7. The seven new National SuDS Standards are summarised as –

1. Runoff destinations

Discharge must follow the discharge hierarchy:

- Priority 1. Collected for non-potable use.*
- Priority 2. Infiltrated to ground.*
- Priority 3. Discharged to an above ground surface water body.*
- Priority 4. Discharged to a surface water sewer, or another piped surface water drainage system.*
- Priority 5. Discharged to a combined sewer.*

Evidence is required to justify use of lower priority discharge locations.

2. Management of everyday rainfall (interception)

Apply a 'SuDS approach' so that at least the first 5mm of rainfall for the majority of rainfall events does not result in runoff from the site to surface waters or piped drainage systems.

3. Management of extreme rainfall and flooding

A 'SuDS approach' shall be adopted to address the management of development runoff during extreme rainfall, including allowances for climate change and urban creep to:

- protect people and property on the development from flooding of the surface water drainage system*
- mitigate any increased flood risk to people and property adjacent to or downstream of the development*
- protect the receiving water body from morphological damage or minimise the impact on sewer capacity*

4. Water quality

Apply a 'SuDS approach' that protects surface waters, groundwater and coastal waters by managing the quality of the surface water runoff to adequately address water quality risks from the development.

5. Amenity

A 'SuDS approach' shall be adopted that maximises benefits for amenity through the creation of multi-functional places and landscapes.

6. Biodiversity

A 'SuDS approach' shall be adopted to ensure the surface water drainage system maximises biodiversity benefits throughout the development lifecycle.

7. Design of drainage for construction, operation, maintenance, decommissioning and structural integrity



A 'SuDS approach' shall be adopted to ensure that surface water drainage systems are designed so they can be easily and safely constructed, operated and maintained taking account of the need to minimise negative impacts on natural resources and the environment.

Wiltshire Council Betterment Strategy (2024)

- 8.8. Section 2.1 of the Wiltshire Council Betterment Strategy (June 2024) identifies the requirements for greenfield sites and states –

Where full disposal of surface water via infiltration is not viable, the LLFA expect to see that the discharge rates restricted to provide betterment over the greenfield conditions.

- With regards the control of surface water discharges from new development, Wiltshire Council requires post development discharges from greenfield sites to provide 30% betterment over pre-development discharges for all storm events between the 1 in 1 year and 1 in 100 year return period events.*
- For greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.*

National Standards for SuDS

Standard 1 - Runoff destinations

- 8.9. In accordance with the National Standards for SuDS, the following priority discharge hierarchy is to be reviewed -

- Priority 1. Collected for non-potable use.
- Priority 2. Infiltrated to ground.
- Priority 3. Discharged to an above ground surface water body.
- Priority 4. Discharged to a surface water sewer, or another piped surface water drainage system
- Priority 5. Discharged to a combined sewer.

Collected for non potable use

- 8.10. Rainwater harvesting is not currently in the scope of the development proposals. The client should consider implementation of rainwater harvesting for use in grey water applications such as toilet flushing.

- 8.11. There is insufficient need for water butts in the site.

Infiltrated to ground

- 8.12. Geological mapping identifies bedrock of clays. Infiltration SuDS are discounted as applicable means of surface water discharge.

Discharges to an above ground surface water body

- 8.13. Surface water drainage for the site is to discharge to the watercourse located to the north of the site as per the existing site arrangements.

Discharged to a surface water sewer, or another piped surface water drainage system

- 8.14. Not considered



- 8.15. **Discharged to a combined sewer**
Not considered

- 8.16. **Standard 2 -Management of everyday rainfall (interception)**
Guidance requires that the first 5mm of rainfall does not result in discharge from the site. Guidance advises the use of rainwater harvesting or infiltration and the retention of water in SuDS which is to be 'lost to soils or the atmosphere'
- 8.17. Compliance to the standard is achieved where reviewing the table below.

Table C: National Standards for SuDS – Standard 2 compliance

SuDS Component	Compliance criteria	Consideration for use in site
Green roofs and walls	Drain own surface water area only	Not considered
Rainwater harvesting systems	All surfaces drained to rainwater harvesting systems where system design is based upon regular daily demand for non potable water	Recommended for use – costs may negate implementation
Rainwater harvesting systems - Water butts	Not complaint	Not complaint
Soakaway or infiltration system	All areas discharged via infiltration sized for 1 in 1 year or greater	Not applicable due to ground conditions
Permeable surfaces	Compliant where draining area served only either as a lined or unlined system	Potential for use
Permeable surfaces with additional area - unlined	All soil types where the system is unlined if the additional impermeable area is no greater than the permeable area. Where the infiltration capacity of the ground below the permeable surface is greater than 1×10^{-6} m/s and unlined, up to 5 times the permeable surface area may be added as additional contributing area.	Potential for use
Permeable surfaces with additional area - lined	Not complaint	Not complaint
Swales	Longitudinal fall to be less than 1:100 and have a 500mm base width. Swales are suitable for interception for impermeable surface areas up to 5 times the base of the vegetated surface area receiving the runoff, whether lined or unlined. A swale which is unlined and has a longitudinal fall which is less than 1:100 and an infiltration capability greater than 1×10^{-6} m/s shall be assumed to comply with interception for a contributing area up to 25 times the base area of the swale.	Potential for use
Infiltration trench	Roads drained by infiltration trenches are compliant	Not applicable due to ground conditions
Detention Basins - with infiltration	Flat unlined base that can infiltrate to ground, shall be assumed to comply where the drained impermeable surface area is up to 5 times the vegetated detention basin surface area receiving the runoff for any soil type. Where infiltration is greater than 1×10^{-6} m/s shall be assumed to comply where the drained impermeable surface area is up to 25 times the base area of the basin	Potential for use



Bio retention areas and rain gardens	Unlined bioretention features shall be assumed to comply where the impermeable surface area is up to 5 times the vegetated surface area of the bioretention component receiving the runoff	Potential for use
Attenuation Ponds	Not complaint where a permanent water pool is present	Not complaint

Conclusion of Standard 2

- 8.18. The utilisation of at surface SuDS in the form of a basin or swale should be consider as the primary source of inception storage, Rain gardens can also be included if required.

Standard 3 - Management of extreme rainfall and flooding

- 8.19. The following text reviews the requirement of the design to meet standard 3.

Climate Change

- 8.20. The NPPF requires development to take account of the impacts of climate change. The allowances to be made for climate change effects when assessing flood risk are related to the lifetime of the development.
- 8.21. The peak rainfall intensity allowances to be used when designing urban drainage systems have been obtained from the environment agencies web based resource tool 'Climate change allowances for peak rainfall' by searching the development management catchment for the surrounding area.
- 8.22. The site is located in the Gloucestershire and the Vale Management Catchment, the catchment allowances have reproduced in **Table D**. Both the central and upper end allowances need to be assessed to understand the range of impact.

Table D: Peak rainfall intensity allowance

Gloucestershire and the Vale Management Catchment peak rainfall allowances	3.3% Annual exceedance		1% Annual exceedance	
	'2050s' (up to 2060)	'2070s' (2061 to 2125)	'2050s' (up to 2060)	'2070s' (2061 to 2125)
Central	20%	25%	20%	25%
Upper End	35%	35%	40%	40%

- 8.23. Surface water drainage design will allow for 35% climate change within the 30 year return period storms and 40% for the 100 year return period storms.

Surface Water Flow Balancing

Catchment Areas

- 8.24. The developable boundary measures 2000m² and is a greenfield site.

Greenfield Runoff Rate

- 8.25. Greenfield runoff rates have been calculated as represented in **Table E** – calculations can be found in **Appendix D**. Greenfield runoff rates are very low due to the development size.



Table E: Greenfield Runoff Rates

Return Period (Years)	1	2	30	100
Greenfield Runoff Rates (l/s)	0.8	0.8	2.2	3.0

- 8.26. **Post development unattenuated Peak Runoff Rate**
Where assessing the redeveloped sites peak runoff rate, including allowance for climate change and changes in impermeable areas (assuming that the full 0.2ha is impermeable area comprising the warehouse and associated yard area), the unattenuated peak runoff rate is as presented in **Table F**.

Table F: Post development site Modified Rational Method impermeable runoff.

Return Period	C	I	A	Flow (l/s)
1:1 year	0.95	28.809	0.2	15.217
1:30 year (+30%cc)	0.95	77.748	0.2	41.066
1:100 year (+40%cc)	0.95	132.593	0.2	70.036

- 8.27. If the site were to discharge at unattenuated rates, the post development site would significantly increase the impermeable runoff through the introduction of large impermeable areas.

Allowable discharge rate

- 8.28. The site is a greenfield site therefore all flows are to be limited to greenfield conditions with a 30% betterment over pre-development discharge in accordance with the Wiltshire Council betterment policy.
- 8.29. **Table G** identifies the allowable discharge rates for the site where betterment is applied.

Table G: Allowable Discharge

Return Period (Years)	1	2	30	100
Greenfield Runoff Rates (l/s)	0.8	0.8	2.2	3.0
30% Betterment Greenfield (l/s)	0.56	0.56	1.54	2.1

- 8.30. Discharge rates are to be limited to 0.5l/s for all storm events.

Surface Water Drainage Strategy

- 8.31. In view of the requirements of the NPPF, PPG, and design parameters and constraints associated with redeveloping this site, a surface water drainage strategy design has been devised and hydraulically modelled to demonstrate that the scheme can be suitably implemented without increasing the level of flood risk, when the surface water drainage system experiences a 1:100-year rainfall event (including 40% allowance for climate change).
- 8.32. The surface water drainage scheme has been designed to ensure:
- Sustainable Urban Drainage systems are wholly incorporated within the scheme.
 - Consideration is given for the improvement of water quality within the design.
 - The designed drainage scheme can satisfactorily retain a critical 1 in 100 Year storm event with climate change.



- 8.33. An online attenuation basin is proposed to the north of the development area. Drainage from the building is collected and conveyed in ACO drains or Filter Carrier Drains.
- 8.34. The yard is to have over the edge drainage discharge to the basin,
- 8.35. The basin will provide additional protection of the site for RoFSW events due to the location and volume provided. The RoFSW extents within the site would also be reduced through the implementation of a drainage strategy.
- 8.36. Refer to drawing MTD26/014-SK01 entitled 'Drainage Strategy' in **Appendix E** for the layout of the surface water network.
- 8.37. The hydraulic assessment provides various scenarios up to and included the critical 1 in 100 Year storm event with additional 40% allowance for climate change. The simulations confirm that the storm can be managed and maintained within the site without flooding. The hydraulic models of the proposed surface water network and SuDS devices can be found in **Appendix F**.

Exceedance

- 8.38. Exceedance flows will follow the natural topography of the site and discharge in a northerly direction. Refer to drawing MTD26/014-SK01 entitled 'Drainage Strategy' in **Appendix E**

Conclusion of Standard 3

- 8.39. The drainage strategy has been developed in line with the requirements of the National Standards for SuDS and implements a suitable strategy whilst considering the site specific requirements.

Standard 4 - Water quality

- 8.40. In terms of water quality, the proposed surface water system offers a suitable level of mitigation in accordance with Environment Agency, DEFRA and CIRIA guidance.
- 8.41. The CIRIA SuDS Manual C753, 2015 details an approach for establishing the hazard posed by the intended land use activities and the extent to which the proposed SuDS components can reduce and mitigate the contamination risk to the receiving waterbody. Referring to Table 26.2 – 'Pollution hazard indices for different land use classifications' (CIRIA C753, 2015) the proposed development and land use results in a low pollution hazard, therefore a 'simple index' method can be used to make a qualitative assessment of the proposed SuDS management.
- 8.42. To ensure that there is adequate treatment, all SuDS components utilised should have a pollution mitigation index that equals or exceeds the pollution hazard index. In reference to Table 26.2, the pollution hazard index for the commercial roof areas and commercial yard is -

TSS = 1.0,

Metals = 0.8,

Hydrocarbons = 0.7 5.



Figure 11: CIRIA C753, 2015. Table 26.2 – ‘Pollution hazard indices for different land use classifications’

TABLE 26.2 Pollution hazard indices for different land use classifications				
Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (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	0.5	0.4	0.4
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 ¹	Medium	0.7	0.6	0.7
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 ¹	High	0.8 ²	0.8 ²	0.9 ²

Notes

- 1 Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).
- 2 These should only be used if considered appropriate as part of a detailed risk assessment – required for all these land use types (Table 4.3). When dealing with high hazard sites, the environmental regulator should first be consulted for pre-permitting advice. This will help determine the most appropriate approach to the development of a design solution.

8.43. In reference to Table 26.3 – ‘Indicative SuDS mitigation indices for discharges to surface waters’ (CIRIA C753, 2015) the inclusion of, filter carrier drains and an attenuation basin provides mitigation totalling:

TSS = 1.1,

Metals = 1.1

Hydrocarbons = 0.9



Figure 12: CIRIA C753, 2015. Table 26.3 – ‘Indicative SuDS mitigation indices for discharges to surface waters

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters			
Type of SuDS component	Mitigation indices ¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond ⁴	0.7 ³	0.7	0.5
Wetland	0.8 ³	0.8	0.8
Proprietary treatment systems ^{5,6}	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.		

Notes

- 1 SuDS components only deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters.
- 2 Filter drains can remove coarse sediments, but their use for this purpose will have significant implications with respect to maintenance requirements, and this should be taken into account in the design and Maintenance Plan.
- 3 Ponds and wetlands can remove coarse sediments, but their use for this purpose will have significant implications with respect to the maintenance requirements and amenity value of the system. Sediment should normally be removed upstream, unless they are specifically designed to retain sediment in a separate part of the component, where it cannot easily migrate to the main body of water.
- 4 Where a wetland is not specifically designed to provide significantly enhanced treatment, it should be considered as having the same mitigation indices as a pond.
- 5 See Chapter 14 for approaches to demonstrate product performance. A British Water/Environment Agency assessment code of practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: <http://tinyurl.com/qf7yuj7>
- 6 SEPA only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS component are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are causing pollution where there is a requirement to retrofit treatment. SEPA (2014) also provides a flowchart with a summary of checks on suitability of a proprietary system.

Conclusion of Standard 4

- 8.44. The proposed SuDS included in the drainage strategy provide sufficient water quality mitigation and as such provides compliance to Standard 4 of the National Standards for SuDS.

Standard 5 – Amenity

Detention Basin

- 8.45. Attenuation basins (or dry detention basins) provide significant community and environmental value by doubling as multi-functional green spaces. Instead of fenced-off concrete or plastic underground tanks, surface-level basins act as attractive parks, informal play areas, or sports fields when dry, while naturally supporting local biodiversity and improving urban landscapes.

- 8.46. Core Amenity Benefits are summarised as:

- Recreational Space: Usable open green space for walking, relaxing, or informal sports during dry weather periods.
- Visual Enhancement: Softens urban landscapes and introduces natural topography and native planting instead of sterile infrastructure.
- Biodiversity Support: Damp-tolerant meadows and seasonal wet patches attract birds, insects, and amphibians.



Filter Carrier Drains (FCD)

8.47. Filter drains with carrier pipes provide key amenity, safety, and environmental benefits by managing urban and highway runoff efficiently. They act as sustainable drainage systems (SuDS) that blend into landscapes while protecting infrastructure.

8.48. Key Amenities and Benefits are summarised as:

- Space Integration: Can be neatly integrated alongside roadways, pathways, and property boundaries without taking up large footprints like open detention basins.
- Flood and Hazard Reduction: Swiftly removes standing water and surface runoff from pavements and yards, reducing hydroplaning risks for motorists and property erosion for homeowners.
- Water Treatment: Naturally filters out silts, heavy metals, and pollutants through aggregate and geotextile layers before water enters natural watercourses or sewer systems.
- Low Visual Impact: Sub-surface gravel trenches maintain a clean, tidy landscape appearance compared to open concrete or metal drainage channels.

Filter Carrier Drains (FCD)

8.49. Filter carrier drains (often part of Sustainable Drainage Systems or SuDS) use stone trenches and perforated pipes to store and clean stormwater. While subsurface gravel layers have low biodiversity compared to surface wetlands, they host specialized microbial life and can support surface flora and small fauna when integrated into green corridors

Standard 6 – Biodiversity

Attenuation Basins

8.50. Attenuation basins are surface storage areas that temporarily hold stormwater runoff to prevent local floods. When designed for multi-functionality, they transition from simple engineering structures into rich ecosystems supporting diverse aquatic, wetland, and terrestrial wildlife.

8.51. Key Habitats & Species:

- Wet & Damp Zones: Bases that hold occasional or permanent water attract aquatic plants, macroinvertebrates (like dragonflies and damselflies), amphibians, and visiting waterfowl.
- Slopes & Banks: Gently sloped banks with native grasses provide cover and foraging grounds for pollinators, small mammals, and ground-nesting birds.
- Surrounding Buffers: Expanded green margins allow for native shrubs and wildflower meadows that establish vital ecological corridors through urban or suburban spaces.

Filter Carrier Drains (FCD)

8.52. Filter carrier drains (often part of Sustainable Drainage Systems or SuDS) use stone trenches and perforated pipes to store and clean stormwater. While subsurface gravel layers have low biodiversity compared to surface wetlands, they host specialized microbial life and can support surface flora and small fauna when integrated into green corridors



Standard 7 - Design of drainage for construction, operation, maintenance, decommissioning and structural integrity

Construction

- 8.53. Due to the limited extent of works the drainage would be installed at the initial stages of construction. The Basin can be utilised as attenuation storage for the period of construction where appropriate protection measures are implemented.

Management & Maintenance

- 8.54. Maintenance refers to the inspections required to identify performance issues and plan maintenance as required, operation and maintenance of the drainage system, landscape management and waste management associated with contaminated silt and other waste materials resulting from maintenance.
- 8.55. CIRIA C753 The SuDS Manual provides information in Chapter 32 for the operation and maintenance of SuDS. The maintenance activities are broadly defined as regular, occasional and remedial maintenance. It is noted that some scenarios may require one-off maintenance activities. The SuDS Manual defines maintenance as –
- Regular Maintenance: consists of basic tasks carried out to a frequent and predictable schedule, including inspections/monitoring, silt or oil removal if required more frequently than once a year, vegetation management, sweeping or surfaces and litter / debris removal.
 - Occasional maintenance: comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the regular tasks.
 - Remedial maintenance: describes the intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised with good design, constructions and regular maintenance activities.
- 8.56. Maintenance regimes are to be reviewed on an annual basis to ensure that the approach adopted is meeting its objectives.
- 8.57. All those responsible for the maintenance operations should adhere to the relevant health and safety legislation for the activities listed within this report (including lone working, if relevant). Method statements and risk assessments should always be completed prior to the undertaking of any works.

Indicative Maintenance & Management Plan

Gravity Drains & Catchpits

- 8.58. Maintenance will usually be carried out manually, although a suction tanker can be used for sediment/debris removal. If maintenance is not undertaken for long periods, deposits can become hard-packed and require more effort to remove.

Flow Control Chambers

- 8.59. The flow control chamber proposed for this site is a Hydro Brake which has no moving parts and are self-activating requiring minimal maintenance. The bypass disc is the only manually operated element and is applicable for use in the event of a blockage or issue with the drainage network. It is recommended that the chamber is inspected monthly for three months after installation and bi-annually thereafter to verify the condition and operation of the unit and check for blockages within the chamber or flow control device.



- 8.60. Any silt or debris found during inspections should be removed and cleaned out with the use of a sump vacuum cleaner.

Pond

- 8.61. Ponds are features with a permanent pool of water that provide both attenuation and treatment of surface water runoff.
- 8.62. They can support emergent and submerged aquatic vegetation along their shoreline which helps to enhance treatment processes and has amenity and biodiversity benefits.
- 8.63. Access to the pond would be via the adjacent parking and road area therefore no additional provision for access is required.
- 8.64. Refer to **Figure 13** for the Operation and Maintenance requirements as stated within CIRIA C753

Figure 13: CIRIA C753, 2015. Table 23.1 – ‘Operation and maintenance requirements for ponds and wetlands

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices eg penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1 m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1 m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
	Remove sediment from any forebay.	Every 1–5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	Every 5 years, or as required
Occasional maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, eg every 25–50 years
Remedial actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair / rehabilitate inlets, outlets and overflows.	As required

Blockages & Spillages

Blockage

- 8.65. In the event of a blockage within the drainage network, the key risk is that of flooding to the surrounding area. The extent and location of flooding is dependent upon the location of the blockage and the associated storm event.
- 8.66. In the event of a blockage within the network, the network is to be drained down by use of suction equipment and the blockage removed.
- 8.67. If a blockage does occur and results in flooding, the exceedance flow routes are anticipated to flow in a westerly direction.

Spillages

- 8.68. Due to the nature of the development, the likelihood of a spillage is minimal.
- 8.69. Most spillages on development sites are of compounds that do not pose a serious risk to the environment if they enter the drainage in a slow and controlled manner with time available for natural breakdown in a treatment system. Therefore, small spillages of oil, milk or other known organic substances should be removed where possible using soak mats as recommended by the Environment Agency with residual spillage allowed to bio-remediate in the drainage system.
- 8.70. In the event of a serious spillage, either by volume or of unknown or toxic compounds, then isolate the spillage with soil, turf or fabric and block outlet pipes from chamber(s) downstream of the spillage with a bung. Contact the Environment Agency immediately.

Responsibility

- 8.71. The definition of responsibility is determined by adoptions, private responsibility and shared responsibility typically determined within a management company. The extent of the responsibilities is defined by the layout and the areas offered for adoption.

Site Owners

- 8.72. The site is under full control and responsibility of the client. No external authorities are to be proposed to undertake responsibility or maintenance.



9. FOUL DRAINAGE

Existing drainage

- 9.1. The site is not served by Thames Water sewers
- 9.2. Existing foul and surface water drainage serving the existing buildings and yard discharge to the watercourse to the north of the site. Foul drainage discharges through a septic tank / sewage treatment works located to the south of the application site.

Foul Drainage Strategy

- 9.3. The foul flows generated by the office building are to be discharge to the existing septic tank / sewage treatment plant that serves the existing site.
- 9.4. The capacity of the existing septic tank / sewage treatment plant is to be determined such that the additional foul flows can be assessed against the capacity of the existing network.
- 9.5. Effluent is to discharge to the watercourse to the north as per current site conditions.



10. CONCLUSIONS

10.1. The development proposals, in which this Flood Risk Assessment & Drainage Strategy (FRADS) is written for comprises a new warehouse and yard area at Bevan Transport Ltd, Downfield Farm, The Pry, Purton, SN5 4JP. The key conclusions are:

- The site, within the clients ownership, is located in Flood Zone 2 & 1.
- The proposed warehouse id sequentially located within the site to be located in Flood Zone 1
- RoFSW is shown to extend to the development area of the site. The true extent of the RoFSW may not be realised as mapped noting the inaccuracies in the model and nis representation of site levels.
- Suitable mitigation measures are proposed for the site should the mapped low risk 1:1000 year RoFSW event be realised thus making the development and its occupants safe.
- A surface water drainage strategy is proposed for implementation within the site that accords with the NPPF and National Standards for SuDS. Attenuation and treatment is achieved through the integration of a detention basin and filter carrier drains within the site.
- The detention basin provides additional mitigation to the mapped RoFSW extents noting that levels and additional volumes will limit the extent and spread of the RoFSW.
- Surface water drainage is to discharge to the watercourse located to the north of the site.

10.2. The proposed works are sequentially located and the implementation of appropriate flood measures would deem that the proposed works are applicable in the setting of the site.

10.3. The overall conclusions drawn from this report is that the development would be appropriately safe for its lifetime taking account of the flood risk vulnerability of the site and its users.



APPENDICIES



MTD CONSULTING

APPENDIX A



MTD CONSULTING



TOWN AND
COUNTRY
PLANNING
DEVELOPMENT
CONSULTANTS

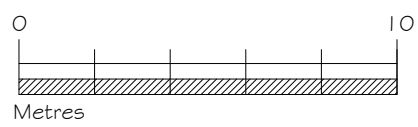
LPC (TRULU) LTD.,
TRULU, TETBURY, GLOUCESTERSHIRE GL9 6SQ
Tel: 01285 841433 email: admin@spectrul.com

Client
Bevan Transport Ltd
Project
Downfield Farm, The Fry,
Purton, SN5 4JP

Drawing
PROPOSED SITE PLAN

Date: June 2025 Scale: 1:200 @ A1

Drawing Number:
LPC 6064 PR 01A



FLOOD
ZONE
2

FLOOD
ZONE 3

FLOOD
ZONE
2

SURFACE WATER

FLOOD
ZONE 2

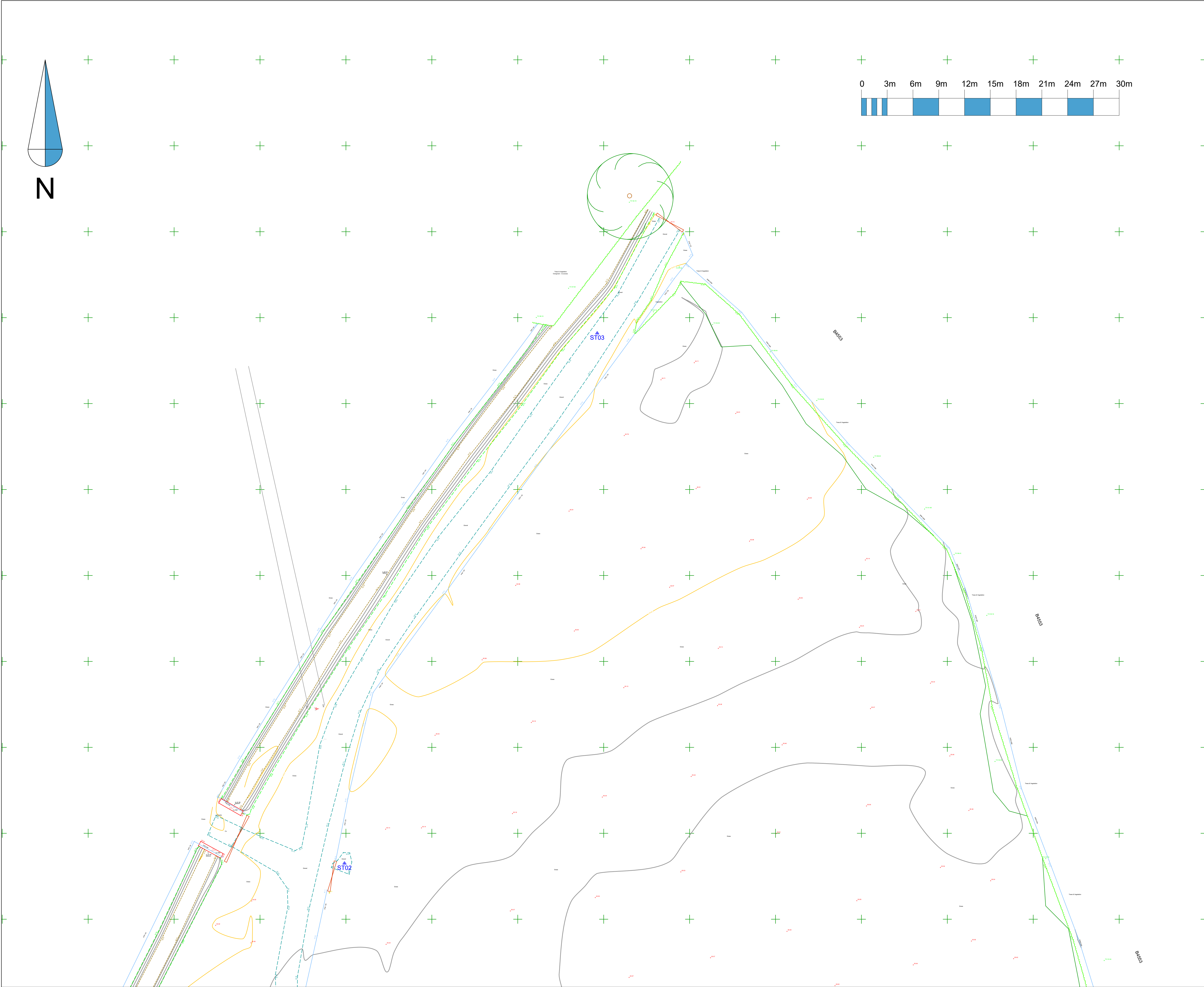
EXTENDED
YARD



APPENDIX B



MTD CONSULTING



Notes: Coordinate System

The survey has been orientated to the O.S. National Grid (OSGB36) via GPS and the O.S. Active Network. True OSGB36 coordinates have been established at:
Station: STN 1 E: 410735.803 m N: 189048.573 m EL: 83.769 m
and a further OSGB36 point established to create a true O.S. bearing for angle orientation. A scale factor of 1 has been applied to the survey therefore the coordinates shown are arbitrary.
All levels are related to O.S. Datum.

SURVEY STATIONS			
Name	Easting	Northing	Height
ST01	410735.803	189048.573	83.769
ST02	410679.833	189076.502	83.147
ST03	410709.249	189138.187	83.221

Stations * and * are marked with a MAG Nail, Hilti Nail or Wooden Stake.

ON DETAIL SURVEY

A/C	Air Conditioning Unit	EP	Electricity Pole	O/H	Overhead	Tac	Tactile Paving
AV	Air Valve	FI	Fire Hydrant	PM	Parking Meter	TP	Telephone Pole
B/L	Bed Level	FB	Flower Bed	PS	Paving Slab	T/CB	Telephone Call Box
BB	Beltline Beacon	FW	Foul	PO	Post	THL	Threshold Level
B/S	Bolted	GV	Gas Valve	PB	Post Box	T/F	Top Of Fence
BH	Borehole	GY	Gully	Ri	Riser	T/P	Top Of Parapet Level
Br	Brick	IC	Inspection Cover	RE	Rodding Eye	T/V	Top Of Vegetation
BSP	Brick paving	IL	Invert Level	RS	Road Sign	T/W	Top Of Wall
BT	British Telecom	JB	Junction Box	SP	Sign Post	TL	Traffic Lights
CB	Cabinet	KO	Kerb Outlet	S/A	Soakaway	UTL	Unable to Lift
CP	Catch Pit	LP	Lamp Post	SL	Slip	VP	Vent Pipe
Co	Concrete	LI	Light	SC	Stop Cock	WL	Water Level
CL	Cover Level	MH	Manhole Cover	SV	Stop Valve	WM	Water Meter
C/S	Culvert	Md	Master Post	S	Stump	WO	Water Wash Out
dl	Dilapidated	MB	Multiple Bolt	SW	Surface Water		
DCH	Drainage Channel	NVP	No Visible Pipes	STN	Survey Control Station		
EH	Earth Road	OVG	Overgrown				

ON FENCES/WALLS/DIVISIONS

A/R	Armco Crash Barrier	H/F	Heres Fence	P/R	Post and Rail Fence	BW	Brick Wall
B/W	Barbed Wire Fence	H/R	Hand Rail	P/W	Post and Wire Fence	CW	Concrete Wall
CL	Chain Link Fence	I/R	Iron Rail Fence	S/F	Safety Fence	RM	Reinforcing Wall
C/B	Close Boarded Fence	P/L	Palisade Fence	T/F	Trellis Fence	SW	Stone Wall
E/F	Electric Fence	P/F	Picket Fence	W/M	Wire Mesh Fence	TW	Timber Wall

ON BUILDINGS

CHM	Chimney	EL	Eave Level	HH	Head Height	SH	Sill Height
DH	Door Head	FRL	Flat Roof Level	PL	Parapet Level	SWP	Soil Pipe
DP	Down Pipe	FL	Floor Level	RL	Ridge Level	THL	Threshold Level

1
2

Rev	Comments	By	Chkd	Date
-		-	-	-
-		-	-	-
-		-	-	-
-		-	-	-
-		-	-	-

SURVEYBASE
PRECISION DIGITAL SURVEYORS

www.surveybase.co.uk ☎ 0343 841 0112

Project Name

Bevan Transport Limited Haulage Yard,
Downfield Farm, The Pry, Swindon SN5 4JP

CAD Drawing Name

SB14922 - TOPO

Drawing Title

Topographical Survey of
(SHEET 1 OF 2)

Client

LPD (Tull)

Date

14/05/2026

Scale

A1 @ 1:200

Drawn By

SB - ND

Checked By

SB - ND

SB Code

SB14922

Revision

-

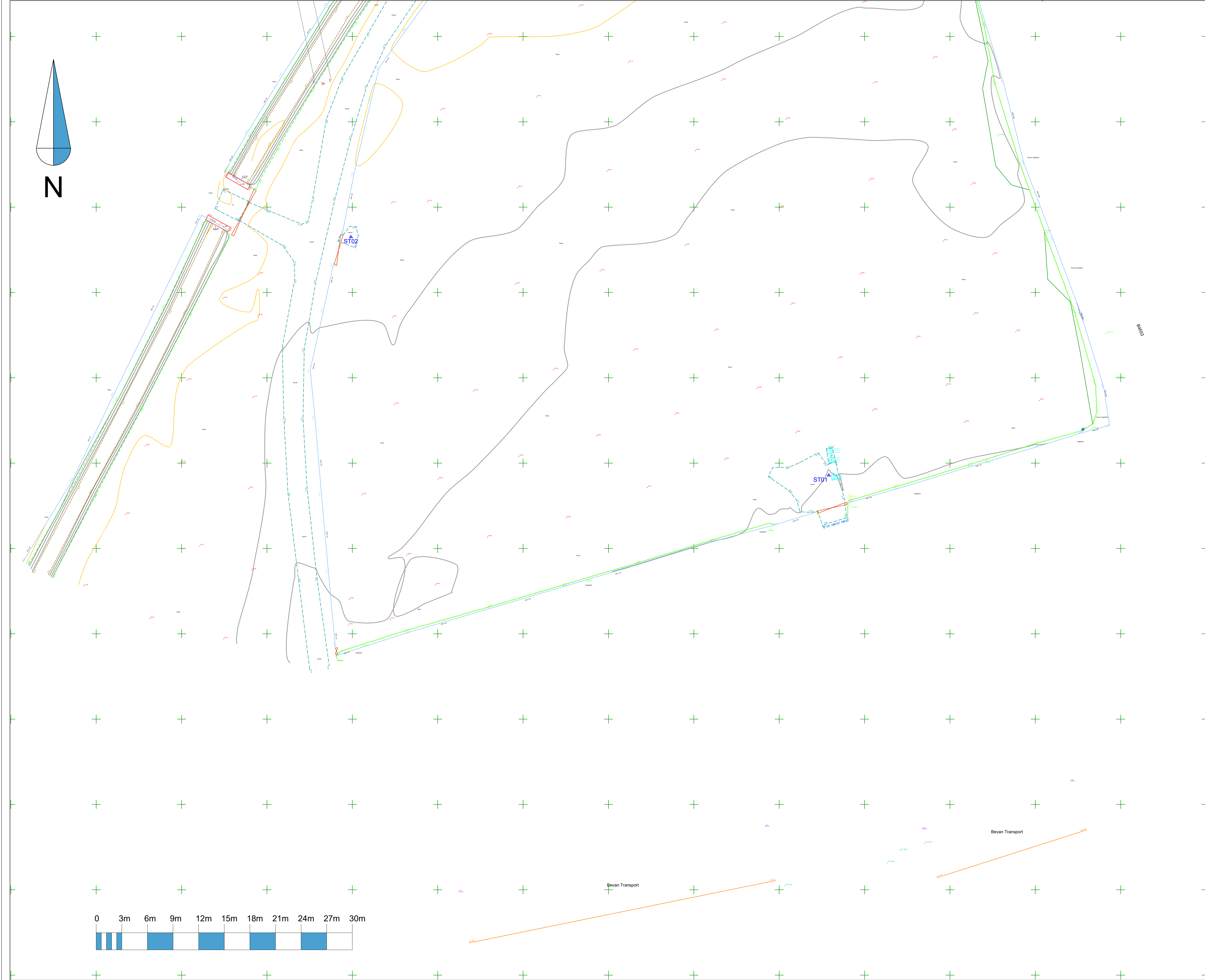
Grid Orientation

NORTH GPS

Site Level Datum

OS GPS

All dimensions are to be checked on site where applicable. This drawing must not be scaled, and only written dimensions should be reported.
Tree species and sizes on this drawing are not guaranteed, and if critical should be verified by an arboriculturist.
Tree spreads are average about the bole, and heights are approximate at the time of the survey.



Notes: Coordinate System

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BdL	Bed Level	FB	Flower Bed	PS	Paving Slab	TCB	Telephone Call Box
BB	Beisha Beacon	FW	Foul	PO	Post	THL	Threshold Level
BO	Bollard	GV	Gas Valve	PP	Post Box	T/F	Top Of Fence
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Br	Brick	IC	Inspection Cover	RE	Rodding Eye	T/V	Top Of Vegetation
BSP	Brick paving	IL	Invert Level	RS	Road Sign	T/W	Top Of Wall
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CAB	Cabinet	KO	Kerb Outlet	S/A	Soakaway	UTL	Unable to Lift
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Co	Concrete	LI	Light	SC	Stop Cock	WL	Water Level
CL	Cover Level	MH	Manhole Cover	SV	Stop Valve	WM	Water Meter
CS	Culvert	Md	Master Post	S	Stump	WO	Water Wash Out
dl	Dilapidated	MB	Multiple Bolt	SW	Surface Water		
DCH	Drainage Channel	NVP	No Visible Pipes	STN	Survey Control Station		
EH	Earth Road	OVG	Overgrown				

ON FENCES/WALLS/DIVISIONS

A/B	Armco Crash Barrier	H/F	Hera Fence	P/R	Post and Rail Fence	BW	Brick Wall
B/W	Barbed Wire Fence	H/R	Hand Rail	P/W	Post and Wire Fence	CW	Concrete Wall
CL	Chain Link Fence	I/R	Iron Rail Fence	S/F	Safety Fence	RM	Reinforcing Wall
C/B	Close Boarded Fence	P/L	Palisade Fence	T/F	Trellis Fence	SW	Stone Wall
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ON BUILDINGS

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DP	Down Pipe	FL	Floor Level	RL	Ridge Level	THL	Threshold Level

1
2

Rev	Comments	By	Chkd	Date
-		-	-	-
-		-	-	-
-		-	-	-
-		-	-	-
-		-	-	-

www.surveybase.co.uk 0343 841 0112

Project Name

Bevan Transport Limited Haulage Yard,
Downfield Farm, The Pry, Swindon SN5 4JP

CAD Drawing Name

SB14922 - TOPO

Drawing Title

Topographical Survey of
(SHEET 2 OF 2)

Client

LPD (Tull)

Date

14/05/2026

Scale

A1 @ 1:200

Drawn By

SB - ND

Checked By

SB - ND

SB Code

SB14922

Revision

-

Grid Orientation

NORTH GPS

Site Level Datum

OS GPS

All dimensions are to be checked on site where applicable. This drawing must not be scaled, and only written dimensions should be reported.
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Tree spreads are average about the bole, and heights are approximate at the time of the survey.

APPENDIX C



MTD CONSULTING

Product 4 (Detailed Flood Risk) for **SN5 4JP**

Our Ref: **EIR2026/19474**

Product 4 is designed for developers where Flood Risk Standing Advice FRA (Flood Risk Assessment) Guidance Note 3 Applies. This is:

- i) "all applications in Flood Zone 3, other than non-domestic extensions less than 250 sq metres; and all domestic extensions", and
- ii) "all applications with a site area greater than 1 ha" in Flood Zone 2.

Product 4 includes the following information:

Ordnance Survey 1:25k colour raster base mapping;
Flood Zone 2 and Flood Zone 3;
Relevant model node locations and unique identifiers (for cross referencing to the water levels, depths and flows table);
Model extents showing *defended* scenarios;
FRA site boundary (where a suitable GIS layer is supplied);
Flood defence locations (where available/relevant) and unique identifiers; (supplied separately)
Flood Map flood storage areas (where available/relevant);
Historic flood events outlines (where available/relevant, not the Historic Flood Map) and unique identifiers;

Statutory (Sealed) Main River (where available within map extents);

A table showing:

- i) Model node X/Y coordinate locations, unique identifiers, and levels and flows for *defended* scenarios.
- ii) Flood defence locations unique identifiers and attributes; (supplied separately)
- iii) Historic flood events outlines unique identifiers and attributes; and
- iv) Local flood history data (where available/relevant).

Please note:

If you will be carrying out computer modelling as part of your Flood Risk Assessment, please request our guidance which sets out the requirements and best practice for computer river modelling.

This information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

This letter is not a Flood Risk Assessment. The information supplied can be used to form part of your Flood Risk Assessment. Further advice and guidance regarding Flood Risk Assessments can be found on our website at:

<https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities>

If you would like advice from us regarding your development proposals you can complete our pre application enquiry form which can be found at:

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

Flood risk assessment data



Location of site: 410722 / 189062 (shown as easting and northing coordinates)

Document created on: 16 April 2026

This information was previously known as a product 4.

Customer reference number: 3YYGX5XBM32N

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- past floods
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- flood defences and attributes

We aren't able to display flood defence locations and attributes as there are no formal flood defences in the area of interest.

Surface water and other sources of flooding

When using the surface water map on the [check your long term flood risk service](#) the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- [reservoir flood risk](#)
- groundwater flood risk - you could use the [British Geological Survey groundwater flooding data](#), [groundwater: current status and flood risk](#) and the guide on [mining and groundwater constraints for development](#) - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

Your Lead Local Flood Authority is Wiltshire.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Ray (Swindon) 2013

Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial, defences removed climate change fluvial

Date: 19 December 2012

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Model information

EIR2026/19474

Model: Ray (Swindon) 2013

Description: The information provided is from the River Ray (Swindon) 2013 detailed mapping project. The study was carried out using 1D-2D modelling software (ISIS-Tuflow).

The project covers the Ray (Wilts) and its tributaries from Mannington in the south to the confluence with the Thames in the north, including the following:

Tadpole Ditch
Tadpole Brook
Lydiard Brook
Shaw Brook
Rod Bourne
Hreod Burna
Elcombe Brook

The project excluded the Haydon Wick Brook.

Model design runs:

1 in 5 / 20% Annual Exceedance Probability (AEP); 1 in 20 / 5% AEP; 1 in 100 / 1% AEP; 1 in 100+20% / 1% AEP plus 20% increase in flows and 1 in 1000 / 0.1% AEP

Mapped Outputs:

1 in 5 / 20% AEP; 1 in 20 / 5% AEP; 1 in 100 / 1% AEP and 1 in 1000 / 0.1% AEP

Model accuracy:

Levels $\pm$ 250mm

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 2.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change



Flood map for planning

Location (easting/northing)
410722/189062

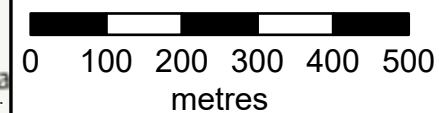
Scale

1:10,000

Created

16 Apr 2026

-  Selected area
-  Main river
-  Flood Zone 3
-  Flood Zone 2



Past floods

Past flood events included in this document

The recorded flood outlines included in this document are for areas of land local to your site location that have been flooded by any of these sources:

- ephemeral water
- main rivers
- ordinary watercourses
- the sea
- unknown

Data limitations

The outlines do not include flooding from:

- drainage where rainfall has led to surface water ponding or overland runoff
- artificial, water-bearing sewer, water supply and wastewater treatment pipelines

Changes to flood defences

The defences (also known as assets) that were in place may also have changed. For example, assets may have been built more recently than the last recorded flood outline.

What the recorded flood outlines dataset is

The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

- rivers
- the sea
- groundwater
- surface water

[Download the complete recorded flood outlines dataset](#), which includes data quality flags for outlines recorded after April 2020. This indicates the confidence we have in an outline.

Get flood information from other organisations

Contact Wiltshire Lead Local Flood Authority (LLFA) and your drainage board to get information about past flooding caused by surface water or drainage systems.



Past floods

Location (easting/northing)
410722/189062

Scale
1:10,000

Created
16 Apr 2026

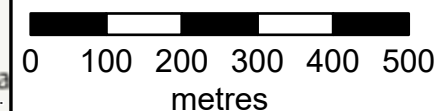
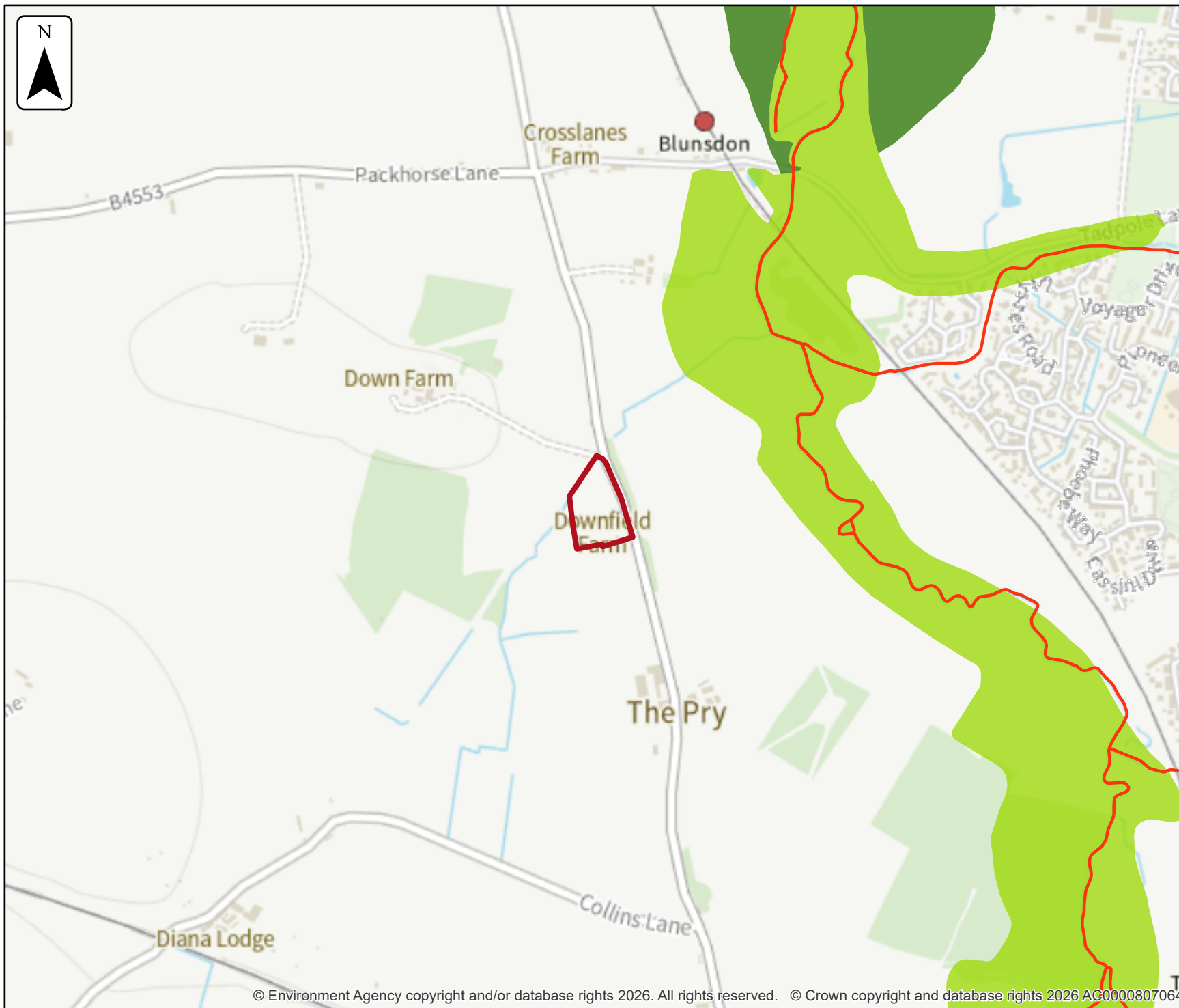
 Selected area

 Main river

Date of flood event

 1968

 1947



Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
1968	1968	main river	channel capacity exceeded (no raised defences)	No
1947	1947	main river	channel capacity exceeded (no raised defences)	No

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods

Climate change

The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change



Defences removed climate change modelled fluvial extent

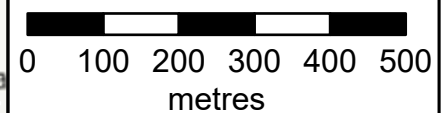
Location (easting/northing)
410722/189062

Scale Created
1:10,000 16 Apr 2026

Model name
Ray (Swindon) 2013

-  Selected area
-  Main river
- Modelled flood extent
 -  1% AEP (+20%)

Flood extents may not be
visible where they overlap
other return periods





Defences removed modelled fluvial extent

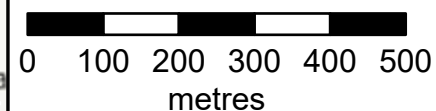
Location (easting/northing)
410722/189062

Scale Created
1:10,000 16 Apr 2026

Model name
Ray (Swindon) 2013

-  Selected area
-  Main river
- Modelled flood extent
 -  5% AEP
 -  1% AEP
 -  0.1% AEP

Flood extents may not be
visible where they overlap
other return periods





Defended climate change modelled fluvial extent

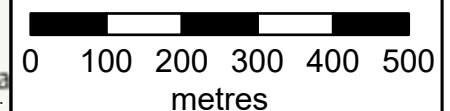
Location (easting/northing)
410722/189062

Scale Created
1:10,000 16 Apr 2026

Model name
Ray (Swindon) 2013

-  Selected area
-  Main river
- Modelled flood extent
 -  1% AEP (+20%)

Flood extents may not be
visible where they overlap
other return periods





Defended modelled fluvial extent

Location (easting/northing)
410722/189062

Scale Created
1:10,000 16 Apr 2026

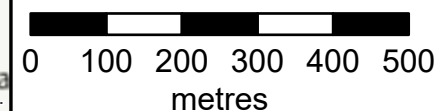
Model name
Ray (Swindon) 2013

-  Selected area
-  Main river

Modelled flood extent

-  5% AEP
-  1% AEP
-  0.1% AEP

Flood extents may not be
visible where they overlap
other return periods





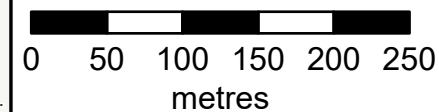
Defended modelled fluvial node locations

Location (easting/northing)
410722/189062

Scale Created
1:5,000 16 Apr 2026

Model name
Ray (Swindon) 2013

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defended

Label	Modelled location ID	Easting	Northing	20% AEP	5% AEP	1% AEP	0.1% AEP
				Level	Level	Level	Level
1	1171988	411046	189438	82.92	83.09	83.30	83.51
2	1171847	411066	189399	82.92	83.09	83.30	83.52
3	1171843	411091	189390	82.93	83.09	83.30	83.52
4	1171939	411110	189225	82.93	83.10	83.30	83.52
5	1171934	411125	189359	82.93	83.09	83.30	83.52
6	1172396	411127	189380	82.93	83.09	83.30	83.52
7	1171925	411152	189288	82.93	83.09	83.30	83.52
8	1172382	411152	189149	82.94	83.10	83.31	83.52
9	1171708	411188	189014	82.98	83.12	83.32	83.53
10	1172060	411208	189078	82.95	83.11	83.31	83.53

Data in this table comes from the Ray (Swindon) 2013 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.

Defended

Label	Modelled location ID	Easting	Northing	20% AEP	5% AEP	1% AEP	0.1% AEP
				Flow	Flow	Flow	Flow
1	1171988	411046	189438	11.53	11.76	11.96	12.14
2	1171847	411066	189399	10.78	10.83	11.01	11.45
3	1171843	411091	189390	11.44	12.34	13.46	14.49
4	1171939	411110	189225	14.71	15.77	16.68	17.34
5	1171934	411125	189359	11.96	12.57	13.36	14.18
6	1172396	411127	189380	1.40	1.96	3.19	5.64
7	1171925	411152	189288	14.69	15.72	16.58	17.36
8	1172382	411152	189149	14.76	15.90	16.87	17.51
9	1171708	411188	189014	15.33	16.14	17.03	18.36
10	1172060	411208	189078	14.93	15.99	17.02	17.85

Data in this table comes from the Ray (Swindon) 2013 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



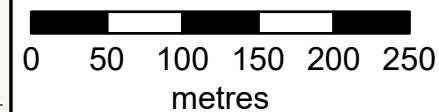
Defences removed modelled fluvial node locations

Location (easting/northing)
410722/189062

Scale Created
1:5,000 16 Apr 2026

Model name
Ray (Swindon) 2013

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defences removed

Label	Modelled location ID	Easting	Northing	20% AEP	5% AEP	1% AEP	0.1% AEP
				Level	Level	Level	Level
1	1171988	411046	189438	82.90	83.07	83.28	83.47
2	1171847	411066	189399	82.90	83.07	83.28	83.47
3	1171843	411091	189390	82.90	83.07	83.28	83.47
4	1171939	411110	189225	82.91	83.08	83.28	83.47
5	1171934	411125	189359	82.90	83.07	83.28	83.47
6	1172396	411127	189380	82.90	83.07	83.28	83.47
7	1171925	411152	189288	82.90	83.07	83.28	83.47
8	1172382	411152	189149	82.91	83.08	83.29	83.48
9	1171708	411188	189014	82.97	83.11	83.30	83.49
10	1172060	411208	189078	82.93	83.09	83.30	83.48

Data in this table comes from the Ray (Swindon) 2013 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.

Defences removed

Label	Modelled location ID	Easting	Northing	20% AEP	5% AEP	1% AEP	0.1% AEP
				Flow	Flow	Flow	Flow
1	1171988	411046	189438	11.46	11.60	11.79	12.02
2	1171847	411066	189399	10.72	10.66	11.0	11.45
3	1171843	411091	189390	10.93	11.43	11.94	12.84
4	1171939	411110	189225	15.09	15.86	16.70	17.35
5	1171934	411125	189359	12.28	12.89	13.42	14.23
6	1172396	411127	189380	0.42	0.47	0.48	1.10
7	1171925	411152	189288	15.05	15.81	16.61	17.39
8	1172382	411152	189149	15.20	15.99	16.88	17.52
9	1171708	411188	189014	15.58	16.33	17.08	19.48
10	1172060	411208	189078	15.35	16.10	17.05	17.83

Data in this table comes from the Ray (Swindon) 2013 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



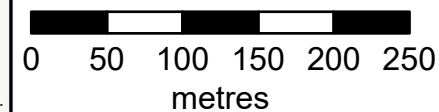
Defended climate change modelled fluvial node locations

Location (easting/northing)
410722/189062

Scale Created
1:5,000 16 Apr 2026

Model name
Ray (Swindon) 2013

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defended climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+20%)
				Level	Flow
1	1171988	411046	189438	83.37	11.99
2	1171847	411066	189399	83.38	11.11
3	1171843	411091	189390	83.38	13.70
4	1171939	411110	189225	83.38	16.92
5	1171934	411125	189359	83.38	13.60
6	1172396	411127	189380	83.38	3.80
7	1171925	411152	189288	83.38	16.79
8	1172382	411152	189149	83.38	17.08
9	1171708	411188	189014	83.39	17.26
10	1172060	411208	189078	83.39	17.28

Data in this table comes from the Ray (Swindon) 2013 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



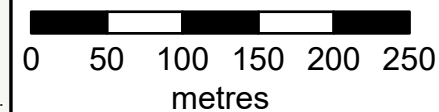
Defences removed climate change modelled fluvial node locations

Location (easting/northing)
410722/189062

Scale Created
1:5,000 16 Apr 2026

Model name
Ray (Swindon) 2013

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defences removed climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+20%)
				Level	Flow
1	1171988	411046	189438	83.35	11.86
2	1171847	411066	189399	83.35	11.10
3	1171843	411091	189390	83.35	12.15
4	1171939	411110	189225	83.36	16.94
5	1171934	411125	189359	83.35	13.65
6	1172396	411127	189380	83.35	0.52
7	1171925	411152	189288	83.36	16.82
8	1172382	411152	189149	83.36	17.12
9	1171708	411188	189014	83.37	17.45
10	1172060	411208	189078	83.37	17.30

Data in this table comes from the Ray (Swindon) 2013 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.

Modelled floodplain flood levels

EIR2026/19474

The modelled flood levels for the closest most appropriate model grid cells for your site are provided below:

2D grid cell reference	Model	Easting	Northing	flood levels (mAOD)										
				20% AEP	5% AEP	3.3 AEP	1% AEP	1% AEP (+10% increase in flows)	1% AEP (+15% increase in flows)	1% AEP (+20% increase in flows)	1% AEP (+25% increase in flows)	1% AEP (+35% increase in flows)	1% AEP (+70% increase in flows)	0.1% AEP
Flood Point 1	Ray (Swindon) 2013	410,723	189,061	No Data	No Data		No Data			No Data				83.45
Flood Point 2	Ray (Swindon) 2013	410,723	189,061	No Data	No Data		No Data			No Data				83.45
Flood Point 3	Ray (Swindon) 2013			No Data	No Data		No Data			No Data				83.45

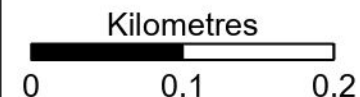
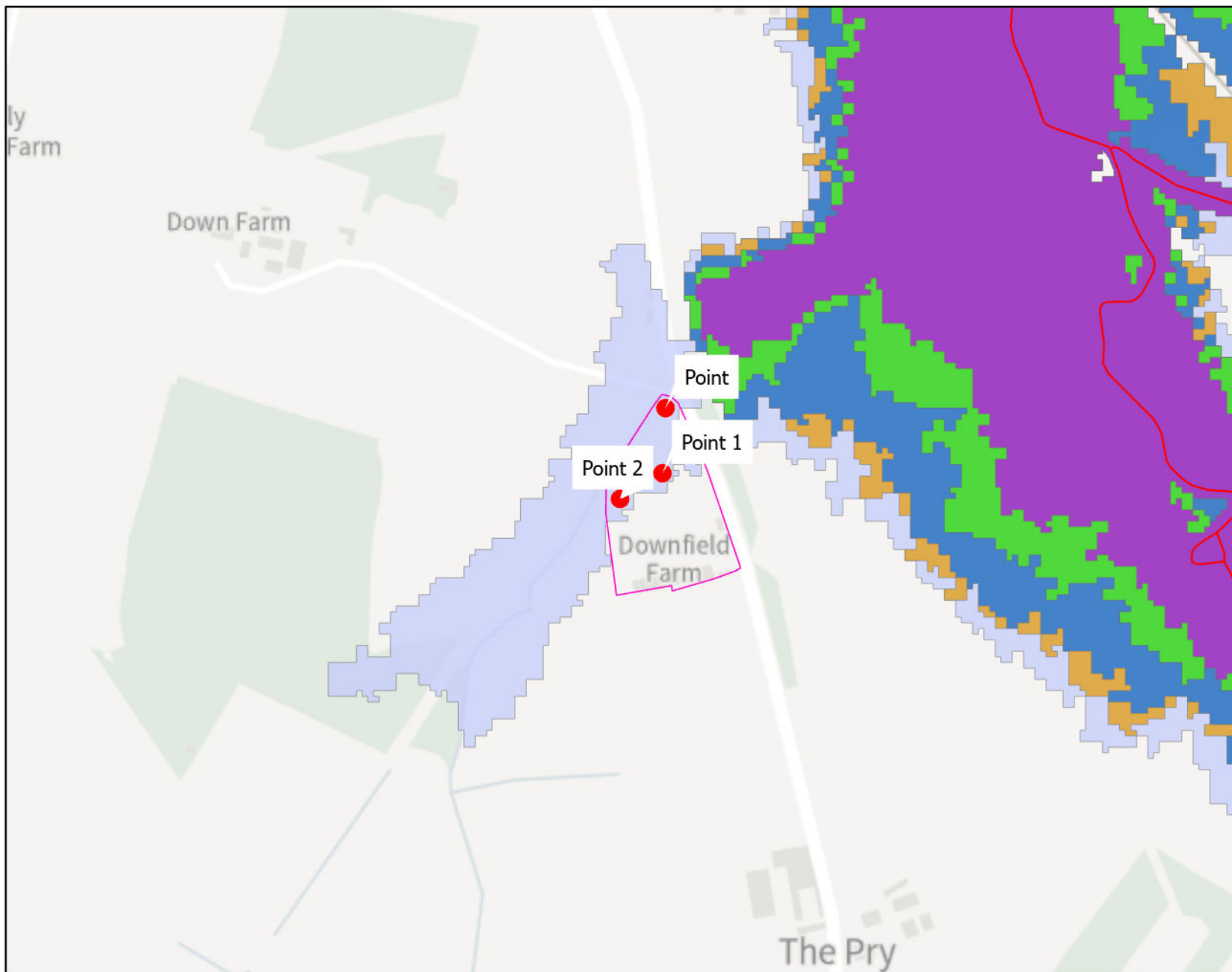
This flood model has represented the floodplain as a grid.
The flood water levels have been calculated for each grid cell.

Note:
Due to changes in guidance on the allowances for climate change, the percentage increase in river flows above should no longer to be used for development design purposes. The data included in this Product can be used for interpolation of levels as part of an intermediate level assessment.

For further advice on the new allowances please visit
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Detailed FRA Map centred on SN5 4JP

Created on 06/05/2026 REF: EIR2026/19474



Legend

- Site
- Statutory Main Rivers
- 20% AEP Modelled Flood Extent
- 5% AEP Modelled Flood Extent
- 1% AEP Modelled Flood Extent
- 1%+20% AEP Modelled Flood Extent
- 0.1% AEP Modelled Flood Extent
- Flood Points

AEP = Annual Exceedance Probability
The probability of a flood of a particular magnitude, or greater, occurring in any given year

Where available climate change extents have been calculated with an additional flow added to an AEP event. An example of how this is written is 1%+20% AEP.

Hazard Mapping

Hazard Mapping methodology:

To calculate flood hazard with the debris factor we have used the supplementary note to Flood Risk to People Methodology (see below).

The following calculation is used:

$$HR = d \times (v+0.5) + DF$$

Where HR = flood hazard rating

d = depth of flooding (m)

v = velocity of floodwaters (m/sec)

DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

The resultant hazard rating is then classified according to:

Flood Hazard	Colour	Hazard to People Classification
Less than 0.75	Green	Very low hazard - Caution
0.75 to 1.25	Yellow	Danger for some - includes children, the elderly and the infirm
1.25 to 2.0	Orange	Danger for most - includes the general public
More than 2.0	Red	Danger for all - includes the emergency services

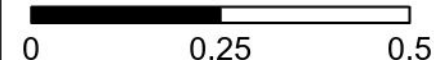
REF: HR Wallingford and Environment Agency (May 2008) Supplementary note of flood hazard ratings and thresholds for development planning and control purpose – Clarification of the Table 113.1 of FD2320/TR2 and Figure 3.2 of FD2321/TR1

1% + 20% CC AEP Hazard Map centred on SN5 4JP

Created on 05/05/2026 REF: EIR2026/19474



Kilometres



Legend

— Statutory Main Rivers

□ Site

1%+20% AEP Hazard

<VALUE>

Very low hazard – Caution

Danger for some – includes children, the elderly and the infirm

Danger for most – includes the general public

Danger for all – includes the emergency services

For hazard and debris factor we used HR Wallingford and Environment Agency (May 2008) supplementary note on flood hazard ratings and thresholds for development planning and control purpose. The following calculation is used:

$$HR = d \times (v+0.5) + DF$$

HR = flood hazard rating

d = depth of flooding (m)

v = velocity of floodwaters (m/sec)

DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Lead Local Flood Authority is Wiltshire.

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

[Find out more about flood risk activity permits](#)

Help and advice

Contact the Thames Environment Agency team at enquiries_thm@environment-agency.gov.uk for:

- [more information about getting a product 5, 6, 7 or 8](#)
- general help and advice about the site you're requesting data for

APPENDIX D



MTD CONSULTING

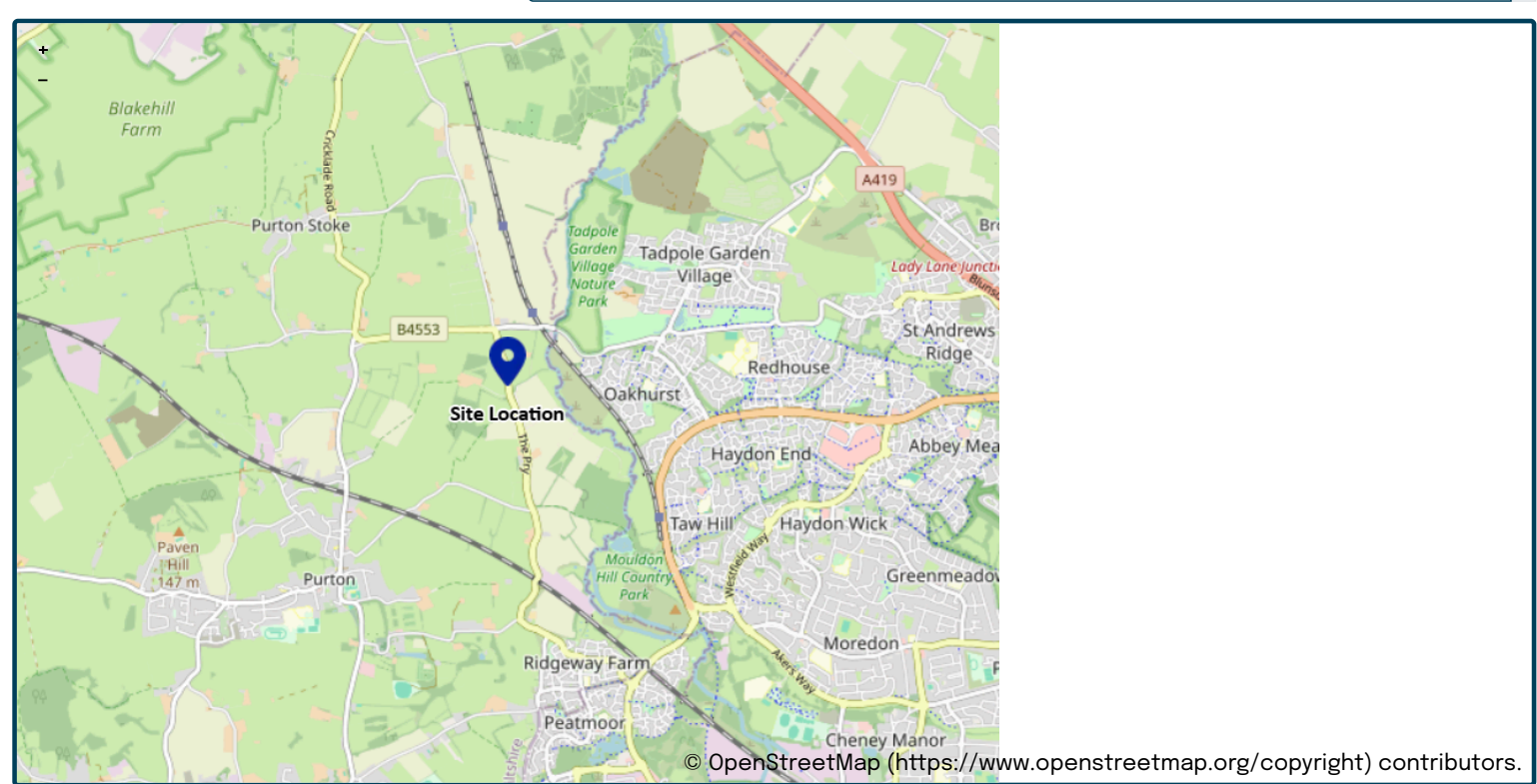
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	20/08/2026
Calculated by	MTD
Reference	MTD26-014
Model version	2.2.3

Location

Site name	Bevan Transport
Site location	The Pry, Purton



Site easting (British National Grid)	410712
Site northing (British National Grid)	189082

Site details

Total site area (ha)	0.2	ha
----------------------	-----	----

Greenfield runoff

Method

Method	IH124
--------	-------

IH124

	<u>My value</u>	☐	<u>Map value</u>
SAAR (mm)	693 mm		693
How should SPR be derived?	WRAP soil type		
WRAP soil type	4	☐	2
SPR	0.47		
QBar (IH124) (l/s)	1 l/s		

Growth curve factors

	<u>My value</u>	☐	<u>Map value</u>
Hydrological region	6		6
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	IH124
Flow rate 1 year (l/s)	0.8 l/s
Flow rate 2 year (l/s)	0.8 l/s
Flow rate 10 years (l/s)	1.5 l/s
Flow rate 30 years (l/s)	2.2 l/s
Flow rate 100 years (l/s)	3.0 l/s
Flow rate 200 years (l/s)	3.6 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

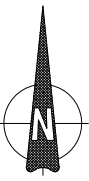
Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com/) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

APPENDIX E



MTD CONSULTING



NOTES:
1. Drawing for information only

DRAINAGE KEY:

- Foul Water Drain
- Surface Water Drain
- Rodding Eye
- Flow control chamber
- Exceedance Route Arrow

Rev	Date	Description	Initials	Check
-----	------	-------------	----------	-------



CLIENT:
BEVAN TRANSPORT LTD

PROJECT
**DOWNFIELD FARM,
THE PRY, PURTON**

DRAWING
DRAINAGE STARTEGY

Drawing No.

MTD26/014-SK01

Status

Preliminary for Comment

Not for Construction

Job Number	MTD26/014	Date	AUG 2026
Scale	1:200 @ A1		
Drawn By	MTD	Checked By	TL

APPENDIX F



MTD CONSULTING

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	30	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
FCD1	0.015	5.00	83.600	1200	410764.962	189061.140	0.500
FCD2	0.015	5.00	83.600	1200	410754.898	189090.884	0.565
FCD3	0.043	5.00	83.600	1200	410736.522	189084.666	0.605
HW1			83.600		410732.755	189079.638	0.999
pond	0.087	5.00	83.600	1200	410724.303	189075.427	1.000
HW2			83.600		410711.678	189072.561	1.001
S1-HB			83.600	1200	410707.493	189074.197	1.045
7_OUT			83.000		410680.134	189101.336	0.795

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	FCD1	FCD2	31.400	0.600	83.100	83.035	0.065	483.1	225	5.89	50.0
1.001	FCD2	FCD3	19.400	0.600	83.035	82.995	0.040	485.0	225	6.44	50.0
1.002	FCD3	HW1	6.283	0.600	82.995	82.601	0.394	15.9	225	6.47	50.0
1.003	HW1	pond	9.443	0.600	82.601	82.600	0.001	9443.0	150	8.13	50.0
1.004	pond	HW2	12.946	0.600	82.600	82.599	0.001	12946.0	150	10.82	50.0
1.005	HW2	S1-HB	4.493	0.600	82.599	82.555	0.044	102.1	150	10.90	50.0
1.006	S1-HB	7_OUT	38.536	0.600	82.555	82.205	0.350	110.1	150	11.57	50.0

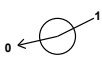
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	0.588	23.4	2.0	0.275	0.340	0.015	0.0
1.001	0.587	23.3	4.1	0.340	0.380	0.030	0.0
1.002	3.293	130.9	9.9	0.380	0.774	0.073	0.0
1.003	0.095	1.7	9.9	0.849	0.850	0.073	0.0
1.004	0.080	1.4	21.7	0.850	0.851	0.160	0.0
1.005	0.994	17.6	21.7	0.851	0.895	0.160	0.0
1.006	0.957	16.9	21.7	0.895	0.645	0.160	0.0

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	31.400	483.1	225	FilterCarrier	83.600	83.100	0.275	83.600	83.035	0.340
1.001	19.400	485.0	225	FilterCarrier	83.600	83.035	0.340	83.600	82.995	0.380
1.002	6.283	15.9	225	Circular	83.600	82.995	0.380	83.600	82.601	0.774
1.003	9.443	9443.0	150	Circular	83.600	82.601	0.849	83.600	82.600	0.850
1.004	12.946	12946.0	150	Circular	83.600	82.600	0.850	83.600	82.599	0.851
1.005	4.493	102.1	150	Circular	83.600	82.599	0.851	83.600	82.555	0.895
1.006	38.536	110.1	150	Circular	83.600	82.555	0.895	83.000	82.205	0.645

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	FCD1	1200	Manhole	1 STANDARD	FCD2	1200	Manhole	1 STANDARD
1.001	FCD2	1200	Manhole	1 STANDARD	FCD3	1200	Manhole	1 STANDARD
1.002	FCD3	1200	Manhole	1 STANDARD	HW1		Junction	
1.003	HW1		Junction		pond	1200	Manhole	1 STANDARD
1.004	pond	1200	Manhole	1 STANDARD	HW2		Junction	
1.005	HW2		Junction		S1-HB	1200	Manhole	1 STANDARD
1.006	S1-HB	1200	Manhole	1 STANDARD	7_OUT		Manhole	1 STANDARD

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
FCD1	410764.962	189061.140	83.600	0.500	1200				
						0	1.000	83.100	225
FCD2	410754.898	189090.884	83.600	0.565	1200		1	1.000	83.035
						0	1.001	83.035	225
FCD3	410736.522	189084.666	83.600	0.605	1200		1	1.001	82.995
						0	1.002	82.995	225
HW1	410732.755	189079.638	83.600	0.999			1	1.002	82.601
						0	1.003	82.601	150
pond	410724.303	189075.427	83.600	1.000	1200		1	1.003	82.600
						0	1.004	82.600	150
HW2	410711.678	189072.561	83.600	1.001			1	1.004	82.599
						0	1.005	82.599	150
S1-HB	410707.493	189074.197	83.600	1.045	1200		1	1.005	82.555
						0	1.006	82.555	150
7_OUT	410680.134	189101.336	83.000	0.795			1	1.006	82.205

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

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)	2	30	0	0	0	0	0	100	40	0	0	0
Climate Change (CC %)			0	0	0	0	0					
Additional Area (A %)			35	0	0	0	0					
Additional Flow (Q %)				0	0	0	0					

Node S1-HB Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	82.555	Product Number	CTL-SHE-0032-5000-1000-5000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.5	Min Node Diameter (mm)	1200

Node pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	82.600
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	72.5	0.0	1.000	250.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 98.18%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	FCD1	11	83.150	0.050	2.7	0.0869	0.0000	OK
15 minute winter	FCD2	11	83.106	0.071	5.2	0.1181	0.0000	OK
15 minute winter	FCD3	11	83.042	0.047	12.7	0.1205	0.0000	OK
480 minute winter	HW1	464	82.894	0.293	1.5	0.0000	0.0000	SURCHARGED
480 minute winter	pond	464	82.894	0.294	3.3	29.8790	0.0000	SURCHARGED
480 minute winter	HW2	464	82.894	0.295	0.6	0.0000	0.0000	SURCHARGED
480 minute winter	S1-HB	464	82.894	0.339	1.0	0.3838	0.0000	SURCHARGED
15 minute summer	7_OUT	26	82.220	0.015	0.3	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	FCD1	1.000	FCD2	2.6	0.304	0.112	0.2720	
15 minute winter	FCD2	1.001	FCD3	5.3	0.642	0.227	0.1627	
15 minute winter	FCD3	1.002	HW1	12.7	0.848	0.097	0.1122	
480 minute winter	HW1	1.003	pond	1.5	0.241	0.868	0.1662	
480 minute winter	pond	1.004	HW2	0.4	0.181	0.316	0.2279	
480 minute winter	HW2	1.005	S1-HB	1.0	0.159	0.060	0.0791	
480 minute winter	S1-HB	1.006	7_OUT	0.3	0.383	0.021	0.0349	12.0

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 98.18%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	FCD1	1380	83.246	0.146	0.3	0.2522	0.0000	OK
1440 minute winter	FCD2	1380	83.246	0.211	0.6	0.3502	0.0000	OK
1440 minute winter	FCD3	1380	83.246	0.251	1.5	0.6398	0.0000	SURCHARGED
1440 minute winter	HW1	1380	83.246	0.645	1.5	0.0000	0.0000	SURCHARGED
1440 minute winter	pond	1380	83.246	0.646	3.4	85.6736	0.0000	SURCHARGED
1440 minute winter	HW2	1380	83.246	0.647	0.9	0.0000	0.0000	SURCHARGED
1440 minute winter	S1-HB	1380	83.246	0.691	0.7	0.7811	0.0000	SURCHARGED
1440 minute winter	7_OUT	1380	82.221	0.016	0.4	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)
1440 minute winter	FCD1	1.000	FCD2	0.3	0.159	0.013	1.0342	
1440 minute winter	FCD2	1.001	FCD3	0.6	0.307	0.026	0.7610	
1440 minute winter	FCD3	1.002	HW1	1.5	0.202	0.011	0.2499	
1440 minute winter	HW1	1.003	pond	1.5	0.138	0.877	0.1662	
1440 minute winter	pond	1.004	HW2	0.4	0.174	0.301	0.2279	
1440 minute winter	HW2	1.005	S1-HB	0.7	0.121	0.038	0.0791	
1440 minute winter	S1-HB	1.006	7_OUT	0.4	0.407	0.025	0.0401	35.3

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	FCD1	1410	83.406	0.306	0.4	0.5304	0.0000	FLOOD RISK
1440 minute winter	FCD2	1410	83.406	0.371	0.8	0.6173	0.0000	FLOOD RISK
1440 minute winter	FCD3	1410	83.406	0.411	2.0	1.0500	0.0000	FLOOD RISK
1440 minute winter	HW1	1410	83.406	0.805	1.9	0.0000	0.0000	FLOOD RISK
1440 minute winter	pond	1410	83.406	0.806	4.2	118.5024	0.0000	FLOOD RISK
1440 minute winter	HW2	1410	83.406	0.807	0.8	0.0000	0.0000	FLOOD RISK
1440 minute winter	S1-HB	1410	83.406	0.851	0.6	0.9628	0.0000	FLOOD RISK
1440 minute winter	7_OUT	1410	82.222	0.017	0.5	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)
1440 minute winter	FCD1	1.000	FCD2	0.4	0.174	0.017	1.2488	
1440 minute winter	FCD2	1.001	FCD3	0.8	0.342	0.034	0.7716	
1440 minute winter	FCD3	1.002	HW1	1.9	0.211	0.015	0.2499	
1440 minute winter	HW1	1.003	pond	1.9	0.203	1.111	0.1662	
1440 minute winter	pond	1.004	HW2	0.5	0.159	0.330	0.2279	
1440 minute winter	HW2	1.005	S1-HB	0.6	0.127	0.033	0.0791	
1440 minute winter	S1-HB	1.006	7 OUT	0.5	0.418	0.027	0.0428	38.1