

Hampshire Water Transfer and Water Recycling Project

Environmental Statement – Appendix 19.1 Flood Risk Assessment – 1 of 8 documents

VOLUME NUMBER: 6

PLANNING INSPECTORATE SCHEME NUMBER: WA010002

APPLICATION DOCUMENT REFERENCE: 6.2

APFP REGULATION: 5(2)(a), 5(2)(e)

May 2026

Version 0



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Document	Title
Environmental Statement – Appendix 19.1 Flood Risk Assessment – 1 of 8 documents	Preliminary Flood Risk Assessment
Environmental Statement – Appendix 19.1 Flood Risk Assessment – 2 of 8 documents	Water Recycling Plant Flood Risk Assessment
Environmental Statement – Appendix 19.1 Flood Risk Assessment – 3 of 8 documents	Budds Farm Wastewater Treatment Works Pumping Station and Motor Control Centre Kiosk Flood Risk Assessment
Environmental Statement – Appendix 19.1 Flood Risk Assessment – 4 of 8 documents	Break Pressure Tank and Intermediate Pumping Station E Flood Risk Assessment
Environmental Statement – Appendix 19.1 Flood Risk Assessment – 5 of 8 documents	Intermediate Pumping Station F - Flood Risk Assessment
Environmental Statement – Appendix 19.1 Flood Risk Assessment – 6 of 8 documents	Intermediate Pumping Station G Flood Risk Assessment
Environmental Statement – Appendix 19.1 Flood Risk Assessment – 7 of 8 documents	Break Pressure Tank K Flood Risk Assessment
Environmental Statement – Appendix 19.1 Flood Risk Assessment – 8 of 8 documents	Flood Risk Assessment Sustainable Drainage Systems Strategy

Hampshire Water Transfer and Water Recycling Project Environmental Statement – Appendix 19.1 Preliminary Flood Risk Assessment

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1 Introduction

1.1 Purpose

- 1.1.1 Southern Water Services Limited (hereafter referred to as ‘the Applicant’) produced a Water Resources Management Plan (2020 – 2070) in 2019 (WRMP19), which outlined proposed long-term solutions to address an identified large-scale supply demand deficit in Hampshire from 2027 and to protect the unique chalk rivers in Hampshire, the River Test and River Itchen. This included a selection of long-term and large-scale water resource solutions, one of which was the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as ‘the Proposed Development’), which has since become the selected option to play a major role in making up the shortfall in water supply across the Hampshire supply area. The draft WRMP24 and revised draft WRMP24 reaffirmed the need for Proposed Development as the selected option required to address the continuing water resource deficit as identified in the WRMP19.
- 1.1.2 The Proposed Development comprises a new Water Recycling Plant (WRP), transfer pipelines, break pressure tanks (BPT), intermediate pumping stations (IPS), and associated infrastructure. The Proposed Development includes the transfer of treated wastewater from Budds Farm Wastewater Treatment Works (WTW) to the new WRP. Pipelines would connect the WRP to Bedhampton Springs, transferring recycled water to Bedhampton Springs and source water back to the WRP site. Separate connecting pipelines, delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir (HTR), would enable the transfer of recycled water and source water between HTR and the WRP. From the WRP, the source water is then transferred via a pipeline to the Otterbourne Water Supply Works (WSW), approximately 35km to the north-west. Additionally, reject water from WRP is returned to the Eastney Long Sea Outfall (LSO) via Budds Farm WTW.
- 1.1.3 This Preliminary Flood Risk Assessment (PFRA) has been produced to support a Development Consent Order (DCO) application and provide an overarching assessment of flood risk along the Preferred Pipeline Route and in relation to the Pipeline. As the pipeline is predominantly below ground and does not constitute permanent above-ground development, the PFRA focuses on flood risk along the Preferred Pipeline Route during operation. For permanent above-ground infrastructure associated with the Proposed Development, including the AGP and WRP, detailed site-specific FRAs have been prepared. These assessments consider site-specific flood risk constraints, mitigation measures, and residual risks. A Sustainable Drainage Systems (SuDS) strategy has been prepared to accompany the site-specific FRAs for the AGP and WRP to ensure the permanent above-ground infrastructure does not result in an increase in surface water runoff rates and volumes leaving the sites. The PFRA should be read in conjunction with the relevant site-specific FRAs and the SuDS strategy, which together provide a

comprehensive assessment of flood risk across the Proposed Development. This assessment considers flood risk from all sources; fluvial, tidal, surface water, groundwater, sewers, and artificial sources, using data from the Environment Agency (EA), including the updated National Flood Risk Assessment 2 data (NaFRA2), which provides enhanced flood risk mapping and climate change scenarios.

- 1.1.4 This PFRA also demonstrates that the requirements of the Section 4.7 of the National Policy Statement (NPS) for Water Resources [1], the National Planning Policy Framework (NPPF) [2], and the Planning Practice Guidance (PPG) [3] are met.
- 1.1.5 As set out in the Section 4.7.7 of the National Policy Statement for Water Resources Infrastructure, an appropriate FRA should:
- Consider the risk of all forms of flooding arising from the development, in addition to the risk of flooding to the project, and demonstrate how these risks will be managed and where relevant, mitigated, so that the development remains safe throughout its lifetime.
 - Take into account the impacts of climate change, clearly stating the development lifetime over which the assessment has been made, and the range of climate scenarios considered.
 - Explore opportunities for enhancing local flood risk management (for example, through increased water storage or adapting operational aspects of the infrastructure during critical flood risk periods).
 - Consider the need for safe access and exit arrangements.
 - Include the assessment of residual risk after risk reduction measures have been taken into account and demonstrate that this is acceptable for the development.
 - Consider if there is a need to remain operational during a worst-case flood event over the development's lifetime, and;
 - Provide evidence for the Secretary of State to apply the Sequential Test and Exception Test.
- 1.1.6 In addition, as set out in the PPG (Paragraph: 020 Reference ID: 7-020-20220825), the objectives of a site-specific FRA are to establish:
- Whether a proposed development is likely to be affected by current or future flooding from any source.

- Whether it will increase flood risk elsewhere.
- Whether the measures proposed to deal with these effects and risks are appropriate.
- The evidence for the local planning authority to apply (if necessary) the Sequential Test, and;
- Whether the development will be safe and pass the Exception Test, if applicable.

1.2 Statement of professional competence

- 1.2.1 Stantec has many years of experience in, amongst other areas, the assessment of flood risk, hydrology, flood defence and river engineering. The authors and reviewers of this document are experienced hydrologists, and document approval has been undertaken by a Fellow of the Chartered Institution of Water and Environmental Management.

1.3 Report objectives and structure

- 1.3.1 This PFRA concentrates on the flood risk issues over the operational lifetime of the Pipeline. This report has been prepared in accordance with the requirements of the NPS, NPPF and the PPG. The objectives of this report are to a) quantify the flood risk to the Preferred Pipeline Route; b) demonstrate that the Pipeline would remain safe and operational taking climate change into consideration; and c) demonstrate that the Pipeline would not increase flood risk elsewhere.

1.4 Scope of assessment

- 1.4.1 This document has been produced to act as an overarching flood risk assessment for the Preferred Pipeline Route, addressing flood risk to the Pipeline and its indicative location. For the above-ground infrastructure, including the AGP and WRP, detailed, site-specific FRAs have been produced. These site-specific FRAs address flood risk specifically to the AGP and WRP and should be referred to for information on individual asset locations.

1.5 Caveats and exclusions

- 1.5.1 This PFRA has been prepared in accordance with the Section 4.7 of the NPS for Water Resources Infrastructure, the NPPF, the PPG, and Local Planning Policy. The proposed flood management and surface water management strategies are based on the relevant British Standards (BS8533); standing advice provided by

the Environment Agency (EA); Lead Local Flood Authority (LLFA) guidance; or on common industry practice. The following caveats and exclusions apply to this PFRA:

- Activities during the construction phase may have an impact on the existing and future flood risk. Thus, an assessment of the risks and appropriate mitigation measures are identified and secured within the Outline Construction Environmental Management Plan (oCEMP) (Document reference 7.1, DCO Volume 7).
- The Construction (Design and Management) Regulations 2015 (CDM Regulations) would apply to any future development of this site which involves 'construction' work, as defined by the CDM Regulations. As such it is the responsibility of the proposed developer (ultimate client) to fulfil its duties under the CDM Regulations.
- The approach for this PFRA is based on the requirements of the EA and LLFA, and reflects the development proposals as understood at the time of assessment. The conclusions of this PFRA are based on data and guidance available at the time of the study and on the subsequent assessment that has been undertaken in relation to the development proposals as outlined in this report.

2 Legislative framework

2.1 Scope

2.1.1 The legislative and policy framework described below applies to both this PFRA and the associated site-specific FRAs for the permanent above-ground infrastructure. The site-specific assessments have been prepared in alignment with this framework and are intended to be read alongside this PFRA.

2.2 National policy statement for water resources infrastructure - flood risk

2.2.1 Flood risk is identified within Section 4.7 of the National Policy Statement (NPS) for Water Resources Infrastructure [1] for nationally significant water resource projects. The NPS establishes a clear expectation that flood risk should be considered for the construction, operation, and long-term performance of the infrastructure.

2.2.2 In line with the NPS, infrastructure projects in the following locations should be accompanied by a flood risk assessment:

- Flood Zones 2 and 3 (medium and high probability of river and sea flooding)
- Flood Zone 1 (low probability of river and sea flooding) for projects of 1 hectare or greater (or where strategic flood risk assessments identify land as being at increased flood risk in future), or projects that may be subject to other sources of flooding (local watercourses, surface water, groundwater, canals or reservoirs), or where the Environment Agency has notified the local planning authority that there are critical drainage problems.

2.2.3 At 4.7.7, the NPS requires an FRA to:

- Consider the risk of all forms of flooding arising from the development, in addition to the risk of flooding to the project, and demonstrate how these risks will be managed and, where relevant, mitigated, so that the development remains safe throughout its lifetime.
- Take into account the impacts of climate change, clearly stating the development lifetime over which the assessment has been made, and the range of climate scenarios considered.
- Explore opportunities for enhancing local flood risk management
- Consider the need for safe access and exit arrangements.

- Include the assessment of residual risk after risk reduction measures have been taken into account, and demonstrate that this is acceptable for the development.
- Consider if there is a need to remain operational during a worst-case flood event over the development's lifetime.
- Provide evidence for the Secretary of State to apply the Sequential Test and Exception Test, as appropriate.

2.2.4 The NPS requires that development's design takes into account flood risk and should put forward measures to mitigate the impact of flooding. Mitigation measures will need to be developed as part of the application for development consent to ensure that it is safe from flooding and will not increase flood risk elsewhere for the Proposed Development's lifetime, taking into account climate change.

2.2.5 These mitigation measures may include the use of sustainable drainage systems (SuDS). Under 4.7.11 of the NPS, the term SuDS is taken to cover the whole range of sustainable approaches to surface water drainage management including:

- "Source control measures, including rainwater recycling and drainage.
- Infiltration devices to allow water to soak into the ground, which can include individual soakaways and communal facilities.
- Filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns.
- Filter drains and porous pavements to allow rainwater and runoff to infiltrate into permeable material below ground and provide storage if needed.
- Basins and ponds to hold excess water after rain and allow controlled discharge that avoids flooding.
- Flood routes to carry and direct excess water through developments to minimise the impact of surface water flooding".

2.2.6 The NPS also sets out at 4.7.15, that a "sequential approach should be applied to the layout and design of the project. Vulnerable uses should be located on parts of the site at lower probability and residual risk of flooding. The applicant should seek opportunities, where appropriate, to use open space for multiple purposes such as amenity, wildlife habitat, and flood storage uses. Opportunities can be taken to lower flood risk by improving flow routes, flood storage capacity and using sustainable drainage systems".

2.2.7 Where flood risk is a factor in determining an application for development consent, the Secretary of State will need to be satisfied that, where relevant, the application

is supported by an appropriate flood risk assessment and that the Sequential Test has been applied as part of site selection and, if required, the Exception Test. The Sequential Test and Exception Test are described in detail within the NPPF and the associated PPG, and have been applied to this assessment accordingly.

2.2.8 Following the Sequential Test and, if required, the Exception Test, the Secretary of State will “need to be satisfied that flood risk will not be increased elsewhere, and will only consider development appropriate in areas at risk of flooding where it can be demonstrated that:

- Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location.
- The development is appropriately flood resistant and resilient.
- It incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate.
- Any residual risk can be safely managed.
- Safe access and escape routes are included where appropriate, as part of an agreed emergency plan”. (section 4.7.17, NPS)

2.2.9 Further, section 4.7.19 of the NPS states that “when determining an application, the Secretary of State will need to be satisfied that the potential effects of climate change on flood risk on the development have been considered as part of the design”.

2.2.10 Under 4.7.20 of the NPS, “approval for the development’s overall approach to drainage will form part of any development consent issued by the Secretary of State. The Secretary of State will therefore need to be satisfied that the proposed drainage system complies with any technical standards issued by the government or to any National Standards”.

2.2.11 This PFRA satisfies the requirements for the NPS decision making progress. Further details of how the above-mentioned requirements have been met for the Preferred Pipeline Route are detailed in Section 6 and Section 7 of this PFRA, and the NPS requirements for the application of SuDS are detailed within the accompanying SuDS Strategy within ES Appendix 19.1 Flood Risk Assessment – 8 of 8 documents, Volume II.

2.3 National planning policy

2.3.1 The primary planning policy is the NPS for Water Resources Infrastructure. The NPS is broadly aligned with the policies and principles of the NPPF and the

accompanying PPG. As such, by virtue of this assessment meeting the requirements of the NPS, it is considered that the relevant requirements of the NPPF and PPG are also satisfied. For reference, the applicable NPPF and PPG requirements are set out below.

- 2.3.2 One of the key aims of the NPPF and PPG is to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at the highest risk. Where new development is exceptionally necessary in such areas policy aims to make it safe without increasing flood risk elsewhere, and where possible reduce flood risk overall.
- 2.3.3 A risk-based approach should be adopted at all levels of planning. Applying the source pathway-receptor model to planning for development in areas of flood risk requires:
- A strategic approach which avoids adding to the causes or “sources” of flood risk, by such means as avoiding inappropriate development in flood risk areas and minimising run-off from new development onto adjacent and other downstream property, and into the river systems.
 - Managing flood “pathways” to reduce the likelihood of flooding by ensuring that the design and location of the development maximises the use of Sustainable Drainage Systems (SuDS), and takes account of its susceptibility to flooding, the performance and processes of river/coastal systems and appropriate flood defence infrastructure, and of the likely routes and storage of floodwater, and its influence on flood risk downstream.
 - Reducing the adverse consequences of flooding on the “receptors” (i.e. people, property, infrastructure, habitats and statutory sites) by avoiding inappropriate development in areas at risk of flooding.
- 2.3.4 A Flood Risk Assessment should be carried out to the appropriate degree at all levels of the planning process, to assess the risks of all forms of flooding to and from the development, whilst taking climate change into account.
- 2.3.5 A sequential approach should be undertaken in the decision-making process to ensure that development is steered to the lowest risk areas. Avoiding flood risk through the Sequential Test is the most effective way of addressing flood risk. The Sequential Test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of flooding, taking all sources of flood risk and climate change into account. Where it is not possible to locate development in low-risk areas, the Sequential Test should go on to compare reasonably available sites:

- Within medium risk areas; and
- Then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas.

2.3.6 If there is no reasonably available site in Flood Zone 1, the flood vulnerability of the development can be taken into account in locating development in Flood Zone 2 and then Flood Zone 3. The flood vulnerability classification, as described in Annex 3 of the NPPF, is shown in Table 2-1. Within each flood zone, new development should be directed to sites at the lowest probability of flooding from all sources. The pipeline associated with the Preferred Pipeline Route is classified as ‘water-compatible’, as it is ‘water transmission infrastructure’.

Table 2-1 NPPF Annex 3 Flood risk vulnerability classification

Essential infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including infrastructure for electricity supply including generation, storage and distribution systems; including electricity generating power stations, grid and primary substations storage; and water treatment works that need to remain operational in times of flood.
- Wind turbines.
- Solar farms.

Highly vulnerable

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as ‘Essential Infrastructure’.)

More vulnerable

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

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.

Water-compatible development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).

- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

2.3.7 Flood risk areas are categorised as High, Medium and Low Probability, based on the risk of inundation. Extracts from Tables 1 and 2 of the Flood Risk and Coastal Change PPG [3] are provided in Table 2-2 and Table 2-3 respectively; development must be compatible within the Flood Zone that it is located within.

Table 2-2 PPG Flood Zones

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
Zone 2 Medium Probability	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	<p>This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:</p> <ul style="list-style-type: none"> land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). <p>Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)</p>

Table 2-3 Flood risk vulnerability and flood zone ‘compatibility’

Flood risk vulnerability classification		Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	Exception Test Required	✓	✓	✓
	Zone 3a +	Exception Test Required +	✗	Exception Test Required	✓	✓
	Zone 3b *	Exception Test Required *	✗	✗	✗	✓ *

Key:

✓ Development is appropriate and Exception Test is not required.

✗ Development should not be permitted.

+ In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test and water compatible uses should be designed and constructed to:

- Remain operational and safe for users in times of flood;
- Result in no net loss of floodplain storage; and
- Not impede water flows and not increase flood risk elsewhere.

2.3.8 Where required, and following the application of the Sequential Test, the Exception Test must be passed in order for developments of a particular nature to be justified within the Flood Zones. For the Exception Test to be passed the following must be demonstrated:

- development that has to be in a flood risk area will provide wider sustainability benefits to the community that outweigh flood risk; and;
- the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

- 2.3.9 The pipeline associated with the Preferred Pipeline Route is classified as ‘water-compatible’ and is therefore considered appropriate for location within Flood Zone 1, 2 and 3a. Within Flood Zone 3b it must be shown to remain operational and safe for users in times of flood, result in no net loss of floodplain storage or impede flow and not increase flood risk elsewhere.

2.4 Local planning Policy

- 2.4.1 Local planning policies relevant to flood risk have been identified for the local planning authorities through which the Preferred Pipeline Route passes. These policies are presented to demonstrate awareness of the local policy context along the route. However, given the predominantly subsurface nature of the Pipeline and its classification as water-compatible development, it does not give rise to increased flood risk nor is it materially affected by flood risk. Compliance with the flood risk requirements set out in the NPS for Water Resources Infrastructure and the PPG is addressed comprehensively in Sections 6 and 7 of this PFRA, which demonstrate that the Preferred Pipeline Route is safe from flooding, would not increase flood risk elsewhere, and remains appropriate for its location.

East Hampshire District Local Plan: Joint Core Strategy (Part 1 Local Plan) (adopted June 2014)

- 2.4.2 The local plan sets out the requirements for flood risk in *Policy CP25 Flood Risk: Development in areas at risk of flooding, now and in the future, as identified on the latest Environment Agency flood risk maps and the Council’s Strategic Flood Risk Assessment will be permitted provided that:*
- it meets the sequential and exception test (where required) as outlined in Government guidance;
 - a site-specific flood risk assessment demonstrates that the development, including the access, will be safe without increasing flooding elsewhere, and where possible, will reduce flood risk overall;
 - the scheme incorporates flood protection, flood resilience and resistance measures appropriate to the character and biodiversity of the area and the specific requirements of the site;
 - appropriate flood warning and evacuation plans are in place; and
 - new site drainage systems are designed taking account of events which exceed the normal design standard.
- 2.4.3 All development will be required to ensure that there is no net increase in surface water runoff. Priority will be given to incorporating SuDS to manage surface water drainage, unless it can be demonstrated that SuDS are not appropriate. Where SuDS are provided, arrangements must be put in place for their whole life management and maintenance.

2.4.4 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Eastleigh Borough Council Local Plan 2016 – 2036 (2022)

2.4.5 The Local Plan sets out the approach to development in Eastleigh. It reflects the Council's strategy and the Borough Council's corporate priorities are of particular significance in providing a basis for the plan. The Council has three strategic priorities, which are a green borough, a healthy community and a prosperous place. The following policies are relevant to the Proposed Development:

- Strategic Policy S1, Delivering Sustainable Development
- Policy DM3, Adaptation to Climate Change
- Policy DM5, Managing Flood Risk
- Policy DM6, Sustainable Surface Water Management and Watercourse Management
- Policy DM7, Flood Defences, Land Reclamation and Coast Protection

2.4.6 The Proposed Development would not impact any of the allocated sites for development. This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Fareham Borough Council Local Plan 2037 (Emerging)

2.4.7 The updated Local Plan will set the strategic planning policies for the Borough, taking into account population and economic growth, climate change and environmental character. *Policy CC2, Managing Flood Risk and Sustainable Drainage Systems* is relevant to the Proposed Development, and states that Planning permission will be granted where the proposal development will be safe over its lifetime, taking into account the increased risk of flooding due to climate change and without increasing flood risk elsewhere and any proposed flood protection, prevention and resilience measures address the specific requirements of the site and are appropriate to the character and biodiversity of the area.

2.4.8 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Fareham Borough Council Local Plan Part 1 Core Strategy (2011) and Part 2 Development Sites and Policies

- 2.4.9 The Core Strategy identifies the Borough's development needs up to 2026 and how they will be met. The strategy sets out the spatial vision, a series of objectives designed to achieve the vision; overarching key policy areas which provide focus and link the objectives to the spatial strategy; core delivery policies; and an implementation and monitoring framework which set out how the spatial strategy will be delivered. *Policy CS15, Sustainable Development and Climate Change* is relevant to the Proposed Development. The policy emphasises avoiding unacceptable levels of flood risk and proactively managing surface water through the promotion of sustainable drainage techniques.
- 2.4.10 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Fareham Borough Council SFRA (2020)

- 2.4.11 The primary source of flood risk to Fareham Borough is from the sea. The key parts of the Borough which are currently at risk of flooding from the sea are the Fareham frontage to Portsmouth Harbour, Portchester, Lower Swanwick and Warsash. The secondary source of flood risk to the Borough is from rivers.
- 2.4.12 The Proposed Development is not mentioned specifically within the SFRA; however the Proposed Development does cross the River Meon and the Wallington River which are discussed in the SFRA. The SFRA looks at the sites put forward for allocation within the Local Plan and suggests whether these are suitable for allocation based on their flood risk. As outlined in the Emerging Local Plan for Fareham the Proposed Development will not impact any of the allocated sites for development.
- 2.4.13 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Havant Borough Council Core Strategy (2011) and Local Plan (Allocations) (2014)

- 2.4.14 The Core Strategy describes the Council's long term vision and objectives for what the borough will be like as a place in 2026. It closely aligns with the Sustainable Community Strategy, Forward Together, produced by the Havant Local Strategic Partnership. The strategy identifies the strategic Sites that are considered fundamental to achieving the overall vision. The strategy also identifies the required physical and social infrastructure necessary to support new development

and meet future needs. *Policy CS15, Flood and Coastal Erosion Risk* is relevant to the Proposed Development.

- 2.4.15 The Havant Borough Local Plan (Allocations) follows on from the adopted Havant Borough Local Plan (Core Strategy). Together these plans provide the Borough with up-to-date policies to encourage investment in new jobs, provide enough land for new homes and protect its special environment. *Policy AL6, Havant Thicket Reservoir Pipeline* outlines that planning permission will be granted for development proposals that help deliver the Havant Thicket Reservoir pipeline.
- 2.4.16 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Havant Borough Council Emerging New Local Plan- Building a Better Future (Regulation 18) (2025)

- 2.4.17 The plan states that planning permission in areas at risk of flooding now, or in the future taking into account climate change, will be granted where:
- The proposal passes the sequential and exception tests as set out in the NPPF, the PPG and relevant local guidance;
 - The development will be safe over its lifetime without increasing flood risk elsewhere;
 - Any proposed flood protection, resilience and resistance measures address the specific requirements of the site, and are appropriate to the character, residential amenity and biodiversity of the site and the area;
 - Opportunities have been explored and incorporated into the design which reduce flood risk
- 2.4.18 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Portsmouth City Council: Portsmouth Plan and Core Strategy (2012)

- 2.4.19 The plan is an overarching planning policy document, which forms part of a wider set of local planning policy documents known as the Local Development Framework (LDF). The plan sets out a vision and objectives for the development of Portsmouth up to 2027, identifies broad locations for development, protection or change and allocated strategic Sites; sets clear policies that guide decisions on planning applications, indicates how the plan will be implemented and show how progress will be monitored. *Policy PCS12, Flood Risk* is relevant to the Proposed Development. The Proposed Development would cross through allocated site STC4, north of Fort Widley.

2.4.20 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Portsmouth Local Plan 2038 (Regulation 19 document) (2024) and Pre-Submission Portsmouth Local Plan Addendum 2040 (2025))

2.4.21 Regulation 19 consultation on the Portsmouth Local Plan was held between July and September 2024 with submission to Secretary of State planned for June 2026.

2.4.22 Development proposals will be permitted where:

- They seek to reduce the impact and extent of all types of flooding following the relevant flood risk management steps as set out in Government policy and guidance;
- They are accompanied by a site specific Flood Risk Assessment where required by national policy that is informed by the PfSH SFRA Level 1;
- The proposal meets the sequential and exception tests as set out in Government policy and guidance;
- The development will be safe over its lifetime, taking into account the increased risk of flooding due to climate change;
- Landowners must safeguard land and ensure development does not impact the integrity of or prejudice land used for existing or future flood defences/ flood risk management and/or maintenance of watercourses;
- The development will not result in the increase of flood risk elsewhere and where possible will reduce the overall level of flood risk;
- Appropriate flood prevention, protection and resilience measures necessary and appropriate to specific requirements of the proposal site and any other areas potentially impacted by the proposed development have been sensitively incorporated. These will be maintained for the lifetime of the development. Flood management and mitigation measures should be informed by the PfSH Level 1 and Level 2 SFRA;

2.4.23 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Winchester City Council Local Plan Part 1 – Joint Core Strategy (2013)

2.4.24 The Local Plan Part 1 is a long-term strategic plan for development within Winchester District, and includes the strategic vision, objectives and the key policies needed to achieve sustainable development in Winchester District to 2031. It identifies the amount of development, broad locations for change, growth and protection, including allocating strategic Sites. *Policy CP17 - Flooding, Flood Risk*

and the Water Environment is relevant to the Proposed Development. The Proposed Development would not impact any of the allocated sites for development.

2.4.25 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Your Place, Your Plan Winchester District Local Plan (Regulation 19) (2024) and Schedule of Proposed Main Modifications to the Submission Winchester Local Plan 2020 – 2040 (11th June 2025)

2.4.26 The updated Local Plan will address local housing need, the economy, environmental considerations including the climate emergency, community infrastructure as well as strategic infrastructure needs, and is being prepared with the climate emergency in mind. The local planning authority will permit development provided it avoids flood risk to people and property and complies with the following:

- Applies a Sequential Test to the location, and the Exception Test if required, and applying the sequential approach at the site level;
- Manages flood risk from new development to ensure risk is not increased elsewhere and that opportunities to reduce the causes and impacts of flooding within the district through development are taken;
- Manages flood risk from new development by ensuring drainage off site has enough capacity to service the new development;
- Safeguards land and designated structures and features from development that is required for current and future flood management;
- Includes sustainable water management systems such as Sustainable Drainage Systems (SuDS) which must be considered at the outset and should be designed to meet the relevant standards and accompanied by a management plan for the lifetime of the development.

2.4.27 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Winchester City Council Level 1 Strategic FRA (SFRA) (2007)

2.4.28 The document is used as a tool to assess flood risk for spatial planning, producing development briefs, setting constraints, informing sustainability appraisals, identifying locations of emergency planning measures and requirements for FRAs.

- 2.4.29 A general policy for localised flooding issues is as follows:
- 2.4.30 No development will be allowed unless it is demonstrated that:
- Dry access and egress is provided;
 - The receiving watercourse has sufficient capacity; and
 - Flood risk will not be increased in nearby localised flooding areas and/or flood incident locations.
- 2.4.31 The main implementations from the SFRA include making sure that the flood risk is managed appropriately by applying PPS25 (now replaced by the NPPF and PPG). The aims of PPS25 are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. There may be exceptional circumstances where new development is necessary. In such areas, policy aims to make it safe without increasing the risk elsewhere and, where possible, to reduce the overall flood risk. Structural works may be required to reduce flood hazard within acceptable limits at Level 2 SFRA locations.
- 2.4.32 The Proposed Development is not mentioned specifically within the SFRA; however the Proposed Development is in close proximity to areas designated as localised flooding areas such as W003, which is located north of Deeps Copse.
- 2.4.33 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Hampshire County Council Preliminary FRA (PFRA) (2011)

- 2.4.34 The report assesses local flood risk from all sources of flooding in order to identify Flood Risk Areas which will require further investigation. The Hampshire County Council Preliminary FRA is the starting point for a more detailed local flood risk management strategy and is intended to be updated as floods are identified and flooding mechanisms and consequences are understood.
- 2.4.35 Due to its extensive coastline, Hampshire is susceptible to coastal flooding. With a combination of high tides and high river levels, there is a high potential for river or surface water flooding where rivers in flood are unable to discharge into the sea due to high tides. Winchester, an area through which the Proposed Development will pass, has been identified as one of the eight areas within Hampshire to have a substantial potential flood risk.
- 2.4.36 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Hampshire County Council Local Flood Risk Management Strategy (LFRMS) (2013)

- 2.4.37 The LFRMS is an over-arching strategy which is seen as the first step in understanding the flood risk in Hampshire. The aim of the document is to help understand the broad nature and extent of flood risk in the area and to reduce and manage flood risk in a way that will benefit people, property and the environment. The plan also highlights the wards with the highest risk of flooding. The key policies within the plan are:
- Policy 1 – To ensure collaboration and successful flood risk management Hampshire County Council will undertake effective partnership working;
 - Policy 2 – To better understand the risks associated with the movement of water Hampshire County Council will develop a catchment approach to flood and water management;
 - Policy 3 - To help protect communities that are most vulnerable to flooding, Hampshire County Council will continue to identify risks and develop clear priorities;
 - Policy 4 - To ensure successful and sustainable growth Hampshire County Council will support the planning process by encouraging resilient development;
 - Policy 5 - To increase knowledge and understanding of flood events Hampshire County Council will record, prioritise and investigate instances of flooding;
 - Policy 6 - To reduce flood risk in vulnerable areas Hampshire County Council will work with Multi-Agency Groups to develop Flood Alleviation Schemes; and
 - Policy 7 - To improve adaptation to and recovery from flood events Hampshire County Council will encourage and support community resilience.
- 2.4.38 The Proposed Development is not mentioned specifically within the LFRMS.
- 2.4.39 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

Partnership for South Hampshire SFRA (2024) Level 1 & 2

- 2.4.40 In addition, the Proposed Development is located within the South Hampshire area and is included in the Partnership for South Hampshire (PfSH) SFRA. This is a partnership of twelve local authorities around the Solent that aim to improve the environmental, cultural and economic performance of the area. These are Eastleigh Borough Council, East Hampshire District Council, Fareham Borough Council, Gosport Borough Council, Hampshire County Council, Havant Borough Council, New Forest District Council, New Forest National Park, Portsmouth City Council, Southampton City Council, Test Valley Borough Council and Winchester City Council.

- 2.4.41 The PfSH SFRA has been prepared in line with the requirements of the NPPF and the supporting PPG. The Level 1 PfSH SFRA provides a strategic overview of flood risk from all sources across the region and informs planning decisions, the application of the Sequential and Exception Tests, and development management across the partner authorities.
- 2.4.42 The SFRA:
- provides a strategic evidence base to inform planning policy and decision-making, particularly in areas affected by, or which may affect, flood risk
 - assists the development management process by providing a consistent approach to the assessment of flood risk
 - seeks to identify cross-boundary and partnership opportunities and strategic flood risk management solutions
 - supports risk management authorities in the discharge of their statutory duties
 - supports emergency planning and flood response across the South Hampshire area
- 2.4.43 Where required, the PfSH SFRA is supplemented by Level 2 SFRA, which provides more detailed, site-specific flood risk information to support the allocation of strategic development sites and the application of the Exception Test within individual local authority areas. The Level 2 SFRA for PfSH has been prepared to assess strategic allocations within that authority’s administrative area and to inform Local Plan preparation, rather than to assess individual development proposals. The Level 2 SFRA includes refined modelling of tidal flood risk and climate change impacts for specific allocation sites. Climate change poses a significant risk to the region. Predicted sea-level rise will reduce the level of protection provided by the sub-region’s flood defences over the coming century. Extreme tidal floods and river flood flows will increase the risk of tidal inundation and flooding from rivers.
- 2.4.44 The Proposed Development is not referenced specifically within either the Level 1 or Level 2 PfSH SFRA. However, SFRA mapping demonstrates that the Preferred Pipeline Route intersects areas of flood risk from rivers and the sea within the wider PfSH area. The PfSH Level 1 SFRA therefore provides appropriate strategic context for this PFRA, while detailed, site-specific assessment of flood risk relevant to the Preferred Pipeline Route is undertaken within this PFRA using the EA Flood Map for Planning data and supporting data. This PFRA demonstrates compliance with relevant national and local planning policy requirements; further details of how flood risk has been addressed are provided in Sections 6 and 7.

North Solent Shoreline Management Plan (2010)

- 2.4.45 The plan is a high level, non-statutory, policy document that sets out a framework for the management of over 386km of coastline and coastal defences.
- 2.4.46 The Proposed Development is not mentioned specifically within the Management Plan. The Policy Unit Reference 5A19 (Southmoor Lane to Farlington Marshes) covers the coastal defences at the location of the WRP site and the existing Budds

Farm WTW; for which the management approach is to Hold the Line. Hold the Line is the shoreline management policy to maintain or upgrade the level of protection provided by existing coastal defences.

South Downs Local Plan (2014-2033) (Adopted July 2019)

- 2.4.47 Within the South Downs Local Plan, *Strategic Policy SD49: Flood Risk Management* states that development proposals will be permitted that seek to reduce the impact and extent of all types of flooding through:
- Steering development away from areas of flood risk as identified by the EA and the SFRA and directing development to Flood Zone 1, wherever possible. Development in areas of flood risk will, where relevant, be required to meet the national Sequential and Exception Tests;
 - Not increasing the risk of flooding elsewhere and, wherever possible, reducing overall flood risk;
 - Flood protection, mitigation and adaptation measures necessary and appropriate to the specific requirements of the proposal, the development site and other areas potentially impacted; and
 - Ensuring that the integrity of coastal and river flood defences are not undermined.
- 2.4.48 Development proposals should, where required by national policy and guidance, be accompanied by a site-specific Flood Risk Assessment (FRA). Proposed flood protection, mitigation and adaptation measures should be supported with a management schedule, the identification of the body responsible for maintenance, and evidence of funding and maintenance in perpetuity.
- 2.4.49 This PFRA fulfils local planning policy requirements; further details of how the requirements have been met are detailed in Section 6 and Section 7 of this Flood Risk Assessment.

3 Description of the proposed development

3.1 Description of the proposed development

3.1.1 The Proposed Development comprises the construction, operation and maintenance of the following components:

- Water Recycling Plant and associated pumping stations.
- Pipelines between Budds Farm Wastewater Treatment Works and the Water Recycling Plant.
- Pipelines between the Water Recycling Plant and Bedhampton Springs, connecting into pipelines being delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir.
- Underground pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works.
- Above Ground Plant comprising Intermediate Pumping Stations and Break Pressure Tanks located along the Pipeline between the Water Recycling Plant and Otterbourne Water Supply Works.

3.1.2 The Proposed Development would also comprise the use of the following existing infrastructure:

- Havant Thicket Reservoir for the storage of recycled water.
- The existing Eastney Long Sea Outfall, Eastney Pumping Station, and Eastney Transfer Tunnel for the release of reject water from the Water Recycling Plant.
- Pipelines and other related works that have been consented separately by Portsmouth Water for the transfer of recycled water and source water between Bedhampton Springs and Havant Thicket Reservoir.
- The construction and operation of the Proposed Development would include other works such as landscaping and environmental mitigation measures.

3.2 Watercourse crossings

3.2.1 The Preferred Pipeline Route will inherently cross both Ordinary Watercourses and Main Rivers. Watercourses are classified as either Main Rivers, which are formally designated on the EA's Main River Map and fall under EA jurisdiction, or Ordinary Watercourses, which cover all other watercourses including streams, ditches and drains, and fall under the jurisdiction of the LLFA or Internal Drainage Board (IDB). With the exception of the possible above ground crossing at Old Mill Dam (crossing ID: PIPE_WCX_B_0002), all crossings would be constructed below ground using either trenchless or open cut methods. Once installed, the pipeline would remain subsurface and the ground above the constructed pipeline would be reinstated to

its existing elevation, ensuring no alteration to existing surface water flow paths or floodplain storage, and therefore no increase in flood risk.

3.2.2 One of the proposed route options between the WRP and Bedhampton Springs includes an above-ground crossing of the Old Mill Dam watercourse, subject to further feasibility and environmental assessment. This crossing would represent the only above-ground watercourse crossing if selected. In response to consultation feedback from Hampshire County Council requesting assurance that the pipeline would not form a blockage during high flow conditions, flood risk and impediment to flow have been assessed. The initial outline design of the proposed above-ground crossing has a soffit level of 4.83 mAOD, which is above the extent of Flood Zones 2 and 3, confirming that the crossing is elevated within Flood Zone 1 and would not obstruct fluvial flood flows (see Figure 1).

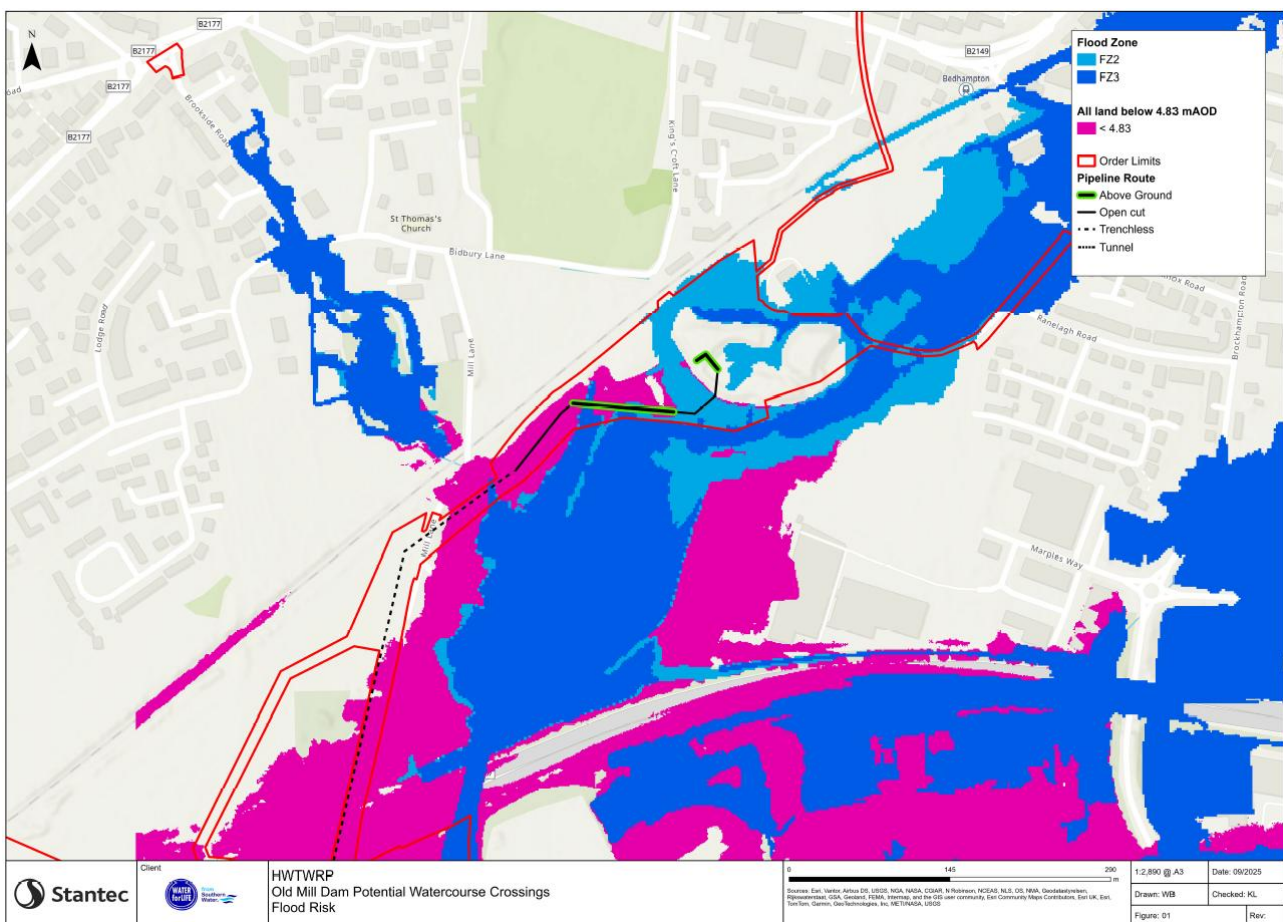


Figure 1 All land below 4.83 mAOD compared to Flood Zones 2 and 3

3.2.3 A review of groundwater and flood risk conditions at the Old Mill Dam watercourse indicates that the channel is predominantly groundwater-fed, with limited surface water input. Overflow from spring collection chambers form the main source of flow. These springs are part of the Bedhampton and Havant system, a large proportion of the groundwater in this area is being collected from the springs for

the purposes of public water supply, in chambers that are below ground surface. Groundwater flooding in this area would occur as “clearwater” flooding, where the water table rises above ground following prolonged rainfall. LiDAR analysis shows that low-lying land to the south of the crossing would flood first during such events, reducing the likelihood of water emerging at the pipeline location. Based on these factors, the proposed above-ground crossing is unlikely to impede flood flows or increase flood risk. Full details of this assessment are provided in Appendix A.

- 3.2.4 As per the oCEMP (Document reference 7.1, DCO Volume 7), the Pipeline crossings of Main Rivers would be undertaken using trenchless construction methods to minimise ecological, hydrological, and geomorphological impacts. Where trenchless crossings are to be used, the launch and reception pits would be set back at least 8 metres from the bank tops either side of the river. The pipeline would be installed at a minimum of 2.5 metres below the hard bed of the watercourse and would remain at this depth for a minimum of 5 metres either side of the watercourse bank top. The actual depth of cover would be confirmed by the Contractor to ensure protection of the pipework and the watercourse. The trenchless crossings would be maintained for at least 5 metres beyond each bank top (exact details of trenchless crossing depths would be subject to site-specific assessments at each crossing location, informed by the results of local Ground Investigations). Ground investigations and settlement assessments would be conducted to ensure no alteration to watercourse bed levels. Buffer strips would be retained adjacent to water features to mitigate runoff and sediment ingress.
- 3.2.5 For Ordinary Watercourses and drainage ditches, traditional open cut trenching would be employed, the pipeline would be installed wherever possible by installing a temporary piped culvert known as a ‘flume’ to take the watercourse flow. The pipeline would then be installed in a trench excavated beneath the flume. For open cut watercourse crossings, the minimum depth to cover shall be 1.5m. Flumes can be installed during the enabling works phase and remain in place until reinstatement of the working width is complete. These are required to maintain the continuity of flow in the watercourse while facilitating movement of vehicles and plant along the working width. In most cases, flume pipes would be installed during periods of dry weather, when the watercourse/ditch is dry. Vegetation would need to be removed, and a flume pipe placed in, both ends around the pipe would need to be plugged to form a seal. A layer of geotextile would be placed over the top of the flume pipe and clean stone would be filled in around the pipe up to ground level, to create an access track.
- 3.2.6 These methods would be informed by the Construction Environmental Management Plan (CEMP), ensuring no temporary increase in flood risk during construction. The requirement for the Contractor to prepare and implement a detailed CEMP is secured through a requirement in the DCO.

- 3.2.7 The Preferred Pipeline Route would intersect with Main Rivers and Ordinary Watercourses and, as such, would inherently cross areas of Flood Zones 2 and 3 (Medium and High Probability, respectively). However, once constructed, the vast majority of the pipeline would be below ground, and as a result, would have no impact on surface water flow paths or flood storage capacity, ensuring no increased flood risk to the surrounding area.

3.3 Invasive non-native species treatment at Otterbourne water supply works

- 3.3.1 An Invasive Non-Native Species (INNS) Treatment Plant is proposed at Otterbourne WSW. The proposed INNS treatment facility would be located entirely within the existing operational boundary of the Otterbourne WSW and would not exceed 1 hectare in area. In accordance with the Design Principles Document (Document Reference 5.11, DCO Volume 5), should the INNS Treatment Plant be housed within a new building, the building footprint would not exceed 288 m² and would remain wholly contained within the existing site fenceline. Otterbourne WSW is located within Flood Zone 1 based on the EA Flood Map for Planning and associated climate change allowances, both for the present day and for the future period up to 2125. As the proposed INNS treatment facility does not meet the criteria requiring a site-specific FRA, the development is considered appropriate in flood risk terms and flood risk is therefore not considered further for this element of the Proposed Development.

4 Sources of flood risk information

4.1 Environment Agency

4.1.1 The EA produces a range of flood mapping datasets to support flood risk management and planning decisions in England. Key mapping products include the Flood Map for Planning [4], which delineates Flood Zones 1, 2, and 3 based on undefended, present-day fluvial and tidal flood risk and the Risk of Flooding from Surface Water (RoFSW) map [5], which models pluvial flooding extents and depths. In 2025, the EA launched a major update through the National Flood Risk Assessment 2 (NaFRA2) [6], integrating enhanced national-scale modelling with local hydraulic data to produce higher-resolution flood extents, depths, and climate change scenarios. NaFRA2 incorporates the latest UK Climate Projections (UKCP18) and significantly improves the representation of flood risk. As a result, the updated mapping identifies approximately 6.3 million properties at risk of flooding, with projections rising to 8 million by mid-century due to climate change [7]. The EA Flood Map for Planning now incorporates the NaFRA2 outputs and includes allowances for climate change, this data has been used for this assessment.

4.2 Water and sewerage company

4.2.1 The Applicant, the sewerage operator in the region, is required by OFWAT to maintain a register of flooding incidents due to hydraulic capacity problems on its sewerage network. The Applicant's records of such flooding events have been reviewed; these include flooding incidents which could have been internal or external caused by sewer incapacity. In the event of a sewerage exceedance event, it is expected that flows would be conveyed in line with the topographical gradient of the surrounding area. Overall, the Pipeline within the Proposed Development is not at significant risk from flooding if a sewer exceedance event were to occur, given that the pipeline itself would be predominantly sub-surface, and as such, the risk of flooding due to sewer exceedance events is low.

5 Flood risk to the preferred pipeline route

5.1 Potential sources of flood risk

5.1.1 Flooding can occur from a number of sources; the following section discusses the potential sources of flood risk along the Preferred Pipeline Route as outlined in Table 5-1.

Table 5-1 Possible sources of flooding identified in the PPG (Paragraph: 001 Reference ID: 7-001-20220825)

Source	Description
Flooding from rivers (or fluvial flooding)	River flows which exceed the flow capacity of the river channel (or culverts) can cause flooding from rivers. It can happen for example, when heavy rain falls on an already waterlogged catchment. A blockage caused by natural material or manmade objects/litter can also cause rivers to overtop their banks.
Flooding from the sea (or coastal/tidal flooding)	High tides and/or storm surges which lead to overtopping of existing defences (if any) can cause flooding from the sea.
Flooding from surface water (or pluvial flooding)	Intense rainfall that cannot soak into the ground or enter drainage systems can quickly run off the land and result in local flooding. This type of flooding is typically localised and happens very quickly after the rain has fallen.
Flooding from groundwater	Groundwater flooding occurs when water levels in the ground rise above surface elevations. It is most likely to occur in areas underlain by permeable rocks or granular layers called aquifers.
Flooding from sewers	Sewer flooding can occur when piped systems are overwhelmed by heavy rainfall, when sewers become blocked or when sewers are of inadequate capacity.
Flooding from reservoirs, canals and other artificial sources	Non-natural or artificial sources of flooding can include reservoirs, canals and lakes where water is retained above natural ground level.

5.2 Flooding from rivers (fluvial)

5.2.1 The Flood Map for Planning, provided by the EA, for the Preferred Pipeline Route is provided in Appendix B. The Preferred Pipeline Route is shown to intersect with

Main Rivers and Ordinary Watercourses and, as such, would inherently cross areas of Flood Zones 2 and 3 (Medium and High Probability, respectively). As shown in Table 2-2, Flood Zones 2 and 3 have a Medium and High Probability of flooding respectively. Flood Zone 3a comprises land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea flooding. Flood Zone 3b is identified by local planning authorities and comprises land where water from rivers or the sea has to flow or be stored in times of flood; it is normally land having a 3.3% or greater annual probability of flooding or land that is designed to flood. The Preferred Pipeline Route would inherently cross areas of both Flood Zone 3a and Flood Zone 3b, However, once constructed, the vast majority of the pipeline would be below ground (with the exception of the potential above-ground crossing at Old Mill Dam), and as a result, would have no impact on surface water flow paths or flood storage capacity, ensuring no increased flood risk to the surrounding area.

- 5.2.2 The EA's NaFRA2 'Risk of flooding from rivers and sea', is also presented in Appendix B. This NaFRA2 data has been reviewed to inform the assessment of flood risk to the pipeline and to ensure that the new infrastructure would remain safe and operational over its intended lifetime. The risk of flooding from rivers and sea data has confirmed that the proposed pipeline route would cross areas of High, Medium and Low probability of flooding as it crosses Main Rivers and Ordinary Watercourses. However, the pipeline constitutes water-compatible infrastructure and would be installed below ground using trenchless or open-cut methods, making the development acceptable in these locations as outlined in Table 2-3. All crossings, with the exception of the potential above-ground crossing at Old Mill Dam over the Hermitage Stream (crossing ID: PIPE_WCX_B_0002), would be constructed subsurface, ensuring no impediment to flood water flow paths or displacement of floodplain storage, and therefore no increase in flood risk. As discussed in Section 3.2, the potential above-ground crossing at Old Mill Dam is elevated within Flood Zone 1 and therefore would not obstruct fluvial flood flows.

Climate change

- 5.2.3 The EA's Flood Map for Planning also includes scenarios accounting for climate change; the EA flood map for planning with climate change for the Preferred Pipeline Route is also shown in Appendix B. Climate change allowances used in the EA's Flood Map for Planning reflect projected future conditions for both fluvial and tidal flooding. For fluvial flood zones, the map incorporates the 'central' peak river flow allowance, based on the 50th percentile for the 2080s epoch (2070–2125), representing a scenario of increased river flows due to climate change, this climate change allowance is appropriate. These allowances ensure that flood risk assessments consider long-term climate impacts in line with national guidance. The Preferred Pipeline Route is shown to intersect with areas at risk of flooding as a result of climate change up to 2125. However, once constructed, the pipeline would be below ground, and as a result, would have no impact on surface water flow paths or flood storage capacity, ensuring no increased flood risk to the

surrounding area both now and under future scenarios accounting for climate change.

5.3 Flooding from the sea (coastal/tidal)

5.3.1 The Flood Map for Planning, provided by the EA, for the Preferred Pipeline Route is presented in Appendix B. This map also includes flood risk from the sea, which is relevant given the proximity of tidally influenced watercourses such as the Hermitage Stream and the River Itchen. The EA's NaFRA2 'Risk of flooding from rivers and sea' dataset is also included in Appendix B and has been reviewed to inform this assessment. The Preferred Pipeline Route intersects with Flood Zones 2 and 3, representing medium and high probability of flooding. At the location of the WRP and Budds Farm WTW, the primary source of this flood risk is tidally influenced. However, the Pipeline would be installed below ground using trenchless or open-cut methods, and as such, it would not alter floodplain storage or conveyance of any flooding from the sea. Consequently, there would be no increase in flood risk to the surrounding area. The potential above-ground crossing at Old Mill Dam would be elevated within Flood Zone 1 and would therefore not obstruct tidal flood flows. The NaFRA2 data confirms that the Preferred Pipeline Route passes through areas of high, medium, and low flood risk, but given the water-compatible nature of the infrastructure and its subsurface installation, the Preferred Pipeline Route is considered acceptable in these locations.

5.3.2 Tidal flood risk to the WRP and new development within the Budds Farm WTW is addressed within the associated site specific detailed FRAs. The conclusions of which are that the WRP and new development within the Budds Farm WTW are all located above the 1 in 200-year tidal flood level and as such the development is considered acceptable in these locations.

Climate change

5.3.3 The EA's Flood Map for Planning, which considers risk of flooding from rivers and the sea, also includes scenarios accounting for climate change; the EA flood map for planning with climate change for the Preferred Pipeline Route is shown in Appendix B. Climate change allowances used in the EA's Flood Map for Planning reflect projected future conditions for both fluvial and tidal flooding. For tidal flooding, the 'upper end' allowance to account for cumulative sea level rise to 2125, based on the 95th percentile, is applied, this climate change allowance is appropriate. These allowances ensure that flood risk assessments consider long-term climate impacts of tidal flooding in line with national guidance. The pipeline is shown to intersect with areas at risk of tidal flooding as a result of climate change up to 2125. However, the Pipeline would be installed below ground using trenchless or open-cut methods, and as such, it would not alter floodplain storage or conveyance of any flooding from the sea, ensuring no increased flood risk to the surrounding area both now and under future scenarios accounting for climate change. The potential above-ground crossing at Old Mill Dam would be elevated within Flood Zone 1 and would therefore not obstruct tidal flood flows.

- 5.3.4 The existing Budds Farm WTW is shown to have a future risk of tidal flooding due to the impact of climate change on extreme sea levels. A new Pumping Station is required at the Budds Farm WTW and a site-specific detailed FRA has been produced for this. The conclusions of the site-specific FRA for the Budds Farm WTW Pumping Station are that the new infrastructure would be elevated above the 1 in 200-year tidal flood level with the H++ climate change allowance applied. The H++ allowance represents a credible maximum scenario for sea level rise due to climate change. It is used to account for extreme climate change impacts and involves adding 1.9 meters to the present-day 1 in 200-year tidal flood level. As such the new development within the Budds Farm WTW would be resilient to this future tidal flood risk, to ensure that treated wastewater can continue to be sent to the WRP for ongoing treatment. Further details can be found in the site-specific FRA for the Budds Farm WTW Pumping Station within ES Appendix 19.1 Flood Risk Assessment – 3 of 8 documents, Volume II.

5.4 Flooding from surface water (pluvial)

- 5.4.1 The EA's NaFRA2 data for surface water flood risk for the Preferred Pipeline Route is presented in Appendix C; this mapping indicates the Preferred Pipeline Route crosses areas of High, Medium, Low and Very Low surface water flood risk. The majority of the Preferred Pipeline Route, however, is located in Very Low and Low risk areas. 'Very Low' risk areas have a probability of flooding of less than 0.1% each year; 'Low' risk areas have a probability of between 0.1% and 1% each year; 'Medium' risk areas have a probability of between 1% and 3.3% each year; and 'High' risk areas have a probability of greater than 3.3% each year.
- 5.4.2 The Preferred Pipeline Route intersects areas identified as having a high risk of surface water flooding, as shown in Appendix C. However, once constructed, the pipeline would be below ground and therefore would not obstruct or alter existing surface water flow paths or contribute to increased surface water flood risk. The potential above-ground crossing at Old Mill Dam would be located in an area with a very low risk of surface water flooding. Trenchless sections would be constructed entirely underground, with launch and reception pits set back from watercourse banks to minimise disturbance. Open-cut sections would employ mitigation measures at watercourse crossings, including the use of temporary flume pipes, to maintain flow continuity and minimise temporary disruption. These construction methods ensure that the pipeline remains water-compatible infrastructure and does not increase surface water flood risk during or after construction.

Climate change

- 5.4.3 In addition to present day surface water flood risk, the potential impacts of climate change on surface water flooding have been considered. This assessment is based on updated mapping derived from the NaFRA2 dataset, consistent with the data used to inform the EA's Risk of Flooding from Surface Water maps, and incorporates climate change allowances to represent potential increases in future rainfall intensity. The climate change allowances are derived from the UK Climate Projections 2018 (UKCP18) and adopt the central allowance within Representative Concentration Pathway (RCP) 8.5, representing a reasonable worst-case emissions scenario. The allowances reflect projected changes in rainfall for the mid-century epoch (yearly chance of flooding between 2040 and 2060) and are considered appropriate for assessing the long-term resilience of the proposed development. Climate change uplifts for the Risk of Flooding from Surface Water mapping do not go beyond the above-mentioned epoch.
- 5.4.4 Surface water flood risk mapping incorporating climate change allowances is presented in Appendix C. The mapping indicates an increase in the extent and depth of surface water flooding in certain low-lying areas when compared to present-day conditions; however, the overall conclusions of the assessment remain unchanged. The Pipeline would be subsurface and does not introduce new above-ground obstructions or changes to overland flow paths. As such, the Preferred Pipeline Route is not considered to increase surface water flood risk on-site or elsewhere, nor is it expected to be significantly affected by surface water flooding under future climate change scenarios.

5.5 Flooding from groundwater

Hydrogeological impact assessment

- 5.5.1 The impacts of the Preferred Pipeline Route on groundwater flows and levels (and subsequently impacts to groundwater flood risk) have been considered in ES Appendix 19.3 Hydrogeological Impact Assessment, Volume II. The primary mechanisms for impact on groundwater flood risk identified in this assessment are:
- Below ground infrastructure resulting in mounding upgradient.
 - The creation of preferential pathways below ground (such as pipe bedding).
- 5.5.2 Groundwater flooding has been identified as an issue in the wider Hampshire region, with over 100 towns and villages in the county suffering significant flooding in the winter of 2000/2001 [8]. The highest risk sites are all within the Chalk in the

north of the county (north of Rowlands Castle), and are therefore located outside the study area for the Preferred Pipeline Route.

5.5.3 ES Figure 19.12 Groundwater flooding susceptibility, Volume III illustrates the susceptibility of the area to groundwater flooding based on the ground properties and anticipated groundwater depth. The dataset indicates a higher susceptibility to groundwater flooding in areas of permeable strata (such as alluvial and fluvial superficial deposits and Chalk bedrock) at lower topographies (such as within valleys), whilst topographical highs (such as Portsdown Hill) and areas of low permeability strata (such as London Clay) are not susceptible. Note that the British Geological Survey susceptibility to groundwater flooding dataset does not ascertain the risk of groundwater flooding, only susceptibility.

5.5.4 To mitigate groundwater flooding risks, a series of mitigation measures have been implemented to prevent mounding or the creation of preferential pathways:

- Where the pipeline is installed below groundwater level, the pipe bedding material would be permeable, to promote movement of groundwater around the pipeline (i.e. the pipeline would not form a substantial barrier to groundwater flow). To minimise the potential for groundwater flow along the line of the pipe (i.e. to prevent the pipeline acting as a preferential flow path), clay stanks would be used at regular intervals. (as secured by Design Principles – PL_3).
- The detailed design would incorporate measures to avoid reinstated backfill around underground pipelines becoming a preferential route for subsurface flows (as secured by Design Principles - PL_1).
- A Construction Drainage Plan would be prepared by the Contractor, to manage the quality and quantity of construction stage drainage. The plan would be informed by surveys undertaken by a specialist drainage Contractor, which would locate drains and create pre-construction drawings to ensure appropriate reinstatement. The plan would be agreed with the EA and the relevant Lead Local Flood Authority (LLFA) prior to implementation (as secured by WE5 and WE6 of the oCEMP).

5.5.5 With the implementation of the secured mitigation measures, it is considered that the proposed pipeline would not result in a change to the groundwater flood risk along the Preferred Pipeline Route.

5.6 Flooding from sewers

5.6.1 In the event of a sewerage exceedance event, it is expected that flows would be conveyed in line with the topographical gradient of the surrounding area. Overall, the Pipeline within the Proposed Development is not at significant risk from flooding

if a sewer exceedance event were to occur, given that the pipeline itself would be predominantly sub-surface, and as such, the risk of flooding due to sewer exceedance events is low. The potential above-ground crossing at Old Mill Dam would be located in an area with a very low risk of surface water flooding. The risk of flooding from sewers is also considered to be low, as there are no identified overland flow routes in the area that could be associated with sewer exceedance, and therefore the likelihood of sewer-related flooding affecting the crossing is minimal.

5.7 Flooding from artificial sources

Reservoirs

- 5.7.1 Reservoirs and other artificial water bodies have the potential to hold a large volume of water, often above ground level. Should the containment of these waterbodies fail (e.g. breach or overtopping) there would be a sudden release of deep fast-moving water with little warning able to be provided. However, due to high regulatory standards and strict reservoir maintenance there is a very low risk of these events occurring. The Reservoirs Act 1975, as amended by the Flood and Water Management Act 2010, sets out stringent requirements for the design, construction, inspection, and maintenance of large, raised reservoirs (those capable of holding over 25,000 m³ of water). Reservoir undertakers must appoint qualified panel engineers to supervise construction and ongoing operation, and reservoirs must undergo independent safety inspections at least every ten years. The EA is the enforcement authority in England, responsible for ensuring compliance and taking action where safety standards are not met. Additionally, reservoirs are classified based on risk, and those deemed high-risk must have flood management plans in place, including drawdown procedures and flood preparedness measures. Reservoir flooding is extremely unlikely to occur and there has been no recorded loss of life in the UK from reservoir flooding since 1925. The Preferred Pipeline Route generally avoids areas of flooding from artificial water bodies however the EA flood maps show the Preferred Pipeline Route within potential reservoir flood extents in North Fareham, west of Whitedell Farm. Once the Havant Thicket Reservoir is completed, it would be included in future EA reservoir flood risk mapping. When this mapping is updated, a greater proportion of the Preferred Pipeline Route is anticipated to fall within the EA reservoir flood risk mapping. This reflects the inclusion of the operational reservoir within the national dataset rather than any change in flood risk arising from the Proposed Development itself. Given the above-mentioned regulatory controls, the residual risk of reservoir failure would remain very low.

Flooding from infrastructure failure

Conveyance infrastructure

5.7.2 Infrastructure in close proximity to the Preferred Pipeline Route includes:

- Two bridges, north and south of the crossing of the Hermitage Stream;
- The bridge at Pook Lane, south of the crossing of the Wallington River; and
- The culvert beneath the railway line, south of the crossing of the River Meon.

5.7.3 Conveyance infrastructure assets are maintained by the EA and/or the relevant responsible authority, therefore, there is a low risk of infrastructure failure. As the proposed Pipeline is water compatible development and subsurface, the impacts of an asset failure would be low.

Defence infrastructure

5.7.4 Tidal flood defences are located in the nearby vicinity of the WRP. The WRP is not, however, at risk of tidal flooding and, therefore, would also not be at risk of tidal defence failure. The pipeline would be installed below ground using trenchless or open-cut methods, and as such would not be at risk of tidal flooding and, therefore, would also not be at risk of tidal defence failure.

6 National policy statement and planning practice guidance requirements

6.1 Sequential test

- 6.1.1 In accordance with the NPS, NPPF and PPG, a sequential approach has been applied to the Preferred Pipeline Route to steer it towards areas of lowest flood risk where reasonably practicable, taking account of all sources of flooding and climate change. Given the linear nature of the development and the fixed connection points it must serve, it is not possible to locate the entire pipeline within Flood Zone 1, and the preferred route unavoidably crosses areas of Flood Zones 2 and 3 where it passes beneath watercourses. There are no reasonably available alternative routes that would avoid these higher risk areas without introducing disproportionate environmental and operational constraints. The flood vulnerability of the pipeline has therefore been considered, in accordance with Annex 3 of the NPPF, and as the pipeline classified as water-compatible development (water transmission infrastructure), the development is appropriate within all of the Flood Zones. Applying the Sequential Test, there are no alternative pipeline corridors that would not cross areas of high flood risk, and the development vulnerability classification is appropriate for its location within each flood zone. The Sequential Test for the Preferred Pipeline Route is therefore passed.

6.2 Flood risk vulnerability classification

- 6.2.1 The proposed Pipeline represents ‘water-compatible’ development required to transfer water (i.e. ‘water transmission infrastructure’). According to the PPG ‘compatibility’ guidance presented in Table 6-1, this means that the Preferred Pipeline Route would, therefore, be considered appropriate for location within Flood Zones 2 and 3 (and indeed in Flood Zone 1), without first having to pass the PPG Exception Test.

Table 6-1 Flood risk vulnerability and flood zone ‘compatibility’

Flood risk vulnerability classification		Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	Exception Test Required	✓	✓	✓
	Zone 3a +	Exception Test Required +	✗	Exception Test Required	✓	✓
	Zone 3b *	Exception Test Required *	✗	✗	✗	✓ *

Key:

✓ Development is appropriate and Exception Test is not required.

✗ Development should not be permitted.

+ In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test and water compatible uses should be designed and constructed to:

- Remain operational and safe for users in times of flood;
- Result in no net loss of floodplain storage; and
- Not impede water flows and not increase flood risk elsewhere.

6.2.2 When in Flood Zone 3b the Pipeline would be subsurface and therefore would:

- Remain operational and safe for users in times of flood;
- Result in no net loss of floodplain storage;
- Not impede water flows and not increase flood risk elsewhere.

6.3 Remaining national policy statement and planning practice guidance requirements

- 6.3.1 To address the remainder of the NPS and PPG requirements, it will be demonstrated that:
- The development remains safe throughout its lifetime.
 - Flood risk will not be increased elsewhere.
 - Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location.
 - The development is appropriately flood resistant and resilient.
 - It incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate.
 - Any residual risk can be safely managed.
 - Safe access and escape routes are included where appropriate, as part of an agreed emergency plan.
 - The potential effects of climate change on flood risk on the development have been considered as part of the design.
- 6.3.2 Given the scale and nature of the Preferred Pipeline Route, the key considerations listed above form the focus of the remainder of this PFRA and are presented in Section 7 below.

7 Flood risk considerations

7.1 Flood resilience, residual risk and safe operation over the development's lifetime

Remain flood resilient, safe and operational

- 7.1.1 The vast majority of the Pipeline within the Preferred Pipeline Route would be below ground, ensuring its structural integrity and continuous operation during flood events. As such, the Pipeline is appropriately flood resistant and resilient and would be expected to remain safe and operational for its lifetime without further mitigation measures.

Climate Change

- 7.1.2 The vast majority of the Pipeline would be below ground, as such, it is appropriately flood resistant and resilient and would be expected to remain safe and operational for its lifetime without further mitigation measures, when taking into account the impacts of climate change. The potential above-ground crossing at Old Mill Dam would be elevated within Flood Zone 1 and would be classified as a water-compatible development that would remain safe and operational in times of flood even when taking climate change into account.

Any residual risk can be safely managed, and safe access and escape routes are included

- 7.1.3 Consideration has been given to whether any residual flood risk associated with the Pipeline can be safely managed. The vast majority of the Pipeline would be subsurface, including where it passes through areas of Flood Zones 2, 3a and 3b, and therefore is not directly exposed to flood depths, velocities or debris associated with fluvial or surface water flooding. As such, the Pipeline would not impede flood flows, displace floodplain storage, or rely on access during flood events for safe operation. The Pipeline would be designed and constructed in accordance with relevant engineering standards to ensure its structural integrity during flood events. Operational control and maintenance procedures would ensure that the Pipeline can continue to operate safely during periods of flooding, with no requirement for personnel access during flood conditions. On this basis, any residual flood risk to the Pipeline is considered to be low and access to the Pipeline would not be required during a flood event.

7.2 Not increase flood risk elsewhere

No net loss of floodplain storage

- 7.2.1 The Pipeline would intersect with a Main River and Ordinary Watercourses and, as such, would inherently cross areas of Flood Zones 2 and 3 (Medium and High Probability, respectively). However, the vast majority of the Pipeline would be below ground, and as a result, would have no impact on flood water conveyance or flood storage capacity, ensuring no increased flood risk to the surrounding area. The only potential above-ground crossing at Old Mill Dam over the Hermitage Stream (crossing ID: PIPE_WCX_B_0002) would be elevated within Flood Zone 1, and therefore would not result in any net loss of floodplain storage.
- 7.2.2 Pipeline crossings of EA Main Rivers and Principal Water Framework Directive (WFD) watercourses would be undertaken using trenchless construction methods to minimise ecological, hydrological, and geomorphological impacts. For pipeline crossings of Ordinary Watercourses and drainage ditches, traditional open-cut trenching would be employed, with trenchless pipe-jack techniques used where appropriate. For open-cut crossings, temporary flume pipes would be installed during dry conditions to divert flow, allowing trench excavation beneath. These methods would be informed by the CEMP, ensuring no temporary increase in flood risk during construction. Following construction, the pipeline watercourse crossings would be below ground ensuring no increased flood risk to the surrounding area.

No Impediment to Flood Water Flows

- 7.2.3 The vast majority of the Pipeline would be below ground, ensuring no increased flood risk to the surrounding area and, as such, would not result in any impediment to flood water flows. The only above-ground crossing at Old Mill Dam over the Hermitage Stream (crossing ID: PIPE_WCX_B_0002) would be elevated within Flood Zone 1, and therefore would not result in any impediment to flood water flows.

Washout Assessment

- 7.2.4 Washout valves would be installed at strategic locations along the Pipeline to facilitate safe and controlled drainage during commissioning and maintenance activities. During these operations, water would be transported from the washout points via tankering, ensuring that no water is discharged to the surrounding environment. As such, there is a very low flood risk associated with the operational or maintenance use of the washout valves.

Flood Risk During Construction

- 7.2.5 As described in ES Chapter 19 Water environment, Volume I, activities associated with the construction of new above and below-ground infrastructure have the potential to permanently alter surface and subsurface water flows and drainage patterns by:
- Altering existing surface flow paths and changing the distribution of surface drainage across development sites (e.g. through raising or lowering the existing land surface and creating new discharge locations from temporary site drainage systems, reducing infiltration and increasing surface runoff resulting from soil compaction by construction vehicles).
 - Altering existing subsurface flow patterns due to changes to infiltration rates and surface flows, the installation of impermeable subsurface infrastructure, and the introduction of underground foundations or structures.
 - Installing structures (e.g. temporary watercourse crossings) across existing surface drainage features that constrain their capacity to convey flows downstream and increase localised flood risk.
- 7.2.6 Any changes in surface and subsurface flows could therefore increase flood risk in and around the Proposed Pipeline, particularly where receptors are already at increased flood risk (e.g. within Flood Zones 2 or 3 or in areas of increased surface water flood risk). However, the Preferred Pipeline Route includes a range of mitigation measures that have been identified to minimise potential changes to flood risk. These are set out in the oCEMP (under WE5 and WE6 Outline Construction Environmental Management Plan (Document reference 7.1, DCO Volume 7), and include:
- A Construction Drainage Plan would be prepared by the Contractor, once appointed, to manage the quality and quantity of construction stage drainage. Measures required to be included in the Construction Drainage Plan are set out in the Outline CEMP (under WE5 and WE6).
 - Measures to manage effects where trenched crossings are to be carried out on an Ordinary Watercourse. Temporary dams would be used to create a dry area of channel in which to excavate a trench and install the pipeline, and river flows would be maintained through the use of pumps, pipes or flumes. These measures, required to be included in the Construction Drainage Plan, are set out in the main body of the Outline CEMP (under WE5 and WE6) (Document reference 7.1, DCO Volume 7).
 - Measures to manage effects where temporary culverts are required for watercourse crossings (e.g. where haul road access across watercourses is required).

- Where the pipeline has the potential to be installed below groundwater level in permeable strata, clay stanks would be used at regular intervals to prevent the pipeline acting as a preferential flow pathway.

7.2.7 ES Chapter 19 Water environment, Volume I demonstrates that, following the application of these primary and tertiary mitigation measures, all impacts would have a negligible adverse magnitude and an effect of minor adverse significance. This means that no significant adverse effects on water receptors are expected as a result of changes to surface and groundwater flows during construction.

7.2.8 Contractors would be advised to adhere to guidance such as the CIREG (Construction Insurance Risk Engineers Group) Guide to Managing Flood Risk During Construction [9], or other similar and appropriate industry-standard guidance. To manage flood risk during construction, the contractor shall prepare and maintain a Construction Drainage Plan. The contractor shall monitor weather forecasts and flood warnings, maintain emergency materials and equipment, and enact a Pre-Flood Event Action List when severe weather is forecast. Residual flood risk should be reduced to As Low As Reasonably Practicable (ALARP).

Surface water runoff and the incorporation of SuDS

7.2.9 The Preferred Pipeline Route intersects areas identified as having a high risk of surface water flooding. However, the vast majority of the pipeline would be below ground and therefore would not obstruct or alter existing surface water flow paths or contribute to increased surface water flood risk.

7.2.10 The AGP and WRP along the Preferred Pipeline Route would incorporate SuDS as part of their surface water drainage strategy, to ensure that the proposed permanent above-ground infrastructure does not result in an increase in rates or volumes of surface water runoff. The SuDS proposals are detailed within the accompanying SuDS Strategy within ES Appendix 19.1 Flood Risk Assessment – 8 of 8 documents, Volume II. SuDS have, therefore, been incorporated within the Preferred Pipeline Route.

8 Conclusions

- 8.1.1 The Applicant produced a Water Resources Management Plan (2020 – 2070) in 2019 (WRMP19), which outlined proposed long-term solutions to address an identified large-scale supply demand deficit in Hampshire from 2027 and to protect the unique chalk rivers in Hampshire, the River Test and River Itchen. This included a selection of long-term and large-scale water resource solutions, one of which was the Proposed Development, which has since become the selected option to play a major role in making up the shortfall in water supply across the Hampshire supply area. The draft WRMP24 and revised draft WRMP24 reaffirmed the need for Proposed Development as the selected option required to address the continuing water resource deficit as identified in the WRMP19.
- 8.1.2 A suite of FRAs have been prepared to support the Proposed Development. This PFRA has been produced to provide an overarching assessment of flood risk along the Preferred Pipeline Route and in relation to the Pipeline. As the pipeline is predominantly below ground and does not constitute permanent above-ground development, the PFRA has focused on flood risk along the Preferred Pipeline Route during operation. For permanent above-ground infrastructure associated with the Proposed Development, including the AGP and WRP, detailed site-specific FRAs have been prepared. These assessments consider site-specific flood risk constraints, mitigation measures, and residual risks. A SuDS strategy has been prepared to accompany the site-specific FRAs for the AGP and WRP to ensure the permanent above-ground infrastructure does not result in an increase in surface water runoff rates and volumes leaving the sites. The PFRA should be read in conjunction with the relevant site-specific FRAs and the SuDS strategy, which together provide a comprehensive assessment of flood risk across the Proposed Development. This assessment considers flood risk from all sources; fluvial, tidal, surface water, groundwater, sewers, and artificial sources, using data from the EA, including the updated NaFRA2 data, which provides enhanced flood risk mapping and climate change scenarios.
- 8.1.3 The Preferred Pipeline Route inherently intersects areas of Flood Zones 2 and 3 as it crosses watercourses; however, the vast majority of the pipeline would be constructed below ground using trenchless or open-cut methods, ensuring no impact on floodplain storage or flow paths. The pipeline infrastructure is classified as ‘water-compatible’, as it is ‘water transmission infrastructure’, under the National Planning Policy Framework (NPPF) Annex 3 (as updated July 2021) and is therefore appropriate for location within these flood zones.
- 8.1.4 This PFRA confirms that the Preferred Pipeline Route will meet the requirements of the NPS, NPPF and PPG. Specifically, this PFRA has demonstrated that:
- The Preferred Pipeline Route would cross areas of Flood Zone 1, 2 and 3.

- The Pipeline would comprise 'Water-compatible' development land uses, suitable for its location within Flood Zone 1, 2, and 3.
- The Preferred Pipeline Route has passed the Sequential Test and the Exception Test is not required
- The Pipeline would remain safe and operational in times of flooding over the duration of its intended lifetime and would not involve an increase in the number of staff working within a flood risk area.
- The Pipeline would not result in any loss of floodplain storage capacity or reduce floodplain conveyance.
- The Pipeline would not result in an increase in the volume or rate of surface water runoff.

8.1.5 In summary, this PFRA has demonstrated that the Preferred Pipeline Route is appropriate for its location, would appropriately manage flood risk issues during its construction phase, would remain operational in times of flooding, and would not result in an increase in off-site flood risk.

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10 Glossary

Term	Definition
Above Ground Plant (AGP)	This collectively refers to the Intermediate Pumping Stations and Break Pressure Tanks.
As Low As Reasonably Practicable (ALARP)	Involves weighing a risk against the trouble, time and money needed to control it. Thus, ALARP describes the level to which we expect to see risks controlled.
Amenity	Refers to the qualities of a place that make it enjoyable and attractive to users of an area.
Applicant	Southern Water Services Limited.
Autumn 2025 Consultation	The statutory, targeted consultation held in Autumn 2025 to consult on eight further design refinements to the Proposed Development made in response to feedback from the Spring 2025 Consultation, further investigations, surveys and assessments, and design development.
Baseline	The current environmental and social conditions within the Order Limits or within a study area. This provides a benchmark against which changes arising from the Proposed Development are assessed for each relevant assessment.
Biodiversity	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.
Biodiversity Net Gain (BNG)	This is an approach to development that delivers measurable improvements that delivers a net gain for biodiversity by creating or enhancing habitats.
Break Pressure Tank (BPT)	BPT are anticipated to be required at high points along the pipeline route. Water is pumped to BPTs, where it then flows onwards using gravity from the tank. This reduces the amount of energy required to transfer water. BPTs reduce the overall maximum pressure in the pipeline system associated with changes in flow rate as a result of topography.
Budds Farm pumping station	A pumping station located at Budds Farm Wastewater Treatment Works to support the transfer of treated wastewater to the Water Recycling Plant site.
Budds Farm Wastewater Treatment Works (WTW)	An existing Southern Water site that treats wastewater from the Applicant's customers prior to release into the Solent from the Eastney Long Sea Outfall. The Proposed Development would utilise highly treated wastewater from the Budds Farm WTW to produce recycled water at the Water Recycling Plant site. Reject water would be transferred from the Water Recycling Plant back to Budds Farm WTW where a connection would be made for onwards

Term	Definition
	transfer to the existing Eastney Transfer Tunnel, Eastney Pumping Station and Eastney Long Sea Outfall for discharge into the Solent. Chemical filter washing at the Water Recycling Plant site would generate process waste that would be discharged via the foul sewer network to Budds Farm WTW for treatment.
Capacity	The maximum traffic flow that a road or junction can accommodate without causing unreasonable delay.
'Classic' operation scenario	This scenario refers to the maintenance of water levels in Havant Thicket Reservoir, in accordance with Portsmouth Water's existing planning permission, through the use of spring water inputs from Bedhampton and Havant Springs only.
Climate	The general weather conditions prevailing over a long period of time. Climate change will see trends in the climate conditions changing (seasonal averages and extremes).
Construction compounds	Temporary areas required to facilitate the construction of the Proposed Development.
Construction waste	Consists of all waste produced directly or indirectly during the construction process, including excavated material displaced during this process that no longer has a use.
Contractor	The Applicant or a person appointed by the Applicant or by anyone else having the benefit of part or all of the Development Consent Order to carry out any construction element of the Proposed Development or to operate the Proposed Development.
Cumulative effects	Effects from the interrelationship between the Proposed Development with other committed developments.
Cut and fill	Cut and fill is a common earthworks technique used in construction and civil engineering projects. It involves the removal ('cut') of soil or material from higher areas of a site and the placement ('fill') of that material into lower areas to create a level surface suitable for development.
Design principles	Design principles which reflect the design approach adopted for the Proposed Development and as set out in the Design Principles Document (Document reference 5.11, DCO Volume 5) and will control the detailed design post-consent in accordance with Schedule 2 of the draft Development Consent Order (Document reference 3.1, DCO Volume 3).
Development Consent Order (DCO)	A statutory order which provides consent for a project and means that a range of other consents, such as planning permission and listed building consent, will not be required. A DCO can also include powers authorising the compulsory acquisition and temporary possession of land and rights over land which is the subject of an application. A draft DCO (Document reference 3.1, DCO Volume 3) is submitted by the applicant as part of its application [10].

Term	Definition
Drinking water	Water that has been treated to strict regulatory standards, ready for supply to domestic and non-domestic customers as drinking water.
Drought conditions	Droughts are naturally occurring events and are typically characterised by a prolonged period of abnormally low rainfall, leading to a shortage of water.
Eastney Long Sea Outfall (LSO)	An existing Southern Water infrastructure component used to release treated wastewater from Budds Farm Wastewater Treatment Works. No works to the Eastney LSO are proposed as part of the Proposed Development; however, reject water produced from the Water Recycling Plant will be released from the Eastney LSO using the Eastney Transfer Tunnel and Eastney Pumping Station.
Eastney Pumping Station (PS)	An existing Southern Water infrastructure component. No works are proposed to it as part of the Proposed Development. The Eastney PS receives treated wastewater flows, via gravity, from Budds Farm Wastewater Treatment Works and pumps it out via the Eastney Long Sea Outfall. This pumping station also receives storm flows from the Eastney catchment area. Reject water from the proposed Water Recycling Plant will be released from the Eastney Long Sea Outfall using the Eastney PS and Eastney Transfer Tunnel.
Eastney Transfer Tunnel (TT)	An existing Southern Water infrastructure component. The Eastney TT connects the Budds Farm Wastewater Treatment Works final effluent channel via a shaft located at Budds Farm Wastewater Treatment Works to the Eastney Pumping Station to release treated wastewater. Reject water from the Water Recycling Plant will be released from the Eastney Long Sea Outfall using the Eastney Pumping Station and Eastney TT. A new connection point to the Eastney TT, located at Budds Farm Wastewater Treatment Works, is required. No additional works to the Eastney TT are proposed as part of the Proposed Development.
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	EIA is a process for identifying the likely significant environmental effects (beneficial and adverse) of a Proposed Development to inform the decision-making process by the Secretary of State when determining an application for a Development Consent Order.
Environmental Impact Assessment (EIA) Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [11]; the Regulations which

Term	Definition
	this Environmental Statement has been prepared in accordance with.
Enhancement	Measures taken to achieve a benefit, which are unrelated to an adverse impact or which go beyond that required to mitigate/compensate for an impact. For example, restoration of a degraded habitat to leave it in a measurably better state than it was before the Proposed Development or other interventions to leave a positive legacy for the community.
Environmental Statement (ES) (DCO Volume 6)	A document reporting the findings of the Environmental Impact Assessment which describes the likely significant effects arising from the Proposed Development on the environment and measures proposed to mitigate likely significant effects.
Extreme drought	A drought event that occurs every 1-in-500 years, or a 0.2% chance of occurring in any given year [12].
Flood Risk Assessment (FRA) (Environmental Statement Appendix 19.1 Flood Risk Assessment, Volume II (Document reference 6.2, DCO Volume 6))	A technical report that evaluates the potential for flooding from all sources (e.g. fluvial, coastal, surface water, groundwater, reservoir and sewers) on a development site and proposes measures to manage and mitigate those risks. It is a crucial part of the planning process, ensuring that new developments are located and designed in a way that minimises the potential for flood damage and protects people and property both on the site and in the wider area. A FRA (Environmental Statement Appendix 19.1 Flood Risk Assessment, Volume II (Document reference 6.2, DCO Volume 6)) is submitted by the Applicant as part of the Development Consent Order application.
Flood Zone 1	Land having a less than 0.1% annual probability of river or sea flooding.
Flood Zone 2	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding.
Flood Zone 3a	Land having a 1% or greater annual probability of river flooding; or land having a 0.5% or greater annual probability of sea flooding.
Flood Zone 3b	Comprises land where water from rivers or sea has to flow or be stored in times of flood. Functional floodplain will normally comprise: Normally land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively, or Land that is designed to flood, even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).
Functionally Linked Land	Land or sea beyond the boundary of a National Site Network site which can ecologically support the populations

Term	Definition
	for which the site was designated or classified and fulfil its functions.
Green Infrastructure	<p>The National Planning Policy Framework [13] defines green infrastructure as <i>"a network of multi-functional green and blue spaces and other natural features, urban and rural, which is capable of delivering a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities and prosperity."</i></p> <p>For the purpose of the Proposed Development, Green Infrastructure focus areas have been identified on the Indicative Environmental Masterplan (appended to the Design Approach Document (Document Reference 5.12, DCO volume 5)) which shows areas where there are opportunities to enhance the wider network.</p>
Hampshire Water Transfer and Water Recycling Project	This is the name of the Proposed Development, that is the Strategic Resource Option being delivered as part of the Water For Life Hampshire programme. A water supply scheme comprising a combination of both water transfer and water recycling technology that would play a major role in making up the shortfall in water supply across the Hampshire supply area, especially in a drought.
Havant Thicket Reservoir	The Havant Thicket Reservoir is a development under construction by Portsmouth Water that has planning permission granted by the relevant local planning authorities. Following the transfer of recycled water from the Water Recycling Plant site, the recycled water would be combined with water contained within the Havant Thicket Reservoir. The Proposed Development would use the Havant Thicket Reservoir for the storage of recycled water, before transfer to Otterbourne Water Supply Works.
Impact	A change that is caused by an action/activity associated with the Proposed Development.
Invasive Non-Native Species (INNS)	The Great British Non-Native Species Secretariat defines INNS as <i>"any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live"</i> [14].
Invasive Non-Native Species (INNS) Treatment at Otterbourne Water Supply Works	Infrastructure to be located at Otterbourne Water Supply Works to ensure the addition of source water transferred from Havant Thicket Reservoir would not introduce pathways for the spread of INNS.
Leakage (socio-economic)	The loss or outflow of potential economic benefits, jobs, or skilled workers from a specific area, sector, or group - often to the detriment of the local or intended beneficiaries.

Term	Definition
Light Detection and Ranging (LiDAR)	A survey detection system based on radar principles using light. It makes 3-dimensional representations of areas of the Earth's surface.
Limits of Deviation for Above Ground Plant	The 'Limits of Deviation for Above Ground Plant' represents the extent of the area within which the Above Ground Plant would be located. These are shown in the Design Principles Document (Document reference 5.11, DCO Volume 5). The 'Limits of Deviation for Above Ground Plant' do not represent the footprint of the Above Ground Plant.
Limits of Deviation for Pipeline	The 'Limits of Deviation for Pipeline' represent the area within the Order Limits that the pipeline could be permanently located once constructed. These are shown on the Works plans (Document reference 2.3, DCO Volume 2). The 'Limits of Deviation for Pipeline' does not represent the construction working area for the pipeline.
Main River	Watercourses designated under the Water Resources Act 1991 [15] as 'main' are usually larger rivers and streams that are shown on the Environment Agency's Statutory Main River map. The Environment Agency has permissive powers, but not a duty, to carry out maintenance, improvement or construction work on designated Main Rivers to manage flood risk.
Maximum operation	The period when the Proposed Development is operating at maximum flows. During maximum operation, the Water Recycling Plant would produce 60 Megalitres per day (MI/d) of recycled water, and 90MI/d of source water would be transferred from Havant Thicket Reservoir to Otterbourne Water Supply Works.
Minimum operation	A minimum operation is required to ensure that the Proposed Development is in regular working use for when higher outputs are required. During minimum operation, the Water Recycling Plant would have an output of approximately 10 Megalitres per day (MI/d).
Mitigation	Measures intended to avoid, prevent, reduce and, where possible, offset likely significant adverse environmental effects. Measures follow the mitigation hierarchy as described in section 5.3 of Environmental Statement Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6).
Monitoring	Measures to ensure the systematic and ongoing collection, analysis and evaluation of data related to the implementation and performance of a development. Monitoring can be undertaken to monitor conditions in the future to verify any environmental effects identified by the Environmental Impact Assessment, the effectiveness of mitigation or enhancement measures or ensure remedial action are taken should adverse effects above a set threshold occur. All monitoring measures adopted by the

Term	Definition
	Proposed Development are reflected in Environmental Statement Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6).
Nationally Significant Infrastructure Projects (NSIPs)	NSIPs are large scale major development projects in England or Wales which require permission under the Planning Act 2008 [16]. Projects are only defined as nationally significant if they meet the relevant threshold set out in the Planning Act 2008 [10].
Ofwat	Ofwat (The Water Services Regulation Authority) is a non-ministerial government department that is the regulator of the water and wastewater services industry in England and Wales.
Order Limits	The 'Order Limits' represent the extent of the area within which the Proposed Development, authorised by the Development Consent Order, may be carried out, including the permanent and temporary land needed for construction, operation and maintenance activities. The Order Limits are shown on the Works plans (Document reference 2.3, DCO Volume 2) and Land plans (Document reference 2.2, DCO Volume 2).
Ordinary Watercourse	An Ordinary Watercourse is any channel that water flows through that is not designated as an Environment Agency Main River. Lead local flood authorities and internal drainage boards have responsibility for Ordinary Watercourses.
Otterbourne Water Supply Works (WSW)	An existing Southern Water site which abstracts water from river Itchen and ground sources, and will continue to do in certain circumstances after the Proposed Development. The Proposed Development would transfer source water from Havant Thicket Reservoir to Otterbourne WSW. The source water would be treated to strict regulatory standards at Otterbourne WSW prior to being supplied to customers.
Operational Environmental Management Plan (OEMP) (Document reference 7.7, DCO Volume 7)	Provides a framework of commitments for the operational stage of the Proposed Development. These include general operational practices which have the potential to have an environmental impact, in addition to Proposed Development specific environmental mitigations. The measures contained in the OEMP are secured by a requirement in Schedule 2 to the Development Consent Order.
Outline Construction Environmental Management Plan (CEMP) (Document reference 7.1, DCO Volume 7)	Contains identified topic specific mitigation measures to be adopted during construction, and specifies plans and method statements to be produced by the Contractor to avoid and reduce environmental effects. Mitigation measures are generally tertiary mitigation, although some secondary mitigation measures are also included. The measures contained in the Outline CEMP are secured by a requirement in Schedule 2 to the Development

Term	Definition
	Consent Order. Detailed CEMP(s) will be produced and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the draft Development Consent Order (Document reference 3.1, DCO Volume 3).
Permanent access	Identifies locations where permanent access will be taken from the highway network for the purpose of operation of the Proposed Development.
Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works	<p>An underground pipeline approximately 35 kilometres long would transfer approximately 90 Mega litres per day of source water at maximum operation, from the Water Recycling Plant site to Otterbourne Water Supply Works. Above Ground Plant would support the transfer of water from the Water Recycling Plant site to Otterbourne Water Supply Works.</p> <p>Due to the length of the pipeline, it has been divided into sections:</p> <p>Section D: The Water Recycling Plant site to Portsdown Hill Section E: Portsdown Hill to Boarhunt Section F: Boarhunt to Crockerhill Section G: Crockerhill to Wickham Section H: Wickham to Shedfield Section J: Shedfield to the River Hamble Section K: The River Hamble to Lower Upham Section L: Lower Upham to Brambridge Section M: Brambridge to Otterbourne Water Supply Works</p>
Pipelines between Budds Farm Wastewater Treatment Works and the Water Recycling Plant site	<p>Two pipelines between Budds Farm Wastewater Treatment Works and the Water Recycling Plant site: one to transfer treated wastewater from Budds Farm Wastewater Treatment Works to the Water Recycling Plant site and the other to transfer reject water from the Water Recycling Plant site to Budds Farm Wastewater Treatment Works. The Pipelines would connect to the existing treated wastewater release infrastructure and the reject water would be released via the existing Eastney Long Sea Outfall using the existing Eastney Transfer Tunnel and Eastney Pumping Station. The development required to connect into the existing treated wastewater infrastructure would form part of this component of the Proposed Development.</p> <p>The Pipelines between Budds Farm Wastewater Treatment works and the Water Recycling Plant site would be installed on the same route under the Hermitage Stream and Harts Farm Way and would be approximately 700m in length.</p> <p>The Pipelines between Budds Farm Wastewater Treatment works and the Water Recycling Plant site would transfer a maximum flow of approximately 82 Mega litres per day</p>

Term	Definition
	(Ml/d) of treated wastewater to the Water Recycling Plant site. The pipeline from the Water Recycling Plant site to Budds Farm Wastewater Treatment Works would be sized for the same transfer capacity of approximately 82Ml/d as it may be necessary to return the maximum volume of water being treated back to Budds Farm Wastewater Treatment Works.
Pipelines between the Water Recycling Plant site and Bedhampton Springs	<p>The Pipelines would transfer recycled water from the Water Recycling Plant site to Bedhampton Springs, and source water from Bedhampton Springs back to the Water Recycling Plant site (before transfer to Otterbourne Water Supply Works).</p> <p>The Pipelines, connecting to pipelines being delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir, would enable the transfer at maximum operation of approximately 60 Mega litres per day (Ml/d) of recycled water from the Water Recycling Plant site to Havant Thicket Reservoir and approximately 90Ml/d of source water from Havant Thicket Reservoir to the Water Recycling Plant site, for onward transfer to Otterbourne Water Supply Works.</p>
'Post-WRP' operation scenario	This scenario is used to describe an operational scenario following commissioning of the Proposed Development and the release of recycled water into Havant Thicket Reservoir.
Preferred pipeline corridor	The preferred pipeline corridor was selected as part of the scheme development process which considered a number of pipeline corridor and Above Ground Plant options. The preferred pipeline corridor was consulted on at the Summer 2022 Consultation. Additional information is provided within the Scheme Development Report (Document reference 5.10, DCO Volume 5).
Principal Aquifer	Rocks or soils that provide significant quantities of water and can support water supply and/or baseflow to rivers, lakes and wetlands on a strategic scale. They typically have a high intergranular and/or fracture permeability, meaning they usually provide a high level of water storage.
Process waste	Process waste is chemical waste that is removed from the water recycling process.
Project of national significance	Large scale development that has been directed by the Secretary of State to be treated as development for which a Development Consent Order is required under Section 35 of the Planning Act 2008 [16] due to being a project of national significance.
Proposed Development	This refers to the Hampshire Water Transfer and Water Recycling Project, as described in Environmental Statement Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6).

Term	Definition
Public Consultation 2021	The consultation undertaken in early 2021 which consulted on the 75MI/d desalination plant at Fawley as part of the Water Resources Management Plan 2019 Preferred Strategy and introduced alternative water transfer and water recycling options to consultees.
River Basin Management Plan	River basin management plans set the legally binding locally specific environmental objectives that underpin water regulation (such as permitting) and planning activities. They provide a stable planning base for economic development.
Receptor	An individual, group or asset that receives an impact of effect.
Recycled water	Purified water that has been produced by taking treated wastewater and removing remaining impurities using advanced treatment techniques.
Reject water	During the water recycling process, reject water is produced. Reject water is water containing impurities removed from the treated wastewater and released using the existing Eastney Transfer Tunnel and Eastney Long Sea Outfall.
Release from the Eastney Long Sea Outfall (LSO)	The existing Eastney LSO releases treated wastewater from Budds Farm Wastewater Treatment Works via the existing Eastney Transfer Tunnel and Eastney Pumping Station. The Proposed Development would utilise the Eastney LSO for the release of reject water produced by the Water Recycling Plant site. During maximum operation approximately 22 Mega litres per day (MI/d) of reject water would be released from the Eastney LSO. During minimum flow operation approximately 4MI/d of reject water would be released from the Eastney LSO.
Remediation	An action taken to break or modify the source-pathway-receptor (contaminant) linkage so that the risks are removed or reduced to an acceptable level for the land use under consideration [17].
Residual effects	Remaining effects of the Proposed Development following the implementation of any secondary (foreseeable) mitigation.
Secondary A aquifer	These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
Secondary B aquifer	These are mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers.
Secondary undifferentiated aquifer	This has been assigned in cases where it has not been possible to attribute either a Secondary A or B aquifer to the

Term	Definition
	soil type due to the variable characteristics. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
Sensitivity	The extent to which a receptor is likely to accept or respond to a change.
Severe drought	A drought event that occurs every 1-in-200 years, or a 0.5% chance of occurring in any given year [18].
Significance	Significance is assessed by comparing the magnitude of an impact with a receptor's value, sensitivity, permanence or reversibility, in an assessment-specific matrix. The criteria in this matrix can be pre-set, allowing for objective impact assessment rather than subjective impact evaluation.
Site of Importance for Nature Conservation (SINC)	An important wildlife site which contributes to the ecological network in Hampshire. To safeguard these sites, they are designated as non-statutory designated SINC. SINC are also known nationally as Local Wildlife Sites. They represent a legacy of good management and rely upon continued stewardship by landowners.
Site of Special Scientific Interest (SSSI)	A nationally site designated by Natural England as an area of special interest by reason of any of its flora, fauna, geological or physiographical features. SSSI are legally protected under the Wildlife and Countryside Act 1981 (as amended) [19].
Source Protection Zone 1 (SPZ1)	Inner protection zone - defined as the 50-day travel time from any point below the water table to the abstraction source. This zone has a minimum radius of 50m radius from the source, whichever is larger.
Source Protection Zone 1c (SPZ1c)	Inner protection zone - defined as the 50-day travel time from any point below the water table to the abstraction source. This zone has a minimum radius of 50m and is where there is protective geology cover, such as clay.
Source Protection Zone 2 (SPZ2)	Outer protection zone - defined by a 400-day travel time. The zone will default to a minimum radius of 250m or 500m, depending on the size of the abstraction, if the 400-day travel time zone is smaller.
Source Protection Zone 2c (SPZ2c)	Outer protection zone – defined by a 400-day travel time. The zone will default to a minimum radius of 250m or 500m, depending on the size of the abstraction, if the 400-day travel time zone is smaller, and is where there is a protective geology cover of low permeability sat above a unit of high permeability.
Source Protection Zone 3 (SPZ3)	Source catchment protection zone - defined as the area around an abstraction source within which all groundwater recharge is presumed to be discharged at the abstraction source.

Term	Definition
Source water	Water that is used as a source for drinking water. For the Proposed Development, this water is treated to strict regulatory standards at the Otterbourne Water Supply Works before being supplied to customers.
Source-pathway-receptor linkage	For a risk to arise there must be hazard that consists of a 'source' (e.g. high rainfall); a 'receptor' (e.g. people, environment); and a pathway between the source and the receptor (e.g. flooding).
South East England	Comprising counties of Berkshire, Buckinghamshire, East Sussex, Hampshire, Isle of Wight, Kent, London, Oxfordshire, Surrey and West Sussex.
Special Area of Conservation (SAC)	Area(s) of protected habitat(s) and species as defined in the European Union Habitats Directive (92/43/EEC) [20].
Special Protection Area (SPA)	A designated area for birds under the European Union Directive on the Conservation of Wild Birds (2009/147/EC) [21].
Spring 2025 Consultation	The statutory consultation held in Spring 2025 to consult on water quality modelling updates, and design refinements made to the Proposed Development in response to feedback from the Summer 2024 Consultation and ongoing scheme development.
Spring 2026 Consultation	The statutory, targeted consultation held in Spring 2026 to consult on one further design refinement at Otterbourne Water Supply Works as a result of additional works and treatment required.
Study area	A defined spatial scope (e.g. the area which may be impacted) for each topic assessment.
Sustainable Drainage System (SuDS)	A Sustainable Drainage System that generally mimic the natural drainage patterns of an undeveloped site allowing infiltration into the ground (where feasible) and controlling outflow rates from a proposed development. This reduces the impact and risk of flooding and can provide additional benefits such as pollution control, increased biodiversity, and provision of water-based amenity space.
Summer 2022 Consultation	The non-statutory consultation undertaken in summer 2022 which consulted on the Proposed Development, including the process undertaken to select the Proposed Development and the process undertaken to identify the preferred pipeline corridor, Water Recycling Plant site, and emerging Above Ground Plant zones.
Summer 2024 Consultation	The statutory consultation held in 2024 which consulted on the Proposed Development, including the draft Order Limits, the proposed pipeline routes, proposed sites for the Above Ground Plant and Water Recycling Plant, temporary construction compounds and any temporary or permanent access routes.

Term	Definition
Temporary construction access	Identifies locations where temporary access will be taken from the highway network for the purpose of construction of the Proposed Development.
Treated wastewater	Wastewater that has been treated to strict regulatory standards and is typically released to rivers or the sea.
Trenchless crossings	Crossings where trenchless installation techniques will be used during construction of the Proposed Development.
Washout valves	Located at topographical low points along the Proposed Development pipelines to facilitate commissioning and emptying a section of pipe for repair and maintenance.
Waste	Any substance or object which the holder discards or intends to or is required to discard – unusable or unwanted.
Wastewater	A combination of water from kitchens, bathrooms, sinks and taps (in domestic and non-domestic properties) and rainwater from roads and roofs, that is transported to, and cleaned at, a wastewater treatment works.
Water for Life Hampshire	This is the programme being progressed by the Applicant to address the sustainability objectives of to meet demand following a reduction in abstractions on Hampshire's two main rivers - The Test and Itchen - and ensuring a resilient water supply for the Applicant's customers, especially during times of drought.
Water Recycling Plant (WRP)	The WRP would receive a total maximum volume of approximately 82 Mega litres per day (Ml/d) of treated wastewater from Budds Farm Wastewater Treatment Works. This would provide a maximum output of approximately 60Ml/d of recycled water. Approximately 22Ml/d of reject water is produced from the water recycling process and would be combined with the existing Budds Farm Wastewater Treatment Works treated wastewater flows (that are generated by the existing operation of Budds Farm Wastewater Treatment Works), and released via the existing Eastney Transfer Tunnel, Eastney Pumping Station, and Eastney Long Sea Outfall operated by the Applicant.
Water Recycling Plant (WRP) site	The site containing the WRP, three pumping stations, a main process building, kiosks, administrative buildings and parking facilities. Located at a site north-west of Budds Farm Wastewater Treatment Works.
Water Resources Management Plan 2019 (WRMP19)	The Applicant's existing WRMP19 which sets out how the Applicant will manage and develop water resources to ensure a resilient supply of water for at least the next 25 years. The WRMP identifies the need for a strategic water resource options within the Western (Hampshire) supply area, from which the Proposed Development has been determined as the preferred solution to meet this need.

Term	Definition
Final Draft Water Resources Management Plan 2024 (WRMP24)	The Applicant's Final Draft WRMP24 which sets out how the Applicant will manage and develop water resources to ensure a resilient supply of water for at least the next 25 years. The Final Draft WRMP24 supports the need for a strategic water resource option within the Western (Hampshire) supply area, from which the Proposed Development has been determined as the preferred solution to meet this need. The Final Draft WRMP24 has been submitted to Defra for approval.
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WER)	The WER [22] transpose the European Water Framework Directive 2000/60/EC into law in England and Wales.
The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 (WFD Direction)	The WFD Direction [23] establish a series of thresholds that are used in the classification of water body status under the Water Environment (Water Framework Directive) England and Wales) Regulation 2017.
Works plans (Document reference 2.3, DCO Volume 2)	The Works plans show the spatial extent of the works that are detailed in Schedule 1 of the draft Development Consent Order (Document reference 3.1, DCO Volume 3) to be consented and operated by the Development Consent Order when made.

Appendix A Groundwater flood risk for potential pipe crossing of old mill dam

Reference: GW Flooding: Bedhampton Springs



Figure 1: Photograph of watercourse channel facing north taken from approximate NGR SU 70418 06275, January 2020.

The mechanism for groundwater flooding in this area would most likely be the water table in an unconfined aquifer rising above land surface following rainfall, commonly described as “clearwater” flooding⁴. Groundwater is shallow in this area, as evidenced by the numerous springs and spring collection chambers that are present. Therefore, the key control on whether the proposed pipeline would form a barrier to groundwater flooding would be the level of the pipeline in relation to ground level.

⁴ Macdonald, D. M. J., Bloomfield, J. P., Hughes, A. G., MacDonald, A. M., Adams, B., and McKenzie, A. A., 2008 Improving the understanding of the risk from groundwater flooding in the UK. In: *FLOODrisk 2008, European Conference on Flood Risk Management, Oxford, UK, 30 Sept - 2 Oct 2008*. The Netherlands, CRC Press.

Reference: GW Flooding: Bedhampton Springs

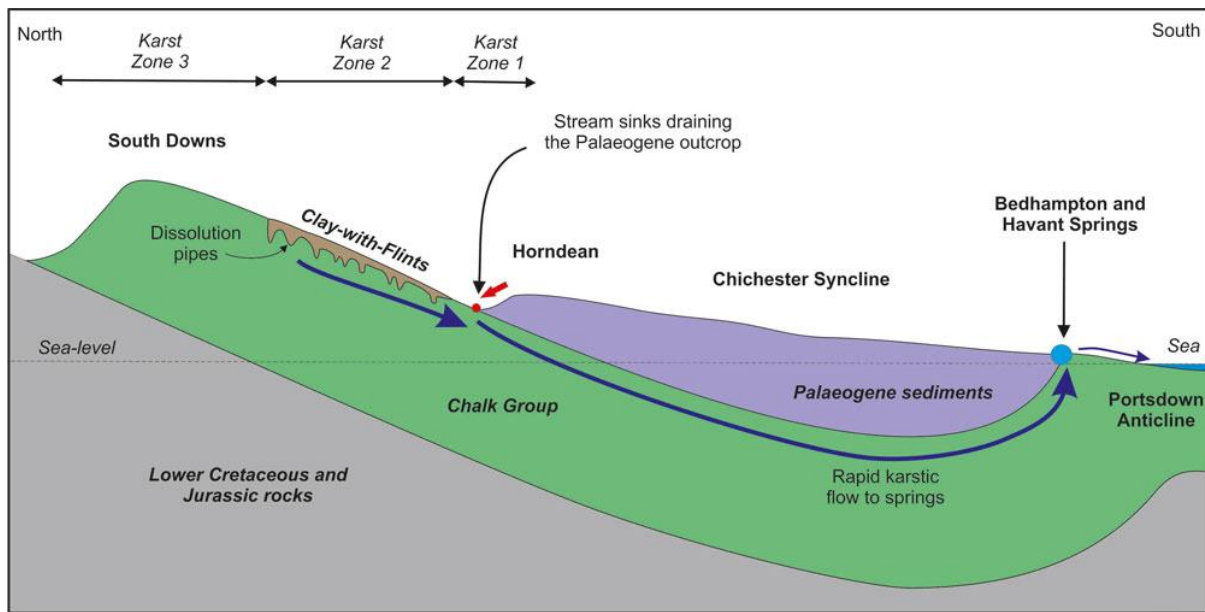


Figure 2: Diagram of recharge mechanism for Havant and Bedhampton Springs⁵

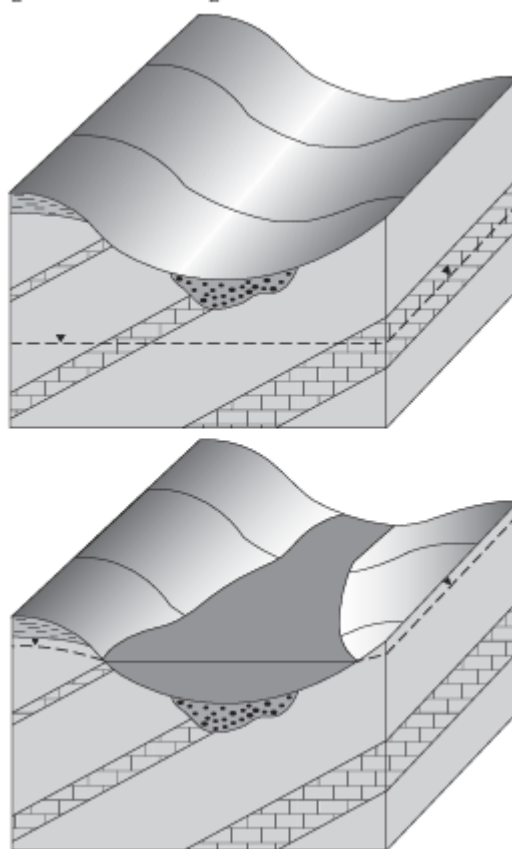


Figure 3: Diagram of recharge mechanism for Havant and Bedhampton Springs (Taken from⁴)

⁵ <https://www2.bgs.ac.uk/groundwater/about/karstAquifers/bedhamptonHavantSprings.html> Accessed 27/11/24

Reference: GW Flooding: Bedhampton Springs

Without the exact design plans for the pipeline, it is not possible to definitively confirm whether the proposed pipeline crossing would form a barrier to groundwater flooding. Extracted LiDAR data from the EA (1m DTM) is shown in Figure 4, with two cross sections drawn across the proposed Old Mill Dam watercourse crossing. This shows that there is an area of lower lying land to the south, which during a groundwater flooding event would flood first before the land near the watercourse crossing. In addition, the springs in this area are collected by Portsmouth Water for the Bedhampton WTW, with overflow from these springs the source of the majority of the water in the watercourse. At least one spring collection chamber has been recorded as being constructed to 5 m below ground surface¹. Therefore, as long as the pipeline remains above ground surface on the banks of the crossing, it is unlikely that this would form a barrier to the flooding as:

- A large proportion of the groundwater in this area is being collected from the springs for the purposes of public water supply, in chambers that are below ground surface.
- The main source of water to this watercourse is the overflow from the spring collectors, and it is unlikely that there would be a release of water from the overflow would be significant enough to cause the watercourse to burst its banks (also note that is likely to be less overflow being released during high groundwater periods as this water would now be routed via the pipeline to the Havant Thicket reservoir).
- If the spring collectors become overwhelmed by groundwater, it is likely that the low lying land to the south of the water course (and Hermitage Stream) would flood first during a 'clearwater' flooding event before groundwater would emerge at the surface in the vicinity of the pipeline.

Reference: GW Flooding: Bedhampton Springs

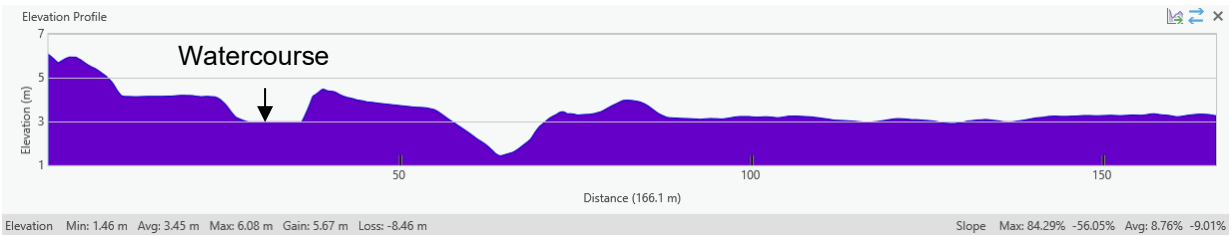
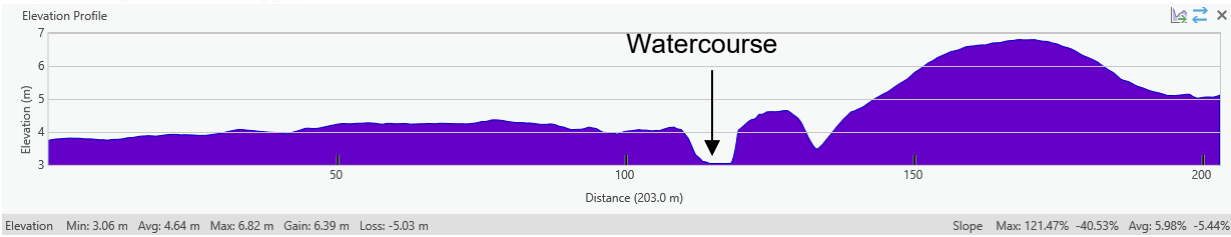
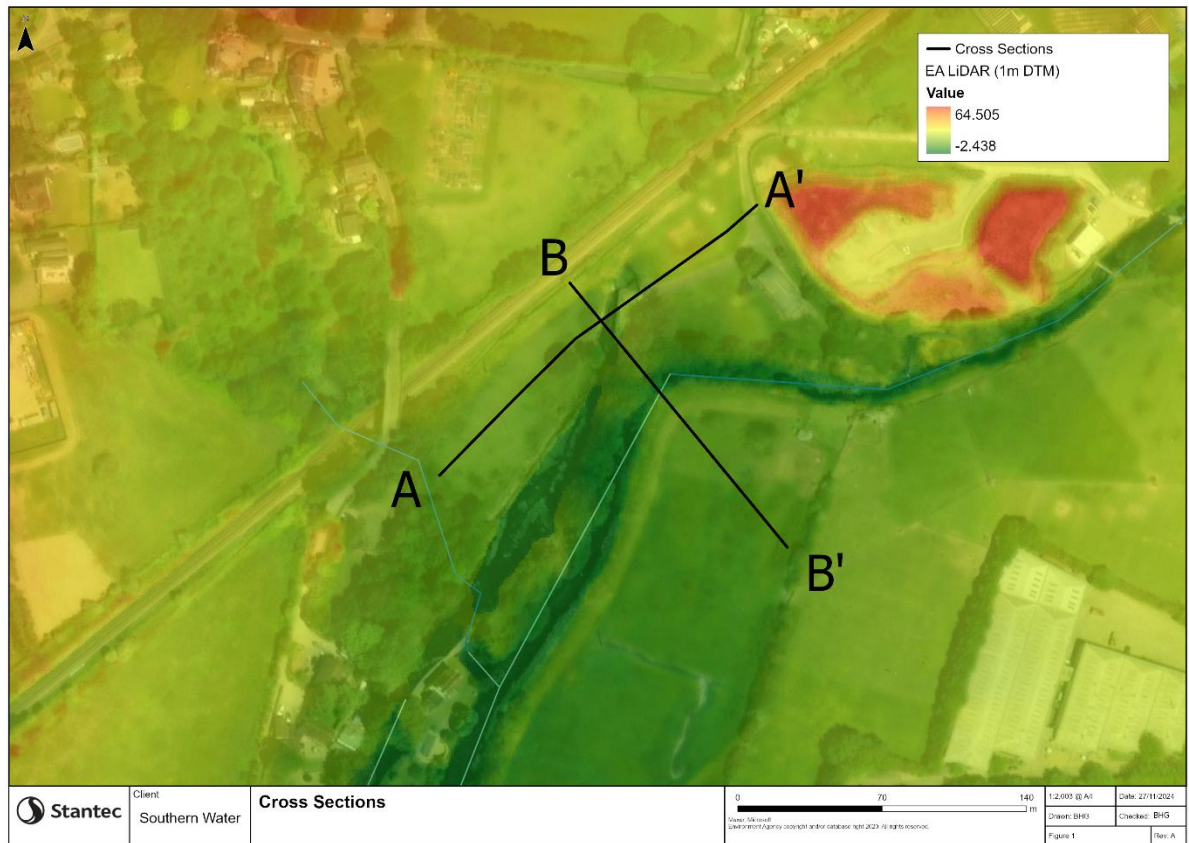
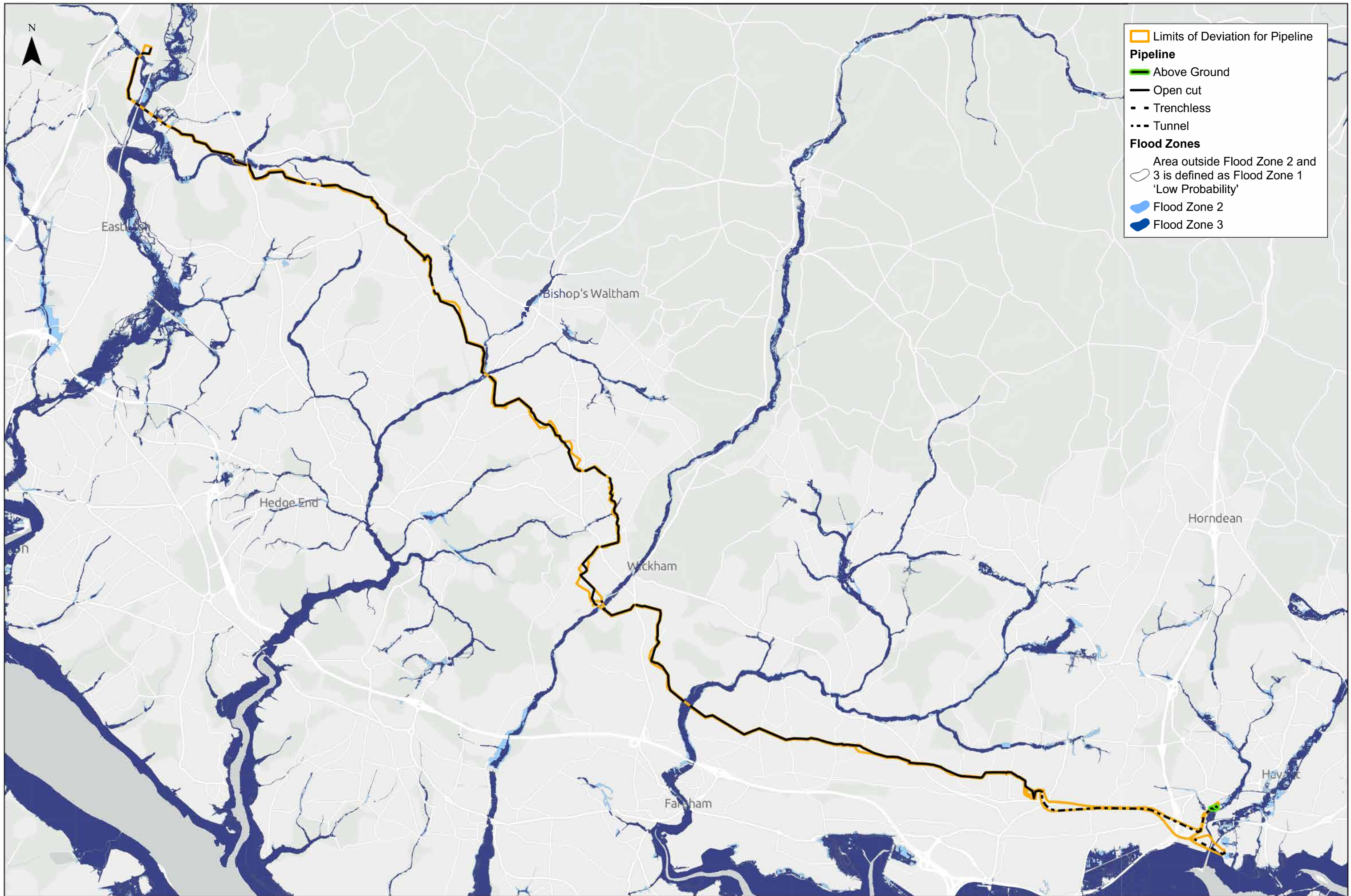


Figure 4: Lidar DTM Cross Sections. Top: Map, Middle: Cross Section A, Bottom: Cross Section B

Ben Harvey-Galliers BSc, PhD, FGS
 Senior Consultant
 Phone: +44 1743 276123
 ben.harvey@stantec.com

Appendix B Pluvial and tidal flood risk maps of the Preferred Pipeline Route



Limits of Deviation for Pipeline

Pipeline

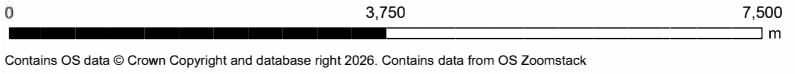
- Above Ground
- Open cut
- - Trenchless
- . . . Tunnel

Flood Zones

- Area outside Flood Zone 2 and 3 is defined as Flood Zone 1 'Low Probability'
- Flood Zone 2
- Flood Zone 3

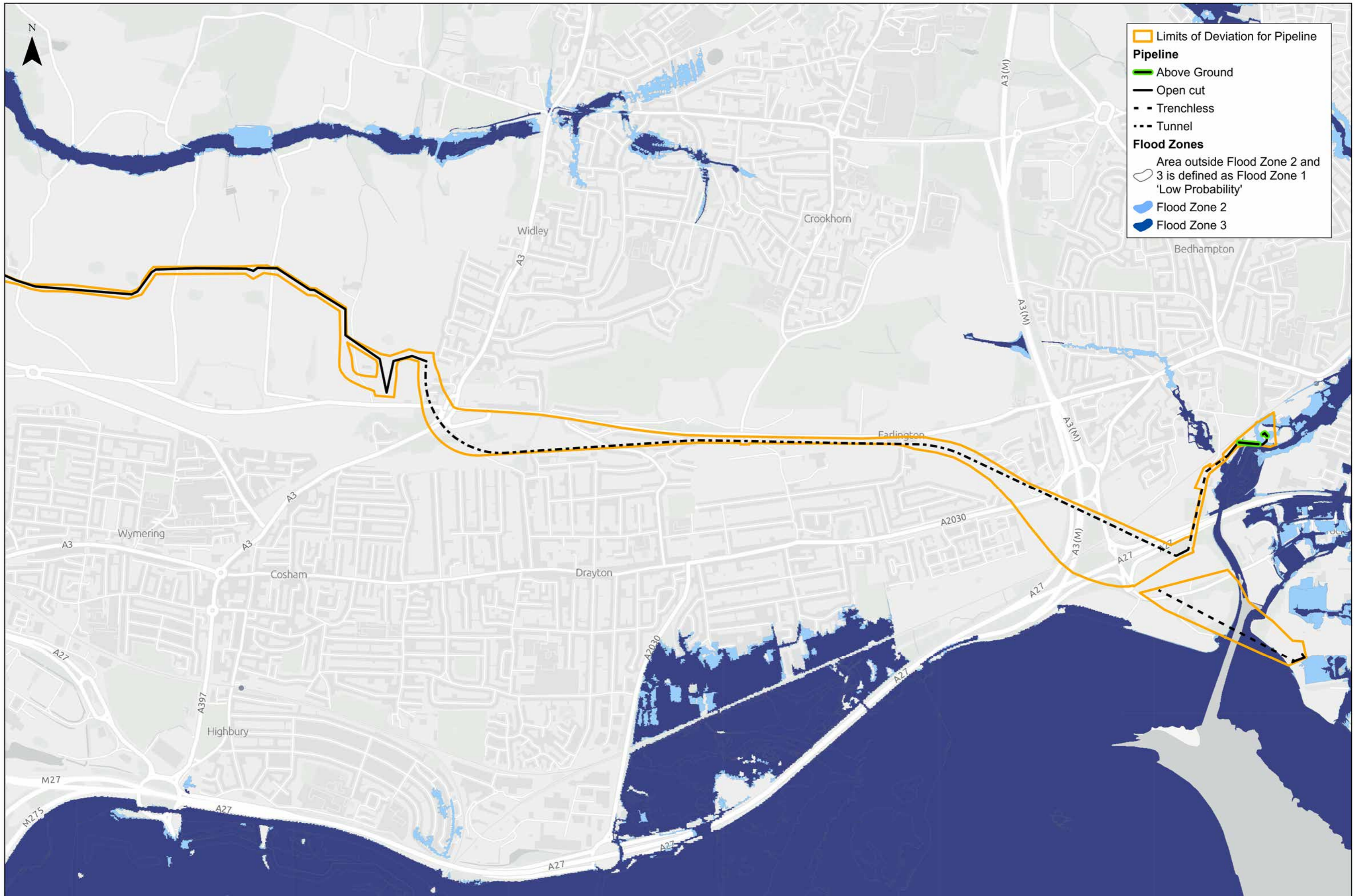


HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Flood Map for Planning



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Client	1:75,317 @ A3	Date: 30/03/26
Drawn: WB	Checked: KL	
Figure: 05	Rev: 01	



Limits of Deviation for Pipeline

Pipeline

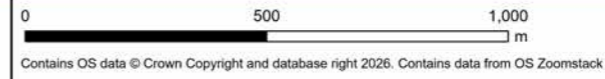
- Above Ground
- Open cut
- - Trenchless
- . . . Tunnel

Flood Zones

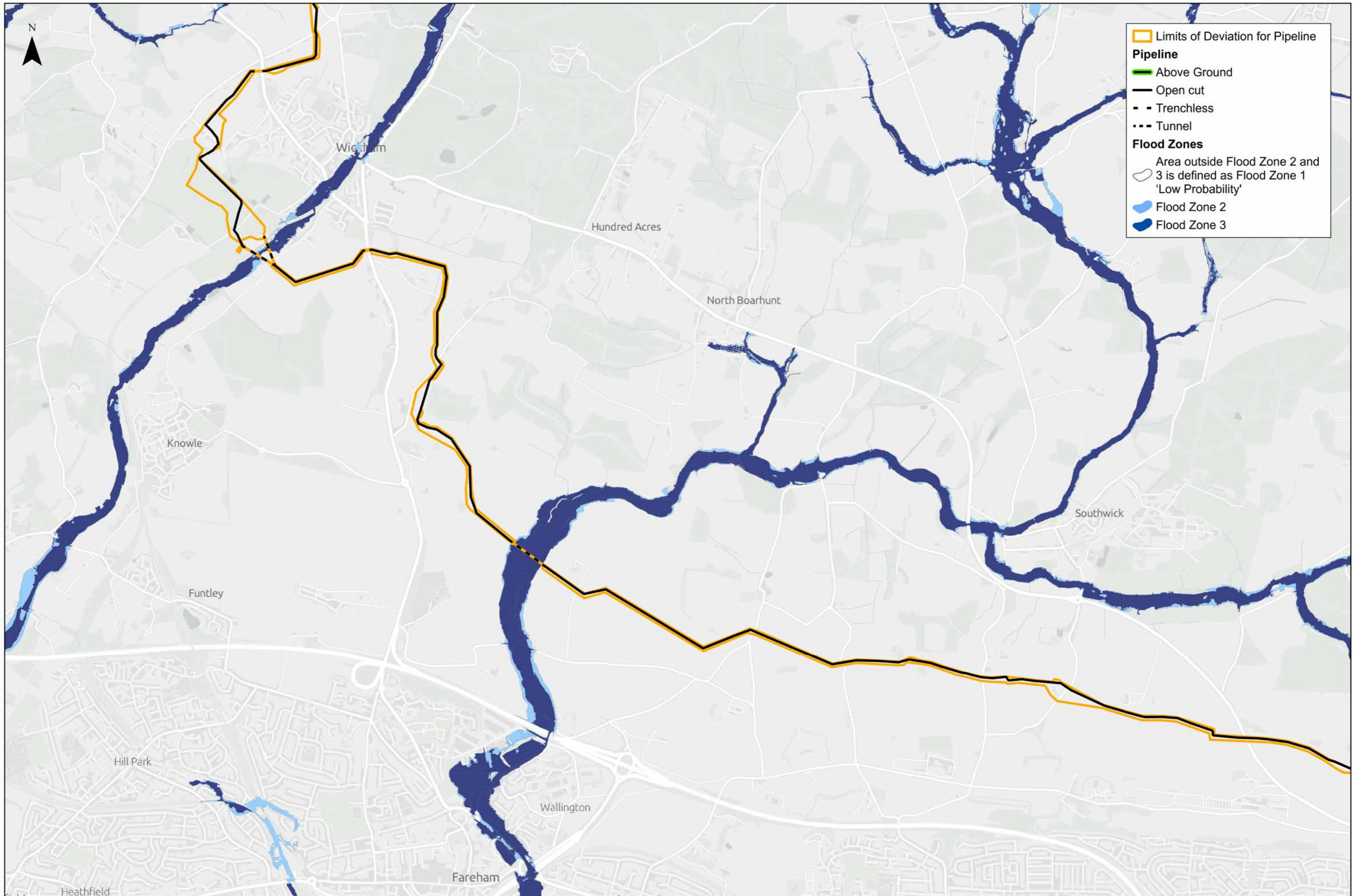
- Area outside Flood Zone 2 and 3 is defined as Flood Zone 1 'Low Probability'
- Flood Zone 2
- Flood Zone 3



HWTWRP PFRA
Preferred Pipeline Route
Environment Agency Flood Map for Planning



1:15,675 @ A3	Date: 30/03/26
Drawn: WB	Checked: KL
Figure: 01	Rev: 01



Limits of Deviation for Pipeline

Pipeline

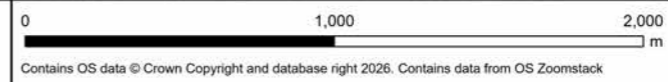
- Above Ground
- Open cut
- - Trenchless
- · · Tunnel

Flood Zones

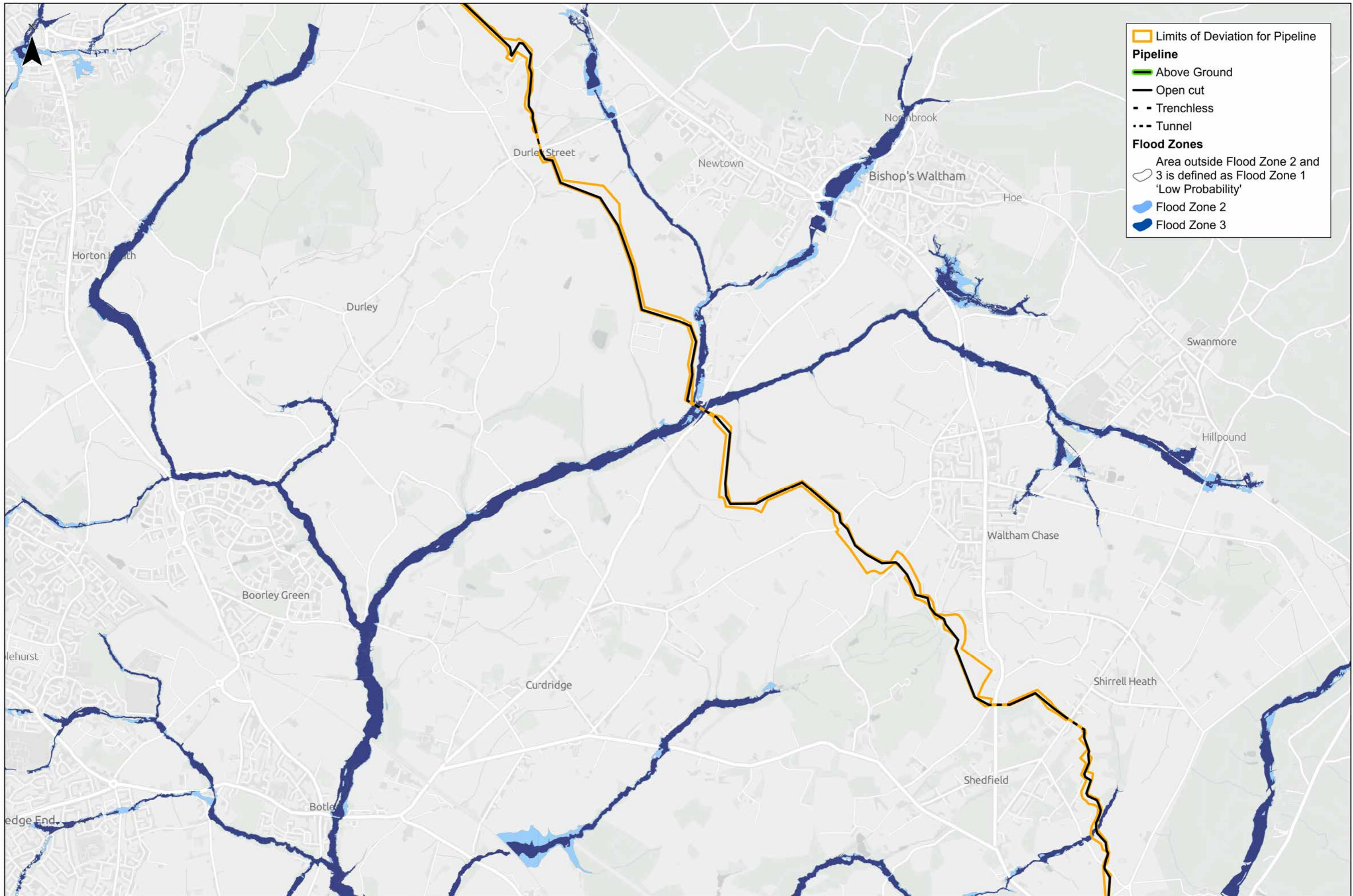
- Area outside Flood Zone 2 and 3 is defined as Flood Zone 1 'Low Probability'
- Flood Zone 2
- Flood Zone 3

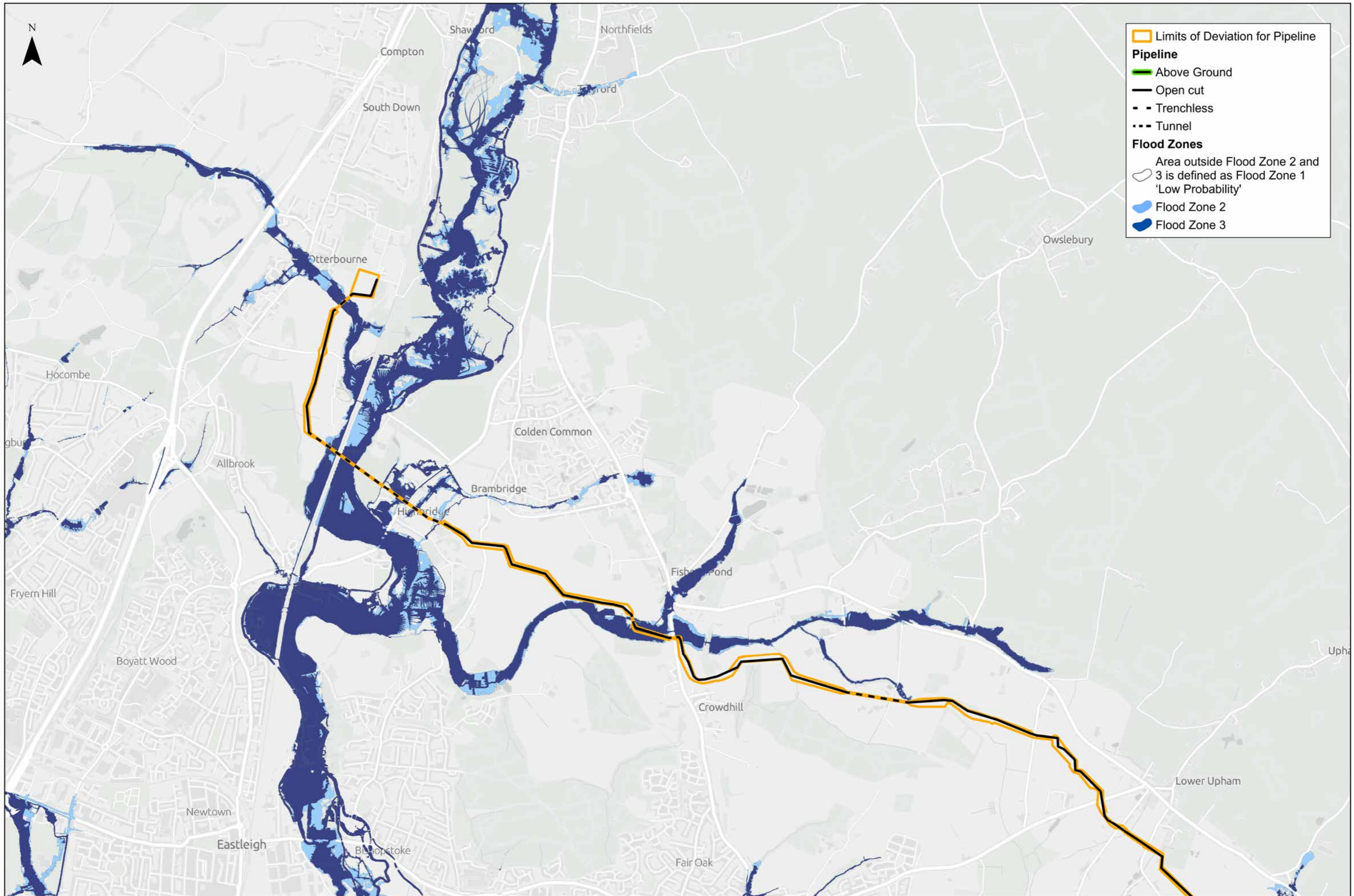


HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Flood Map for Planning

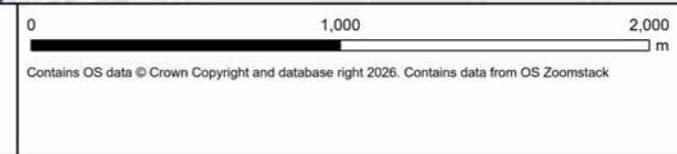


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Drawn: WB	Checked: KL
Figure: 02	Rev: 01

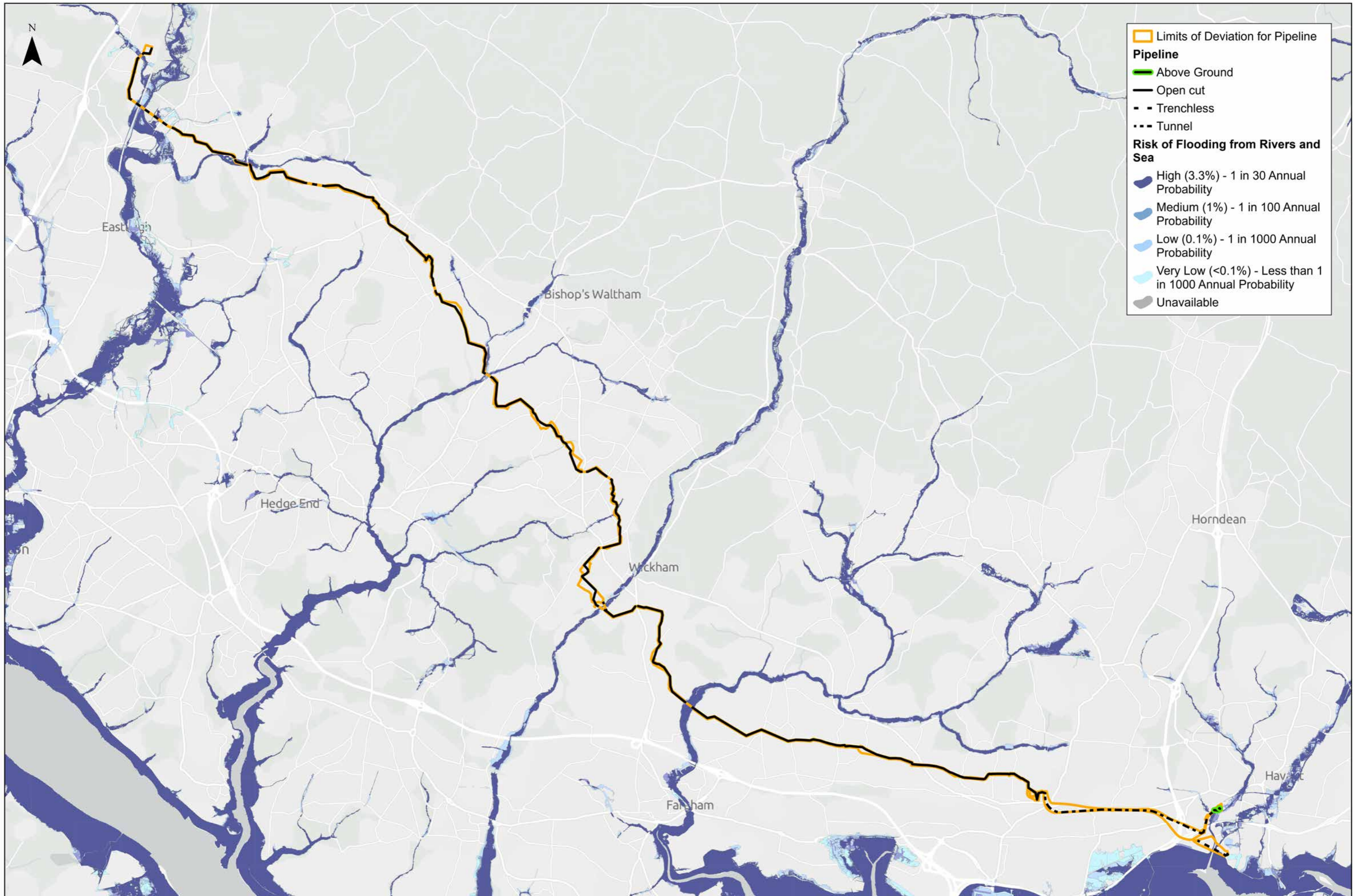




Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Flood Map for Planning



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Figure: 04	Rev: 01



Limits of Deviation for Pipeline

Pipeline

- Above Ground
- Open cut
- - Trenchless
- . . . Tunnel

Risk of Flooding from Rivers and Sea

- █ High (3.3%) - 1 in 30 Annual Probability
- █ Medium (1%) - 1 in 100 Annual Probability
- █ Low (0.1%) - 1 in 1000 Annual Probability
- █ Very Low (<0.1%) - Less than 1 in 1000 Annual Probability
- █ Unavailable



HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Rivers and Sea

0 3,750 7,500 m

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Limits of Deviation for Pipeline

Pipeline

- Above Ground
- Open cut
- - Trenchless
- . . . Tunnel

Risk of Flooding from Rivers and Sea

- High (3.3%) - 1 in 30 Annual Probability
- Medium (1%) - 1 in 100 Annual Probability
- Low (0.1%) - 1 in 1000 Annual Probability
- Very Low (<0.1%) - Less than 1 in 1000 Annual Probability
- Unavailable

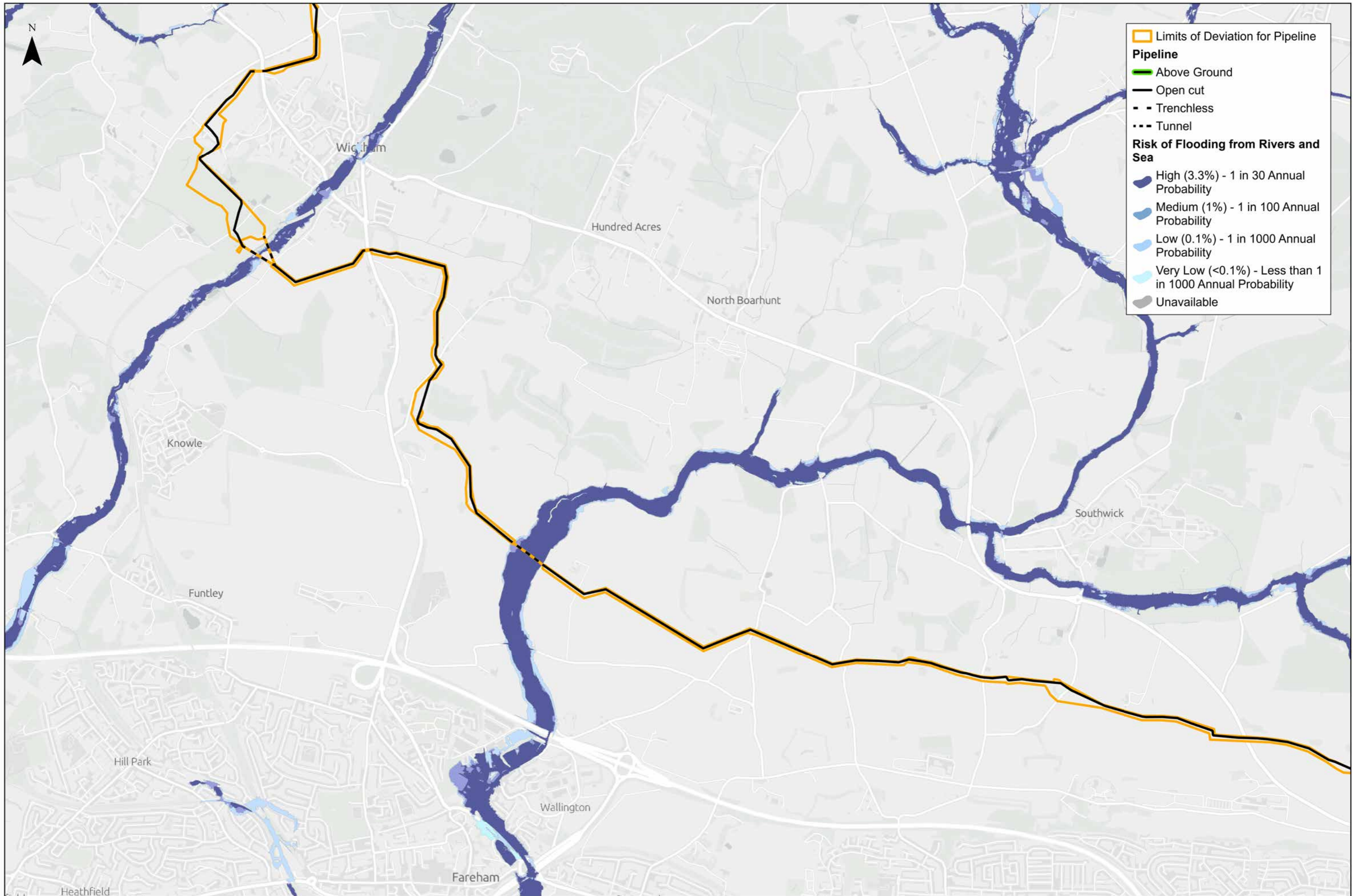


HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Rivers and Sea

0 500 1,000
 m

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Limits of Deviation for Pipeline

Pipeline

- Above Ground
- Open cut
- - Trenchless
- · · Tunnel

Risk of Flooding from Rivers and Sea

- High (3.3%) - 1 in 30 Annual Probability
- Medium (1%) - 1 in 100 Annual Probability
- Low (0.1%) - 1 in 1000 Annual Probability
- Very Low (<0.1%) - Less than 1 in 1000 Annual Probability
- Unavailable

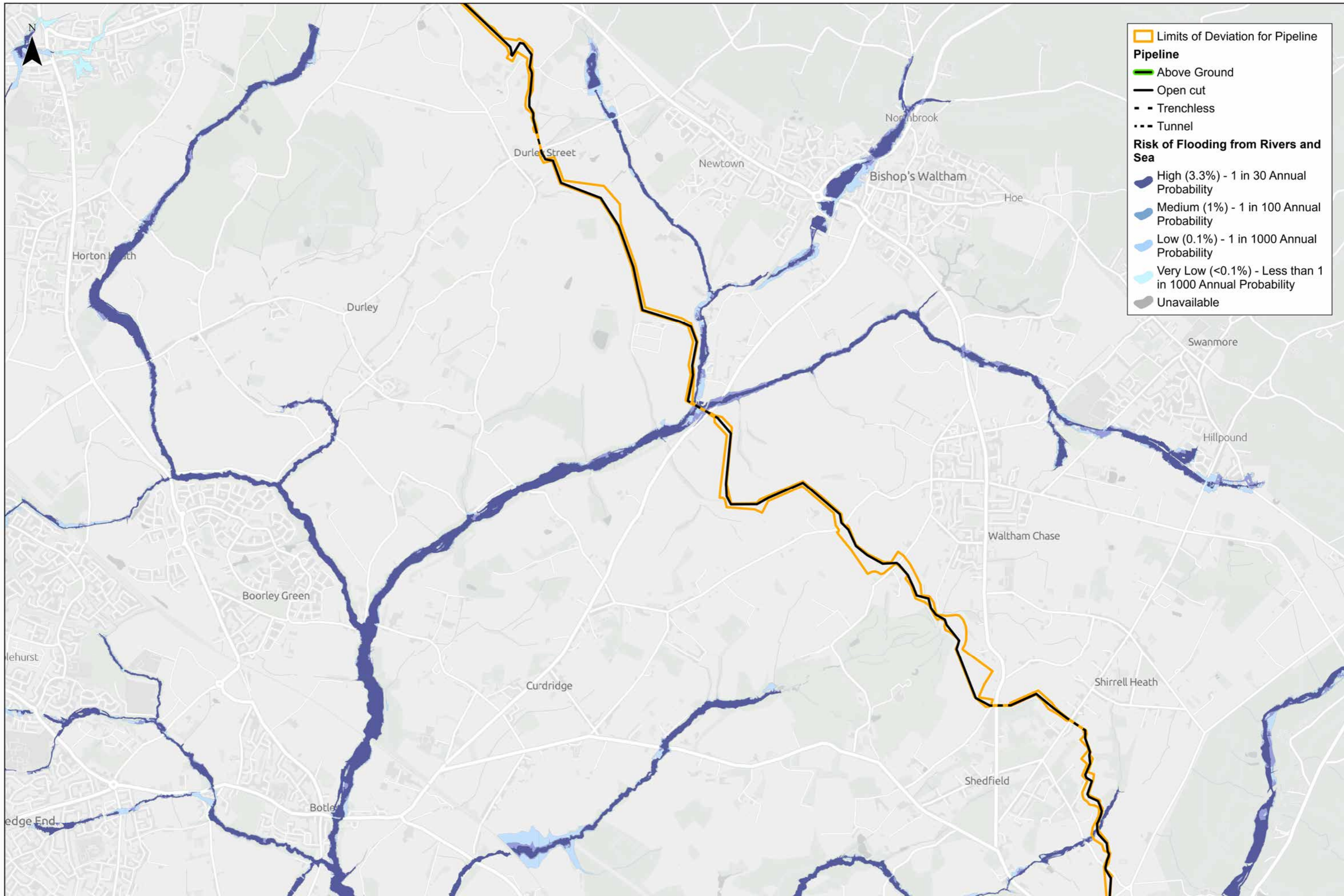


Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Rivers and Sea

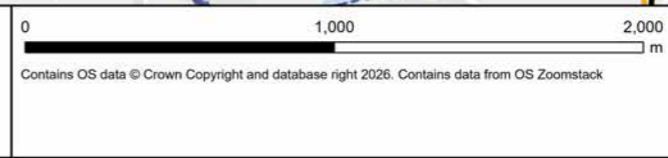
0 1,000 2,000 m

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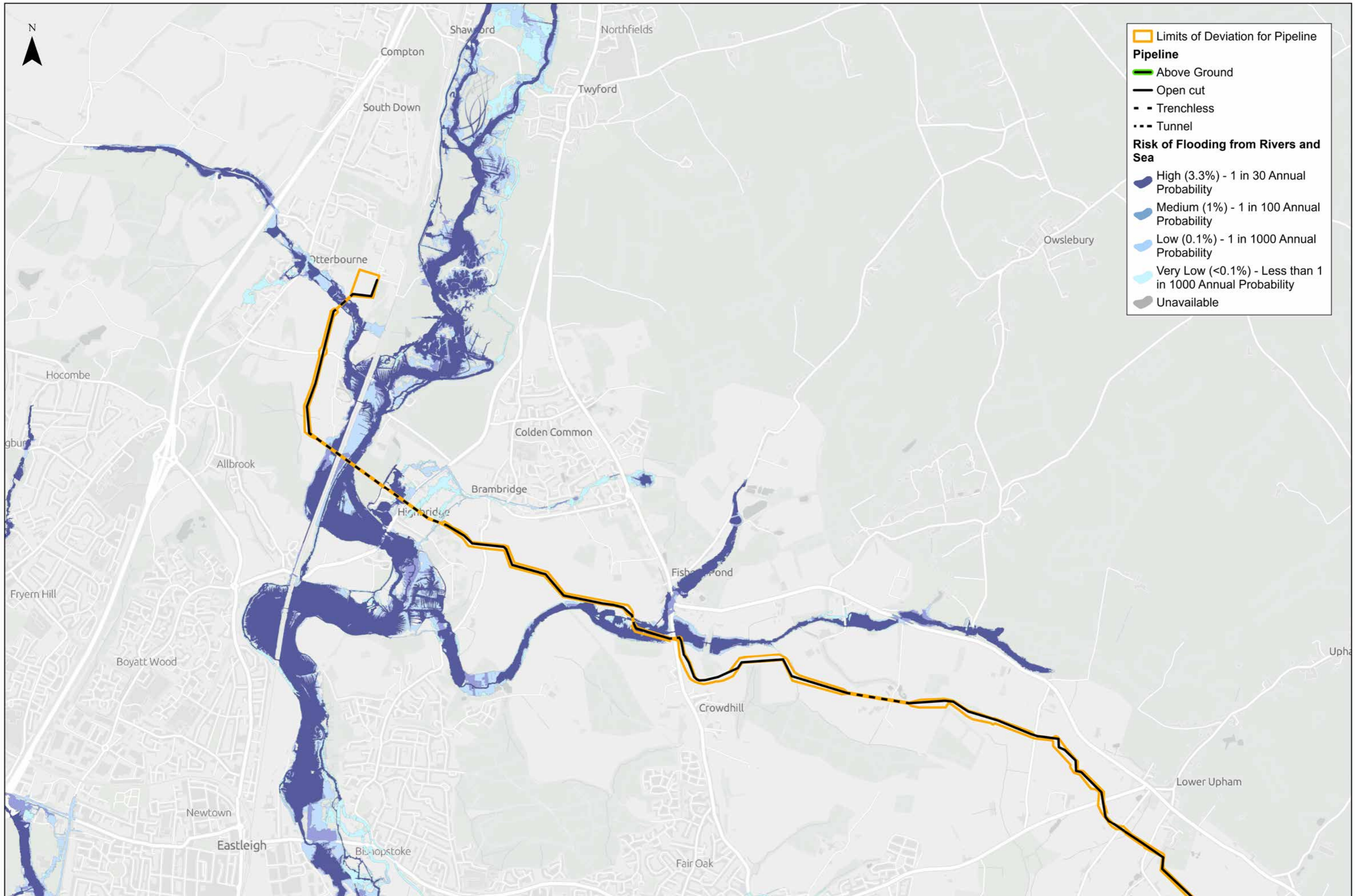
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Drawn: WB	Checked: KL
Figure: 02	Rev: 01



Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Rivers and Sea



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Drawn: WB	Checked: KL
Figure: 03	Rev: 01



Limits of Deviation for Pipeline

Pipeline

- Above Ground
- Open cut
- - Trenchless
- · · Tunnel

Risk of Flooding from Rivers and Sea

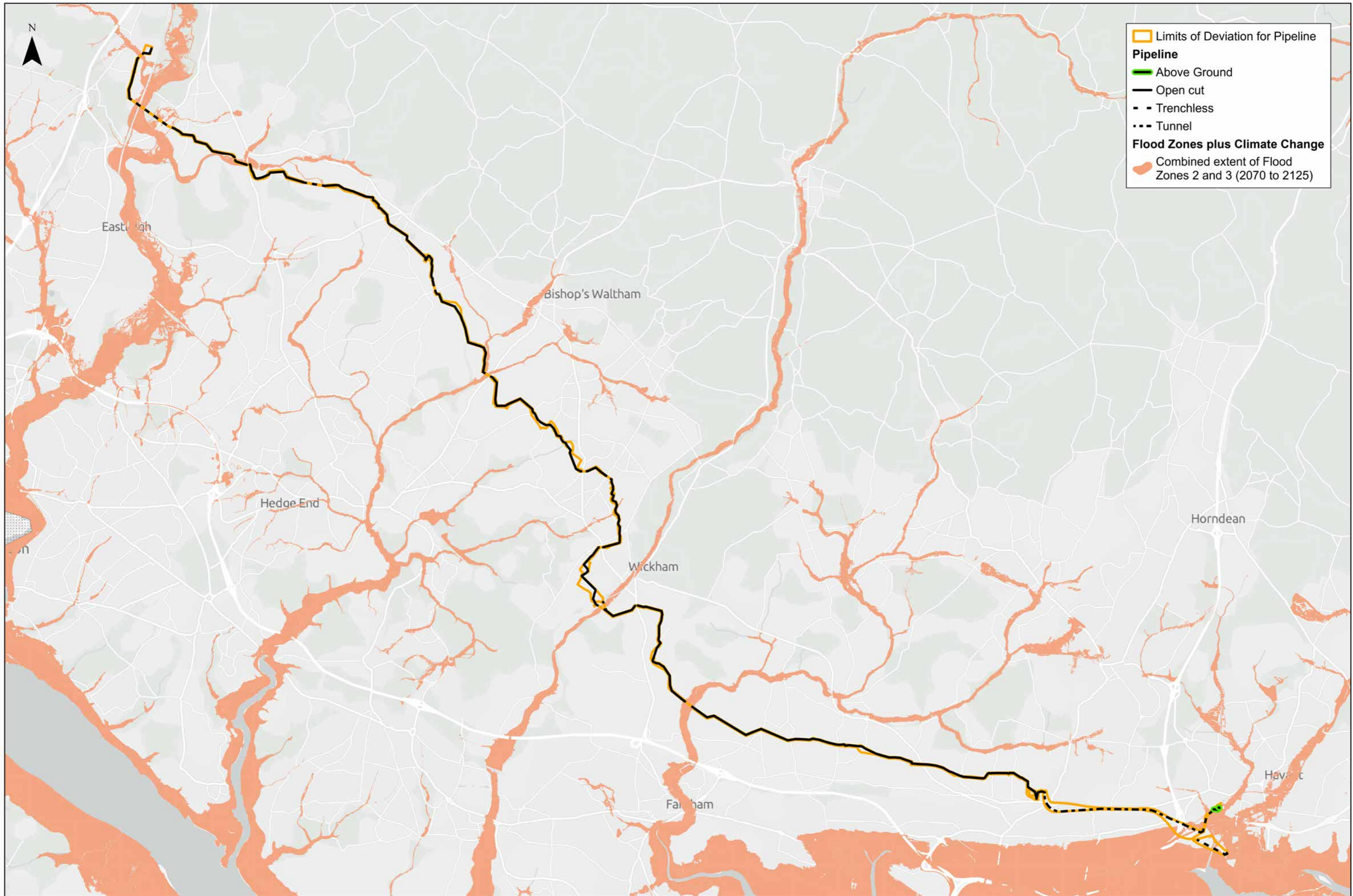
- █ High (3.3%) - 1 in 30 Annual Probability
- █ Medium (1%) - 1 in 100 Annual Probability
- █ Low (0.1%) - 1 in 1000 Annual Probability
- █ Very Low (<0.1%) - Less than 1 in 1000 Annual Probability
- █ Unavailable

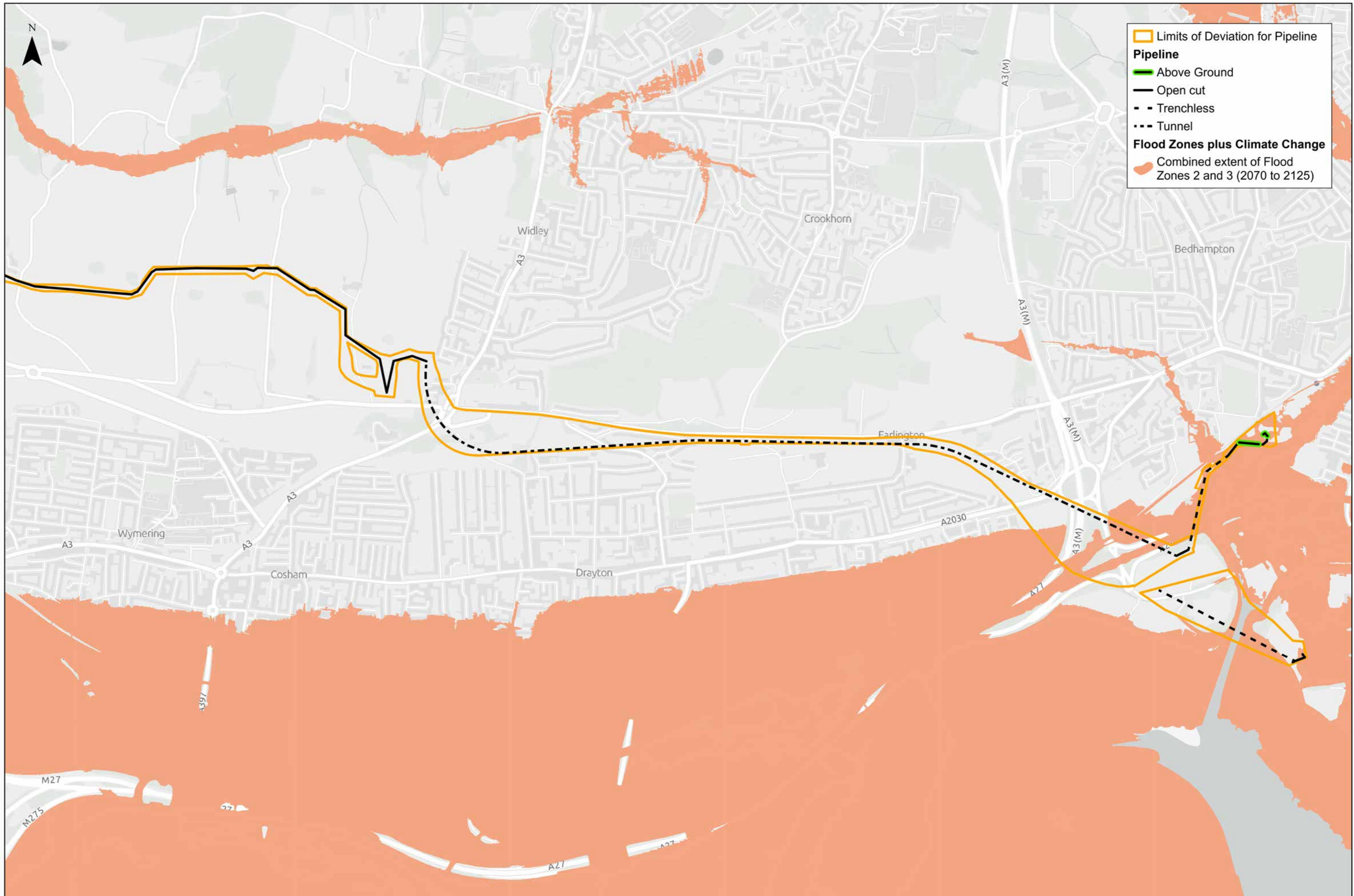


HWTWRP PFRA
Preferred Pipeline Route
Environment Agency Risk of Flooding from Rivers and Sea

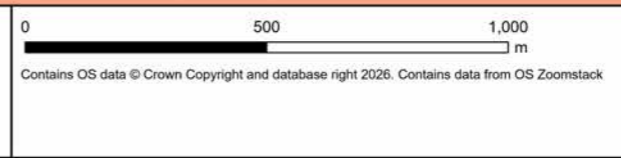


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Drawn: WB	Checked: KL
Figure: 04	Rev: 01

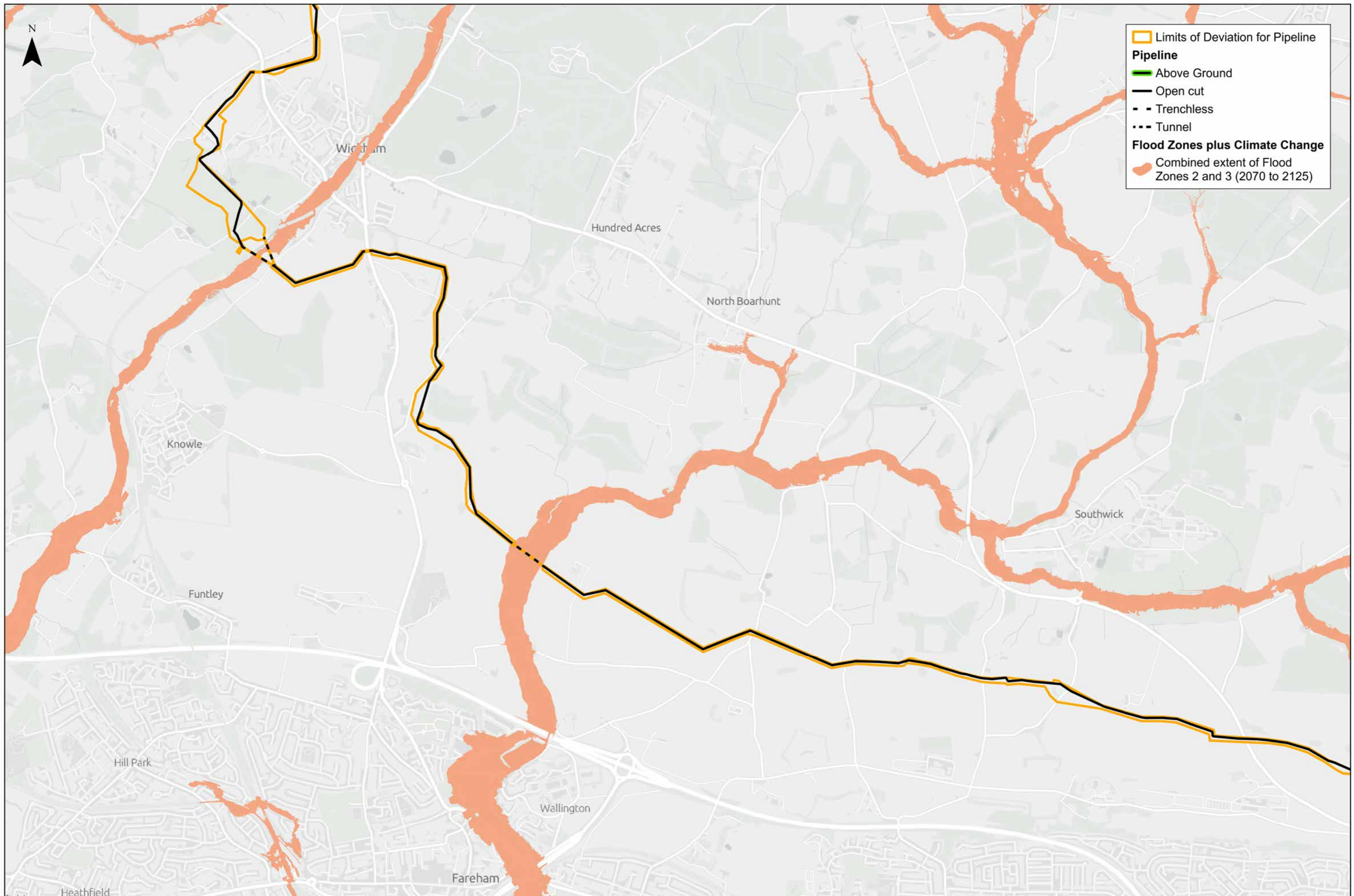




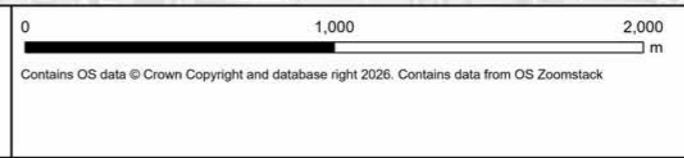
HWTWRP PFRA
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 Environment Agency Flood Map for Planning plus Climate Change



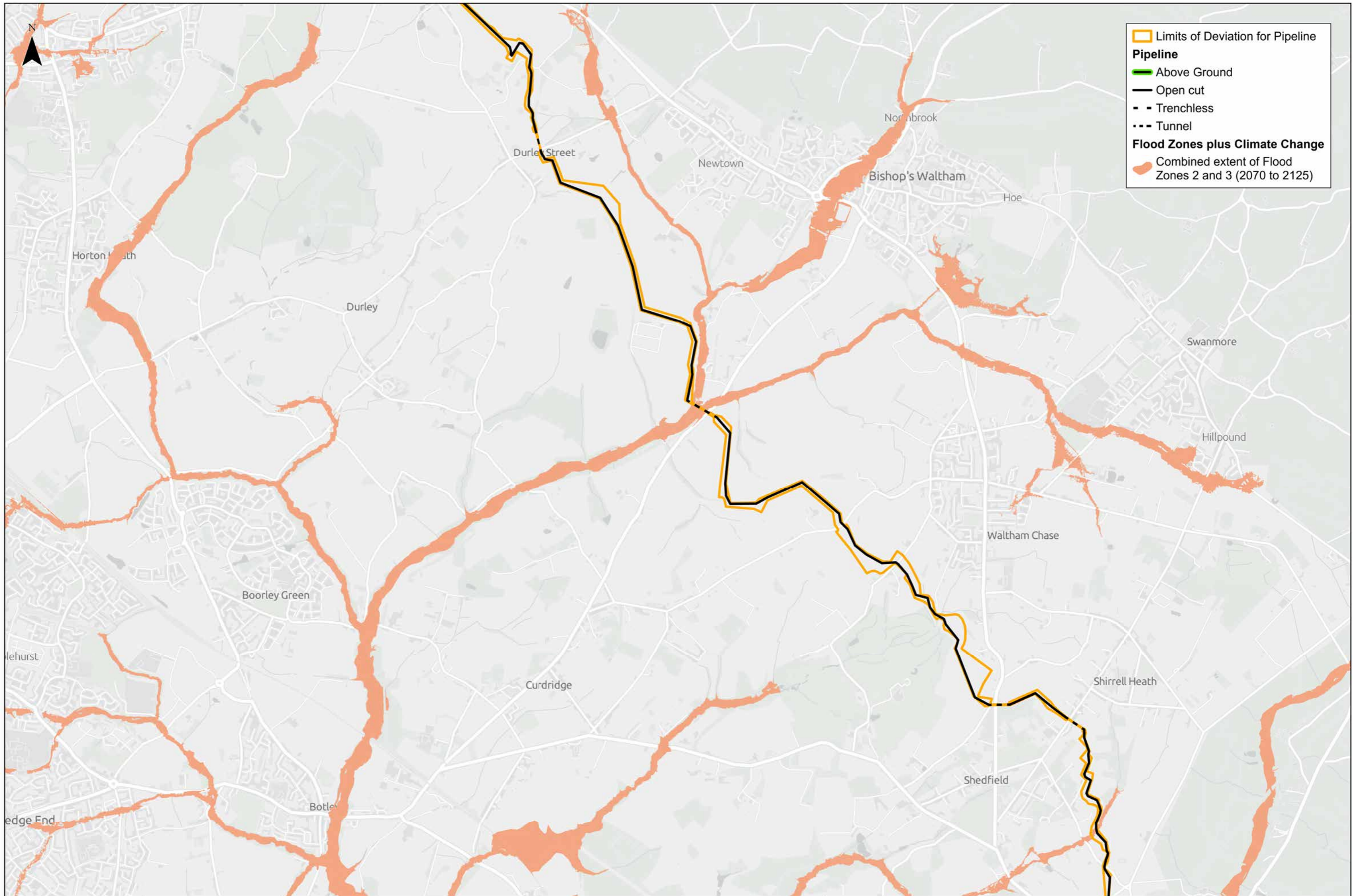
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Figure: 01	Rev: 01

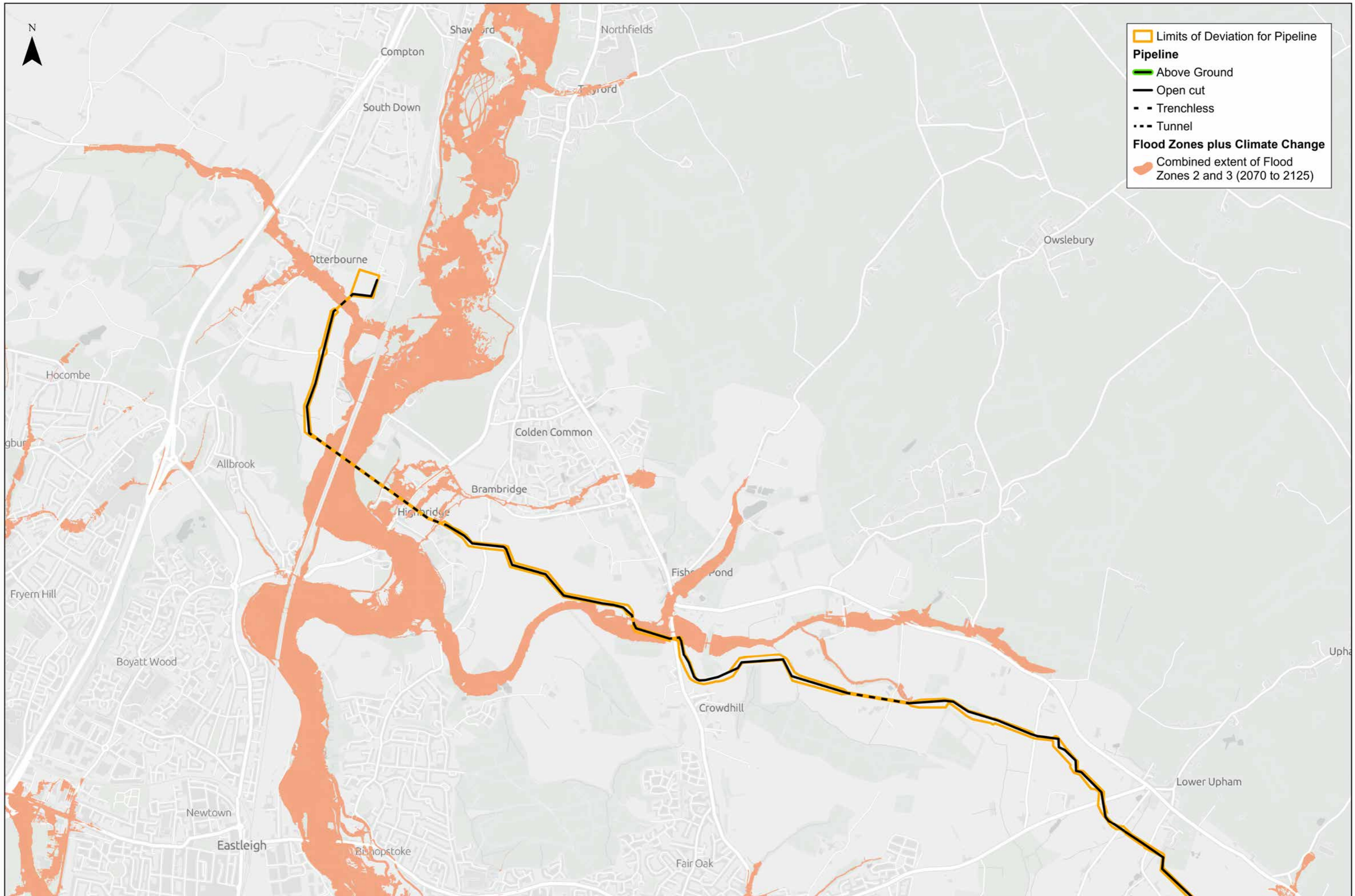


Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Flood Map for Planning plus Climate Change

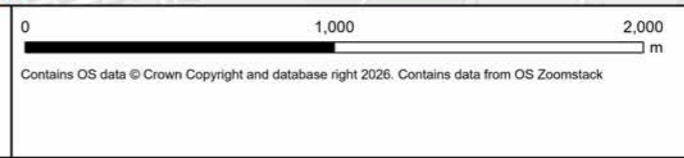


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Drawn: WB	Checked: KL
Figure: 02	Rev: 01



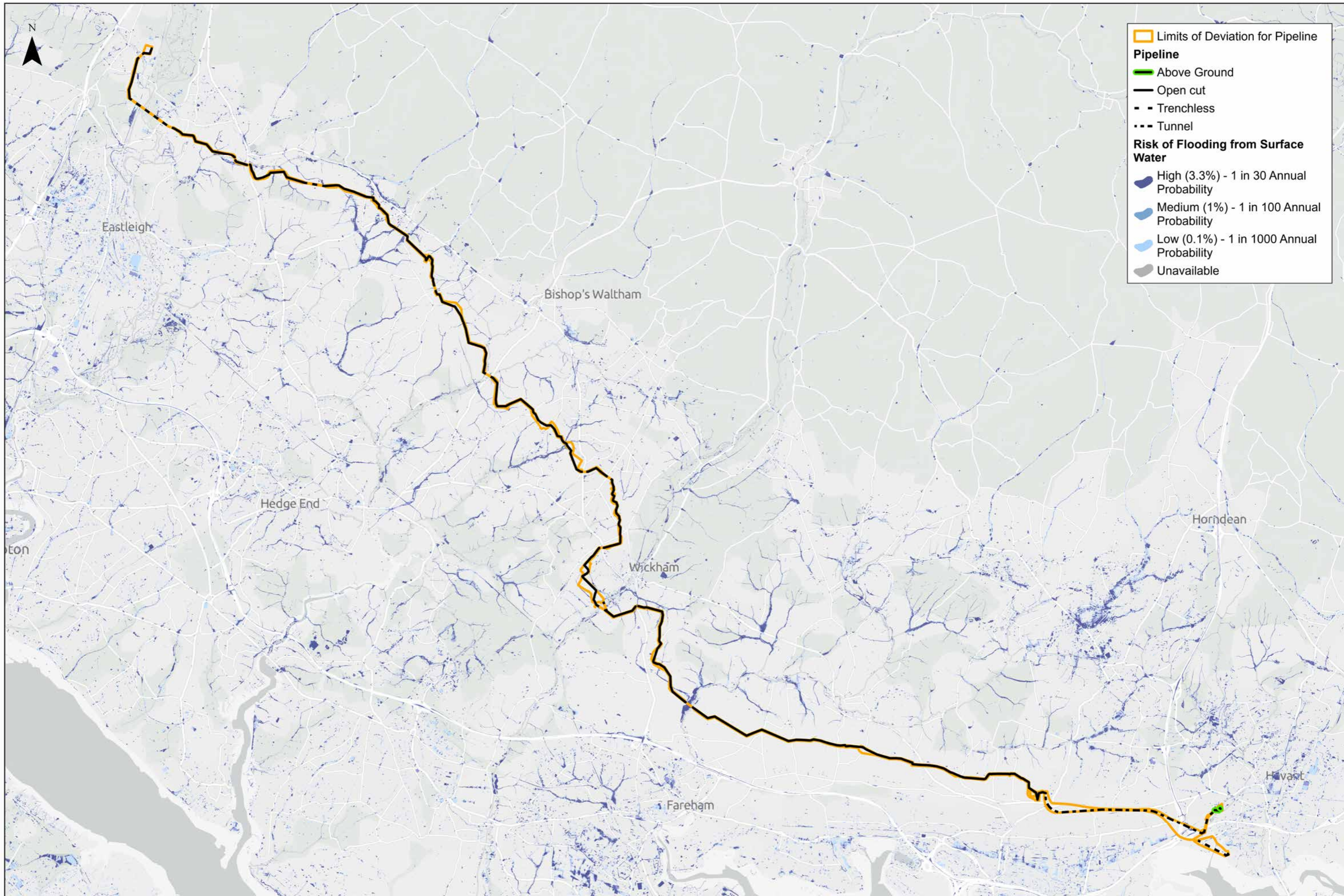


Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Flood Map for Planning plus Climate Change



1:24,492 @ A3	Date: 30/03/26
Drawn: WB	Checked: KL
Figure: 04	Rev: 01

Appendix C Surface water flood risk maps of the Preferred Pipeline Route



Limits of Deviation for Pipeline

Pipeline

- Above Ground
- Open cut
- Trenchless
- Tunnel

Risk of Flooding from Surface Water

- High (3.3%) - 1 in 30 Annual Probability
- Medium (1%) - 1 in 100 Annual Probability
- Low (0.1%) - 1 in 1000 Annual Probability
- Unavailable

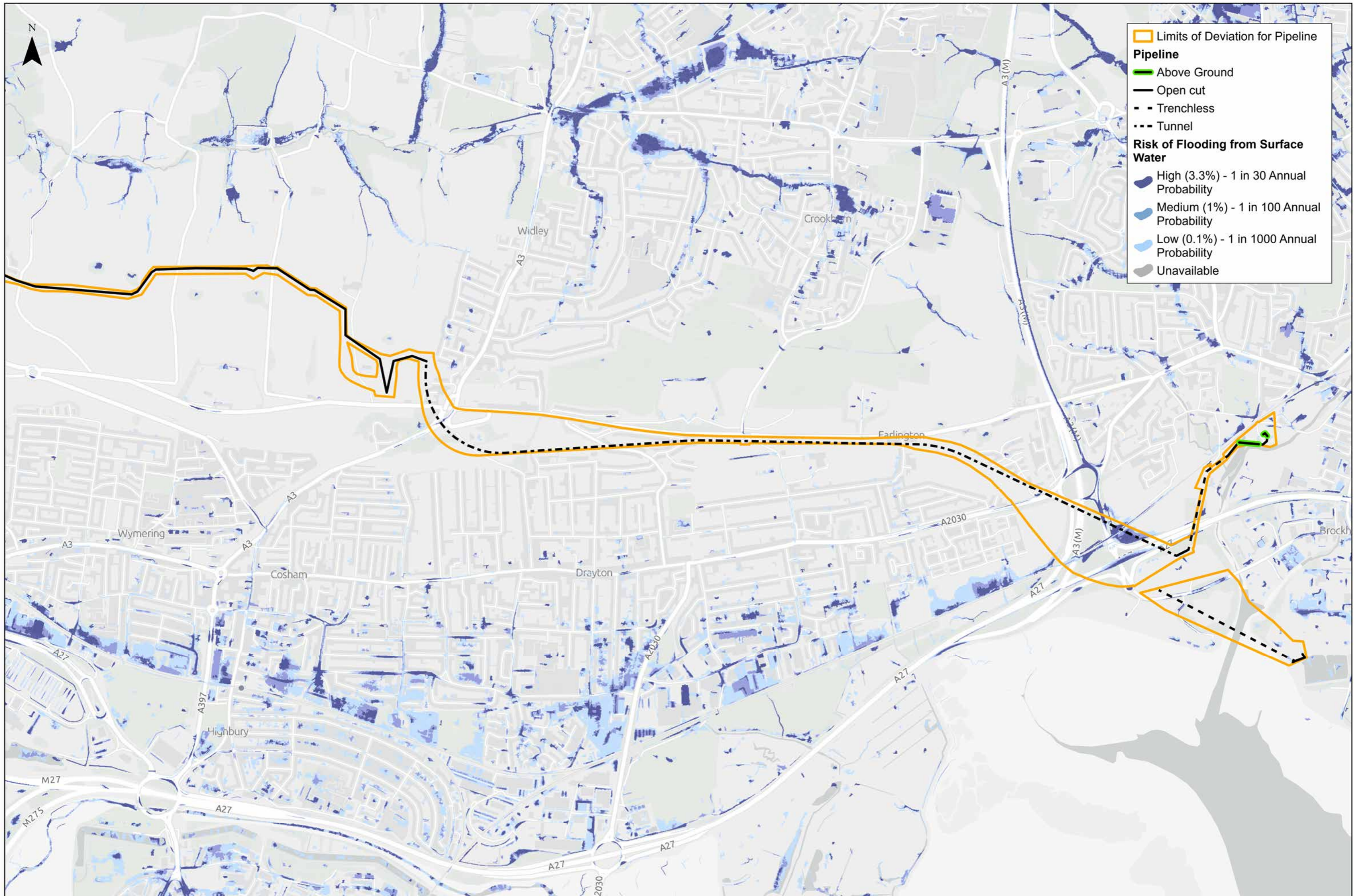


HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Surface Water

0 3,750 7,500 m

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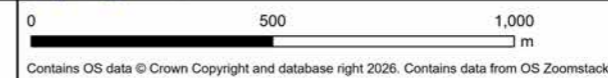
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Drawn: WB	Checked: KL
Figure: 05	Rev: 01



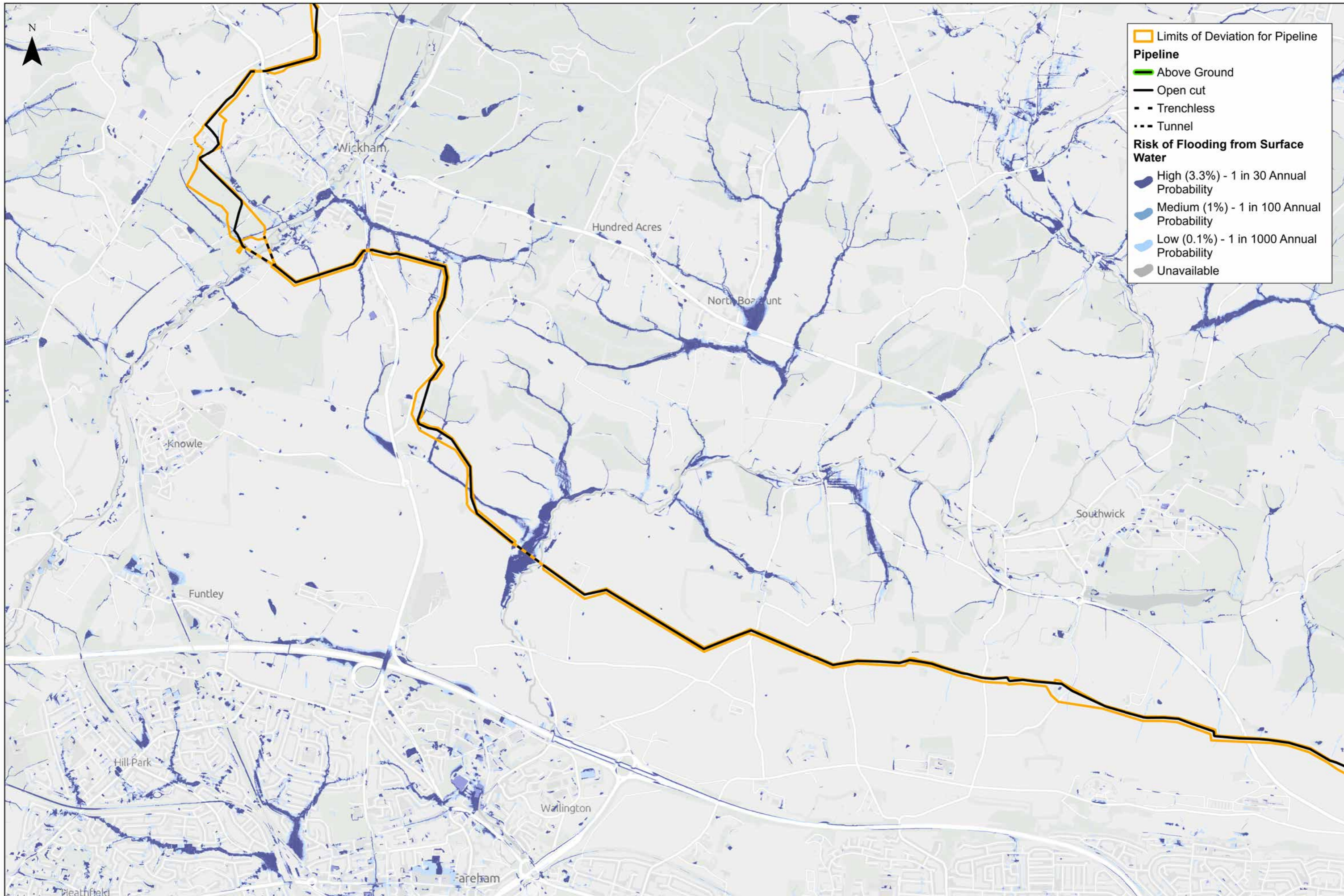
Client



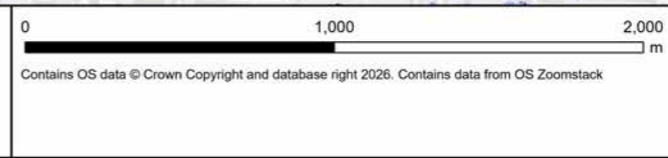
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Surface Water



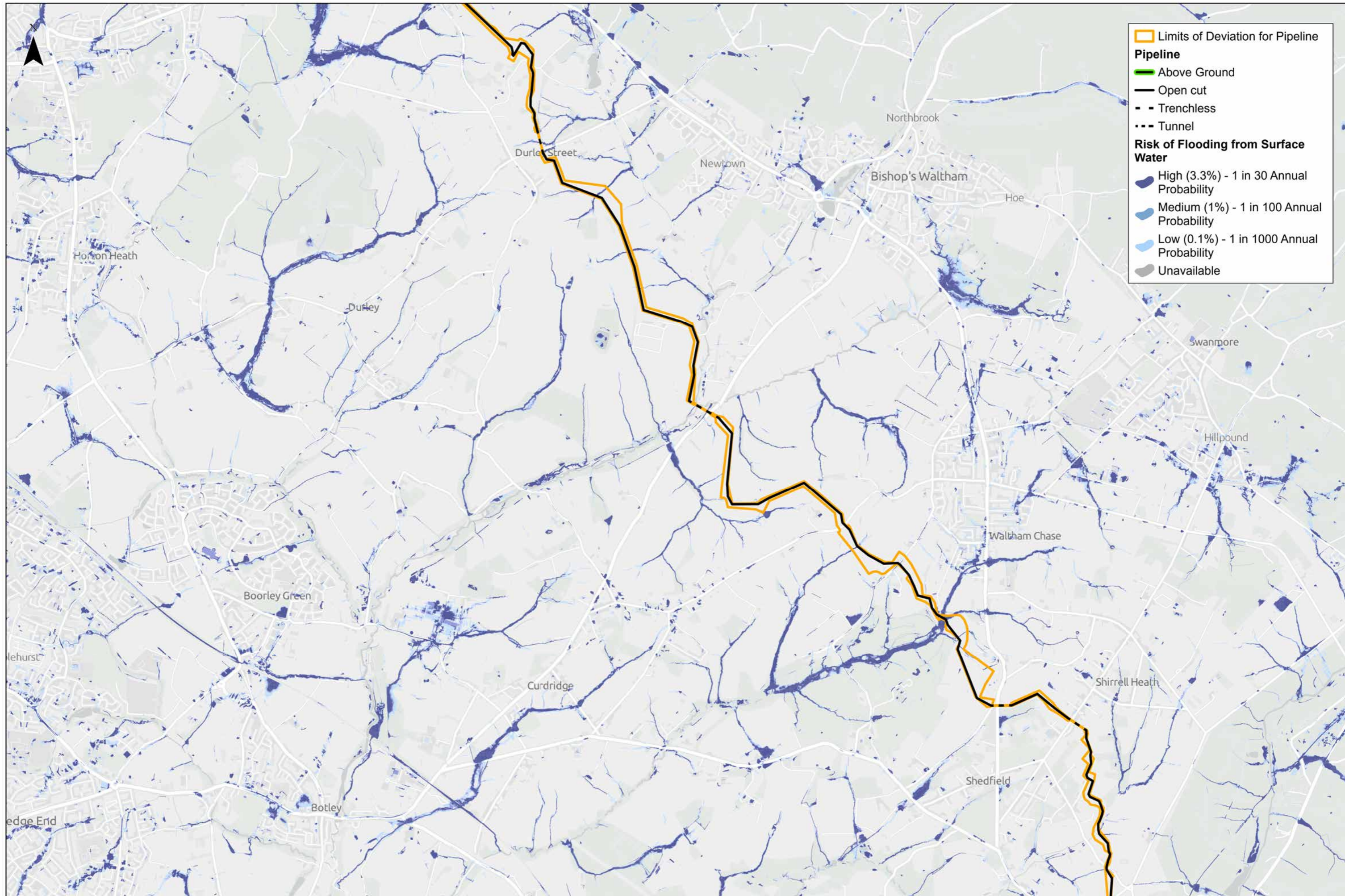
1:15,675 @ A3	Date: 30/03/26
Drawn: WB	Checked: KL
Figure: 01	Rev: 01



Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Surface Water



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Figure: 02	Rev: 01



Client



HWTWRP PFRA
 Preferred Pipeline Route
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1:24,492 @ A3

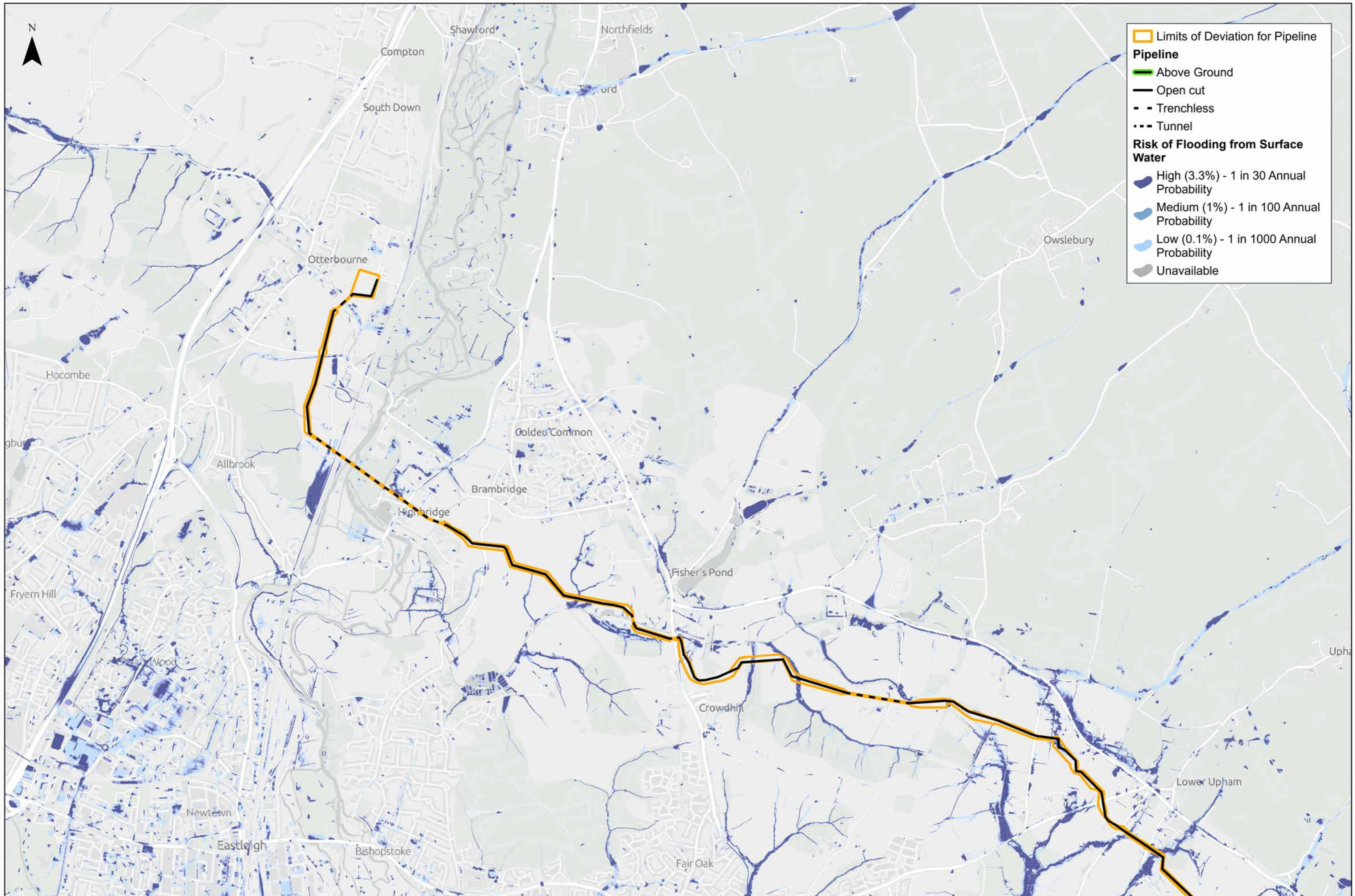
Date: 30/03/26

Drawn: WB

Checked: KL

Figure: 03

Rev: 01



Limits of Deviation for Pipeline

Pipeline

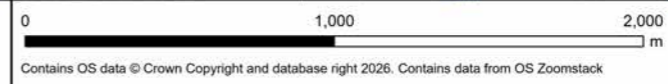
- Above Ground
- Open cut
- - Trenchless
- · · Tunnel

Risk of Flooding from Surface Water

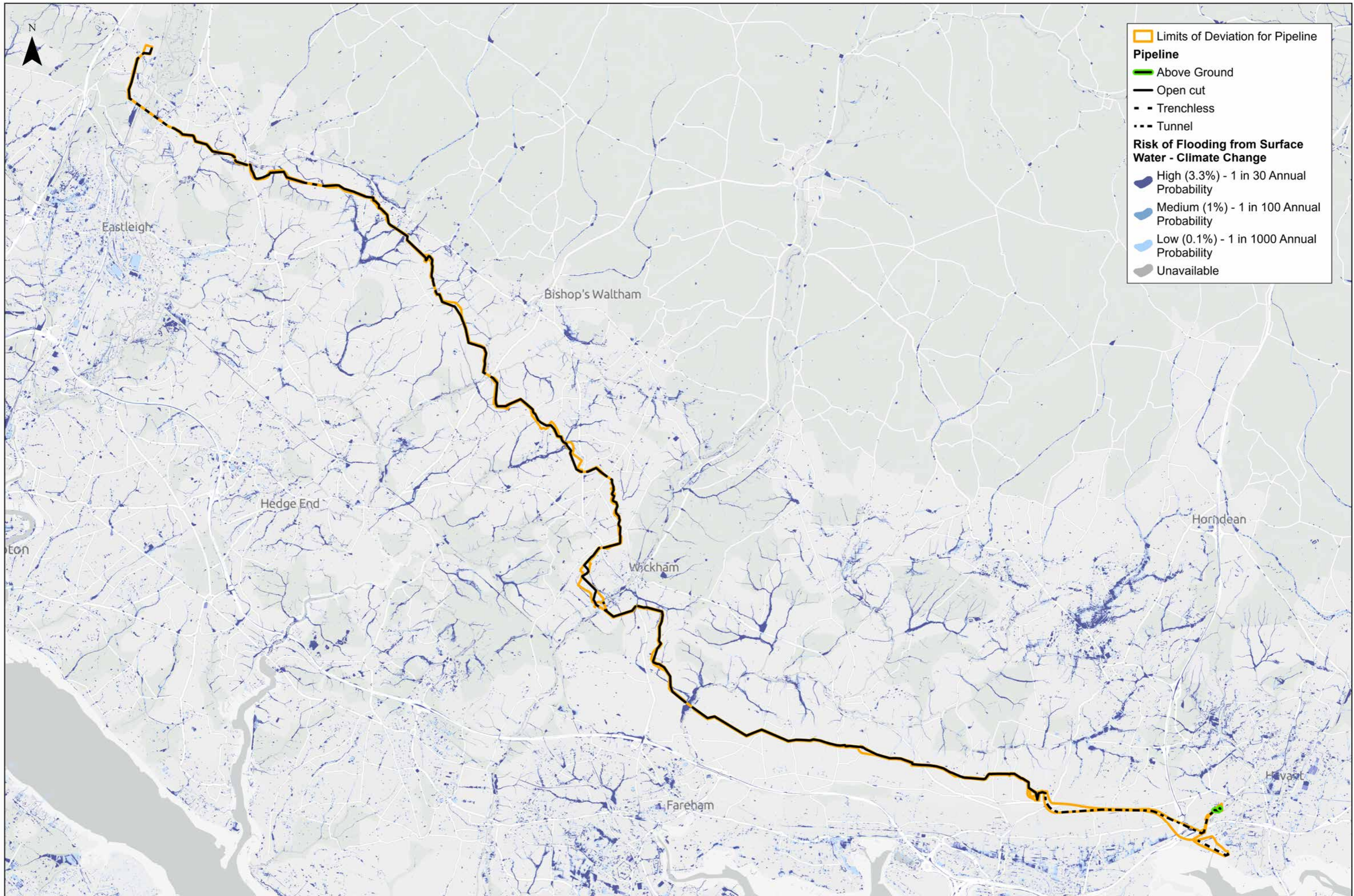
- High (3.3%) - 1 in 30 Annual Probability
- Medium (1%) - 1 in 100 Annual Probability
- Low (0.1%) - 1 in 1000 Annual Probability
- Unavailable



Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Surface Water



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Drawn: WB	Checked: KL
Figure: 04	Rev: 01



Limits of Deviation for Pipeline

Pipeline

- Above Ground
- Open cut
- Trenchless
- Tunnel

Risk of Flooding from Surface Water - Climate Change

- High (3.3%) - 1 in 30 Annual Probability
- Medium (1%) - 1 in 100 Annual Probability
- Low (0.1%) - 1 in 1000 Annual Probability
- Unavailable

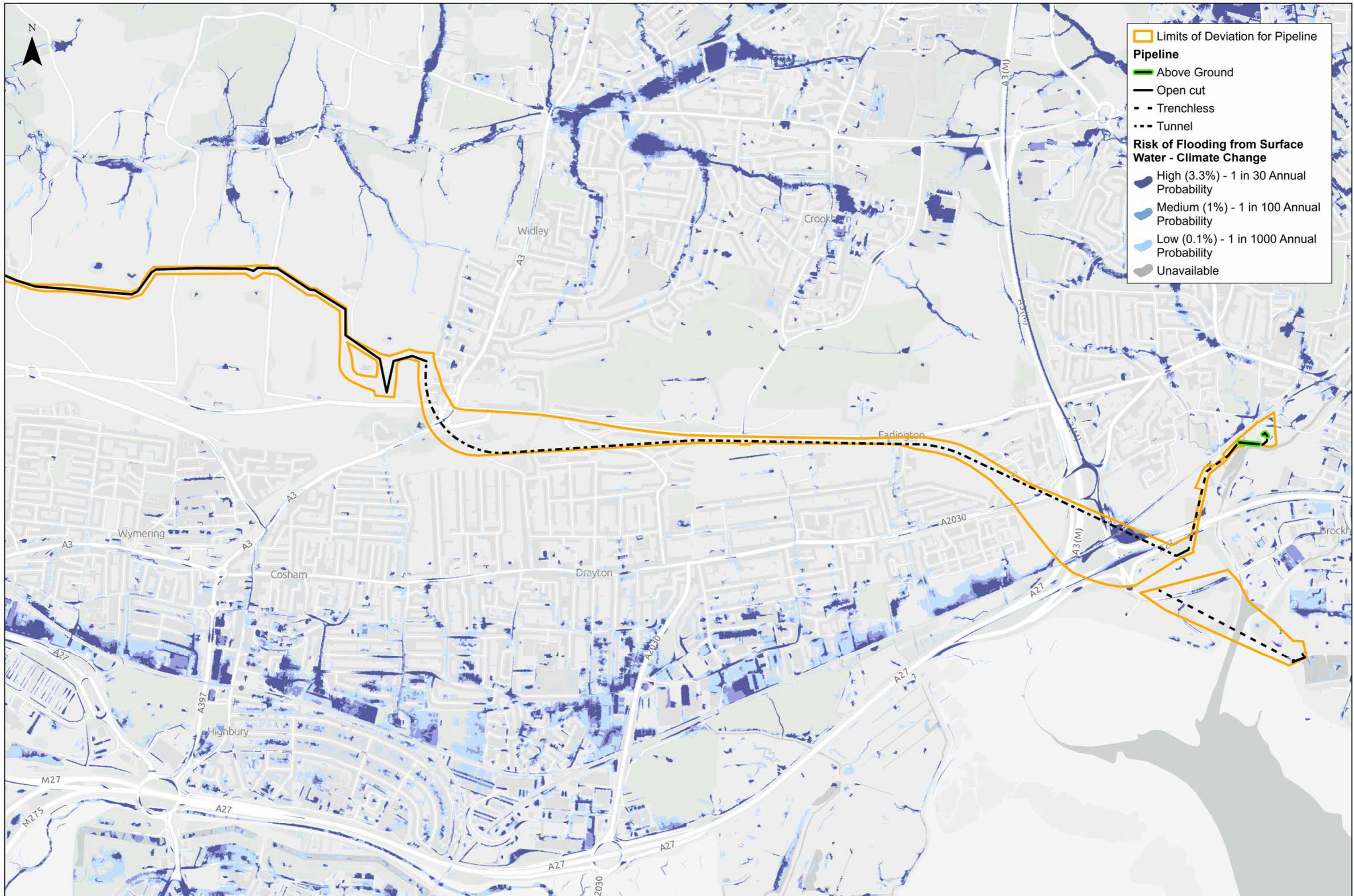


Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Surface Water - Climate Change

0 3,750 7,500 m

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Drawn: WB	Checked: KL
Figure: 05	Rev: 01



Limits of Deviation for Pipeline

Pipeline

- Above Ground
- Open cut
- Trenchless
- Tunnel

Risk of Flooding from Surface Water - Climate Change

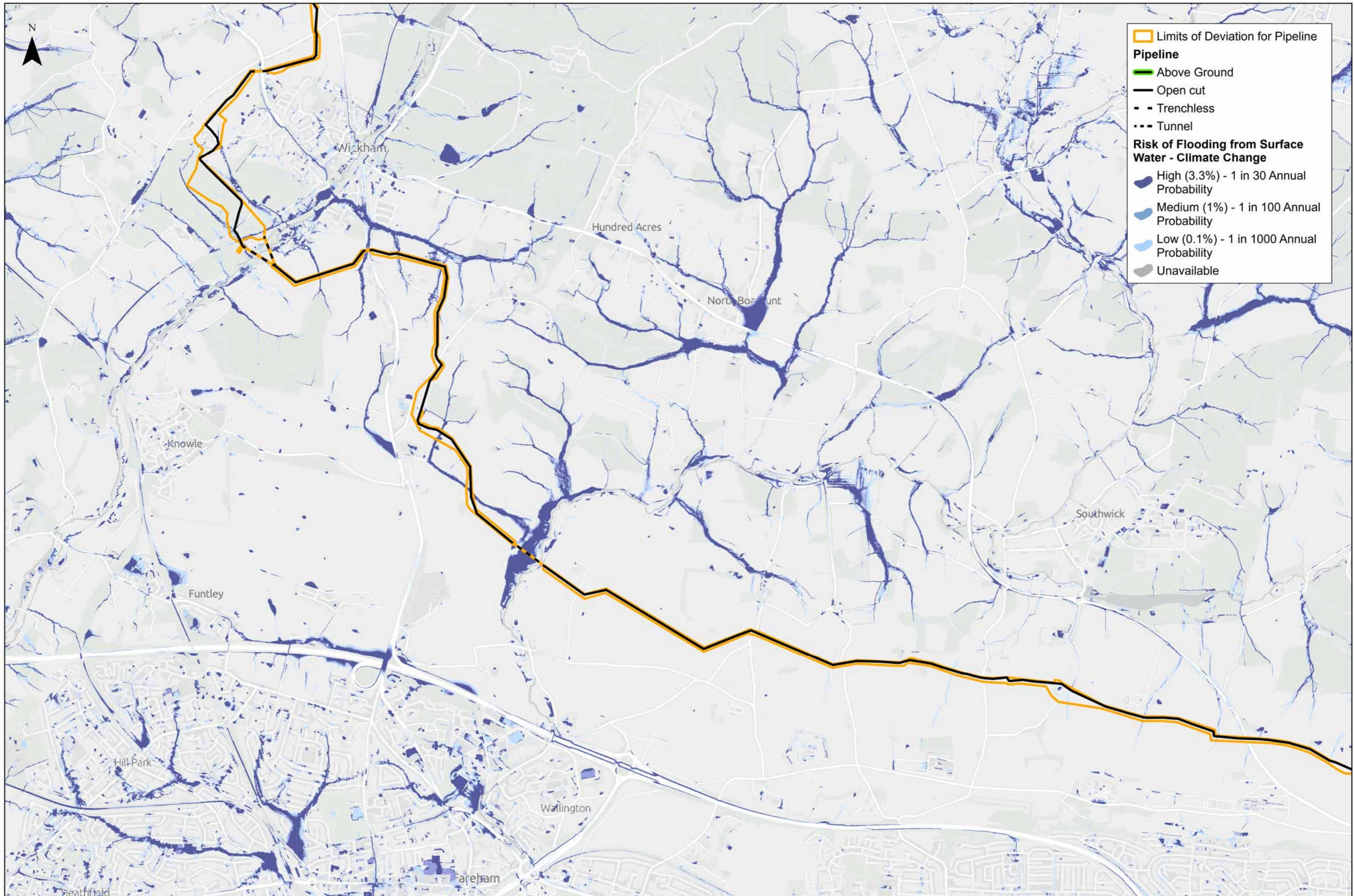
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- Low (0.1%) - 1 in 1000 Annual Probability
- Unavailable



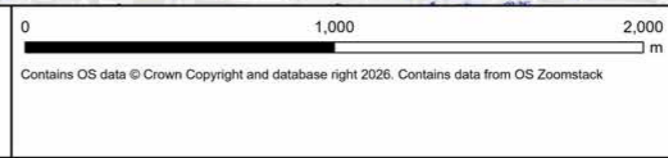
Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Surface Water - Climate Change

0 500 1,000
 m
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1:15,675 @ A3	Date: 30/03/26
Drawn: WB	Checked: KL
Figure: 01	Rev: 01

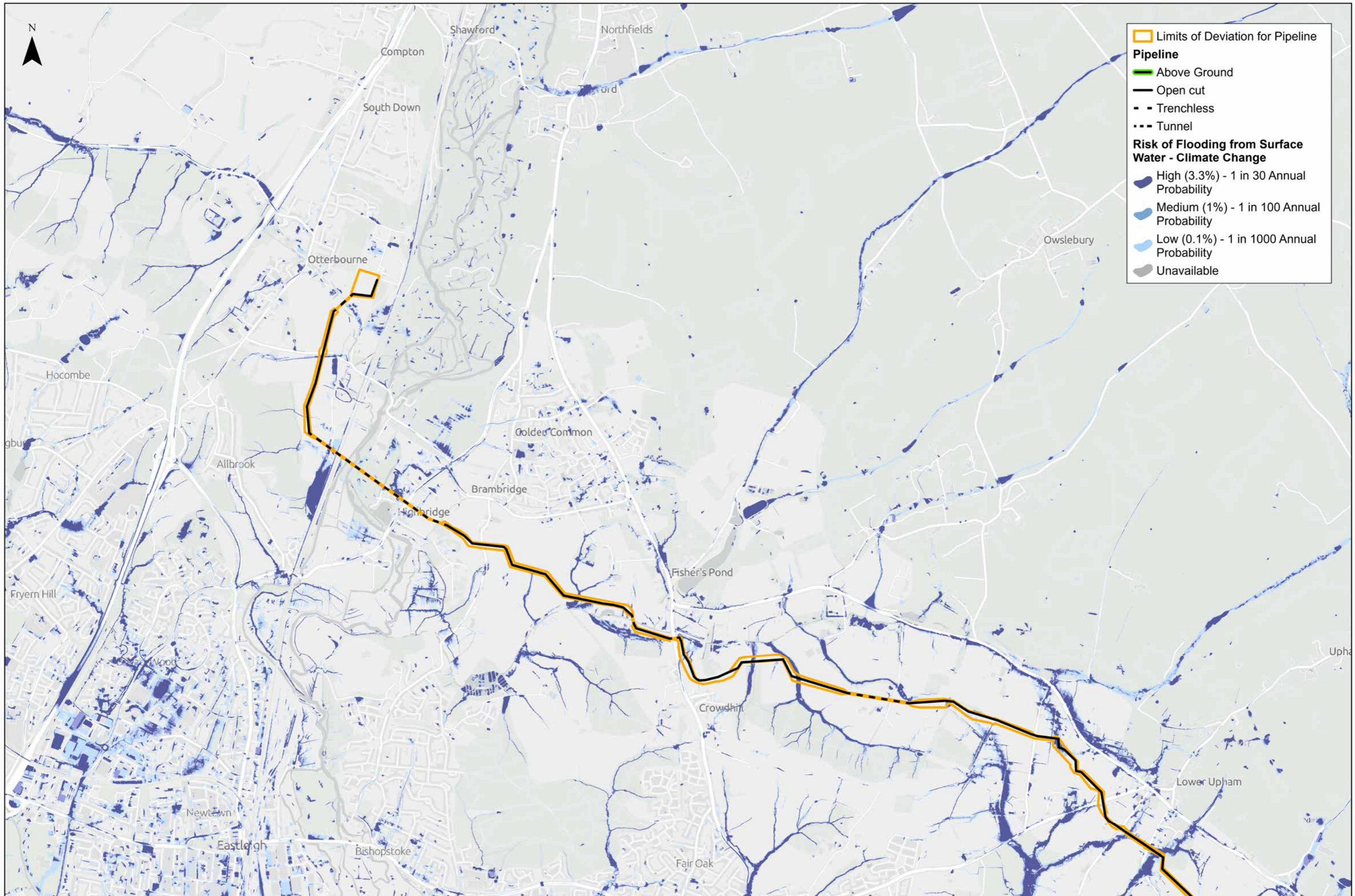


Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Surface Water - Climate Change

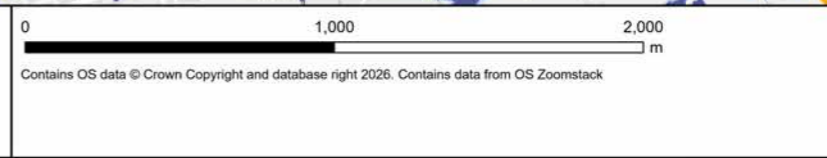


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Drawn: WB	Checked: KL
Figure: 02	Rev: 01





Client
HWTWRP PFRA
 Preferred Pipeline Route
 Environment Agency Risk of Flooding from Surface Water - Climate Change



1:24,492 @ A3	Date: 30/03/26
Drawn: WB	Checked: KL
Figure: 04	Rev: 01



from
Southern
Water. 

The Southern Water logo graphic consists of three white, wavy lines of varying lengths, stacked vertically, resembling a stylized wave or water surface.