

## Hawke Ridge Business Park

### Flood Risk Assessment and Drainage Strategy

For: Hawke Ridge Business Park Ltd and Bellway Homes Ltd

Date: 19/06/2026

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## Document Control

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|     |            |                                      |        |            |

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## Executive Summary

Tumu Consulting Ltd has been commissioned by Hawke Ridge Business Park Ltd and Bellway Homes Limited to prepare a Flood Risk Assessment (FRA) and Surface Water Drainage Strategy in support of a proposed mixed-use development at Hawke Ridge Business Park, Westbury.

The proposed development comprises:

- A retail convenience store;
- Three flexible retail units;
- A roadside drive-through unit;
- A 64-bed care home;
- 249 residential dwellings;
- Associated roads, landscaping, blue-green infrastructure and supporting works.

The site covers approximately 14.58 hectares and is currently agricultural land surrounding the existing Hawke Ridge Business Park.

The assessment has reviewed flood risk from all sources including rivers, surface water, groundwater, sewers, reservoirs and artificial sources. Environment Agency Flood Map for Planning data, detailed hydraulic modelling information, Wiltshire Strategic Flood Risk Assessment data and site-specific topographical information have been utilised.

The assessment concludes that:

- The vast majority of the site is located within Flood Zone 1.
- Small isolated areas adjacent to the Bitham Brook Tributary are located within Flood Zone 2.
- The proposed built development is located entirely within Flood Zone 1.
- The site is at very low risk from tidal, groundwater, sewer and reservoir flooding.
- Surface water flooding represents the principal source of flood risk; however, this can be effectively managed through the proposed drainage strategy.
- Existing drainage ditches intercept upstream catchment runoff and will be retained or diverted as part of the development.
- Finished floor levels and development setbacks provide suitable freeboard above modelled flood levels including climate change allowances.

The proposed surface water drainage strategy adopts Sustainable Drainage Systems (SuDS) principles and includes attenuation ponds, permeable paving, rainwater harvesting, retained drainage ditches and controlled discharge to the Bitham Brook Tributary. The drainage system has been designed to accommodate the 1% Annual Exceedance Probability rainfall event with the required climate change and urban creep allowances.

The proposed development is therefore considered appropriate in terms of flood risk and drainage. The development will not increase flood risk either on-site or elsewhere and is compliant with national planning policy, sustainable drainage standards and Wiltshire Council drainage requirements.

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# 1 Introduction

Tumu Consulting Ltd has been appointed by Hawke Ridge Business Park Ltd and Bellway Homes Limited to undertake a Flood Risk Assessment (FRA) and Drainage Strategy for a proposed mixed-use development at Hawke Ridge Business Park, Westbury.

## 1.1 Site Location

The site is located at Hawke Ridge Business Park, Mill Lane, Hawkeridge, Westbury, BA13 4LD. The site has approximate coordinates of Easting 386393 and Northing 153222, with an Ordnance Survey Grid Reference of ST863532. The site location is shown in Figure 1-1.



**Figure 1-1 Site Location Plan**

As shown in Figure 1-1, the site comprises land parcels located on either side of the existing access road. For clarity, the area outlined in green will be referred to as the Northern Parcel, while the area outlined in yellow will be referred to as the Southern Parcel throughout this report.

## 1.2 Existing Site Usage

The site currently comprises agricultural land surrounding the existing Hawke Ridge Business Park.

## 1.3 Topography

A topographical survey was undertaken by Clifton Survey in January 2026. Survey drawings 454/7121/1A and 454/7121/1B are included within Appendix A.

The site generally falls from west to east, with the highest ground located within the north-western and south-western parts of the site. The highest recorded level is 57.65m AOD within the south-western corner of the site, while the lowest recorded level is approximately 47.10m AOD along the south-eastern boundary.

## 1.4 Geology and Hydrogeology

Ground investigations were undertaken in 2012, 2025 and 2026. Relevant extracts from the Ground Investigation Reports are included within Appendix B.

The investigations established that, within the depth of exploration, the site is generally underlain by the following strata sequence:

- (i) Topsoil and/or Made Ground;
- (ii) Residual Soil;
- (iii) Alluvium; and
- (iv) Oxford Clay Formation.

The Topsoil generally comprised firm brown to dark brown fine-grained soils containing fine plant roots. Where anthropogenic materials such as brick fragments, charcoal, pottery, plastic or ceramics were encountered, the material was classified as Made Ground.

Beneath the Topsoil, a Residual Soil layer was encountered at depths typically ranging between 0.5m and 1.1m below ground level. This layer generally comprised firm to stiff brown and orange-brown slightly silty clay.

According to the British Geological Survey (BGS) Geology Viewer, the site is underlain by the Oxford Clay Formation, comprising silicate mudstone with occasional limestone nodules.

Alluvium was encountered within several exploratory holes located predominantly in the southern and eastern areas of the site. The Alluvium was encountered at depths ranging from 0.3m to 3.7m below ground level and generally comprised firm becoming soft to very soft blue-grey fine-grained soils with varying proportions of sand, gravel and cobbles.

The Oxford Clay Formation was encountered beneath the Topsoil or superficial deposits at depths between 0.35m and 3.7m below ground level and extended to the maximum investigation depth of 4.45m. The formation generally comprised firm to very stiff blue-grey silty clay, often mottled orange-brown, with occasional gypsum, fossil shells, fossilised roots, sand pockets and carbonate concretions.

Groundwater was predominantly encountered within exploratory holes where Alluvium was present, generally between 1.0m and 2.5m below ground level. Monitoring undertaken following the fieldworks recorded groundwater levels ranging between 0.17m and 3.82m below ground level.

There are no licensed groundwater abstractions within 2km of the site, and the site does not lie within an Environment Agency Source Protection Zone (SPZ).

Infiltration testing was undertaken in November 2025. Relevant extracts from the soakaway assessment are included within Appendix B. The results show that infiltration rates were too low to be measured by the BRE 365 methodology.

## 1.5 Hydrology

A tributary of the Bitham Brook flows along the eastern boundary of the site and represents the nearest ordinary watercourse.

The tributary discharges into the Bitham Brook immediately east of the site. The Bitham Brook is the nearest Main River and is located approximately 40m east of the site at its closest point. The Bitham Brook is a tributary of the River Biss, which ultimately flows into the River Avon.

The Environment Agency classifies the Bitham Brook as having a Moderate Ecological Status under the 2022 Water Framework Directive classification.

## 1.6 Existing Drainage

A Wessex Water asset record dated 21 August 2025 has been reviewed to identify existing drainage infrastructure in the vicinity of the site.

No public gravity drainage infrastructure is recorded within the site boundary. However, Wessex Water records identify an existing foul water pumping station located within the south-eastern corner of the Northern Parcel. An associated rising main extends south-west across the site before travelling south along Hawkeridge Road.

The topographical survey identifies a number of existing drainage ditches discharging to the Bitham Brook Tributary via piped outfalls. In addition, several gullies and manholes are present along Hawkeridge Road.

There is a short section of private foul water drainage network linking the Southern Parcel to the existing pumping station. Spurs have also been provided on this gravity network to connect the Northern Parcel to the existing pumping station

# 2 Development Proposals

## 2.1 Description of the Proposed Development

The proposed development comprises the redevelopment of approximately 14.58 hectares of agricultural land to provide:

- One retail convenience store (Use Class E) with a Gross External Area (GEA) of approximately 345 m<sup>2</sup>;
- Three flexible retail units (Use Class E) with a combined Gross External Area (GEA) of approximately 426 m<sup>2</sup>;
- One roadside drive-through unit (sui generis) with a Gross External Area (GEA) of approximately 275 m<sup>2</sup>;
- A 64-bed care home (Use Class C2) with a Gross External Area (GEA) of approximately 3,143 m<sup>2</sup>;
- 249 residential dwellings (Use Class C3) with a combined Gross Internal Area (GIA) of approximately 23,136 m<sup>2</sup>; and
- Associated access roads, parking, landscaping, green infrastructure, blue infrastructure and ancillary works.

A proposed Site Layout Plan is included within Appendix D.

## 2.2 Flood Risk Vulnerability Classification

In accordance with Annex 3 of the National Planning Policy Framework (NPPF), the proposed residential dwellings and care home are classified as More Vulnerable Development.

The proposed retail convenience store, flexible retail units and roadside drive-through unit are classified as Less Vulnerable Development.

The proposed development vulnerability classifications are illustrated in Figure 2-1 below.

### More vulnerable

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

### 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.

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

## 2.3 Design Life

In accordance with the Government's Flood Risk Assessments: Climate Change Allowances guidance(<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>), the residential development and care home are assumed to have a design life of 100 years and are therefore assessed using the relevant climate change allowances applicable to that design life.

The commercial elements of the development, comprising the retail and drive-through units, are assumed to have a design life of 50 years in accordance with BS EN 1990: Basis of Structural Design and the UK National Annex.

The flood risk assessment and drainage strategy presented within this report have been developed using the appropriate climate change allowances for the respective development lifespans..

### 3 Assessment of Flood Risk

This section of the FRA assesses flood risk from a variety of sources, including the Government's Long Term Flood Risk dataset and the Flood Map for Planning (FMfP). Product 4 (P4) data for the site was requested in August 2025. The Environment Agency (EA) provided model output data (Product 6), calibrated and verified model input files (Product 7), and associated model reporting (Product 5) in December 2025. This data has been used to inform the assessment of Bitham Brook flood extents across the site.

#### 3.1 Flood Map for Planning

The EA's Flood Map for Planning shows that the majority of the site is located within Flood Zone 1, which corresponds to land having an annual probability of river and sea flooding of less than 0.1% Annual Exceedance Probability (AEP)

Flood Zone 3 extents are largely contained within the Bitham Brook Tributary. Flood Zone 2 extents are, for the most part, confined to the banks of the Bitham Brook Tributary, except in three localised locations close to the western bank.

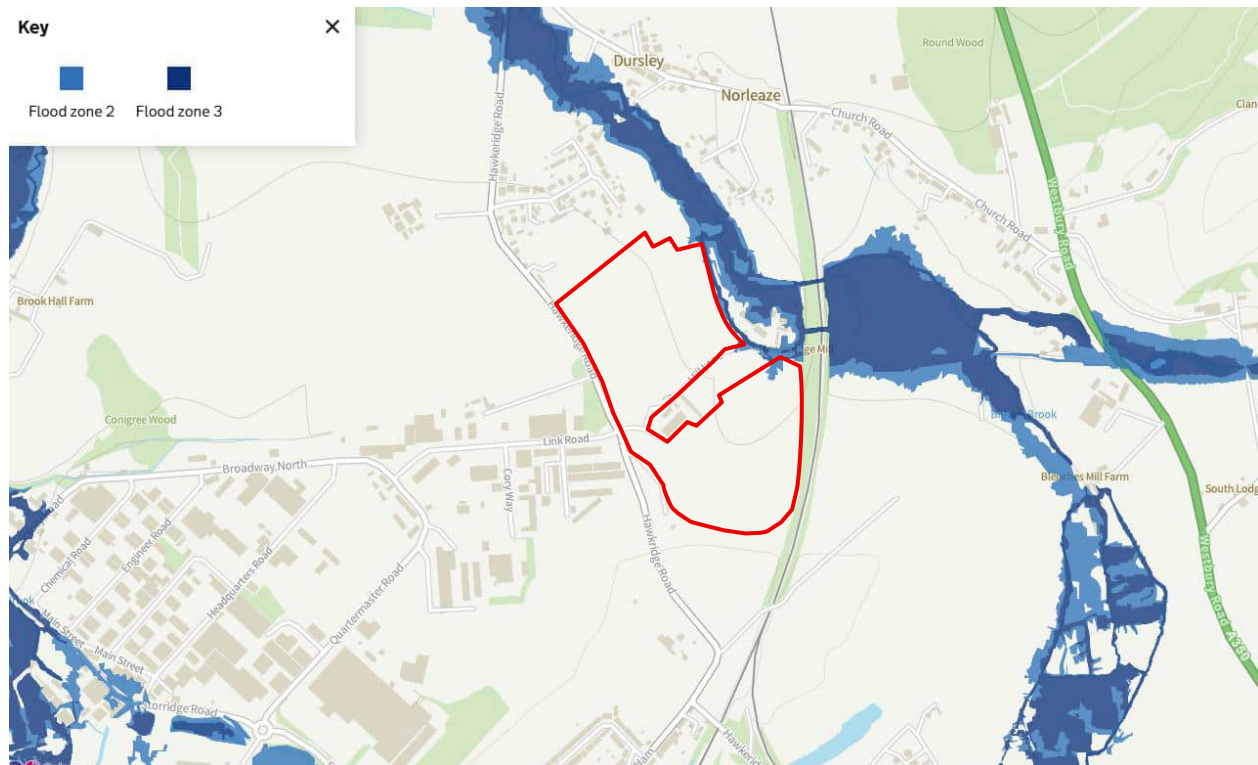


Figure 3-1 Extract from Flood Map for Planning

#### 3.2 Fluvial Flooding

Fluvial flood risk refers to flooding from rivers and watercourses.

To further assess fluvial flood risk, EA Product 6 and Product 7 datasets were obtained for Bitham Brook. The Wiltshire Strategic Flood Risk Assessment (SFRA) (2024) ArcGIS viewer was also reviewed. Extracts of the EA model outputs are included in Appendix E.

The modelled Bitham Brook nodes nearest to the site are shown in Figure 3-2 and Figure 3-3 below, along with the TUMU drawing 20001-TUM-AP-XXX-0002 in Appendix F.

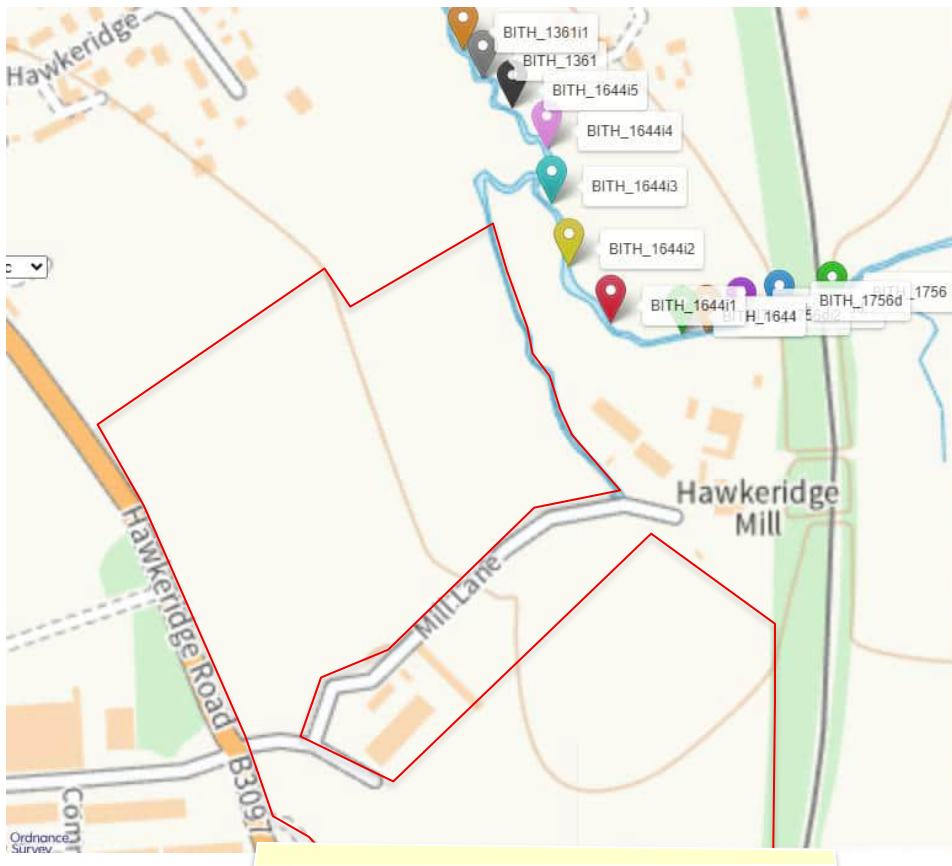


**Figure 3-2** Bitham Book Modelled selection Close the site

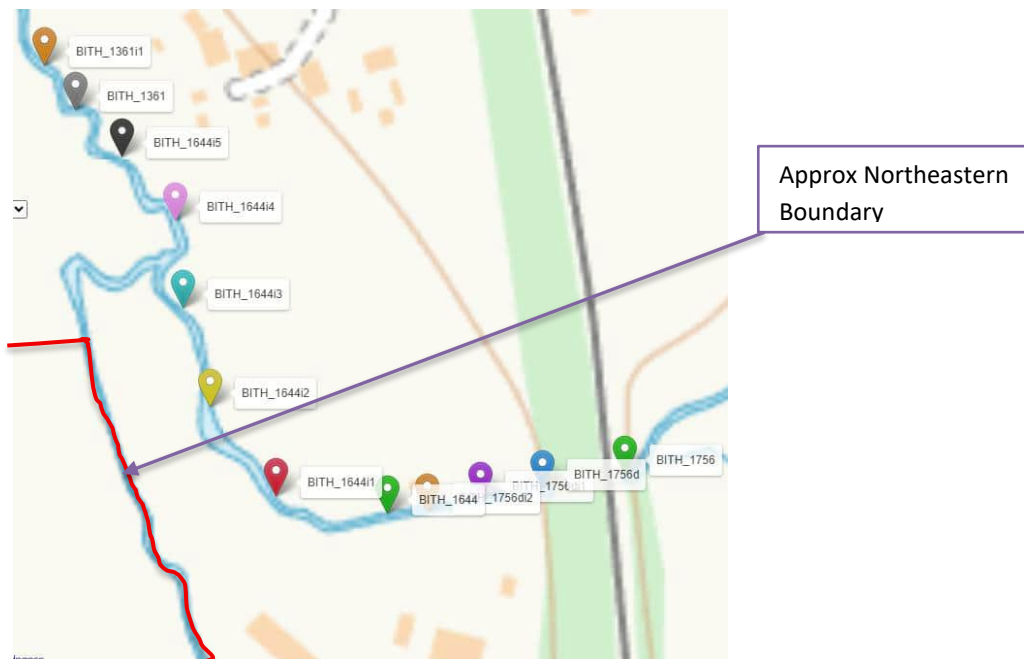


**Figure 3-3** Zoomed in Bitham Brook Sections

Modelled water levels at each node are presented in Table 3-1 below. These levels were used, together with site topographical data, to derive flood extents shown on drawing 20001-TUM-AP-XXX-0002 (Appendix F).

The drawing shows that Flood Zone 3 extents are largely confined within the Bitham Brook channel forming the eastern boundary of the site. This is consistent with both EA Product 6 outputs and the FMfP.

Flood Zone 2 extents are similarly largely contained within the channel, although two localised areas show overtopping of the western bank during the 0.1% annual exceedance probability (AEP) event.

The flood extents presented on drawing 20001-TUM-AP-XXX-0002 are adopted for this assessment, as they incorporate EA model outputs and site-specific topographical data.

Overall, the majority of the site lies within Flood Zone 1, with only very localised areas adjacent to the western bank of the Bitham Brook falling within Flood Zone 2.

### Climate Change Allowances

In accordance with Environment Agency (EA) guidance, climate change has been considered in the assessment of fluvial flood levels. Figure 3-4 below shows the EA Flood Map for Planning flood extents associated with climate change for the 2070–2115 epoch. The climate change flood extents are based on the 0.1% Annual Exceedance Probability (AEP) event, plus the associated climate change allowance. These extents are primarily limited to areas adjacent to the Bitham Brook Tributary.

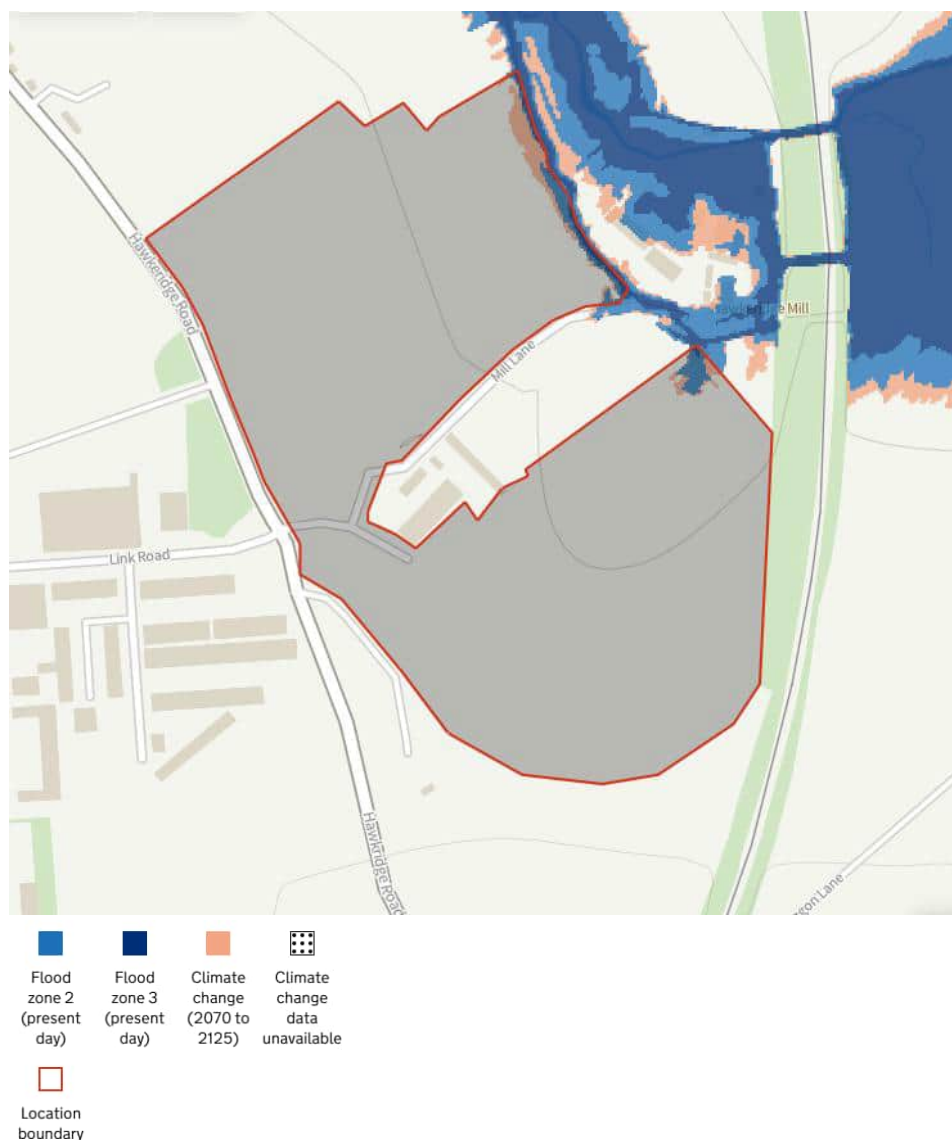


**Figure 3-4** Climate change flood extents based on the EA Flood Map for Planning

The site lies within the Avon Bristol and North Somerset Streams Management Catchment Area.

The EA defines three peak river flow allowances:

- Central allowance (50th percentile)
- Higher central allowance (70th percentile)
- Upper end allowance (95th percentile)

For this development, EA guidance recommends use of the central allowance, as the site is classified as “more vulnerable.” The 2080s epoch has been adopted to reflect a design life of 100 years. Accordingly, a central peak river flow allowance of 26% has been applied for the assessment. Figure 3-5, shows the applicable climate change allowance for the catchment.

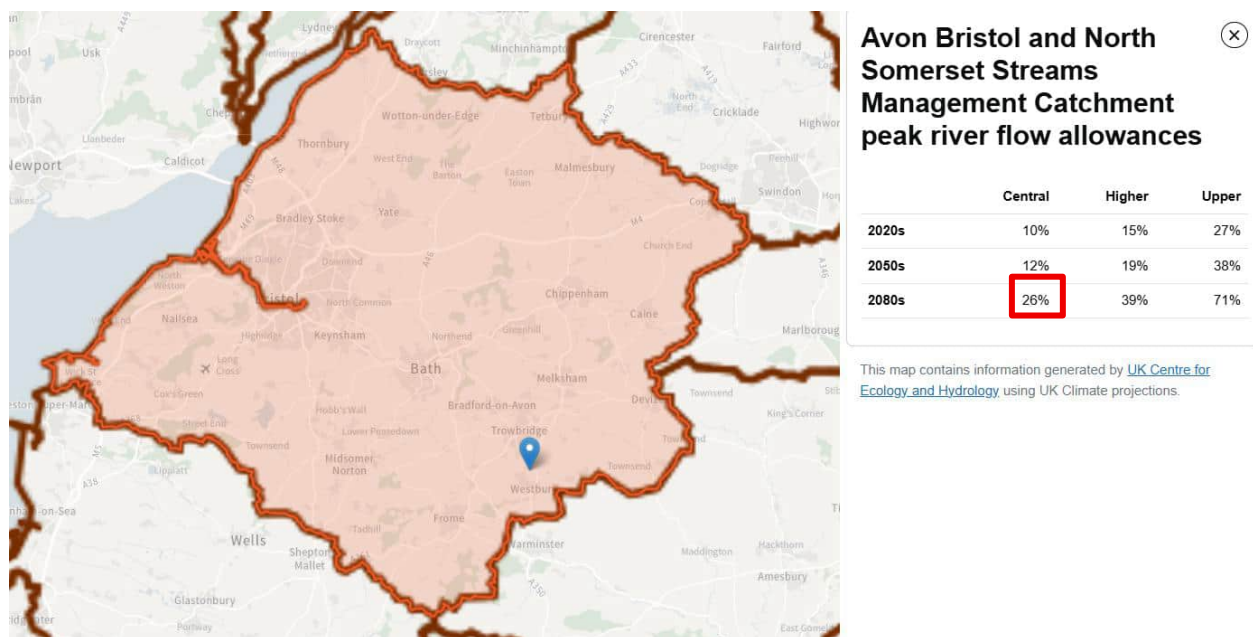


**Figure 3-5 Avon Bristol and North Somerset Streams Catchment Peak River Flow Allowances.**

EA guidance requires the Flood Risk Assessment (FRA) to consider the estimated flood level affecting the proposed development over its lifetime, taking account of the impacts of climate change. The estimated flood level is defined as the depth of flooding anticipated at the development site during the design flood event.

The design flood is defined as either:

- A river flood with a 1% AEP, plus the appropriate allowance for climate change; or
- A tidal flood with a 0.5% AEP, plus the appropriate allowance for climate change.

As the site is not affected by tidal flooding, the relevant design flood for this assessment is the 1% AEP fluvial flood event, with a 26% climate change allowance applied.

| Node Name           | Location Easting | Location Northing | 019_TRO_BISS_DEFE<br>N_SD1_20<br>23_F0002_<br>CC000.csv | 019_TRO_BISS_DEFE<br>N_SD1_20<br>23_F0020_<br>CC000.csv | 019_TRO_BISS_DEFE<br>N_SD1_20<br>23_F0030_<br>CC000.csv | 019_TRO_BISS_DEFE<br>N_SD1_20<br>23_F0100_<br>CC000.csv | 019_TRO_BISS_DEFE<br>N_SD1_20<br>23_F1000_<br>CC000.csv | 019_TRO_BISS_DEFE<br>N_SD1_20<br>80_F0100_<br>CC026.csv | 019_TRO_BISS_DEFE<br>N_SD1_20<br>80_F0100_<br>CC039.csv | 019_TRO_BISS_DEFE<br>N_SD1_20<br>80_F0100_<br>CC071.csv |
|---------------------|------------------|-------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
|                     |                  |                   |                                                         |                                                         |                                                         |                                                         |                                                         |                                                         |                                                         |                                                         |
| <b>BITH_1361</b>    | 386518.393<br>1  | 153685.875        | 45.337                                                  | 45.653                                                  | 45.718                                                  | 45.924                                                  | 46.406                                                  | 46.103                                                  | 46.173                                                  | 46.359                                                  |
| <b>BITH_1361i1</b>  | 386503.967       | 153706.171        | 45.235                                                  | 45.530                                                  | 45.591                                                  | 45.787                                                  | 46.261                                                  | 45.961                                                  | 46.031                                                  | 46.215                                                  |
| <b>BITH_1361i2</b>  | 386488.425       | 153751.616        | 45.137                                                  | 45.418                                                  | 45.476                                                  | 45.663                                                  | 46.119                                                  | 45.829                                                  | 45.897                                                  | 46.075                                                  |
| <b>BITH_1644</b>    | 386658.96        | 153503.712        | 46.438                                                  | 46.657                                                  | 46.693                                                  | 46.808                                                  | 47.182                                                  | 46.916                                                  | 46.976                                                  | 47.126                                                  |
| <b>BITH_1644d</b>   | 386652.956       | 153503.133        | 46.437                                                  | 46.657                                                  | 46.692                                                  | 46.808                                                  | 47.162                                                  | 46.909                                                  | 46.963                                                  | 47.110                                                  |
| <b>BITH_1644i1</b>  | 386608.601       | 153511.5428       | 46.208                                                  | 46.438                                                  | 46.476                                                  | 46.612                                                  | 46.994                                                  | 46.739                                                  | 46.799                                                  | 46.951                                                  |
| <b>BITH_1644i2</b>  | 386578.515       | 153551.6951       | 45.984                                                  | 46.241                                                  | 46.292                                                  | 46.463                                                  | 46.905                                                  | 46.621                                                  | 46.685                                                  | 46.859                                                  |
| <b>BITH_1644i3</b>  | 386566.617       | 153596.405        | 45.770                                                  | 46.094                                                  | 46.161                                                  | 46.369                                                  | 46.849                                                  | 46.547                                                  | 46.615                                                  | 46.801                                                  |
| <b>BITH_1644i4</b>  | 386562.984       | 153635.842        | 45.579                                                  | 45.885                                                  | 45.945                                                  | 46.139                                                  | 46.592                                                  | 46.305                                                  | 46.371                                                  | 46.547                                                  |
| <b>BITH_1644i5</b>  | 386539.360       | 153665.125        | 45.431                                                  | 45.747                                                  | 45.811                                                  | 46.013                                                  | 46.483                                                  | 46.186                                                  | 46.256                                                  | 46.437                                                  |
| <b>BITH_1756</b>    | 386766.197       | 153521.63         | 47.578                                                  | 47.746                                                  | 47.778                                                  | 47.893                                                  | 48.165                                                  | 47.998                                                  | 48.055                                                  | 48.149                                                  |
| <b>BITH_1756d</b>   | 386728.756       | 153515.068        | 47.561                                                  | 47.707                                                  | 47.733                                                  | 47.830                                                  | 48.045                                                  | 47.914                                                  | 47.959                                                  | 48.032                                                  |
| <b>BITH_1756di1</b> | 386700.523       | 153510.192        | 47.103                                                  | 47.257                                                  | 47.284                                                  | 47.381                                                  | 47.606                                                  | 47.465                                                  | 47.515                                                  | 47.590                                                  |
| <b>BITH_1756di2</b> | 386677.247       | 153505.110        | 46.70                                                   | 46.889                                                  | 46.921                                                  | 47.031                                                  | 47.305                                                  | 47.127                                                  | 47.182                                                  | 47.279                                                  |

**Table 3-1**      **Modelled Flood Water Level for Bitham Brook.**

Modelled flood levels to be used for finished floor level (FFL) derivation will be taken from:

- Node Bith\_1644d (northern parcel)
- Node Bith\_1756di1 (southern parcel)

This information is also detailed on drawing 20001-TUM-AP-XXX-0002 in Appendix F and in the tables below.

| Flood Event                            | Node 1644d Flood Level (mAOD) |
|----------------------------------------|-------------------------------|
| 1.0% AEP                               | 46.81                         |
| 1.0% AEP + 26% CC (Design Flood level) | 46.91                         |
| 0.1% AEP                               | 47.16                         |

**Table 3-2** Modelled Flood Level Data for Node 1644d for the Northern Parcel.

| Flood Event                            | Node 1756di1 Flood Level (mAOD) |
|----------------------------------------|---------------------------------|
| 1.0% AEP                               | 47.38                           |
| 1.0% AEP + 26% CC (Design Flood Level) | 47.47                           |
| 0.1% AEP                               | 47.61                           |

**Table 3-3** Modelled Flood Level Data for Node 1756di1 for the Southern Parcel.

### 3.3 Surface Water Flood Risk

Surface water (pluvial) flooding refers to flooding caused by rainfall that cannot infiltrate or be conveyed by drainage systems, resulting in overland flow and ponding.

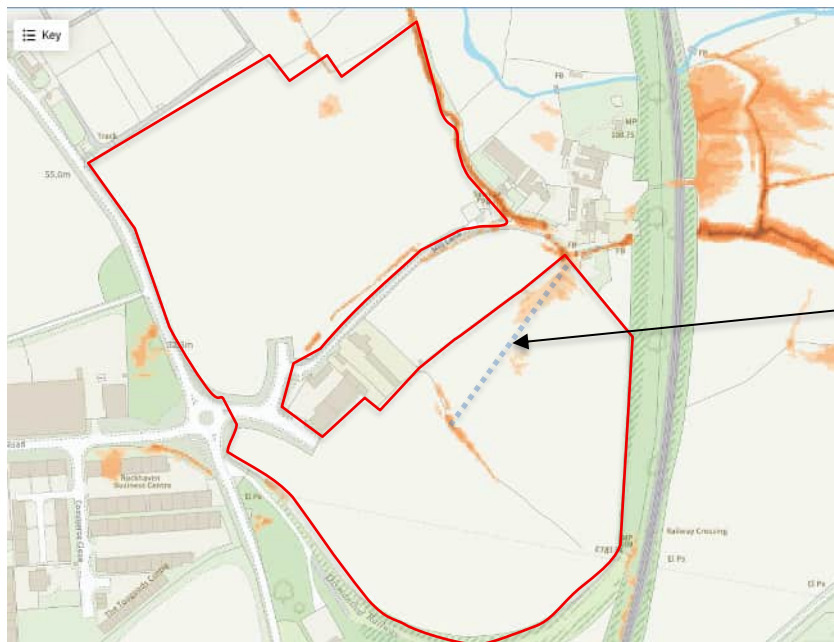
The EA's Long Term Flood Risk Data classifies surface water flood risk into four categories:

- High chance (>3.3%)
- Medium chance (1%–3.3%)
- Low chance (0.1%–1%)
- Very low chance (<0.1%)

The dataset indicates that the majority of the site is at very low risk of surface water flooding.

Figure 3-6 to Figure 3-8 below illustrate modelled pluvial flooding extents for the 3.3%, 1.0% and 0.1% AEP events. Areas of ponding correspond to low points within the site, with flood extents increasing under rarer rainfall events..

The existing drainage drawing in Appendix C shows existing ditches that intercept flows from upstream of the southern parcel. These ditches direct overland flows to the Bitham Brook Tributary via pipe outfalls. As a result, flow through the central low point within the southern parcel will primarily originate from rainfall generated within the site, as off-site flows are diverted through existing ditches and pipe outfalls. The EA surface water flood extents are therefore conservative, as they do not account for the presence of underground drainage infrastructure that is shown on the drawing drainage features drawing in Appendix C.



There is an existing pipe outfall in this location not accounted for in the EA surface water models (see existing drainage in drawing in Appendix C)

**Figure 3-6** EA Flood Map for Planning – Pluvial 3.3% AEP



**Figure 3-7** EA Flood Map for Planning – Pluvial 1.0% AEP

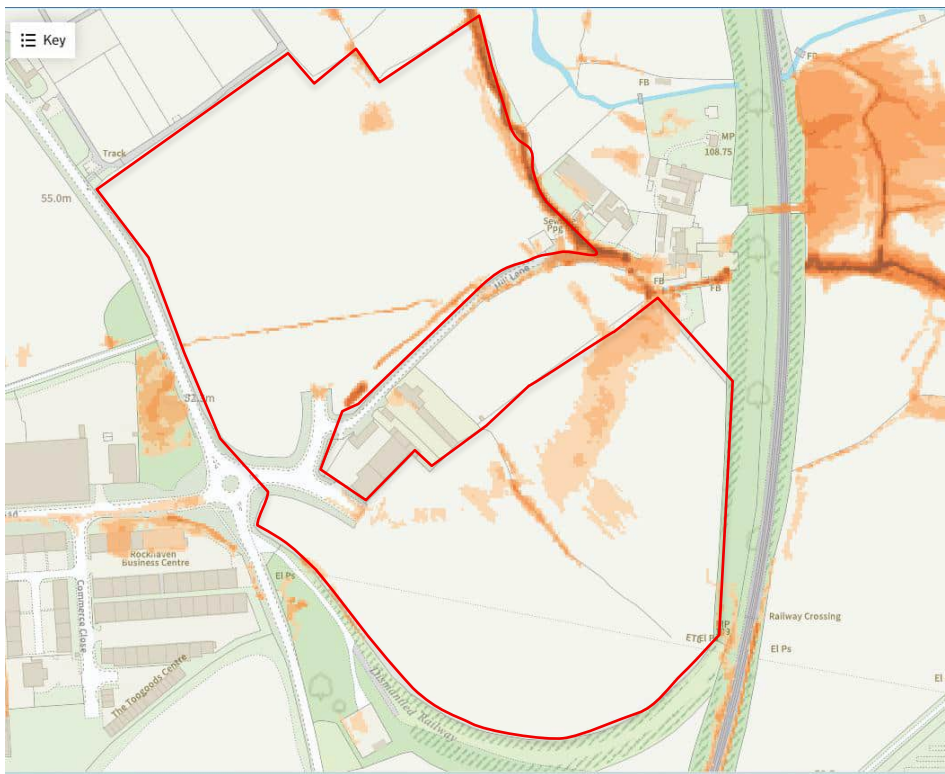


**Figure 3-8 EA Flood Map for Planning – Pluvial 0.1% AEP**

### 3.4 Tidal Flood Risk

Watercourses in proximity to the site are not tidally influenced. Therefore, the risk of tidal flooding is very low.

### 3.5 Sewers: Combined, Foul, or Surface Water Flood Risk

As discussed in Section 1.6, the only recorded drainage on site is the foul/combined pumping station in the south-eastern corner of the northern section. There are no known live sewers on the site thus the risk of flooding from sewers on the site is negligible. The Wiltshire SFRA Viewer (extract shown below) indicates no recorded sewer flooding incidents.

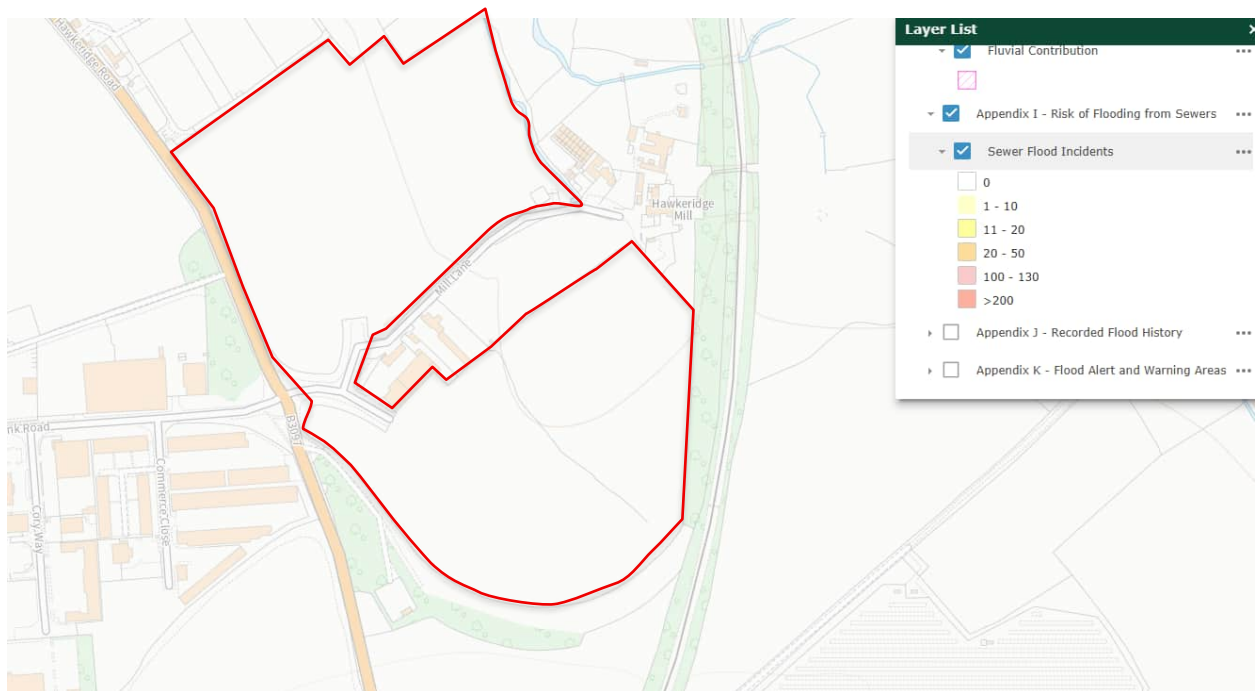


**Figure 3-9 Wiltshire SFRA Viewer – Sewer Flooding Incidents**

### 3.6 Groundwater Flood Risk

Groundwater flood risk refers to flooding arising from groundwater emergence. The Wiltshire Strategic Flood Risk Assessment (SFRA) viewer classifies the site as having negligible groundwater flood risk, the lowest category within the dataset., see extract below

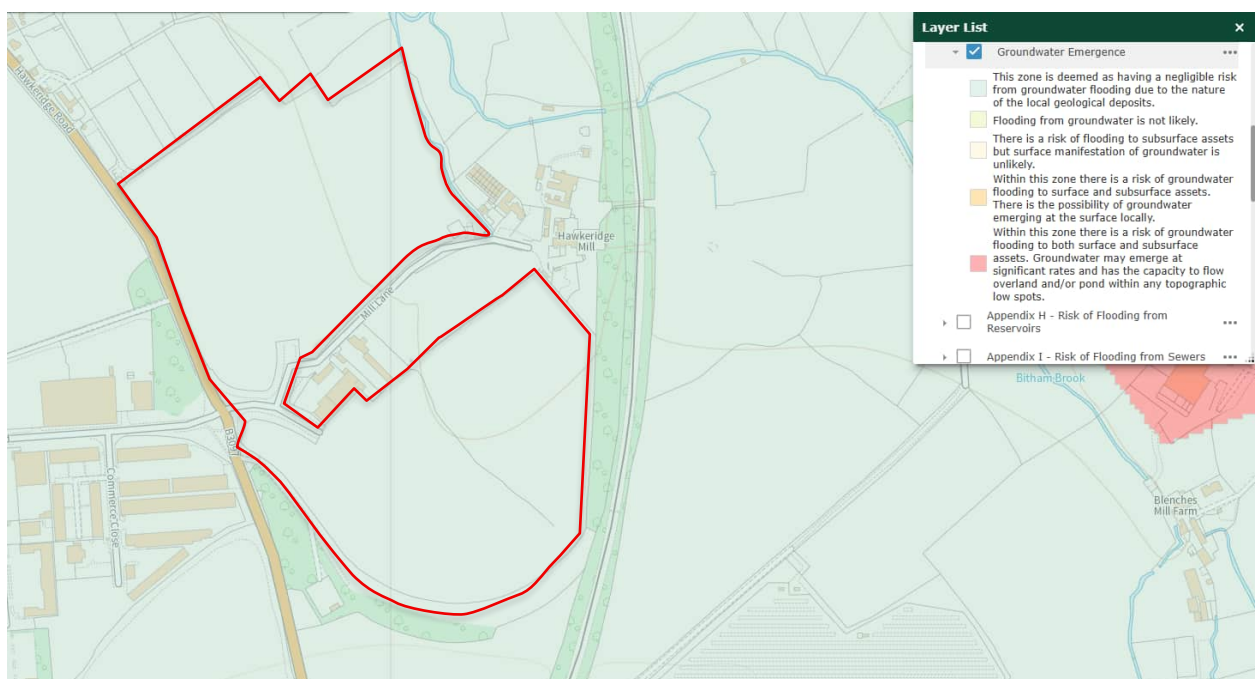


**Figure 3-10 Wiltshire SFRA Viewer - Groundwater Emergence**

### 3.7 Reservoirs, Canals, & Other Artificial Sources

According to the GOV.UK Long Term Flood Risk Data, the majority of the site is not at risk of reservoir flooding.

However, a small area along the eastern boundary of the northern parcel is shown to be at risk of reservoir flooding, primarily in scenarios where fluvial flooding is also occurring.

The reservoir associated with this risk is Fullingbridge Lake (ID273), located approximately 2 km east of the site. It is privately owned and operated as a fishing lake.

Reservoir flooding is considered highly unlikely and would only occur in the event of dam or reservoir failure. Reservoirs are subject to ongoing monitoring and regulation, which further reduces this risk.

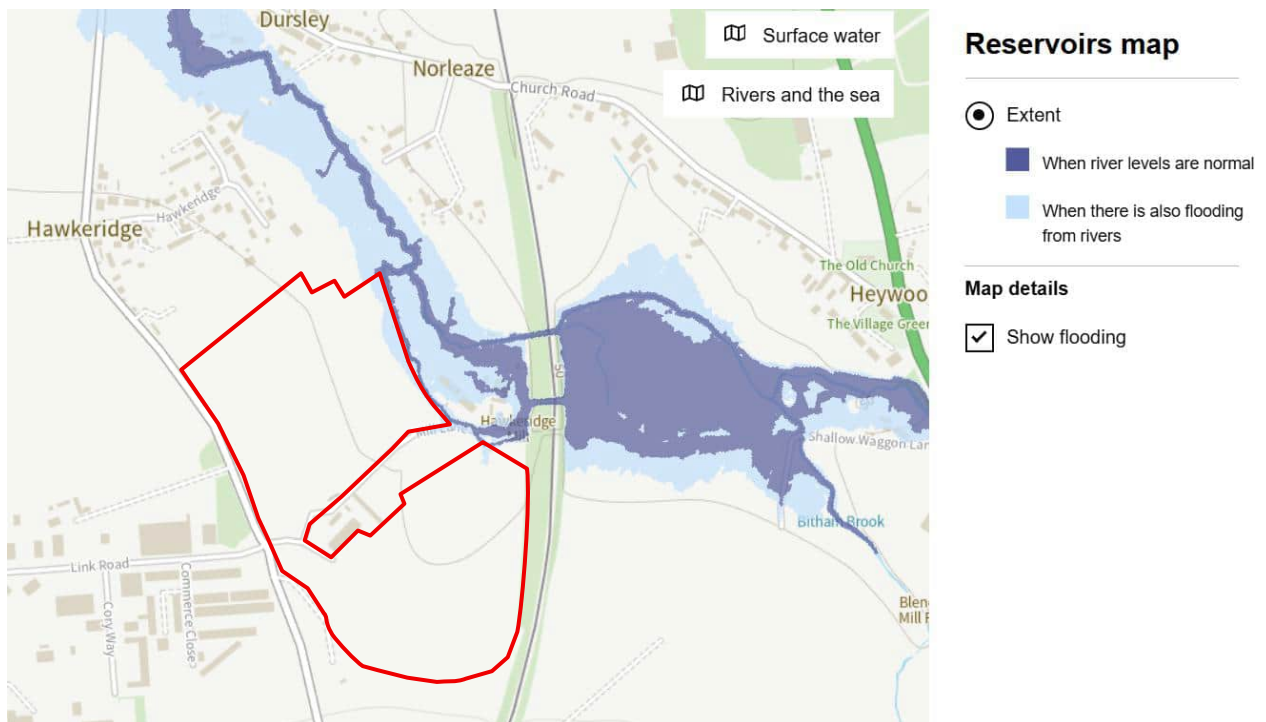


**Figure 3-11** Extract of Reservoirs Inundation Map

### 3.8 Historical Flooding

According to the Recorded Flood Outline Map (DEFRA), the northern section of the site has experienced two recorded flooding events, as shown in Figure 3-12 below. These occurred in 1925 and 1932. The 1925 event had minimal impact, while the 1932 event affected the eastern portion of the northern parcel.

The Figure 3-12 has been produced using DEFRA Recorded Flood Outlines data overlaid onto OS Open Map – Local.

The extents were confirmed through visual inspection and are considered broadly consistent with EA Product 6 data and the Flood Map for Planning

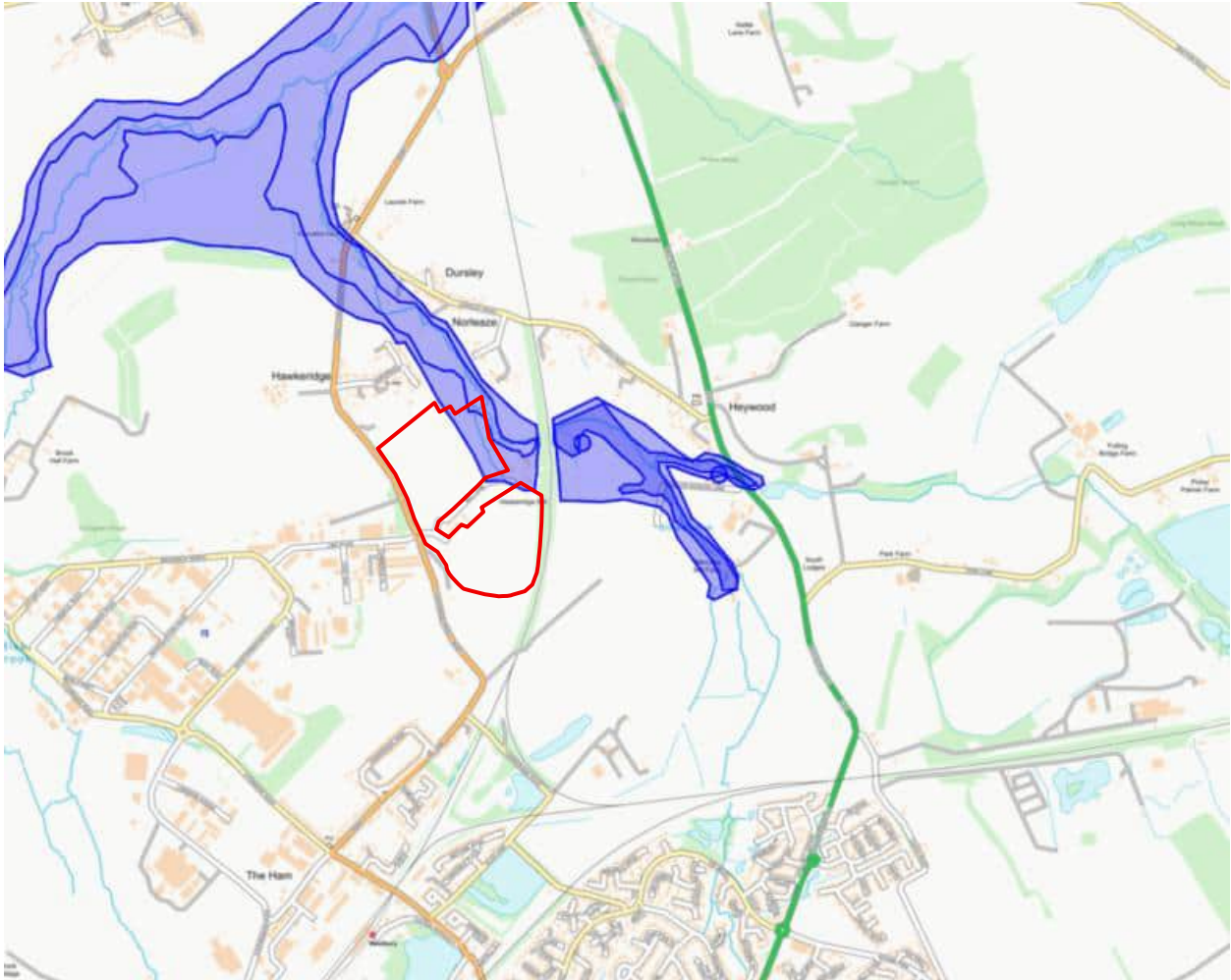


**Figure 3-12** Recorded Flood Outlines Map (DEFRA) overlaid on the OS Open Map – Local.

### 3.9 Flood Risk Summary

The site is predominantly located within Flood Zone 1, with two very small areas adjacent to the western bank of the Bitham Brook falling within Flood Zone 2.

The site is at very low risk of fluvial, tidal, groundwater, and sewer flooding. The majority of the site is also at very low risk of reservoir flooding, including scenarios where reservoir flooding coincides with fluvial flooding.

The principal source of flood risk identified is pluvial (surface water) flooding within the central part of the southern parcel. EA Flood Map for Planning extents are considered conservative when compared with the Wiltshire SFRA. In addition, EA pluvial modelling does not include existing underground drainage infrastructure; therefore, actual surface water extents are smaller if they ever exist at all due to the presence of underground drainage infrastructure.

### 3.10 Flood Zone Compatibility of Development

The proposed dwellings and access road (more vulnerable development) will be located at least 50 m from the western bank of the Bitham Brook Tributary. The development area lies within Flood Zone 1, and dwellings, classified as “more vulnerable,” can be located within this zone in accordance with the Government’s Flood Risk Vulnerability Classification and Flood Zone Compatibility Table.

## 4 Mitigation of Risk

### 4.1 Fluvial Flood Risk

Although the site is located within Flood Zone 1, measures have been implemented to ensure that dwellings and access roads are appropriately positioned with respect to the Bitham Brook Tributary.

As a general principle, dwellings and access roads have been restricted to locations at least 50 m from the western bank of the Bitham Brook Tributary. This ensures that development is located on higher ground and outside areas of potential flood influence.

Within the northern parcel, the modelled 1% AEP + 26% climate change water level is 46.91 m AOD. Dwellings and access roads are located more than 50 m from the western bank of the Bitham Brook Tributary. The minimum existing ground level in this area is approximately 48.40 m AOD, providing a freeboard in excess of 1.0 m above the design flood level.

Within the southern parcel, dwellings and access roads are located over 100 m from the Bitham Brook Tributary. The 1% AEP + 26% climate change water level is 47.47 m AOD, while the lowest existing ground level within the development area is approximately 48.40 m AOD. This provides a freeboard of approximately 0.9 m above the design flood level.

### 4.2 Finished Floor Levels

Finished floor levels (FFLs) across the site shall be set a minimum of 150 mm above proposed external ground or road levels. FFLs shall be no lower than the 1% AEP + 26% climate change water level + 600 mm ie:

- 47.51 m AOD within the northern parcel
- 48.07 m AOD within the southern parcel.

### 4.3 Surface Water Flooding

Existing ditches that intercept overland flow routes from upstream catchments will be retained and, where necessary, re-directed to discharge to the Bitham Brook Tributary. Where culverting is required, culverts will be designed with sufficient capacity to convey design flows.

The proposed development will incorporate a site-wide drainage system to manage surface water runoff such that:

- No flooding occurs for events up to the 3.3% AEP (including climate change allowance)
- No flooding to buildings occurs for events up to the 1% AEP (including climate change allowance)
- Surface water is discharged off-site at controlled rates for all events up to the 1% AEP (including climate change allowance)

Safe exceedance flow routes will be provided to ensure that, in the event of exceedance or blockage, surface water is directed away from properties and critical infrastructure. By using the measure above, the development will not be at risk of surface water flooding and will not increase surface water flooding elsewhere.

Further details of surface water management are provided in Section 5, and maintenance arrangements are set out in Section 6.

## 5 Surface Water Drainage Strategy

### 5.1 Introduction

The surface water drainage strategy has been developed in accordance with relevant guidance and standards, including:

- CIRIA C753 The SuDS Manual
- National Planning Policy Framework (NPPF)
- Building Regulations Approved Document H
- National Standards for Sustainable Drainage Systems (NSS)
- Wiltshire Council Drainage and Betterment Policy (2024)

The National Standards for SuDS state that surface water runoff should be managed in accordance with a drainage hierarchy and should not result in an increase in flood risk off-site. The Standards also require that runoff is controlled to ensure no flooding occurs on-site for frequent events and that buildings and critical infrastructure are protected for more extreme rainfall events.

### 5.2 Roads Adoption Strategy

It is proposed that the majority of roads within the site will be offered for adoption under a Section 38 Agreement. Figure 5-1 identifies the extent of adoptable highways.

Drainage design for adoptable roads will comply with Wiltshire Highways standards, which in turn influence the allowable SuDS components.

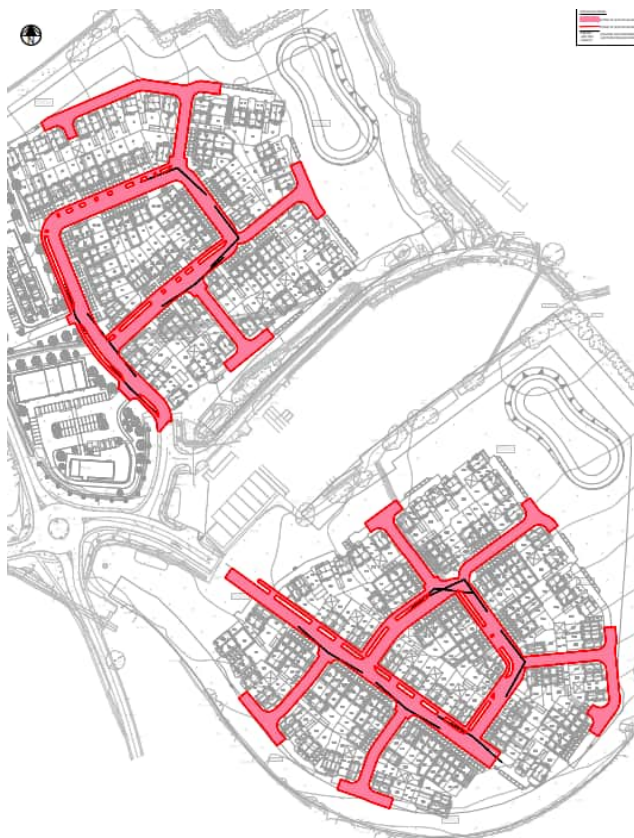


**Figure 5-1**      **Extent of roads (in red) to be offered for Adoption**

### 5.3 Surface Water Drainage Arrangements

The surface water drainage strategy drawings are included in Appendix G. Also included in appendix G are drainage areas plans

Due to site topography, the development is split into two drainage catchments:

- Southern parcel (Catchment 1)
- Northern parcel (Catchment 2)

The drainage strategy has been developed following review of the drainage hierarchy, existing discharge constraints, and available SuDS options.

### 5.4 Disposal Hierarchy

In accordance with the National Standards for SuDS – Standard 1 (Runoff Destinations), surface water discharge should follow the following hierarchy:

1. Water reuse
2. Infiltration systems (where feasible)
3. Discharge to watercourse
4. Discharge to surface water sewer
5. Discharge to combined sewer

Rainwater harvesting will be provided via water butts within residential plots. These will provide water for garden irrigation and other non-potable uses (e.g. cleaning external surfaces, car washing ). Each water butt will include an overflow connection to the surface water drainage system to ensure a controlled discharge route is always available.

Infiltration testing undertaken in accordance with BRE 365 confirms that infiltration is not feasible due to ground conditions (Appendix B).

Surface water will therefore discharge to the Bitham Brook Tributary via controlled outfalls.

### 5.5 Management of Surface water flows - Discharge rate

The site is currently greenfield. Greenfield runoff rates (QBAR, Q30, Q100) are presented in 2Table 5-1 below.

In accordance with Wiltshire Council Betterment Policy (2024), post-development discharge rates will achieve a minimum 30% betterment over existing greenfield runoff rates.

| Return Period (yr)   | Total Developable Site Area | Pre-Development Discharge Rate (l/s) | Post-Development Discharge Rate (l/s) |
|----------------------|-----------------------------|--------------------------------------|---------------------------------------|
| Q <sub>bar</sub>     | 8.673ha                     | 49.6                                 | 34.7                                  |
| Q <sub>30+40%</sub>  | 8.673ha                     | 68.8                                 | 34.7                                  |
| Q <sub>100+45%</sub> | 8.673ha                     | 87.1                                 | 34.7                                  |

**Table 5-1 Surface Water Discharge Rates**

The proposed site's surface water runoff volume will be greater than the existing site's run off for the same event. As a way to mitigate the increase in surface water runoff volume (in accordance with NSS clause 3.19) the proposed total discharge rate from the site will be restricted to 34.7 l/s for all rainfall events up to and including the 1% AEP plus climate change event. As the site is split into two catchments the limit of the flows from each catchment are as follows:

- Northern parcel: 17.5 l/s
- Southern parcel: 17.2l/s

## 5.6 Climate Change

The development design life is assumed to extend beyond 100 years, with an end-of-life beyond 2127. In accordance with EA guidance, the Upper End Allowance for the 2070s epoch is applied.

For the Avon, Bristol and North Somerset Streams catchment, the following rainfall uplifts apply shown in the figure below.:

- 3.3% AEP event: +40%
- 1% AEP event: +45%

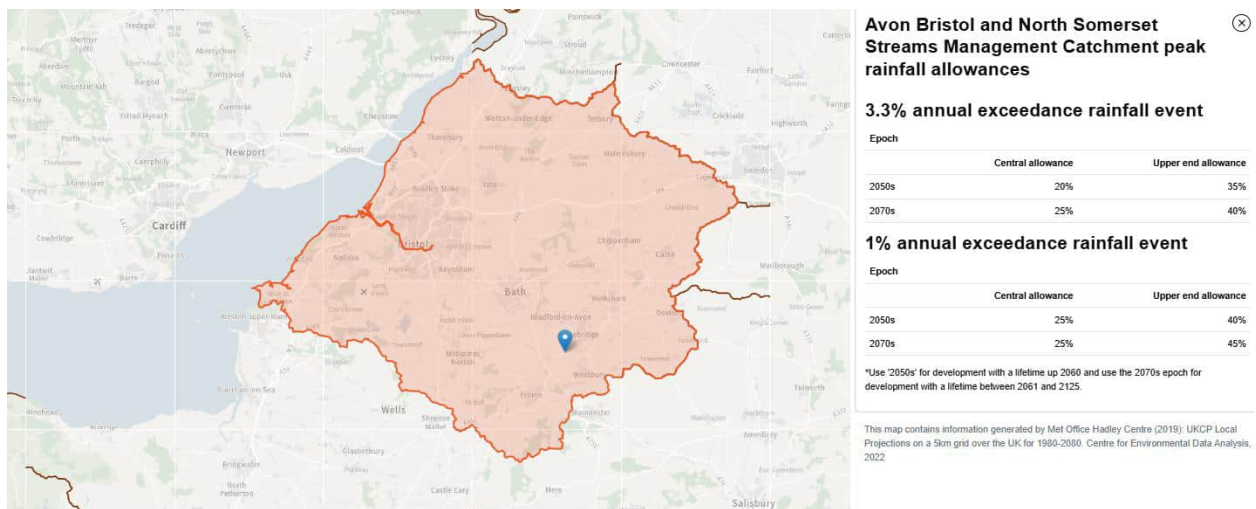


**Figure 5-2 Avon Bristol and North Somerset Streams Management Catchment Peak Rainfall Allowances**

## 5.7 SUDS Selection

Following infiltration testing, all SuDS options have been reviewed. Table 5-2 below shows all the options, and whether they are considered as appropriate for the site.

| SuDS Group | Technique          | Include in the drainage strategy? | Comments                                                                                                                                                                                                            |
|------------|--------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Detention  | Subsurface storage | No                                | Considered during the design process but discounted. Attenuation ponds with permanent wet pools were preferred as they provide attenuation, water quality treatment, biodiversity enhancement and amenity benefits. |
|            | Detention basin    | No                                | Considered during the design process but discounted. Attenuation ponds with permanent wet pools were preferred as they provide greater biodiversity and amenity benefits.                                           |

| SuDS Group        | Technique                  | Include in the drainage strategy? | Comments                                                                                                                                                                                                                                                                      |
|-------------------|----------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ponds and Wetland | Wetland/ Pond              | Yes                               | Attenuation ponds with permanent wet pools will be utilised to facilitate the settlement of suspended solids, provide water quality treatment, enhance biodiversity, provide amenity value and attenuate surface water runoff.                                                |
| Infiltration      | Infiltration trench        | No                                | Ground conditions are unsuitable for infiltration, as confirmed by BRE 365 infiltration testing.                                                                                                                                                                              |
|                   | Infiltration basin         | No                                | Ground conditions are unsuitable for infiltration, as confirmed by BRE 365 infiltration testing.                                                                                                                                                                              |
|                   | Soakaway                   | No                                | Ground conditions are unsuitable for infiltration, as confirmed by BRE 365 infiltration testing.                                                                                                                                                                              |
| Filtration        | Bioretention/filter strips | No                                | Considered during the design process. Permeable paving has been selected as the preferred method of providing source control and water quality treatment within private driveways and shared private drives.                                                                  |
|                   | Filter trench              | No                                | Considered during the design process. Permeable paving has been selected as the preferred method of providing source control and water quality treatment within private driveways and shared private drives.                                                                  |
| Open Channels     | Conveyance swale           | Yes                               | Existing swales and drainage ditches will be retained or diverted where necessary to intercept overland runoff from upstream catchments and convey flows to the Bitham Brook Tributary. Conveyance within the development will primarily be provided by underground pipework. |
|                   | Enhanced dry swale         | No                                | Not required as conveyance within the development will be achieved through underground pipework and retained drainage ditches.                                                                                                                                                |
|                   | Enhanced wet swale         | No                                | Not required as conveyance within the development will be achieved through underground pipework and retained drainage ditches.                                                                                                                                                |
| Source control    | Green roof                 | No                                | Green roofs were considered but discounted due to the requirement for roof space for mechanical and electrical plant and potential photovoltaic installations.                                                                                                                |
|                   | Rainwater harvesting       | Yes                               | Rainwater harvesting will be provided through the installation of water butts within residential plots.                                                                                                                                                                       |

| SuDS Group | Technique          | Include in the drainage strategy? | Comments                                                                                                                                                                  |
|------------|--------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | Permeable pavement | Yes                               | Permeable paving is proposed within private driveways, shared private drives and private parking areas to provide source control, water quality treatment and attenuation |

**Table 5-2 Potential SuDS options**

Key SuDS components proposed for the development include:

- Rainwater harvesting (water butts)
- Permeable paving (private drives and parking areas)
- Attenuation ponds (storage, water quality, amenity, biodiversity)
- Retained or diverted swales and ditches (where feasible)
- Tree planting in accordance with landscape proposals

## 5.8 Calculations

Causeway FLOW modelling software has been used to size the conveyance network and attenuation storage for all events up to and including the 1% AEP event with a 45% climate change allowance and 10% urban creep allowance. The following simulation parameters were used in the sizing of the conveyance network and attenuation storage.

| Design Parameter                        | Input                                 |
|-----------------------------------------|---------------------------------------|
| Rainfall Data                           | FEH22                                 |
| Rainfall Event (AEP) analysed           | 50% ,3.33% ,1%                        |
| Climate Change (%)                      | 40% for 3.3% AEP and ,45%for 1% AEP   |
| Urban Creep                             | 10% for all the residential dwellings |
| Summer, Winter Cv                       | 1.0,1.0                               |
| Additional Storage (m <sup>3</sup> /ha) | 0                                     |
| Time of Entry (mins)                    | 5                                     |
| Pipe Roughness (Ks)                     | 0.6                                   |

**Table 5-3 Causeway FLOW Simulation Parameters**

The detailed Flow calculations are included in Appendix H

The calculations show that no flooding was encountered in the 1% AEP rainfall event with a 45% allowance for climate change, and 10% allowance for urban creep to roof areas.

## 5.9 Water Quality

Surface water runoff will originate from residential roofs, commercial roofs, private driveways, and low-traffic roads. A small area of commercial loading will generate limited additional runoff.

The CIRIA C753 Simple Index Approach has been used to assess pollutant risk and SuDS treatment performance. pollution.

The assessment in Table 5-4 below demonstrates that the proposed SuDS components provide sufficient treatment to mitigate pollutants associated with the proposed land uses.

Runoff from the commercial loading area will be conveyed through permeable paving and subsequently to attenuation ponds for further treatment prior to discharge.

| Land Use                          | Hazard Level | TSS | Metals | Hydrocarbons |
|-----------------------------------|--------------|-----|--------|--------------|
| Residential roofs                 | Very low     | 0.2 | 0.2    | 0.05         |
| Commercial Roof                   | Low          | 0.3 | 0.2    | 0.05         |
| Low Traffic Road (<300 Movements) | Low          | 0.5 | 0.4    | 0.4          |
| SuDS                              |              | TSS | Metals | Hydrocarbons |
| Permeable Paving                  |              | 0.7 | 0.6    | 0.7          |
| Attenuation ponds                 |              | 0.7 | 0.7    | 0.5          |
| Mitigation>Pollution?             |              | Y   | Y      | Y            |

Table 5-4 Simple Index Approach

## 5.10 Flood Exceedance

In the event of blockage or rainfall exceeding the design capacity, exceedance flow routes will be activated across the site.

Overland flow will generally move in a west-to-east direction. Dwellings will be raised a minimum of 150 mm above surrounding ground levels, allowing exceedance flows to pass safely around buildings.

Access roads will act as secondary flow routes and will convey exceedance flows towards attenuation features for safe storage and controlled discharge.

Exceedance flow routes are shown in Appendix I and reflect existing topographical flow paths.

## 5.11 Management of Surface Water During Construction

A Construction Surface Water Management Plan will be included within the Construction Environmental Management Plan (CEMP). The plan will include:

- Temporary surface water attenuation measures
- Identification of temporary discharge locations
- Measures to control sediment and protect water quality
- Pollution prevention measures to protect receiving watercourses, including the Bitham Brook Tributary site.

## 6 Surface Water Drainage Maintenance

The maintenance of SuDS features is essential to ensure that they continue to operate effectively throughout the lifetime of the development. Maintenance activities can be broadly categorised as:

- Regular maintenance – routine tasks undertaken at regular intervals;
- Occasional maintenance – tasks required periodically but less frequently; and
- Remedial maintenance – works required to rectify faults, damage or unforeseen issues.

Drainage infrastructure located within adopted highways will be maintained in accordance with Wiltshire Highways maintenance requirements.

Private drainage infrastructure and SuDS features will be maintained by a management company established following completion of the development.

The maintenance requirements for each SuDS component are outlined below.

### Water Butts

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

**Table 6-1 Operation and Maintenance Requirements for Rainwater Harvesting**

### Swales

| Maintenance Schedule | Required Action                                                                                                                  | Typical Frequency                                                                   |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Regular Maintenance  | Remove litter and debris                                                                                                         | Monthly (or as required)                                                            |
|                      |                                                                                                                                  |                                                                                     |
|                      | Cut grass – to retain grass height within specified design range                                                                 | Monthly (during growing season), or as required                                     |
|                      | Manage other vegetation and remove nuisance plants                                                                               | Monthly at start, then as required                                                  |
|                      | Inspect inlets, outlets and overflows for blockages, and clear if required                                                       | Monthly                                                                             |
|                      | Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding more than 48 hours | Monthly, or when required                                                           |
|                      | Inspect vegetation coverage                                                                                                      | Monthly for 6 months. Quarterly for 2 years, then half yearly                       |
|                      | Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies                        | Half yearly                                                                         |
|                      | Stabilise and mow contributing and adjacent areas                                                                                | As required                                                                         |
|                      | Reseed areas of poor vegetation growth and alter plant species where required                                                    | As required or if bare soil is exposed over 10% or more of the swale treatment area |
|                      | Stabilise and mow contributing and adjacent areas                                                                                | As required                                                                         |

|                        |                                                                                                                                            |                                                                                     |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Occasional Maintenance | Reseed areas of poor vegetation growth and alter plant species where required                                                              | As required or if bare soil is exposed over 10% or more of the swale treatment area |
| Remedial Actions       | Repair erosion or other damage by re-turfing or reseeding                                                                                  | As required                                                                         |
|                        | Relevel uneven surfaces and reinstate design levels                                                                                        | As required                                                                         |
|                        | Scarify and spike the topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface | As required                                                                         |
|                        | Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip                                             | As required                                                                         |

**Table 6-2 Operation and Maintenance Requirements for Swales**

### Pervious Pavements

| Maintenance Schedule   | Required Action                                                                                                                                                                       | Typical Frequency                                                                                                                                                                                                                                                                                                            |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regular inspections    | Brushing and vacuuming (standard cosmetic sweep over whole surface)                                                                                                                   | Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturers recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment. |
| Occasional Maintenance | Removal of weeds                                                                                                                                                                      | As required – once per year on less frequently used pavements.                                                                                                                                                                                                                                                               |
| Remedial action        | Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material. | As required                                                                                                                                                                                                                                                                                                                  |
|                        | Rehabilitation of surface and upper substructure by remedial sweeping                                                                                                                 | Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)                                                                                                                                                                                                                     |
| Monitoring             | Initial inspection                                                                                                                                                                    | Monthly for three months after installation                                                                                                                                                                                                                                                                                  |
|                        | Inspect for evidence of poor operation and/or weed growth – if required, take remedial action                                                                                         | Three-monthly, 48h after large storms in first six months                                                                                                                                                                                                                                                                    |
|                        | Inspect silt accumulation rates and establish appropriate brushing frequencies                                                                                                        | Annually                                                                                                                                                                                                                                                                                                                     |
|                        | Monitor inspection chambers                                                                                                                                                           | Annually                                                                                                                                                                                                                                                                                                                     |

**Table 6-3 Operation and Maintenance Requirements for Pervious Pavements**

## Ponds and Wetlands

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

**Table 6-4 Operation and Maintenance Requirements for Ponds and Wetlands**

## 7 Foul Water Drainage Strategy

### 7.1 Foul Water Drainage Arrangements

The proposed foul water drainage strategy is shown in Appendix G.

The site benefits from an existing foul water pumping station and rising main constructed as part of planning permission 14/03182/FUL. Foul flows from both the northern and southern parcels will be conveyed by gravity through suitably sized foul drainage pipes to the existing pumping station.

It is proposed that the foul drainage network will be offered for adoption by Wessex Water.

The foul water drawing calculations for the gravity sewers from the northern and southern parcels are included in Appendix J.

The calculations show that the gravity drainage network design has adequate capacity to discharge the peak flows and meets the deemed to satisfy criterion of the Design Construction Guidance with regards to self-cleansing velocities for foul

Flows collected at the pumping station will be discharged off-site via the existing rising main, which was constructed concurrently with the pumping station.

It is understood that the existing pumping station and rising main were designed and constructed in accordance with Wessex Water standards.

The existing pumping station and rising main therefore provide a suitable means of foul water disposal for the proposed development

## 8 Conclusion

Tumu Consulting Ltd has undertaken a Flood Risk Assessment and Surface Water Drainage Strategy in support of the proposed mixed-use development at Hawke Ridge Business Park, Westbury.

The assessment has reviewed flood risk from all relevant sources, including fluvial, pluvial, groundwater, sewer, reservoir and other artificial sources. A detailed review of Environment Agency flood modelling data and site-specific topographical information confirms that the majority of the site is located within Flood Zone 1 and is therefore at low risk of flooding from rivers.

The proposed development layout has been designed to avoid areas susceptible to flooding, with all residential development, commercial units and primary access routes located on higher ground and set back from the Bitham Brook Tributary. Appropriate finished floor levels and freeboard allowances have been incorporated to provide resilience against extreme flood events, including the effects of climate change.

Surface water runoff will be managed through a sustainable drainage strategy comprising attenuation ponds, permeable paving, retained and diverted drainage ditches, rainwater harvesting measures and controlled discharge to the Bitham Brook Tributary. The drainage system has been designed to accommodate the 1% Annual Exceedance Probability (AEP) event, including appropriate allowances for climate change and urban creep, in accordance with national and local guidance.

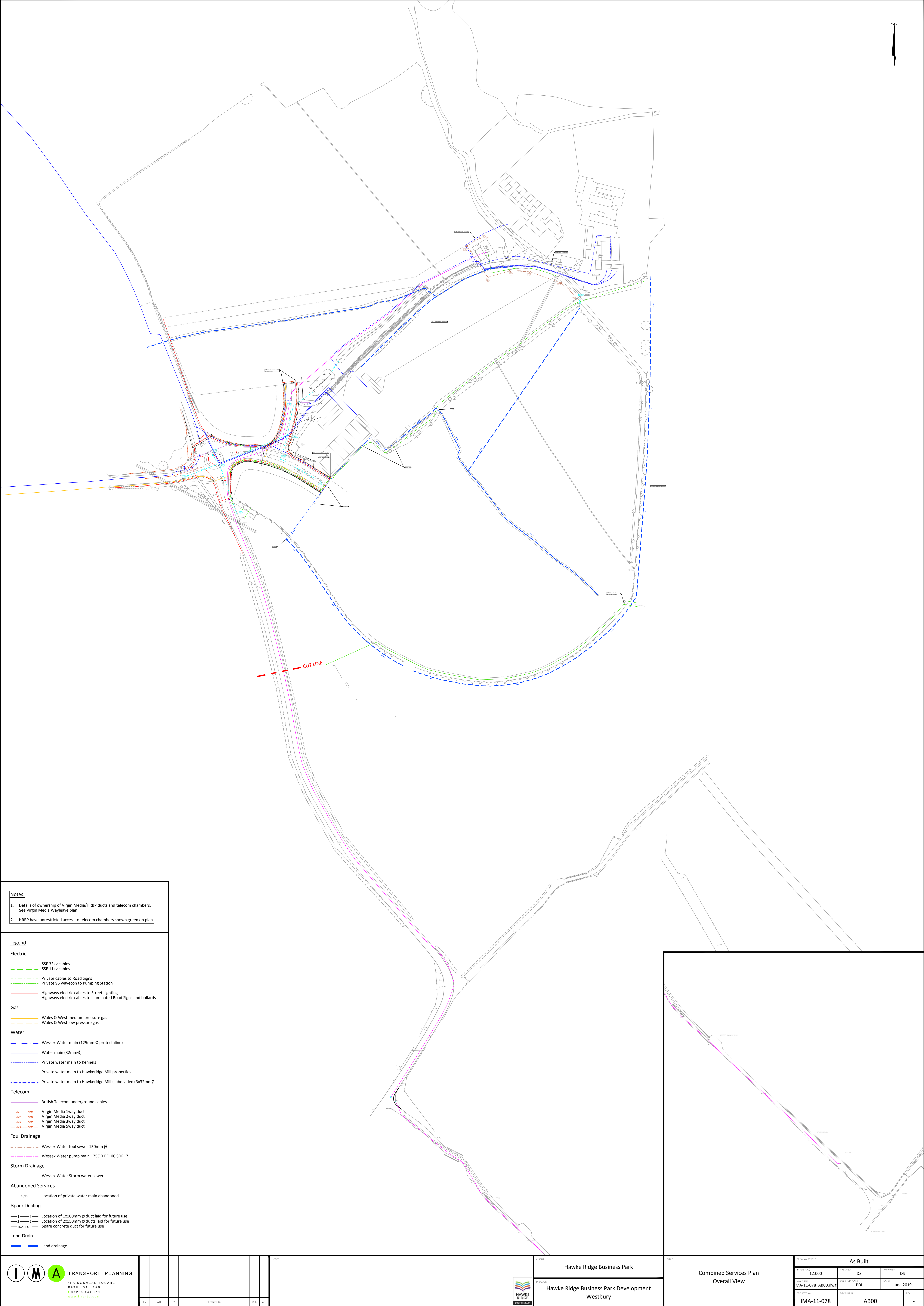
The proposed development will not increase flood risk either on-site or elsewhere and will provide a sustainable approach to managing surface water runoff throughout the lifetime of the development.

Subject to the implementation of the mitigation measures, drainage strategy and maintenance arrangements outlined within this report, the proposed development is considered appropriate in terms of flood risk and drainage and is compliant with the requirements of the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG), the National Standards for Sustainable Drainage Systems (NSS), and Wiltshire Council drainage policies.

## Appendix A – Topographical Survey

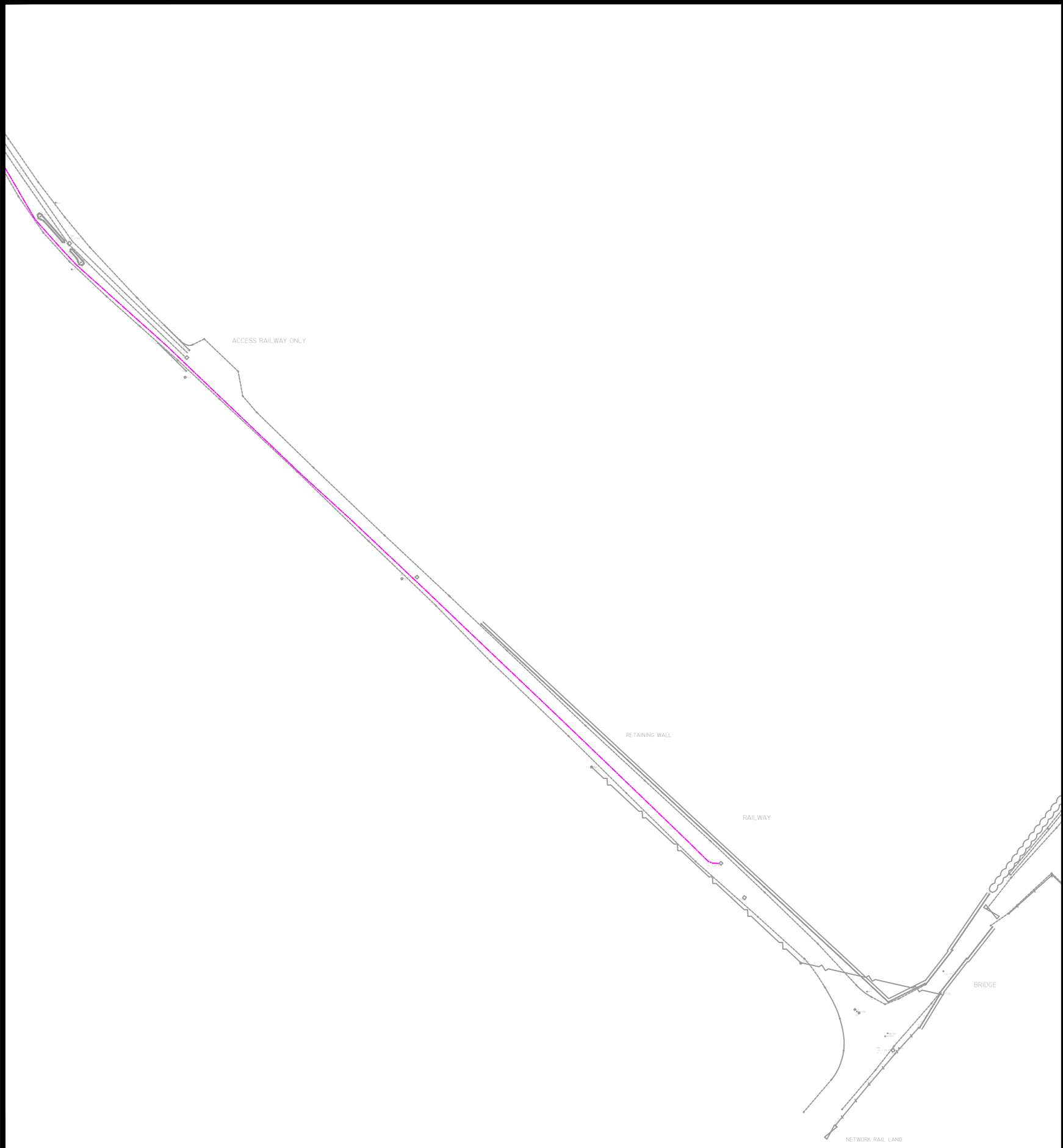




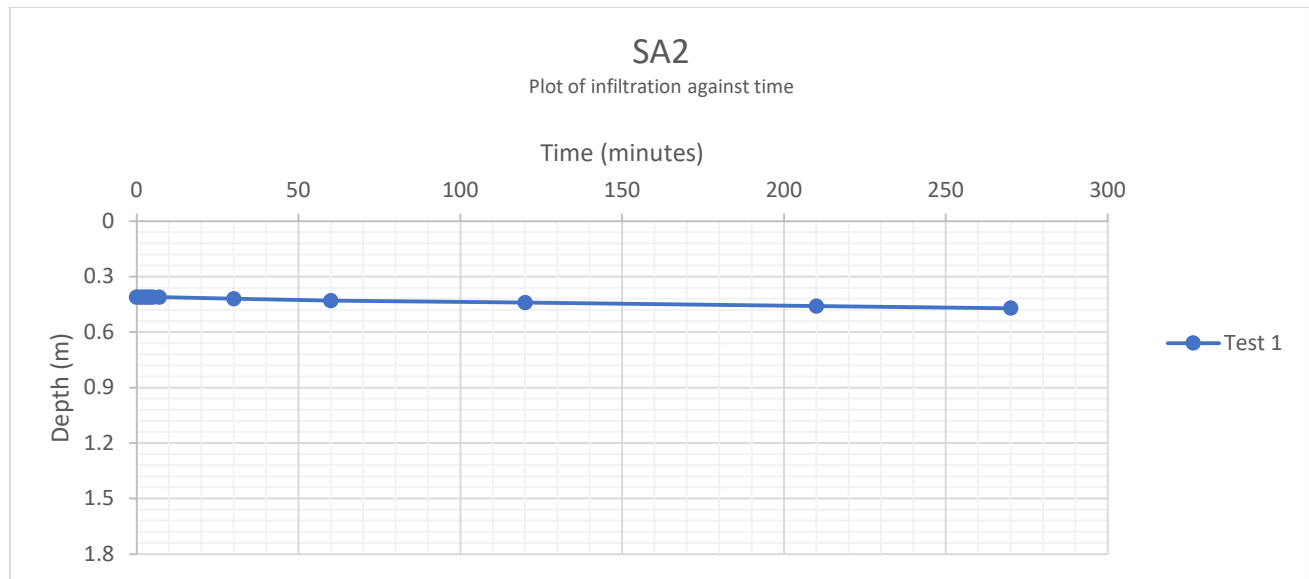


- Notes:**
1. Details of ownership of Virgin Media/HRBP ducts and telecom chambers. See Virgin Media Wayleave plan
  2. HRBP have unrestricted access to telecom chambers shown green on plan

- Legend:**
- Electric**
- SSE 33kv cables
  - SSE 11kv cables
  - Private cables to Road Signs
  - Private 95 wavecon to Pumping Station
  - Highways electric cables to Street Lighting
  - Highways electric cables to illuminated Road Signs and bollards
- Gas**
- Wales & West medium pressure gas
  - Wales & West low pressure gas
- Water**
- Wessex Water main (125mm Ø protectaline)
  - Water main (32mmØ)
  - Private water main to Kennels
  - Private water main to Hawkeridge Mill properties
  - Private water main to Hawkeridge Mill (subdivided) 3x32mmØ
- Telecom**
- British Telecom underground cables
  - Virgin Media 1way duct
  - Virgin Media 2way duct
  - Virgin Media 3way duct
  - Virgin Media 5way duct
- Foul Drainage**
- Wessex Water foul sewer 150mm Ø
  - Wessex Water pump main 125OD PE100 SDR17
- Storm Drainage**
- Wessex Water Storm water sewer
- Abandoned Services**
- Location of private water main abandoned
- Spare Ducting**
- Location of 1x100mm Ø duct laid for future use
  - Location of 2x150mm Ø ducts laid for future use
  - Spare concrete duct for future use
- Land Drain**
- Land drainage



## Appendix B – Extracts from Ground Investigation Reports



|                                                          | Test 1 (28.11.25) | Test 2 | Test 3 |
|----------------------------------------------------------|-------------------|--------|--------|
|                                                          | ●                 | ●      | ●      |
| Total pit depth at start of test (m)                     | <b>1.65</b>       | -      | -      |
| Total pit depth at end of test (m)                       | <b>1.65</b>       | -      | -      |
| Effective Depth, $D_e$ (m)                               | <b>1.24</b>       | -      | -      |
| Effective Storage Volume, $V_{p75-25}$ (m <sup>3</sup> ) | <b>0.37</b>       | -      | -      |
| Surface Area, $a_{p50}$ (m <sup>2</sup> )                | <b>2.71</b>       | -      | -      |
| Time, $t_{p75-25}$ (seconds)                             | <b>NA</b>         | -      | -      |
| Infiltration rate, $f$ (m/s)                             | <b>NA</b>         | -      | -      |

| Depth        | Soil Description                                        |
|--------------|---------------------------------------------------------|
| 0.00 – 0.40m | Brown slightly sandy CLAY occasional rootlets (TOPSOIL) |
| 0.40 – 1.65m | Yellowish brown CLAY                                    |

**Notes:**

No groundwater was encountered in the pit.

Weather was overcast.

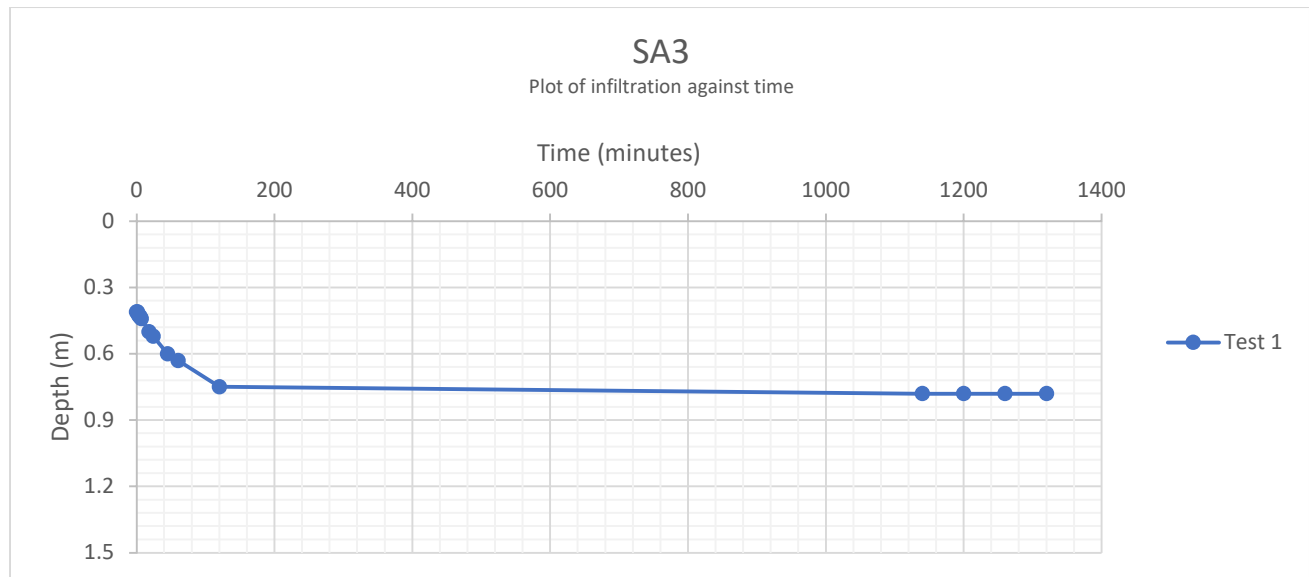
Pit was dug with a 9T Excavator.

Pit was filled using a 4000Ltr water tanker

Pit dimensions: **L 1.20m x W 0.50m x D 1.65m**

NGR: **ST 86433 53328**

**Unable to calculate an infiltration rate due to insufficient drainage.**



|                                                          | Test 1 (28.11.25) | Test 2 | Test 3 |
|----------------------------------------------------------|-------------------|--------|--------|
|                                                          | ●                 | ●      | ●      |
| Total pit depth at start of test (m)                     | 1.47              | -      | -      |
| Total pit depth at end of test (m)                       | 1.47              | -      | -      |
| Effective Depth, $D_e$ (m)                               | 1.06              | -      | -      |
| Effective Storage Volume, $V_{p75-25}$ (m <sup>3</sup> ) | 0.32              | -      | -      |
| Surface Area, $a_{p50}$ (m <sup>2</sup> )                | 2.40              | -      | -      |
| Time, $t_{p75-25}$ (seconds)                             | NA                | -      | -      |
| Infiltration rate, $f$ (m/s)                             | NA                | -      | -      |

| Depth        | Soil Description                                        |
|--------------|---------------------------------------------------------|
| 0.00 – 0.40m | Brown slightly sandy CLAY occasional rootlets (TOPSOIL) |
| 0.40 – 1.47m | Yellowish brown CLAY                                    |

**Notes:**

No groundwater was encountered in the pit.

Weather was overcast.

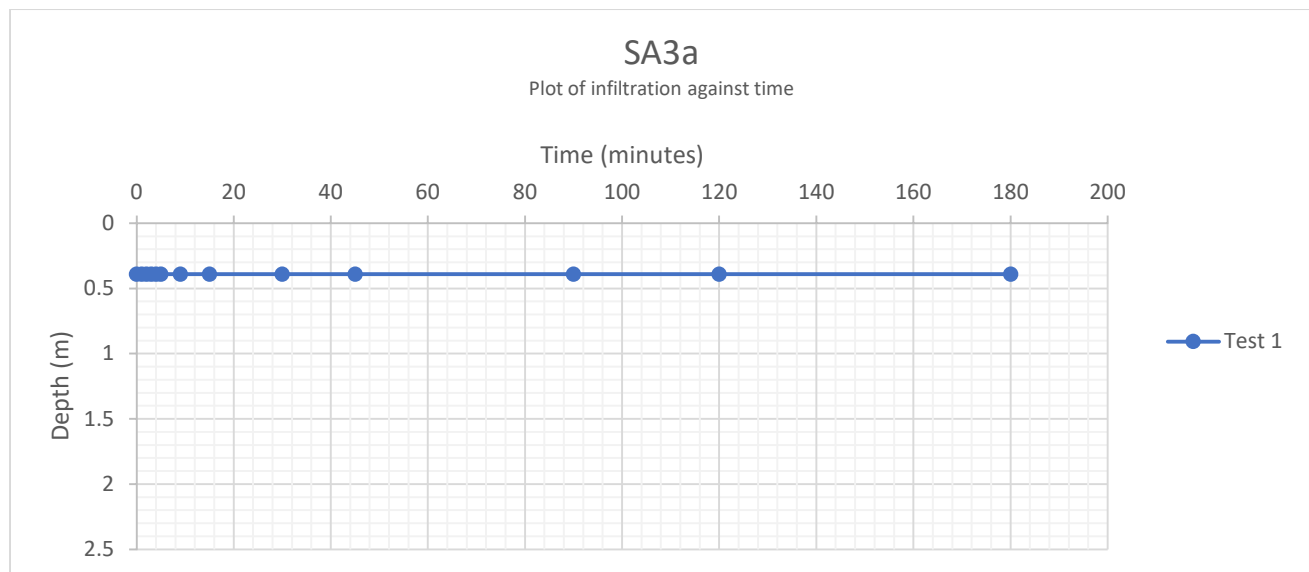
Pit was dug with a 9T Excavator.

Pit was filled using a 4000Ltr water tanker

Pit dimensions: **L 1.20m x W 0.50m x D 1.47m**

NGR: **ST 86677 53256**

**Unable to calculate an infiltration rate due to insufficient drainage.**



|                                                          | Test 1 (29.11.25) | Test 2 | Test 3 |
|----------------------------------------------------------|-------------------|--------|--------|
|                                                          | ●                 | ●      | ●      |
| Total pit depth at start of test (m)                     | <b>2.50</b>       | -      | -      |
| Total pit depth at end of test (m)                       | <b>2.50</b>       | -      | -      |
| Effective Depth, $D_e$ (m)                               | <b>2.11</b>       | -      | -      |
| Effective Storage Volume, $V_{p75-25}$ (m <sup>3</sup> ) | <b>0.63</b>       | -      | -      |
| Surface Area, $a_{p50}$ (m <sup>2</sup> )                | <b>4.19</b>       | -      | -      |
| Time, $t_{p75-25}$ (seconds)                             | <b>NA</b>         | -      | -      |
| Infiltration rate, $f$ (m/s)                             | <b>NA</b>         | -      | -      |

| Depth        | Soil Description                                        |
|--------------|---------------------------------------------------------|
| 0.00 – 0.40m | Brown slightly sandy CLAY occasional rootlets (TOPSOIL) |
| 0.40 – 2.50m | Yellowish brown CLAY                                    |

**Notes:**

No groundwater was encountered in the pit.

Weather was overcast.

Pit was dug with a 9T Excavator.

Pit was filled using a 4000Ltr water tanker

Pit dimensions: **L 1.20m x W 0.50m x D 2.50m**

NGR: **ST 86639 53252**

**Unable to calculate an infiltration rate due to insufficient drainage.**



|                                                          | Test 1 (28.11.25) | Test 2 | Test 3 |
|----------------------------------------------------------|-------------------|--------|--------|
|                                                          | ●                 | ●      | ●      |
| Total pit depth at start of test (m)                     | <b>1.96</b>       | -      | -      |
| Total pit depth at end of test (m)                       | <b>1.96</b>       | -      | -      |
| Effective Depth, $D_e$ (m)                               | <b>1.57</b>       | -      | -      |
| Effective Storage Volume, $V_{p75-25}$ (m <sup>3</sup> ) | <b>0.47</b>       | -      | -      |
| Surface Area, $a_{p50}$ (m <sup>2</sup> )                | <b>3.27</b>       | -      | -      |
| Time, $t_{p75-25}$ (seconds)                             | <b>NA</b>         | -      | -      |
| Infiltration rate, $f$ (m/s)                             | <b>NA</b>         | -      | -      |

| Depth        | Soil Description                                        |
|--------------|---------------------------------------------------------|
| 0.00 – 0.40m | Brown slightly sandy CLAY occasional rootlets (TOPSOIL) |
| 0.40 – 1.96m | Yellowish brown CLAY                                    |

**Notes:**

No groundwater was encountered in the pit.  
Weather was overcast.  
Pit was dug with a 9T Excavator.  
Pit was filled using a 4000Ltr water tanker  
Pit dimensions: **L 1.20m x W 0.50m x D 1.96m**  
NGR: **ST 86538 53065**  
**Unable to calculate an infiltration rate due to insufficient drainage.**



|                       |                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Comment</b><br>SA1 | <b>Project</b><br>Hawk Ridge Business Park, Westbury                                                                                                                                                                                                                                                                                                                                            |
|                       | <b>Photo Plate</b><br>1                                                                                                                                                                                                                                                                                                                                                                         |
|                       | <b>Date</b><br>28/11/25                                                                                                                                                                                                                                                                                                                                                                         |
|                       | <b>Originator</b><br>S.Philp                                                                                                                                                                                                                                                                                                                                                                    |
|                       | <div>  <b>GROUND<br/>TESTING LTD</b> </div> <div>           Ground Testing Ltd<br/> <a href="mailto:ask@groundtesting.co.uk">ask@groundtesting.co.uk</a><br/> <a href="http://www.groundtesting.co.uk">www.groundtesting.co.uk</a><br/>           VAT: 332931414<br/>           Reg: 12200980         </div> |



|                       |                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Comment</b><br>SA2 | <b>Project</b><br>Hawk Ridge Business Park, Westbury                                                                                                                                                                                                                                                                                       |
|                       | <b>Photo Plate</b><br>2                                                                                                                                                                                                                                                                                                                    |
|                       | <b>Date</b><br>28/11/25                                                                                                                                                                                                                                                                                                                    |
|                       | <b>Originator</b><br>S.Philp                                                                                                                                                                                                                                                                                                               |
|                       | <div>  <div> <p>Ground Testing Ltd</p> <p><a href="mailto:ask@groundtesting.co.uk">ask@groundtesting.co.uk</a></p> <p><a href="http://www.groundtesting.co.uk">www.groundtesting.co.uk</a></p> <p>VAT: 332931414</p> <p>Reg: 12200980</p> </div> </div> |



|                       |                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Comment</b><br>SA3 | <b>Project</b><br>Hawk Ridge Business Park, Westbury                                                                                                                                                                                                                                                                                       |
|                       | <b>Photo Plate</b><br>3                                                                                                                                                                                                                                                                                                                    |
|                       | <b>Date</b><br>28/11/25                                                                                                                                                                                                                                                                                                                    |
|                       | <b>Originator</b><br>S.Philp                                                                                                                                                                                                                                                                                                               |
|                       | <div>  <div> <p>Ground Testing Ltd</p> <p><a href="mailto:ask@groundtesting.co.uk">ask@groundtesting.co.uk</a></p> <p><a href="http://www.groundtesting.co.uk">www.groundtesting.co.uk</a></p> <p>VAT: 332931414</p> <p>Reg: 12200980</p> </div> </div> |



|                        |                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Comment</b><br>SA3a | <b>Project</b><br>Hawk Ridge Business Park, Westbury                                                                                                                                                                                                                                                                                                              |
|                        | <b>Photo Plate</b><br>4                                                                                                                                                                                                                                                                                                                                           |
|                        | <b>Date</b><br>28/11/25                                                                                                                                                                                                                                                                                                                                           |
|                        | <b>Originator</b><br>S.Philp                                                                                                                                                                                                                                                                                                                                      |
|                        | <div>  <div>           Ground Testing Ltd<br/> <a href="mailto:ask@groundtesting.co.uk">ask@groundtesting.co.uk</a><br/> <a href="http://www.groundtesting.co.uk">www.groundtesting.co.uk</a><br/>           VAT: 332931414<br/>           Reg: 12200980         </div> </div> |

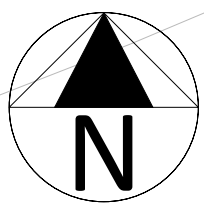
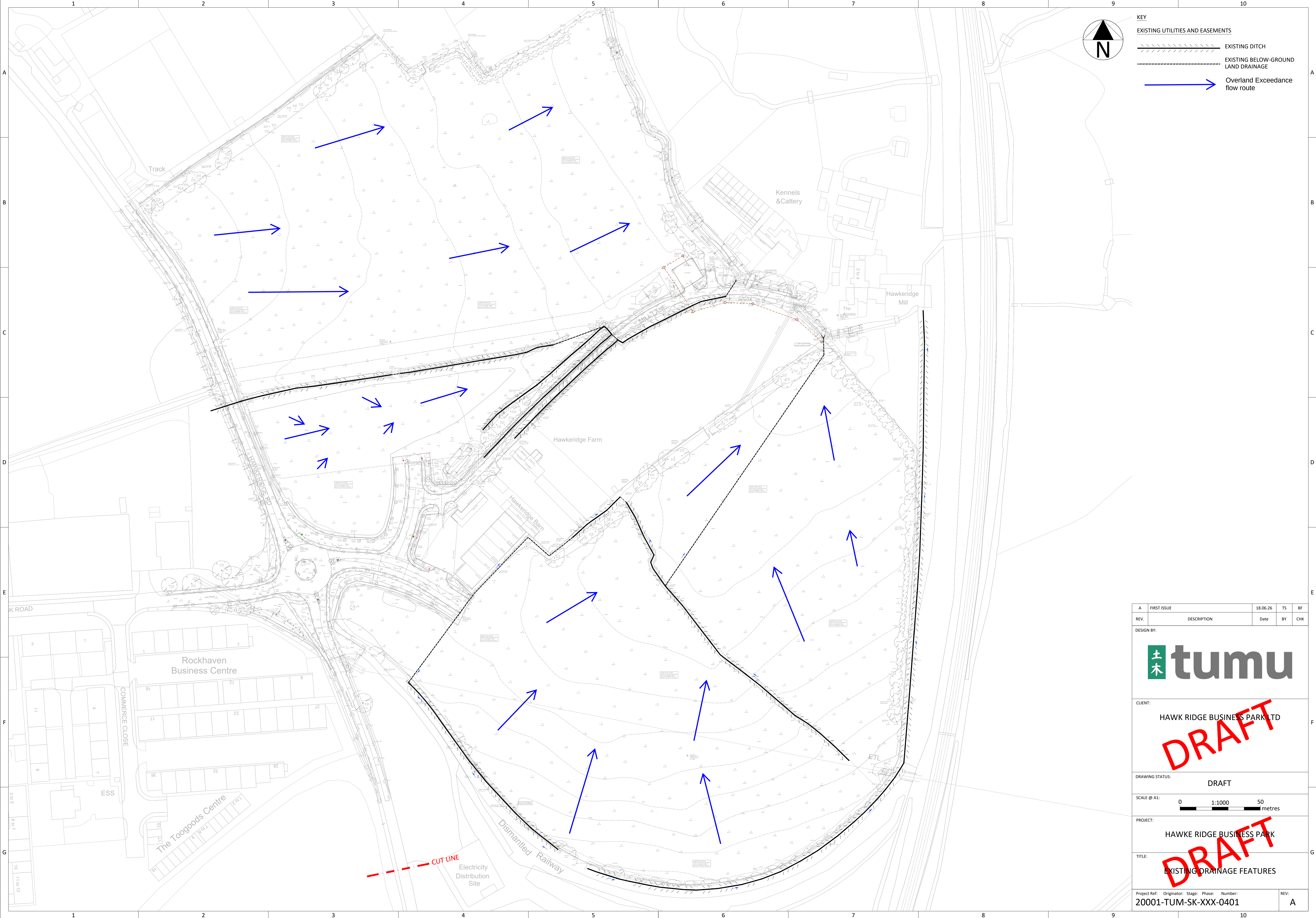


|                       |                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Comment</b><br>SA4 | <b>Project</b><br>Hawk Ridge Business Park, Westbury                                                                                                                                                                                                                                                                                                   |
|                       | <b>Photo Plate</b><br>5                                                                                                                                                                                                                                                                                                                                |
|                       | <b>Date</b><br>28/11/25                                                                                                                                                                                                                                                                                                                                |
|                       | <b>Originator</b><br>S.Philp                                                                                                                                                                                                                                                                                                                           |
|                       | <div>  <div> <p>Ground Testing Ltd<br/> <a href="mailto:ask@groundtesting.co.uk">ask@groundtesting.co.uk</a><br/> <a href="http://www.groundtesting.co.uk">www.groundtesting.co.uk</a><br/>           VAT: 332931414<br/>           Reg: 12200980</p> </div> </div> |



|                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Comment</b><br>GW1<br><br>0.00 – 0.40m Brown slightly sandy CLAY occasional rootlets (TOPSOIL)<br>0.40 – 2.50 Yellowish brown CLAY<br><br>No ground water was identified in the pit.<br><br>NGR: ST 86536 53516 | <b>Project</b><br>Hawk Ridge Business Park, Westbury                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                    | <b>Photo Plate</b><br>6                                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                    | <b>Date</b><br>28/11/25                                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                    | <b>Originator</b><br>S.Philp                                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                    | <div>  <div> Ground Testing Ltd<br/> <a href="mailto:ask@groundtesting.co.uk">ask@groundtesting.co.uk</a><br/> <a href="http://www.groundtesting.co.uk">www.groundtesting.co.uk</a><br/> VAT: 332931414<br/> Reg: 12200980 </div> </div> |

## Appendix C – Existing Drainage and Existing Flood Exceedance Routes



- KEY
- EXISTING UTILITIES AND EASEMENTS
- EXISTING DITCH
  - EXISTING BELOW-GROUND LAND DRAINAGE
  - Overland Exceedance flow route

|                                                                                       |             |          |    |        |
|---------------------------------------------------------------------------------------|-------------|----------|----|--------|
| A                                                                                     | FIRST ISSUE | 18.06.26 | TS | BF     |
| REV.                                                                                  | DESCRIPTION | Date     | BY | CHK    |
| DESIGN BY:                                                                            |             |          |    |        |
|  |             |          |    |        |
| CLIENT:                                                                               |             |          |    |        |
| HAWKE RIDGE BUSINESS PARK LTD                                                         |             |          |    |        |
| DRAWING STATUS:                                                                       |             |          |    |        |
| DRAFT                                                                                 |             |          |    |        |
| SCALE @ A1:                                                                           |             |          |    |        |
| 0 1:1000 50 metres                                                                    |             |          |    |        |
| PROJECT:                                                                              |             |          |    |        |
| HAWKE RIDGE BUSINESS PARK                                                             |             |          |    |        |
| TITLE:                                                                                |             |          |    |        |
| EXISTING DRAINAGE FEATURES                                                            |             |          |    |        |
| Project Ref: 20001-TUM-SK-XXX-0401                                                    |             |          |    | REV: A |

## Appendix D – Proposed Development Masterplan



**PEGASUS**  
GROUP

## Appendix E – Extracts for EA Product 6 and Product 7

|              |             |             | 019_TRO_BI<br>SS_CALIB_F<br>EB_2009_A<br>DJ002.csv | 019_TRO_BI<br>SS_CALIB_F<br>EB_2009_A<br>DJ002.csv | 019_TRO_BI<br>SS_CALIB_F<br>EB_2009_A<br>DJ002.csv | 019_TRO_BI<br>SS_CALIB_<br>NOV_2012_<br>ADJ003.csv | 019_TRO_BI<br>SS_CALIB_<br>NOV_2012_<br>ADJ003.csv | 019_TRO_BI<br>SS_CALIB_<br>NOV_2012_<br>ADJ003.csv | 019_TRO_BI<br>SS_CALIB_<br>OCT_2000_<br>DEFAULT.cs<br>v | 019_TRO_BI<br>SS_CALIB_<br>OCT_2000_<br>DEFAULT.cs<br>v | 019_TRO_BI<br>SS_CALIB_<br>OCT_2000_<br>DEFAULT.cs<br>v |
|--------------|-------------|-------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Location     | Location    | Location    |                                                    |                                                    |                                                    |                                                    |                                                    |                                                    |                                                         |                                                         |                                                         |
|              |             |             | Flow                                               | Water Level                                        | Velocity                                           | Flow                                               | Water Level                                        | Velocity                                           | Flow                                                    | Water Level                                             | Velocity                                                |
|              |             |             | m <sup>3</sup> /s                                  | m AOD                                              | m/s                                                | m <sup>3</sup> /s                                  | m AOD                                              | m/s                                                | m <sup>3</sup> /s                                       | m AOD                                                   | m/s                                                     |
| BITH_1361    | 386518.3931 | 153685.8753 | 7.764                                              | 45.854                                             | 1.103                                              | 4.675                                              | 45.536                                             | 1.016                                              | 6.873                                                   | 45.789                                                  | 1.065                                                   |
| BITH_1361i1  | 386503.967  | 153706.171  | 7.977                                              | 45.728                                             | 1.245                                              | 4.856                                              | 45.425                                             | 1.101                                              | 7.225                                                   | 45.662                                                  | 1.216                                                   |
| BITH_1361i2  | 386488.425  | 153751.616  | 7.977                                              | 45.607                                             | 1.326                                              | 4.856                                              | 45.319                                             | 1.139                                              | 7.225                                                   | 45.544                                                  | 1.290                                                   |
| BITH_1644    | 386658.96   | 153503.712  | 6.156                                              | 46.786                                             | 1.598                                              | 4.316                                              | 46.596                                             | 1.454                                              | 5.558                                                   | 46.732                                                  | 1.552                                                   |
| BITH_1644d   | 386652.956  | 153503.133  | 6.156                                              | 46.786                                             | 1.599                                              | 4.316                                              | 46.595                                             | 1.455                                              | 5.558                                                   | 46.731                                                  | 1.553                                                   |
| BITH_1644i1  | 386608.6014 | 153511.5428 | 6.156                                              | 46.585                                             | 1.546                                              | 4.316                                              | 46.374                                             | 1.449                                              | 5.558                                                   | 46.525                                                  | 1.510                                                   |
| BITH_1644i2  | 386578.515  | 153551.6951 | 6.155                                              | 46.430                                             | 1.522                                              | 4.316                                              | 46.165                                             | 1.435                                              | 5.558                                                   | 46.360                                                  | 1.477                                                   |
| BITH_1644i3  | 386566.6165 | 153596.4054 | 6.153                                              | 46.331                                             | 1.481                                              | 4.315                                              | 45.990                                             | 1.411                                              | 5.557                                                   | 46.250                                                  | 1.444                                                   |
| BITH_1644i4  | 386562.984  | 153635.8417 | 7.763                                              | 46.094                                             | 1.479                                              | 4.675                                              | 45.785                                             | 1.365                                              | 6.872                                                   | 46.021                                                  | 1.447                                                   |
| BITH_1644i5  | 386539.3595 | 153665.125  | 7.763                                              | 45.954                                             | 1.312                                              | 4.675                                              | 45.638                                             | 1.216                                              | 6.874                                                   | 45.885                                                  | 1.269                                                   |
| BITH_1756    | 386766.1973 | 153521.63   | 6.010                                              | 47.845                                             | 2.676                                              | 4.195                                              | 47.688                                             | 2.414                                              | 5.324                                                   | 47.807                                                  | 2.522                                                   |
| BITH_1756d   | 386728.7563 | 153515.068  | 6.010                                              | 47.790                                             | 2.885                                              | 4.195                                              | 47.657                                             | 2.536                                              | 5.324                                                   | 47.758                                                  | 2.698                                                   |
| BITH_1756di1 | 386700.5232 | 153510.1922 | 6.156                                              | 47.364                                             | 2.750                                              | 4.316                                              | 47.213                                             | 2.476                                              | 5.558                                                   | 47.317                                                  | 2.673                                                   |
| BITH_1756di2 | 386677.247  | 153505.1103 | 6.156                                              | 47.011                                             | 2.293                                              | 4.316                                              | 46.837                                             | 2.104                                              | 5.558                                                   | 46.958                                                  | 2.233                                                   |

| Location     | 019_TRO_BI<br>SS_VALID_D<br>EC_2013_V<br>AL002.csv | 019_TRO_BI<br>SS_VALID_D<br>EC_2013_V<br>AL002.csv | 019_TRO_BI<br>SS_VALID_D<br>EC_2013_V<br>AL002.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0002_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0002_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0002_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0005_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0005_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0005_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0010_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0010_CC0<br>00.csv |
|--------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|              | Flow                                               | Water Level                                        | Velocity                                           | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 |
|              | m <sup>3</sup> /s                                  | m AOD                                              | m/s                                                | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       |
| BITH_1361    | 6.180                                              | 45.719                                             | 1.047                                              | 3.120                                                       | 45.337                                                      | 0.902                                                       | 3.905                                                       | 45.460                                                      | 0.950                                                       | 4.644                                                       | 45.551                                                      |
| BITH_1361i1  | 6.507                                              | 45.595                                             | 1.187                                              | 3.337                                                       | 45.235                                                      | 0.986                                                       | 4.202                                                       | 45.351                                                      | 1.052                                                       | 4.952                                                       | 45.435                                                      |
| BITH_1361i2  | 6.507                                              | 45.480                                             | 1.250                                              | 3.337                                                       | 45.137                                                      | 1.016                                                       | 4.202                                                       | 45.248                                                      | 1.086                                                       | 4.952                                                       | 45.329                                                      |
| BITH_1644    | 5.098                                              | 46.687                                             | 1.511                                              | 3.119                                                       | 46.438                                                      | 1.339                                                       | 3.904                                                       | 46.544                                                      | 1.419                                                       | 4.387                                                       | 46.603                                                      |
| BITH_1644d   | 5.098                                              | 46.686                                             | 1.512                                              | 3.119                                                       | 46.437                                                      | 1.340                                                       | 3.904                                                       | 46.543                                                      | 1.419                                                       | 4.387                                                       | 46.603                                                      |
| BITH_1644i1  | 5.098                                              | 46.474                                             | 1.484                                              | 3.119                                                       | 46.208                                                      | 1.337                                                       | 3.904                                                       | 46.318                                                      | 1.414                                                       | 4.388                                                       | 46.378                                                      |
| BITH_1644i2  | 5.097                                              | 46.298                                             | 1.435                                              | 3.119                                                       | 45.984                                                      | 1.332                                                       | 3.905                                                       | 46.097                                                      | 1.406                                                       | 4.387                                                       | 46.166                                                      |
| BITH_1644i3  | 5.096                                              | 46.177                                             | 1.410                                              | 3.119                                                       | 45.770                                                      | 1.304                                                       | 3.905                                                       | 45.885                                                      | 1.374                                                       | 4.387                                                       | 45.986                                                      |
| BITH_1644i4  | 6.180                                              | 45.953                                             | 1.429                                              | 3.119                                                       | 45.579                                                      | 1.243                                                       | 3.905                                                       | 45.696                                                      | 1.305                                                       | 4.643                                                       | 45.788                                                      |
| BITH_1644i5  | 6.180                                              | 45.816                                             | 1.253                                              | 3.120                                                       | 45.431                                                      | 1.106                                                       | 3.905                                                       | 45.553                                                      | 1.150                                                       | 4.642                                                       | 45.646                                                      |
| BITH_1756    | 4.882                                              | 47.765                                             | 2.468                                              | 2.981                                                       | 47.578                                                      | 2.150                                                       | 3.719                                                       | 47.659                                                      | 2.273                                                       | 4.165                                                       | 47.705                                                      |
| BITH_1756d   | 4.882                                              | 47.723                                             | 2.621                                              | 2.981                                                       | 47.561                                                      | 2.211                                                       | 3.719                                                       | 47.632                                                      | 2.369                                                       | 4.165                                                       | 47.671                                                      |
| BITH_1756di1 | 5.098                                              | 47.278                                             | 2.609                                              | 3.119                                                       | 47.103                                                      | 2.237                                                       | 3.904                                                       | 47.177                                                      | 2.402                                                       | 4.388                                                       | 47.219                                                      |
| BITH_1756di2 | 5.098                                              | 46.914                                             | 2.186                                              | 3.119                                                       | 46.699                                                      | 1.949                                                       | 3.904                                                       | 46.791                                                      | 2.057                                                       | 4.387                                                       | 46.844                                                      |

| Location     | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0010_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0030_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0030_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0030_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0050_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0050_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0050_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0075_CC0<br>00.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|              |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        |
|              | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           |
| BITH_1361    | 0.989                                                       | 5.490                                                       | 45.653                                                      | 1.015                                                       | 6.063                                                       | 45.718                                                      | 1.035                                                       | 6.648                                                       | 45.783                                                      | 1.052                                                       | 7.567                                                       |
| BITH_1361i1  | 1.108                                                       | 5.846                                                       | 45.530                                                      | 1.158                                                       | 6.473                                                       | 45.591                                                      | 1.187                                                       | 7.125                                                       | 45.653                                                      | 1.212                                                       | 8.081                                                       |
| BITH_1361i2  | 1.147                                                       | 5.847                                                       | 45.418                                                      | 1.209                                                       | 6.469                                                       | 45.476                                                      | 1.249                                                       | 7.124                                                       | 45.535                                                      | 1.284                                                       | 8.082                                                       |
| BITH_1644    | 1.463                                                       | 4.840                                                       | 46.657                                                      | 1.494                                                       | 5.167                                                       | 46.693                                                      | 1.520                                                       | 5.535                                                       | 46.728                                                      | 1.552                                                       | 6.062                                                       |
| BITH_1644d   | 1.464                                                       | 4.840                                                       | 46.657                                                      | 1.495                                                       | 5.167                                                       | 46.692                                                      | 1.521                                                       | 5.535                                                       | 46.728                                                      | 1.553                                                       | 6.062                                                       |
| BITH_1644i1  | 1.456                                                       | 4.840                                                       | 46.438                                                      | 1.486                                                       | 5.167                                                       | 46.476                                                      | 1.512                                                       | 5.536                                                       | 46.518                                                      | 1.535                                                       | 6.062                                                       |
| BITH_1644i2  | 1.443                                                       | 4.839                                                       | 46.241                                                      | 1.477                                                       | 5.166                                                       | 46.292                                                      | 1.494                                                       | 5.535                                                       | 46.344                                                      | 1.512                                                       | 6.062                                                       |
| BITH_1644i3  | 1.417                                                       | 4.838                                                       | 46.094                                                      | 1.441                                                       | 5.166                                                       | 46.161                                                      | 1.450                                                       | 5.535                                                       | 46.224                                                      | 1.463                                                       | 6.060                                                       |
| BITH_1644i4  | 1.352                                                       | 5.489                                                       | 45.885                                                      | 1.392                                                       | 6.068                                                       | 45.945                                                      | 1.419                                                       | 6.647                                                       | 46.005                                                      | 1.436                                                       | 7.565                                                       |
| BITH_1644i5  | 1.192                                                       | 5.488                                                       | 45.747                                                      | 1.228                                                       | 6.066                                                       | 45.811                                                      | 1.242                                                       | 6.647                                                       | 45.875                                                      | 1.256                                                       | 7.566                                                       |
| BITH_1756    | 2.341                                                       | 4.594                                                       | 47.746                                                      | 2.411                                                       | 4.898                                                       | 47.778                                                      | 2.448                                                       | 5.223                                                       | 47.815                                                      | 2.498                                                       | 5.727                                                       |
| BITH_1756d   | 2.462                                                       | 4.594                                                       | 47.707                                                      | 2.548                                                       | 4.898                                                       | 47.733                                                      | 2.598                                                       | 5.223                                                       | 47.765                                                      | 2.663                                                       | 5.727                                                       |
| BITH_1756di1 | 2.491                                                       | 4.840                                                       | 47.257                                                      | 2.570                                                       | 5.168                                                       | 47.284                                                      | 2.620                                                       | 5.536                                                       | 47.315                                                      | 2.670                                                       | 6.062                                                       |
| BITH_1756di2 | 2.113                                                       | 4.841                                                       | 46.889                                                      | 2.161                                                       | 5.168                                                       | 46.921                                                      | 2.194                                                       | 5.535                                                       | 46.955                                                      | 2.231                                                       | 6.062                                                       |

| Location     | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0075_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0075_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0200_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0200_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F0200_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F1000_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F1000_CC0<br>00.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2023_<br>F1000_CC0<br>00.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|              |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    |
|              | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         |
| BITH_1361    | 45.871                                                      | 1.070                                                       | 8.120                                                       | 45.924                                                      | 1.080                                                       | 9.982                                                       | 46.080                                                      | 1.112                                                       | 14.626                                                      | 46.406                                                      | 1.147                                                       |
| BITH_1361i1  | 45.737                                                      | 1.249                                                       | 8.677                                                       | 45.787                                                      | 1.268                                                       | 10.615                                                      | 45.940                                                      | 1.312                                                       | 15.589                                                      | 46.261                                                      | 1.392                                                       |
| BITH_1361i2  | 45.616                                                      | 1.331                                                       | 8.677                                                       | 45.663                                                      | 1.358                                                       | 10.615                                                      | 45.808                                                      | 1.437                                                       | 15.589                                                      | 46.119                                                      | 1.569                                                       |
| BITH_1644    | 46.777                                                      | 1.591                                                       | 6.393                                                       | 46.808                                                      | 1.612                                                       | 7.406                                                       | 46.902                                                      | 1.663                                                       | 9.547                                                       | 47.182                                                      | 1.680                                                       |
| BITH_1644d   | 46.777                                                      | 1.592                                                       | 6.393                                                       | 46.808                                                      | 1.613                                                       | 7.406                                                       | 46.898                                                      | 1.672                                                       | 9.547                                                       | 47.162                                                      | 1.711                                                       |
| BITH_1644i1  | 46.576                                                      | 1.544                                                       | 6.392                                                       | 46.612                                                      | 1.552                                                       | 7.406                                                       | 46.724                                                      | 1.576                                                       | 10.308                                                      | 46.994                                                      | 1.604                                                       |
| BITH_1644i2  | 46.418                                                      | 1.523                                                       | 6.392                                                       | 46.463                                                      | 1.529                                                       | 7.403                                                       | 46.605                                                      | 1.541                                                       | 10.308                                                      | 46.905                                                      | 1.562                                                       |
| BITH_1644i3  | 46.316                                                      | 1.472                                                       | 6.391                                                       | 46.369                                                      | 1.477                                                       | 7.406                                                       | 46.530                                                      | 1.485                                                       | 10.296                                                      | 46.849                                                      | 1.494                                                       |
| BITH_1644i4  | 46.090                                                      | 1.452                                                       | 8.119                                                       | 46.139                                                      | 1.463                                                       | 9.980                                                       | 46.286                                                      | 1.502                                                       | 14.607                                                      | 46.592                                                      | 1.554                                                       |
| BITH_1644i5  | 45.961                                                      | 1.275                                                       | 8.119                                                       | 46.013                                                      | 1.287                                                       | 9.981                                                       | 46.165                                                      | 1.319                                                       | 14.609                                                      | 46.483                                                      | 1.357                                                       |
| BITH_1756    | 47.863                                                      | 2.542                                                       | 6.031                                                       | 47.893                                                      | 2.574                                                       | 6.987                                                       | 47.981                                                      | 2.692                                                       | 9.028                                                       | 48.165                                                      | 2.875                                                       |
| BITH_1756d   | 47.804                                                      | 2.726                                                       | 6.031                                                       | 47.830                                                      | 2.768                                                       | 6.987                                                       | 47.901                                                      | 2.927                                                       | 9.028                                                       | 48.045                                                      | 3.202                                                       |
| BITH_1756di1 | 47.357                                                      | 2.737                                                       | 6.392                                                       | 47.381                                                      | 2.782                                                       | 7.404                                                       | 47.454                                                      | 2.899                                                       | 9.570                                                       | 47.606                                                      | 3.085                                                       |
| BITH_1756di2 | 47.003                                                      | 2.284                                                       | 6.392                                                       | 47.031                                                      | 2.312                                                       | 7.404                                                       | 47.115                                                      | 2.389                                                       | 9.542                                                       | 47.305                                                      | 2.464                                                       |

| Location     | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>26.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>26.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>26.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>39.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>39.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>39.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>71.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>71.csv | 019_TRO_BI<br>SS_DEFEN_<br>SD1_2080_<br>F0100_CC0<br>71.csv | 019_TRO_BI<br>SS_SEN01_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN01_<br>SD1_2023_<br>F0100_CC0<br>00.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|              |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 |
|              | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       |
| BITH_1361    | 10.188                                                      | 46.103                                                      | 1.114                                                       | 11.146                                                      | 46.173                                                      | 1.121                                                       | 13.839                                                      | 46.359                                                      | 1.135                                                       | 8.277                                                       | 46.061                                                      |
| BITH_1361i1  | 10.905                                                      | 45.961                                                      | 1.316                                                       | 11.885                                                      | 46.031                                                      | 1.330                                                       | 14.770                                                      | 46.215                                                      | 1.378                                                       | 8.811                                                       | 45.932                                                      |
| BITH_1361i2  | 10.902                                                      | 45.829                                                      | 1.445                                                       | 11.886                                                      | 45.897                                                      | 1.471                                                       | 14.769                                                      | 46.075                                                      | 1.546                                                       | 8.813                                                       | 45.807                                                      |
| BITH_1644    | 7.548                                                       | 46.916                                                      | 1.666                                                       | 8.221                                                       | 46.976                                                      | 1.679                                                       | 9.346                                                       | 47.126                                                      | 1.678                                                       | 6.060                                                       | 46.898                                                      |
| BITH_1644d   | 7.548                                                       | 46.909                                                      | 1.677                                                       | 8.221                                                       | 46.963                                                      | 1.705                                                       | 9.346                                                       | 47.110                                                      | 1.709                                                       | 6.060                                                       | 46.896                                                      |
| BITH_1644i1  | 7.566                                                       | 46.739                                                      | 1.578                                                       | 8.221                                                       | 46.799                                                      | 1.586                                                       | 9.777                                                       | 46.951                                                      | 1.595                                                       | 6.056                                                       | 46.719                                                      |
| BITH_1644i2  | 7.540                                                       | 46.621                                                      | 1.545                                                       | 8.221                                                       | 46.685                                                      | 1.565                                                       | 9.776                                                       | 46.859                                                      | 1.559                                                       | 6.059                                                       | 46.587                                                      |
| BITH_1644i3  | 7.609                                                       | 46.547                                                      | 1.488                                                       | 8.221                                                       | 46.615                                                      | 1.488                                                       | 9.777                                                       | 46.801                                                      | 1.492                                                       | 6.054                                                       | 46.498                                                      |
| BITH_1644i4  | 10.186                                                      | 46.305                                                      | 1.504                                                       | 11.143                                                      | 46.371                                                      | 1.513                                                       | 13.834                                                      | 46.547                                                      | 1.543                                                       | 8.275                                                       | 46.290                                                      |
| BITH_1644i5  | 10.188                                                      | 46.186                                                      | 1.320                                                       | 11.142                                                      | 46.256                                                      | 1.327                                                       | 13.837                                                      | 46.437                                                      | 1.345                                                       | 8.276                                                       | 46.159                                                      |
| BITH_1756    | 7.098                                                       | 47.998                                                      | 2.697                                                       | 7.751                                                       | 48.055                                                      | 2.727                                                       | 8.814                                                       | 48.149                                                      | 2.823                                                       | 5.716                                                       | 47.933                                                      |
| BITH_1756d   | 7.098                                                       | 47.914                                                      | 2.935                                                       | 7.751                                                       | 47.959                                                      | 2.991                                                       | 8.814                                                       | 48.032                                                      | 3.141                                                       | 5.716                                                       | 47.873                                                      |
| BITH_1756di1 | 7.544                                                       | 47.465                                                      | 2.913                                                       | 8.221                                                       | 47.515                                                      | 2.974                                                       | 9.354                                                       | 47.590                                                      | 3.072                                                       | 6.058                                                       | 47.435                                                      |
| BITH_1756di2 | 7.547                                                       | 47.127                                                      | 2.398                                                       | 8.221                                                       | 47.182                                                      | 2.440                                                       | 9.346                                                       | 47.279                                                      | 2.467                                                       | 6.060                                                       | 47.060                                                      |

|              | 019_TRO_BI<br>SS_SEN01_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN02_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN02_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN02_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN03_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN03_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN03_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN03_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN03_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN03_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN04_<br>SD1_2023_<br>F0020_CC0<br>00.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| Location     |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        |
|              | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           |
| BITH_1361    | 0.938                                                       | 8.262                                                       | 45.798                                                      | 1.278                                                       | 5.490                                                       | 45.653                                                      | 1.015                                                       | 8.121                                                       | 45.924                                                      | 1.079                                                       | 5.490                                                       |
| BITH_1361i1  | 1.097                                                       | 8.802                                                       | 45.654                                                      | 1.497                                                       | 5.847                                                       | 45.530                                                      | 1.158                                                       | 8.677                                                       | 45.787                                                      | 1.268                                                       | 5.847                                                       |
| BITH_1361i2  | 1.194                                                       | 8.800                                                       | 45.530                                                      | 1.594                                                       | 5.847                                                       | 45.418                                                      | 1.209                                                       | 8.677                                                       | 45.663                                                      | 1.358                                                       | 5.847                                                       |
| BITH_1644    | 1.371                                                       | 6.882                                                       | 46.722                                                      | 1.947                                                       | 4.840                                                       | 46.657                                                      | 1.494                                                       | 6.393                                                       | 46.808                                                      | 1.612                                                       | 4.840                                                       |
| BITH_1644d   | 1.372                                                       | 6.882                                                       | 46.721                                                      | 1.949                                                       | 4.840                                                       | 46.657                                                      | 1.495                                                       | 6.393                                                       | 46.808                                                      | 1.613                                                       | 4.840                                                       |
| BITH_1644i1  | 1.312                                                       | 6.882                                                       | 46.505                                                      | 1.919                                                       | 4.840                                                       | 46.438                                                      | 1.486                                                       | 6.392                                                       | 46.612                                                      | 1.552                                                       | 4.841                                                       |
| BITH_1644i2  | 1.286                                                       | 6.881                                                       | 46.344                                                      | 1.891                                                       | 4.839                                                       | 46.241                                                      | 1.477                                                       | 6.391                                                       | 46.463                                                      | 1.528                                                       | 4.840                                                       |
| BITH_1644i3  | 1.232                                                       | 6.883                                                       | 46.259                                                      | 1.852                                                       | 4.838                                                       | 46.094                                                      | 1.441                                                       | 6.391                                                       | 46.369                                                      | 1.477                                                       | 4.839                                                       |
| BITH_1644i4  | 1.240                                                       | 8.260                                                       | 45.979                                                      | 1.847                                                       | 5.489                                                       | 45.885                                                      | 1.392                                                       | 8.119                                                       | 46.139                                                      | 1.462                                                       | 5.488                                                       |
| BITH_1644i5  | 1.097                                                       | 8.260                                                       | 45.866                                                      | 1.578                                                       | 5.489                                                       | 45.747                                                      | 1.229                                                       | 8.120                                                       | 46.013                                                      | 1.286                                                       | 5.489                                                       |
| BITH_1756    | 2.283                                                       | 6.528                                                       | 47.836                                                      | 3.039                                                       | 4.593                                                       | 47.746                                                      | 2.410                                                       | 6.031                                                       | 47.893                                                      | 2.575                                                       | 4.593                                                       |
| BITH_1756d   | 2.469                                                       | 6.528                                                       | 47.783                                                      | 3.234                                                       | 4.593                                                       | 47.707                                                      | 2.548                                                       | 6.031                                                       | 47.830                                                      | 2.768                                                       | 4.593                                                       |
| BITH_1756di1 | 2.435                                                       | 6.882                                                       | 47.315                                                      | 3.322                                                       | 4.840                                                       | 47.257                                                      | 2.570                                                       | 6.392                                                       | 47.381                                                      | 2.782                                                       | 4.841                                                       |
| BITH_1756di2 | 2.104                                                       | 6.882                                                       | 46.963                                                      | 2.744                                                       | 4.840                                                       | 46.889                                                      | 2.161                                                       | 6.392                                                       | 47.031                                                      | 2.312                                                       | 4.841                                                       |

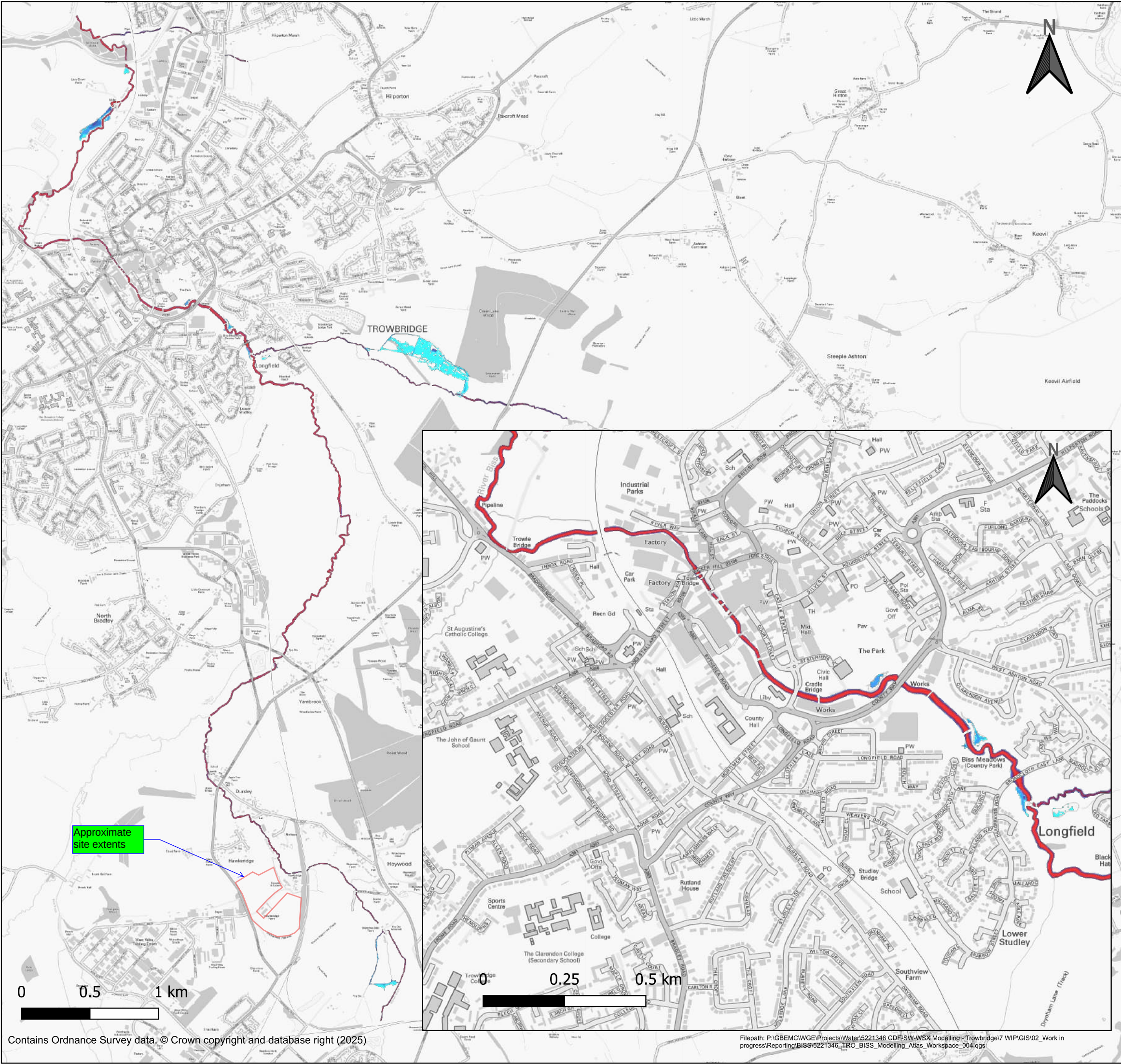
| Location     | 019_TRO_BI<br>SS_SEN04_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN04_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN04_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN04_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN04_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN05_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN05_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN05_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN05_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN06_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 019_TRO_BI<br>SS_SEN06_<br>SD1_2023_<br>F0100_CC0<br>00.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|              |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    |
|              | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         |
| BITH_1361    | 45.653                                                      | 1.015                                                       | 8.123                                                       | 45.924                                                      | 1.078                                                       | 8.121                                                       | 45.924                                                      | 1.080                                                       | 8.120                                                       | 45.924                                                      | 1.080                                                       |
| BITH_1361i1  | 45.530                                                      | 1.158                                                       | 8.679                                                       | 45.788                                                      | 1.268                                                       | 8.677                                                       | 45.787                                                      | 1.268                                                       | 8.677                                                       | 45.787                                                      | 1.268                                                       |
| BITH_1361i2  | 45.418                                                      | 1.209                                                       | 8.679                                                       | 45.664                                                      | 1.358                                                       | 8.677                                                       | 45.663                                                      | 1.358                                                       | 8.677                                                       | 45.663                                                      | 1.358                                                       |
| BITH_1644    | 46.657                                                      | 1.494                                                       | 6.394                                                       | 46.808                                                      | 1.612                                                       | 6.392                                                       | 46.808                                                      | 1.612                                                       | 6.392                                                       | 46.808                                                      | 1.612                                                       |
| BITH_1644d   | 46.657                                                      | 1.495                                                       | 6.394                                                       | 46.808                                                      | 1.613                                                       | 6.392                                                       | 46.808                                                      | 1.613                                                       | 6.392                                                       | 46.808                                                      | 1.613                                                       |
| BITH_1644i1  | 46.438                                                      | 1.486                                                       | 6.394                                                       | 46.612                                                      | 1.552                                                       | 6.392                                                       | 46.612                                                      | 1.552                                                       | 6.393                                                       | 46.612                                                      | 1.552                                                       |
| BITH_1644i2  | 46.241                                                      | 1.477                                                       | 6.393                                                       | 46.463                                                      | 1.529                                                       | 6.392                                                       | 46.463                                                      | 1.528                                                       | 6.392                                                       | 46.463                                                      | 1.528                                                       |
| BITH_1644i3  | 46.094                                                      | 1.441                                                       | 6.392                                                       | 46.369                                                      | 1.477                                                       | 6.391                                                       | 46.369                                                      | 1.476                                                       | 6.391                                                       | 46.369                                                      | 1.477                                                       |
| BITH_1644i4  | 45.885                                                      | 1.392                                                       | 8.122                                                       | 46.140                                                      | 1.463                                                       | 8.119                                                       | 46.139                                                      | 1.462                                                       | 8.119                                                       | 46.139                                                      | 1.463                                                       |
| BITH_1644i5  | 45.747                                                      | 1.228                                                       | 8.122                                                       | 46.013                                                      | 1.286                                                       | 8.120                                                       | 46.013                                                      | 1.287                                                       | 8.120                                                       | 46.013                                                      | 1.287                                                       |
| BITH_1756    | 47.746                                                      | 2.411                                                       | 6.032                                                       | 47.893                                                      | 2.572                                                       | 6.031                                                       | 47.893                                                      | 2.575                                                       | 6.031                                                       | 47.893                                                      | 2.575                                                       |
| BITH_1756d   | 47.707                                                      | 2.548                                                       | 6.032                                                       | 47.830                                                      | 2.768                                                       | 6.031                                                       | 47.829                                                      | 2.768                                                       | 6.031                                                       | 47.829                                                      | 2.768                                                       |
| BITH_1756di1 | 47.257                                                      | 2.570                                                       | 6.394                                                       | 47.381                                                      | 2.782                                                       | 6.392                                                       | 47.381                                                      | 2.782                                                       | 6.392                                                       | 47.381                                                      | 2.782                                                       |
| BITH_1756di2 | 46.889                                                      | 2.161                                                       | 6.393                                                       | 47.031                                                      | 2.312                                                       | 6.392                                                       | 47.031                                                      | 2.312                                                       | 6.392                                                       | 47.031                                                      | 2.312                                                       |

| Location     | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0002_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0002_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0002_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0005_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0005_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0005_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0010_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0010_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0010_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0020_CC0<br>00.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|              |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 |
|              | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       |
| BITH_1361    | 3.119                                                       | 45.337                                                      | 0.902                                                       | 3.906                                                       | 45.460                                                      | 0.950                                                       | 4.644                                                       | 45.551                                                      | 0.989                                                       | 5.489                                                       | 45.653                                                      |
| BITH_1361i1  | 3.337                                                       | 45.235                                                      | 0.986                                                       | 4.203                                                       | 45.351                                                      | 1.052                                                       | 4.953                                                       | 45.435                                                      | 1.108                                                       | 5.847                                                       | 45.530                                                      |
| BITH_1361i2  | 3.337                                                       | 45.137                                                      | 1.016                                                       | 4.202                                                       | 45.248                                                      | 1.086                                                       | 4.953                                                       | 45.329                                                      | 1.147                                                       | 5.847                                                       | 45.418                                                      |
| BITH_1644    | 3.119                                                       | 46.438                                                      | 1.339                                                       | 3.905                                                       | 46.544                                                      | 1.419                                                       | 4.390                                                       | 46.603                                                      | 1.463                                                       | 4.840                                                       | 46.657                                                      |
| BITH_1644d   | 3.119                                                       | 46.437                                                      | 1.340                                                       | 3.905                                                       | 46.543                                                      | 1.419                                                       | 4.390                                                       | 46.603                                                      | 1.464                                                       | 4.840                                                       | 46.656                                                      |
| BITH_1644i1  | 3.119                                                       | 46.208                                                      | 1.337                                                       | 3.905                                                       | 46.318                                                      | 1.414                                                       | 4.387                                                       | 46.378                                                      | 1.456                                                       | 4.841                                                       | 46.438                                                      |
| BITH_1644i2  | 3.119                                                       | 45.984                                                      | 1.332                                                       | 3.905                                                       | 46.097                                                      | 1.406                                                       | 4.387                                                       | 46.166                                                      | 1.443                                                       | 4.839                                                       | 46.241                                                      |
| BITH_1644i3  | 3.118                                                       | 45.770                                                      | 1.304                                                       | 3.905                                                       | 45.885                                                      | 1.374                                                       | 4.388                                                       | 45.986                                                      | 1.417                                                       | 4.838                                                       | 46.094                                                      |
| BITH_1644i4  | 3.119                                                       | 45.579                                                      | 1.243                                                       | 3.905                                                       | 45.696                                                      | 1.305                                                       | 4.644                                                       | 45.788                                                      | 1.353                                                       | 5.489                                                       | 45.885                                                      |
| BITH_1644i5  | 3.119                                                       | 45.431                                                      | 1.106                                                       | 3.905                                                       | 45.553                                                      | 1.150                                                       | 4.645                                                       | 45.646                                                      | 1.192                                                       | 5.489                                                       | 45.747                                                      |
| BITH_1756    | 2.981                                                       | 47.578                                                      | 2.150                                                       | 3.719                                                       | 47.659                                                      | 2.273                                                       | 4.165                                                       | 47.705                                                      | 2.342                                                       | 4.593                                                       | 47.746                                                      |
| BITH_1756d   | 2.981                                                       | 47.561                                                      | 2.210                                                       | 3.719                                                       | 47.632                                                      | 2.369                                                       | 4.165                                                       | 47.671                                                      | 2.462                                                       | 4.593                                                       | 47.707                                                      |
| BITH_1756di1 | 3.118                                                       | 47.103                                                      | 2.236                                                       | 3.905                                                       | 47.177                                                      | 2.402                                                       | 4.389                                                       | 47.219                                                      | 2.491                                                       | 4.840                                                       | 47.257                                                      |
| BITH_1756di2 | 3.118                                                       | 46.699                                                      | 1.950                                                       | 3.905                                                       | 46.791                                                      | 2.057                                                       | 4.387                                                       | 46.844                                                      | 2.112                                                       | 4.840                                                       | 46.889                                                      |

| Location     | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0020_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0030_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0030_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0030_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0050_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0050_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0050_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0075_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0075_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0075_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0100_CC0<br>00.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|              |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        |
|              | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           |
| BITH_1361    | 1.015                                                       | 6.062                                                       | 45.718                                                      | 1.035                                                       | 6.648                                                       | 45.783                                                      | 1.052                                                       | 7.567                                                       | 45.871                                                      | 1.070                                                       | 8.120                                                       |
| BITH_1361i1  | 1.158                                                       | 6.473                                                       | 45.591                                                      | 1.187                                                       | 7.125                                                       | 45.653                                                      | 1.212                                                       | 8.081                                                       | 45.737                                                      | 1.249                                                       | 8.677                                                       |
| BITH_1361i2  | 1.209                                                       | 6.469                                                       | 45.476                                                      | 1.249                                                       | 7.125                                                       | 45.535                                                      | 1.284                                                       | 8.082                                                       | 45.616                                                      | 1.331                                                       | 8.677                                                       |
| BITH_1644    | 1.494                                                       | 5.168                                                       | 46.693                                                      | 1.520                                                       | 5.535                                                       | 46.728                                                      | 1.552                                                       | 6.062                                                       | 46.777                                                      | 1.591                                                       | 6.393                                                       |
| BITH_1644d   | 1.495                                                       | 5.168                                                       | 46.692                                                      | 1.521                                                       | 5.535                                                       | 46.728                                                      | 1.553                                                       | 6.062                                                       | 46.777                                                      | 1.592                                                       | 6.393                                                       |
| BITH_1644i1  | 1.487                                                       | 5.167                                                       | 46.476                                                      | 1.512                                                       | 5.535                                                       | 46.518                                                      | 1.535                                                       | 6.062                                                       | 46.576                                                      | 1.543                                                       | 6.393                                                       |
| BITH_1644i2  | 1.477                                                       | 5.167                                                       | 46.292                                                      | 1.494                                                       | 5.535                                                       | 46.344                                                      | 1.512                                                       | 6.062                                                       | 46.418                                                      | 1.523                                                       | 6.392                                                       |
| BITH_1644i3  | 1.441                                                       | 5.166                                                       | 46.161                                                      | 1.450                                                       | 5.535                                                       | 46.224                                                      | 1.463                                                       | 6.061                                                       | 46.316                                                      | 1.472                                                       | 6.392                                                       |
| BITH_1644i4  | 1.392                                                       | 6.068                                                       | 45.945                                                      | 1.419                                                       | 6.647                                                       | 46.005                                                      | 1.436                                                       | 7.565                                                       | 46.090                                                      | 1.452                                                       | 8.119                                                       |
| BITH_1644i5  | 1.228                                                       | 6.066                                                       | 45.811                                                      | 1.242                                                       | 6.647                                                       | 45.875                                                      | 1.256                                                       | 7.566                                                       | 45.961                                                      | 1.275                                                       | 8.120                                                       |
| BITH_1756    | 2.411                                                       | 4.898                                                       | 47.778                                                      | 2.448                                                       | 5.224                                                       | 47.815                                                      | 2.498                                                       | 5.727                                                       | 47.863                                                      | 2.542                                                       | 6.031                                                       |
| BITH_1756d   | 2.548                                                       | 4.898                                                       | 47.733                                                      | 2.598                                                       | 5.224                                                       | 47.765                                                      | 2.663                                                       | 5.727                                                       | 47.804                                                      | 2.726                                                       | 6.031                                                       |
| BITH_1756di1 | 2.570                                                       | 5.168                                                       | 47.284                                                      | 2.620                                                       | 5.536                                                       | 47.315                                                      | 2.670                                                       | 6.062                                                       | 47.357                                                      | 2.737                                                       | 6.392                                                       |
| BITH_1756di2 | 2.161                                                       | 5.168                                                       | 46.921                                                      | 2.194                                                       | 5.535                                                       | 46.955                                                      | 2.231                                                       | 6.062                                                       | 47.003                                                      | 2.284                                                       | 6.392                                                       |

| Location     | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0100_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0200_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0200_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F0200_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F1000_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F1000_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2023_<br>F1000_CC0<br>00.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>26.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>26.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>26.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
|              |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    |
|              | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         |
| BITH_1361    | 45.924                                                      | 1.079                                                       | 9.982                                                       | 46.079                                                      | 1.112                                                       | 14.632                                                      | 46.406                                                      | 1.147                                                       | 10.154                                                      | 46.098                                                      | 1.114                                                       |
| BITH_1361i1  | 45.787                                                      | 1.268                                                       | 10.613                                                      | 45.939                                                      | 1.312                                                       | 15.593                                                      | 46.261                                                      | 1.392                                                       | 10.843                                                      | 45.957                                                      | 1.315                                                       |
| BITH_1361i2  | 45.663                                                      | 1.358                                                       | 10.611                                                      | 45.808                                                      | 1.437                                                       | 15.590                                                      | 46.119                                                      | 1.569                                                       | 10.843                                                      | 45.825                                                      | 1.444                                                       |
| BITH_1644    | 46.808                                                      | 1.612                                                       | 7.405                                                       | 46.902                                                      | 1.662                                                       | 9.547                                                       | 47.183                                                      | 1.679                                                       | 7.535                                                       | 46.916                                                      | 1.664                                                       |
| BITH_1644d   | 46.808                                                      | 1.613                                                       | 7.405                                                       | 46.898                                                      | 1.671                                                       | 9.547                                                       | 47.163                                                      | 1.711                                                       | 7.535                                                       | 46.910                                                      | 1.675                                                       |
| BITH_1644i1  | 46.612                                                      | 1.552                                                       | 7.403                                                       | 46.724                                                      | 1.576                                                       | 10.316                                                      | 46.994                                                      | 1.603                                                       | 7.535                                                       | 46.736                                                      | 1.579                                                       |
| BITH_1644i2  | 46.463                                                      | 1.528                                                       | 7.409                                                       | 46.604                                                      | 1.540                                                       | 10.315                                                      | 46.906                                                      | 1.562                                                       | 7.557                                                       | 46.618                                                      | 1.545                                                       |
| BITH_1644i3  | 46.369                                                      | 1.476                                                       | 7.405                                                       | 46.530                                                      | 1.485                                                       | 10.303                                                      | 46.850                                                      | 1.494                                                       | 7.531                                                       | 46.543                                                      | 1.488                                                       |
| BITH_1644i4  | 46.139                                                      | 1.462                                                       | 9.978                                                       | 46.286                                                      | 1.502                                                       | 14.615                                                      | 46.593                                                      | 1.555                                                       | 10.145                                                      | 46.301                                                      | 1.504                                                       |
| BITH_1644i5  | 46.013                                                      | 1.286                                                       | 9.978                                                       | 46.165                                                      | 1.319                                                       | 14.615                                                      | 46.484                                                      | 1.357                                                       | 10.147                                                      | 46.182                                                      | 1.320                                                       |
| BITH_1756    | 47.893                                                      | 2.575                                                       | 6.986                                                       | 47.981                                                      | 2.693                                                       | 9.031                                                       | 48.165                                                      | 2.876                                                       | 7.088                                                       | 47.994                                                      | 2.697                                                       |
| BITH_1756d   | 47.829                                                      | 2.768                                                       | 6.986                                                       | 47.901                                                      | 2.927                                                       | 9.031                                                       | 48.045                                                      | 3.203                                                       | 7.088                                                       | 47.911                                                      | 2.934                                                       |
| BITH_1756di1 | 47.381                                                      | 2.782                                                       | 7.406                                                       | 47.454                                                      | 2.900                                                       | 9.572                                                       | 47.606                                                      | 3.085                                                       | 7.525                                                       | 47.464                                                      | 2.913                                                       |
| BITH_1756di2 | 47.031                                                      | 2.312                                                       | 7.405                                                       | 47.115                                                      | 2.390                                                       | 9.543                                                       | 47.305                                                      | 2.464                                                       | 7.526                                                       | 47.125                                                      | 2.397                                                       |

|              | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>39.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>39.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>39.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>71.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>71.csv | 020_TRO_BI<br>SS_DEFAC_<br>SD1_2080_<br>F0100_CC0<br>71.csv |
|--------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| Location     |                                                             |                                                             |                                                             |                                                             |                                                             |                                                             |
|              | Flow                                                        | Water Level                                                 | Velocity                                                    | Flow                                                        | Water Level                                                 | Velocity                                                    |
|              | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         | m <sup>3</sup> /s                                           | m AOD                                                       | m/s                                                         |
| BITH_1361    | 11.124                                                      | 46.171                                                      | 1.121                                                       | 13.847                                                      | 46.359                                                      | 1.135                                                       |
| BITH_1361i1  | 11.856                                                      | 46.029                                                      | 1.330                                                       | 14.778                                                      | 46.215                                                      | 1.378                                                       |
| BITH_1361i2  | 11.856                                                      | 45.895                                                      | 1.470                                                       | 14.777                                                      | 46.076                                                      | 1.546                                                       |
| BITH_1644    | 8.209                                                       | 46.975                                                      | 1.679                                                       | 9.347                                                       | 47.126                                                      | 1.679                                                       |
| BITH_1644d   | 8.209                                                       | 46.962                                                      | 1.705                                                       | 9.347                                                       | 47.110                                                      | 1.710                                                       |
| BITH_1644i1  | 8.208                                                       | 46.797                                                      | 1.586                                                       | 9.781                                                       | 46.951                                                      | 1.595                                                       |
| BITH_1644i2  | 8.208                                                       | 46.684                                                      | 1.564                                                       | 9.779                                                       | 46.860                                                      | 1.559                                                       |
| BITH_1644i3  | 8.206                                                       | 46.613                                                      | 1.488                                                       | 9.781                                                       | 46.802                                                      | 1.492                                                       |
| BITH_1644i4  | 11.122                                                      | 46.370                                                      | 1.512                                                       | 13.842                                                      | 46.547                                                      | 1.543                                                       |
| BITH_1644i5  | 11.122                                                      | 46.254                                                      | 1.327                                                       | 13.845                                                      | 46.437                                                      | 1.345                                                       |
| BITH_1756    | 7.742                                                       | 48.055                                                      | 2.726                                                       | 8.814                                                       | 48.149                                                      | 2.824                                                       |
| BITH_1756d   | 7.742                                                       | 47.959                                                      | 2.991                                                       | 8.814                                                       | 48.032                                                      | 3.142                                                       |
| BITH_1756di1 | 8.208                                                       | 47.514                                                      | 2.973                                                       | 9.356                                                       | 47.590                                                      | 3.073                                                       |
| BITH_1756di2 | 8.208                                                       | 47.181                                                      | 2.440                                                       | 9.346                                                       | 47.279                                                      | 2.466                                                       |



Key

Legend

□ Model Domain

Maximum Depth (m)

<0.1

0.10 - 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

> 1.50

|                |      |             |    |             |       |
|----------------|------|-------------|----|-------------|-------|
|                |      |             |    |             |       |
| Rev            | Date | Description | By | Chk'd       | App'd |
| Drawing Status |      |             |    | Suitability |       |
| FOR ISSUE      |      |             |    | S0          |       |

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SW1E 5BY,  
United Kingdom  
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Client

Environment  
Agency

Project Title

Trowbridge (Biss Model) Flood Modelling

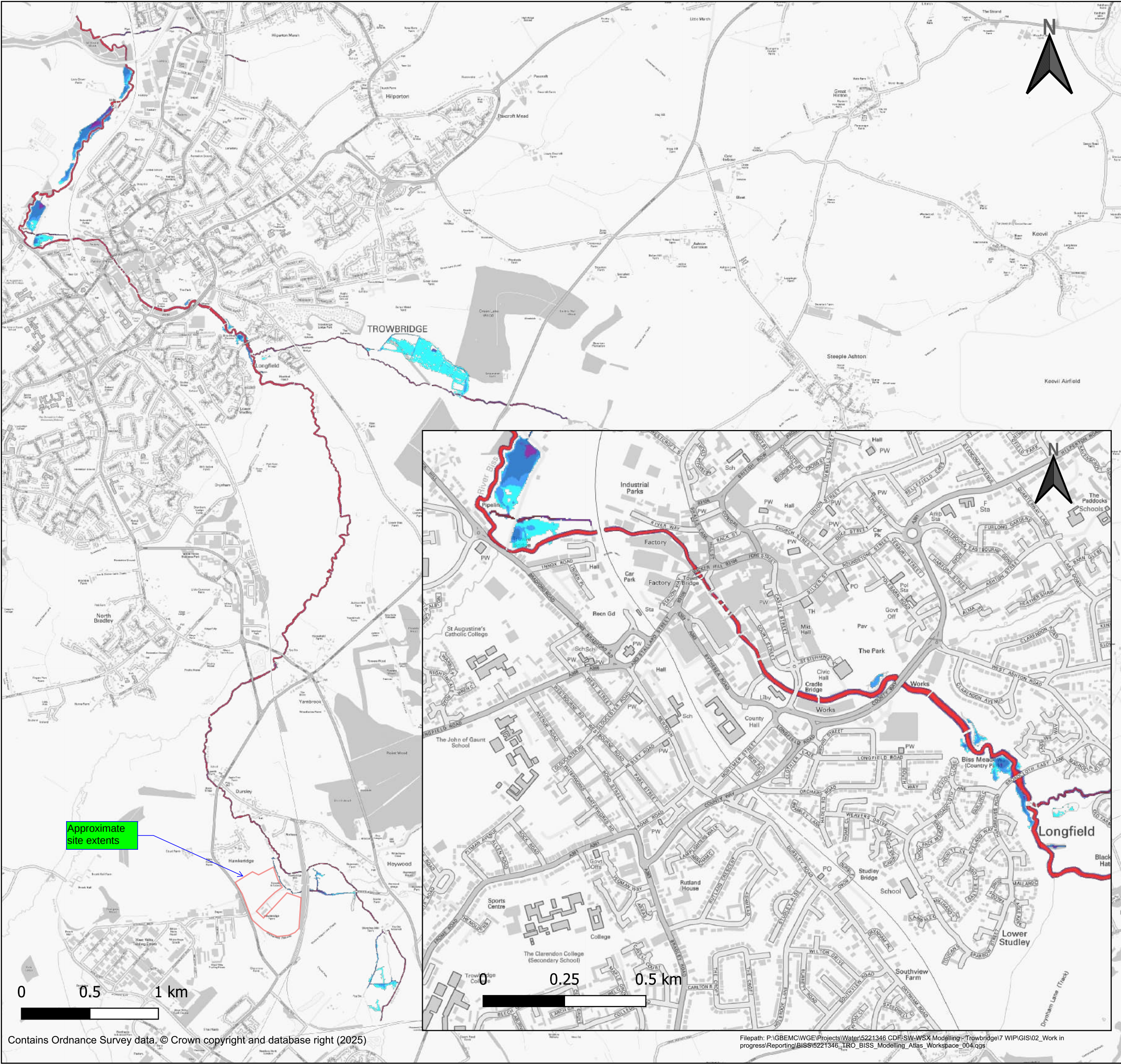
Drawing Title

Trowbridge (Biss Model) Flood Modelling Report  
Catchment Extent - De facto defences removed Maximum  
Depth 50% AEP Fluvial Event

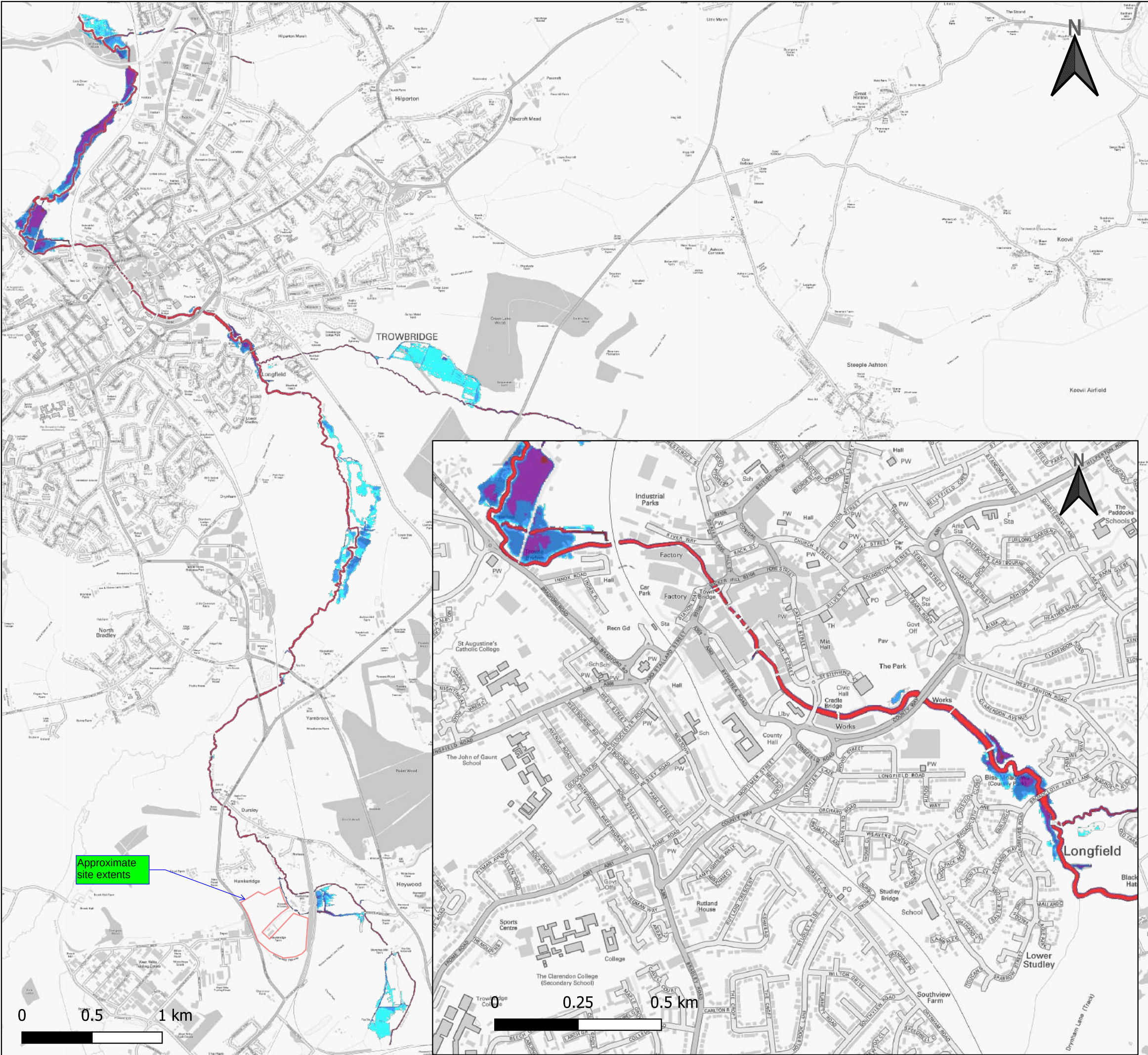
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|-----------------------------|------------|------------|------------|------------|
| Scale                       | Drawn      | Checked    | Reviewed   | Authorised |
| SCALE                       | JB         | JD         | HC         | TR         |
| Original Size               | Date       | Date       | Date       | Date       |
| A3                          | 14/08/2025 | 14/08/2025 | 14/08/2025 | 14/08/2025 |
| Drawing Number              |            |            |            | Revision:  |
| 5221346_BISS_Defac-D-001-00 |            |            |            | 00         |

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Filepath: P:\GBEMC\WGEP\Projects\Water\5221346 CDF\SW-WSX Modelling - Trowbridge\7 WIP\GIS\02\_Work in progress\Reporting\BISS\5221346\_TRO\_BISS\_Modelling\_Atlas\_Workspace\_004.qgs



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| Key                                                                                                                                                                                                                              |  |  |  |  |  |
| Legend                                                                                                                                                                                                                           |  |  |  |  |  |
| <div><div><input type="checkbox"/> Model Domain</div><div>Maximum Depth (m)</div><div><div>&lt;0.1</div><div>0.10 - 0.25</div><div>0.25 - 0.50</div><div>0.50 - 1.00</div><div>1.00 - 1.50</div><div>&gt; 1.50</div></div></div> |  |  |  |  |  |
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Key

Legend

□ Model Domain

Maximum Depth (m)

<0.1

0.10 - 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

> 1.50

|                |      |             |    |             |       |
|----------------|------|-------------|----|-------------|-------|
| Rev            | Date | Description | By | Chk'd       | App'd |
| Drawing Status |      |             |    | Suitability |       |
| FOR ISSUE      |      |             |    | S0          |       |

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Client

Environment Agency

Project Title

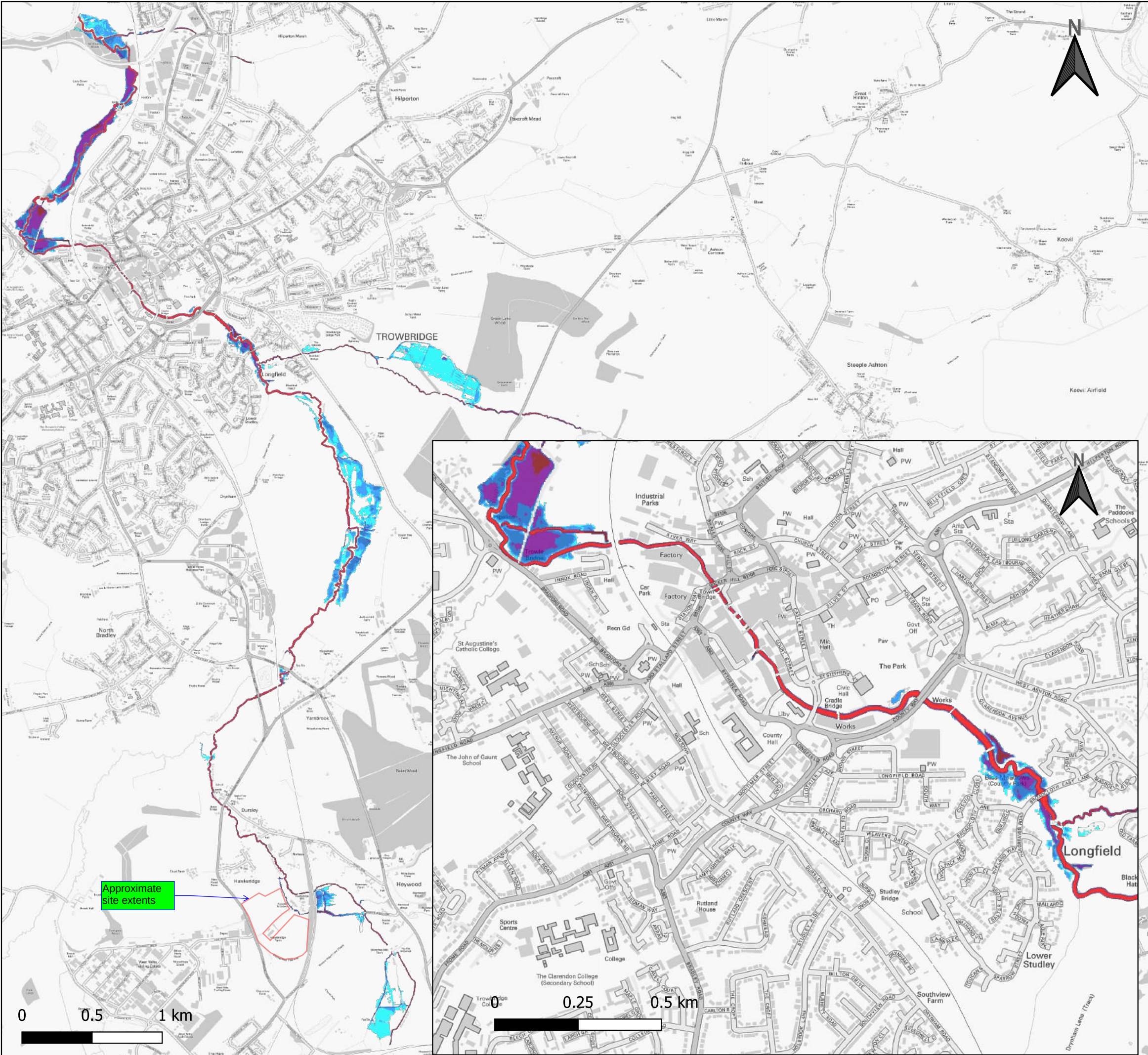
Trowbridge (Biss Model) Flood Modelling

Drawing Title

Trowbridge (Biss Model) Flood Modelling Report  
Catchment Extent - De facto defences removed  
Maximum Depth 5% AEP Fluvial Event

|                             |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|
| Scale                       | Drawn      | Checked    | Reviewed   | Authorised |
| SCALE                       | JB         | JD         | HC         | TR         |
| Original Size               | Date       | Date       | Date       | Date       |
| A3                          | 14/08/2025 | 14/08/2025 | 14/08/2025 | 14/08/2025 |
| Drawing Number              |            |            |            | Revision:  |
| 5221346_BISS_Defac-D-004-00 |            |            |            | 00         |

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Key

Legend

Model Domain

Maximum Depth (m)

- <0.1
- 0.10 - 0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 1.50
- > 1.50

|                |      |             |    |       |             |
|----------------|------|-------------|----|-------|-------------|
| Rev            | Date | Description | By | Chk'd | App'd       |
| Drawing Status |      |             |    |       | Suitability |
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Project Title

Trowbridge (Biss Model) Flood Modelling

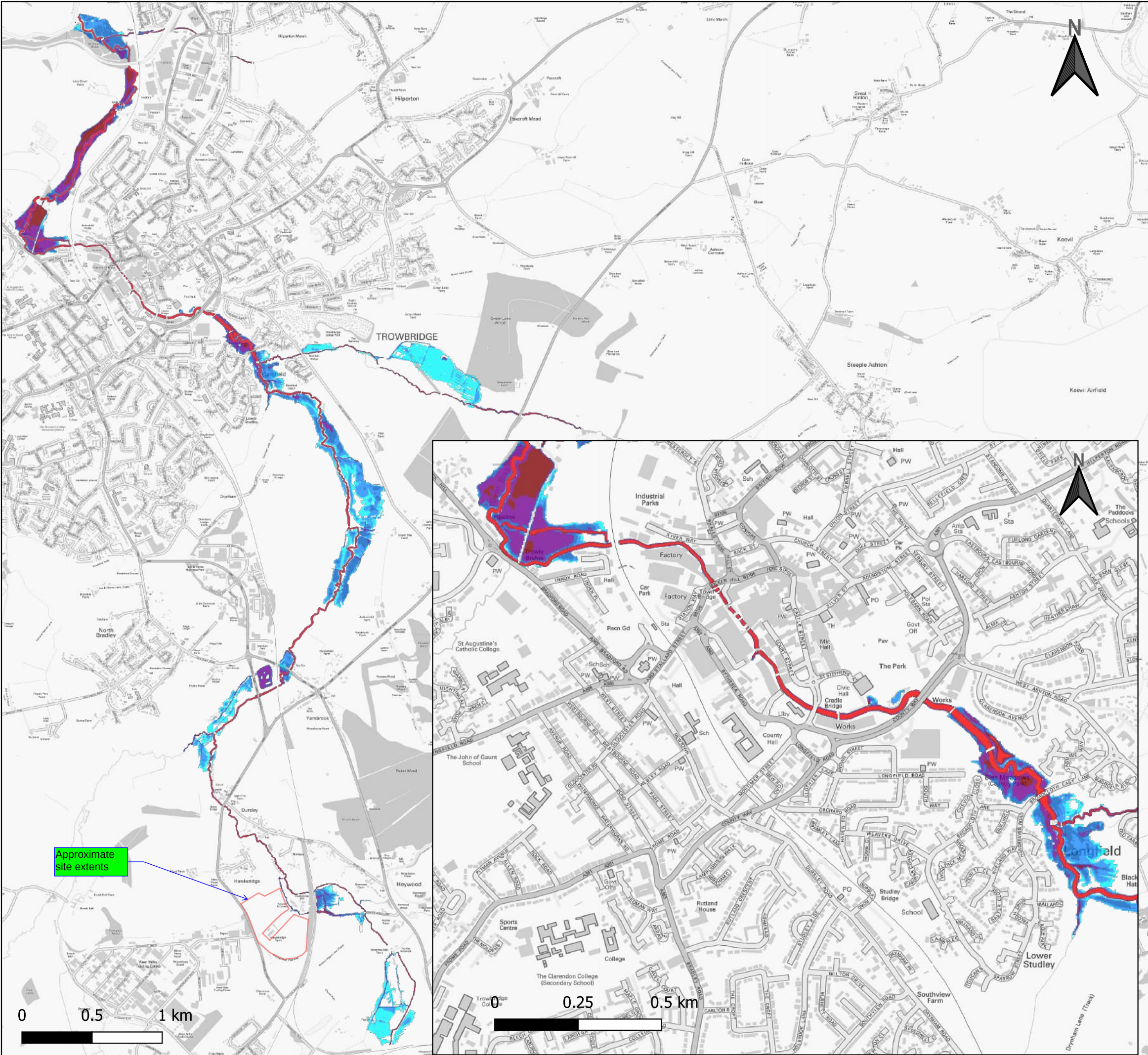
Drawing Title

Trowbridge (Biss Model) Flood Modelling Report  
Catchment Extent - De facto defences removed Maximum  
Depth 3.33% AEP Fluvial Event

|                             |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|
| Scale                       | Drawn      | Checked    | Reviewed   | Authorised |
| SCALE                       | JB         | JD         | HC         | TR         |
| Original Size               | Date       | Date       | Date       | Date       |
| A3                          | 14/08/2025 | 14/08/2025 | 14/08/2025 | 14/08/2025 |
| Drawing Number              |            |            |            | Revision:  |
| 5221346_BISS_Defac-D-005-00 |            |            |            | 00         |

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Key

Legend

□ Model Domain

Maximum Depth (m)

<0.1

0.10 - 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

> 1.50

|                |      |             |    |             |       |
|----------------|------|-------------|----|-------------|-------|
| Rev            | Date | Description | By | Chk'd       | App'd |
| Drawing Status |      |             |    | Suitability |       |
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Environment Agency

Project Title

Trowbridge (Biss Model) Flood Modelling

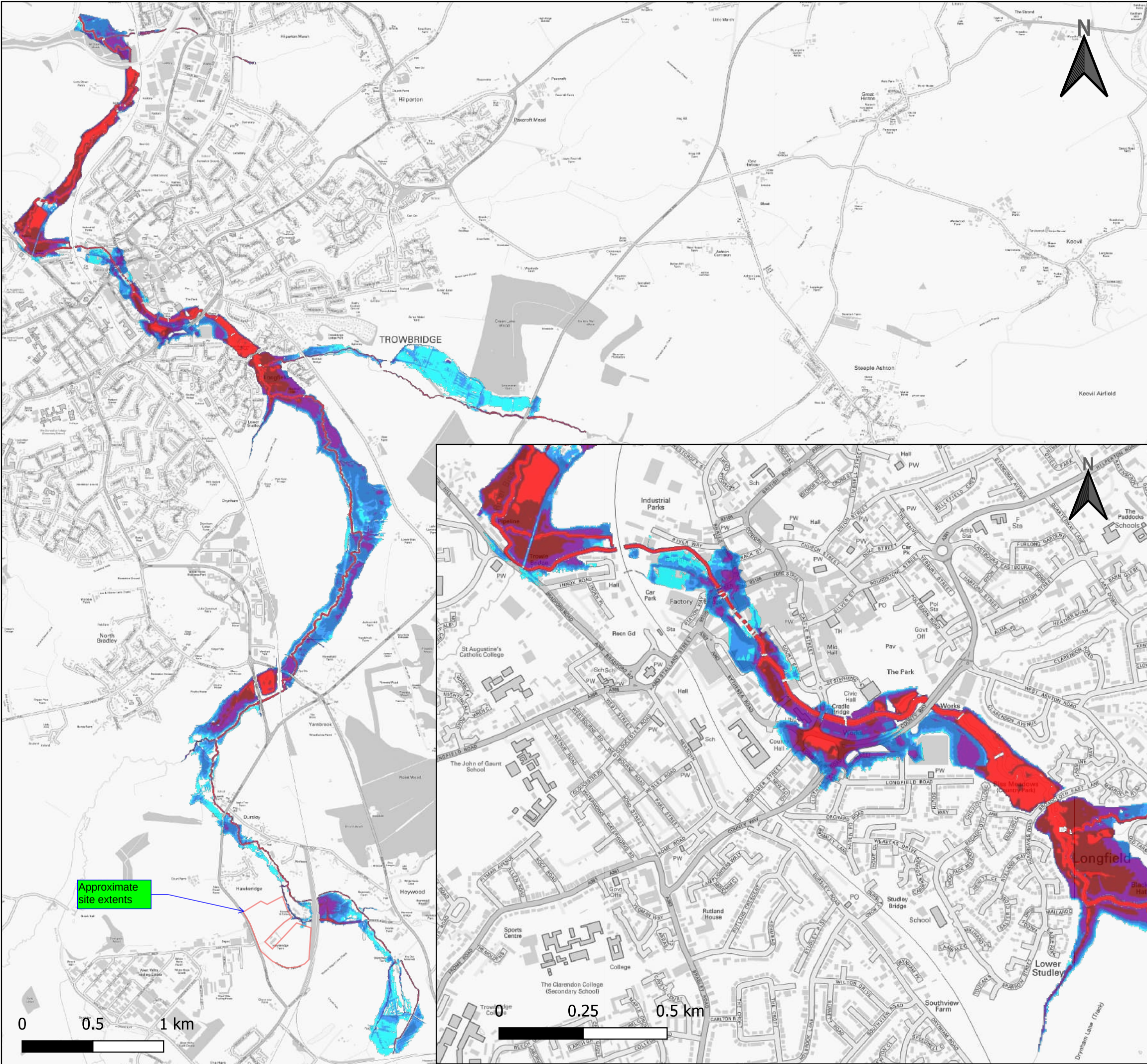
Drawing Title

Trowbridge (Biss Model) Flood Modelling Report  
Catchment Extent - De facto defences removed Maximum  
Depth 1% AEP Fluvial Event

|                             |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|
| Scale                       | Drawn      | Checked    | Reviewed   | Authorised |
| SCALE                       | JB         | JD         | HC         | TR         |
| Original Size               | Date       | Date       | Date       | Date       |
| A3                          | 14/08/2025 | 14/08/2025 | 14/08/2025 | 14/08/2025 |
| Drawing Number              |            |            |            | Revision:  |
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Key

Legend

□ Model Domain

Maximum Depth (m)

- <0.1
- 0.10 - 0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 1.50
- > 1.50

|                |      |             |    |       |             |
|----------------|------|-------------|----|-------|-------------|
| Rev            | Date | Description | By | Chk'd | App'd       |
| Drawing Status |      |             |    |       | Suitability |
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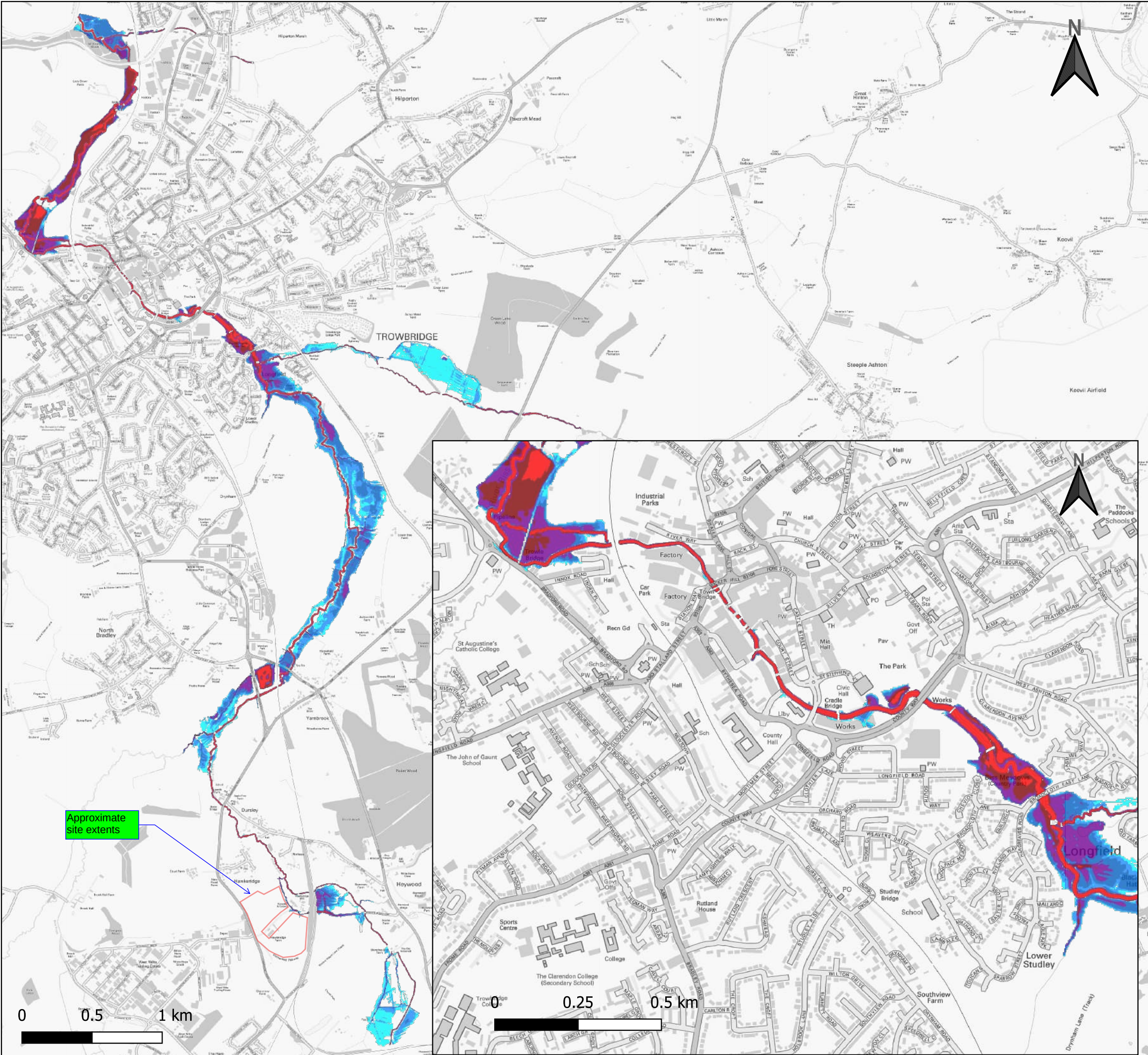
Project Title

Trowbridge (Biss Model) Flood Modelling

Drawing Title

Trowbridge (Biss Model) Flood Modelling Report  
Catchment Extent - De facto defences removed Maximum  
Depth 0.1% AEP Fluvial Event

|                             |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|
| Scale                       | Drawn      | Checked    | Reviewed   | Authorised |
| SCALE                       | JB         | JD         | HC         | TR         |
| Original Size               | Date       | Date       | Date       | Date       |
| A3                          | 14/08/2025 | 14/08/2025 | 14/08/2025 | 14/08/2025 |
| Drawing Number              |            |            |            | Revision:  |
| 5221346_BISS_Defac-D-010-00 |            |            |            | 00         |



Key

Legend

□ Model Domain

Maximum Depth (m)

<0.1

0.10 - 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

> 1.50

|                |      |             |    |             |       |
|----------------|------|-------------|----|-------------|-------|
| Rev            | Date | Description | By | Chk'd       | App'd |
| Drawing Status |      |             |    | Suitability |       |
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Environment Agency

Project Title

Trowbridge (Biss Model) Flood Modelling

Drawing Title

Trowbridge (Biss Model) Flood Modelling Report  
Catchment Extent - De facto defences removed Maximum  
Depth 1% AEP 2080s 'central' (26%) allowance Fluvial Event

|               |            |            |            |            |
|---------------|------------|------------|------------|------------|
| Scale         | Drawn      | Checked    | Reviewed   | Authorised |
| SCALE         | JB         | JD         | HC         | TR         |
| Original Size | Date       | Date       | Date       | Date       |
| A3            | 14/08/2025 | 14/08/2025 | 14/08/2025 | 14/08/2025 |

Drawing Number

5221346\_BISS\_Defac-D-011-00

Revision:

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0

0.5

1 km

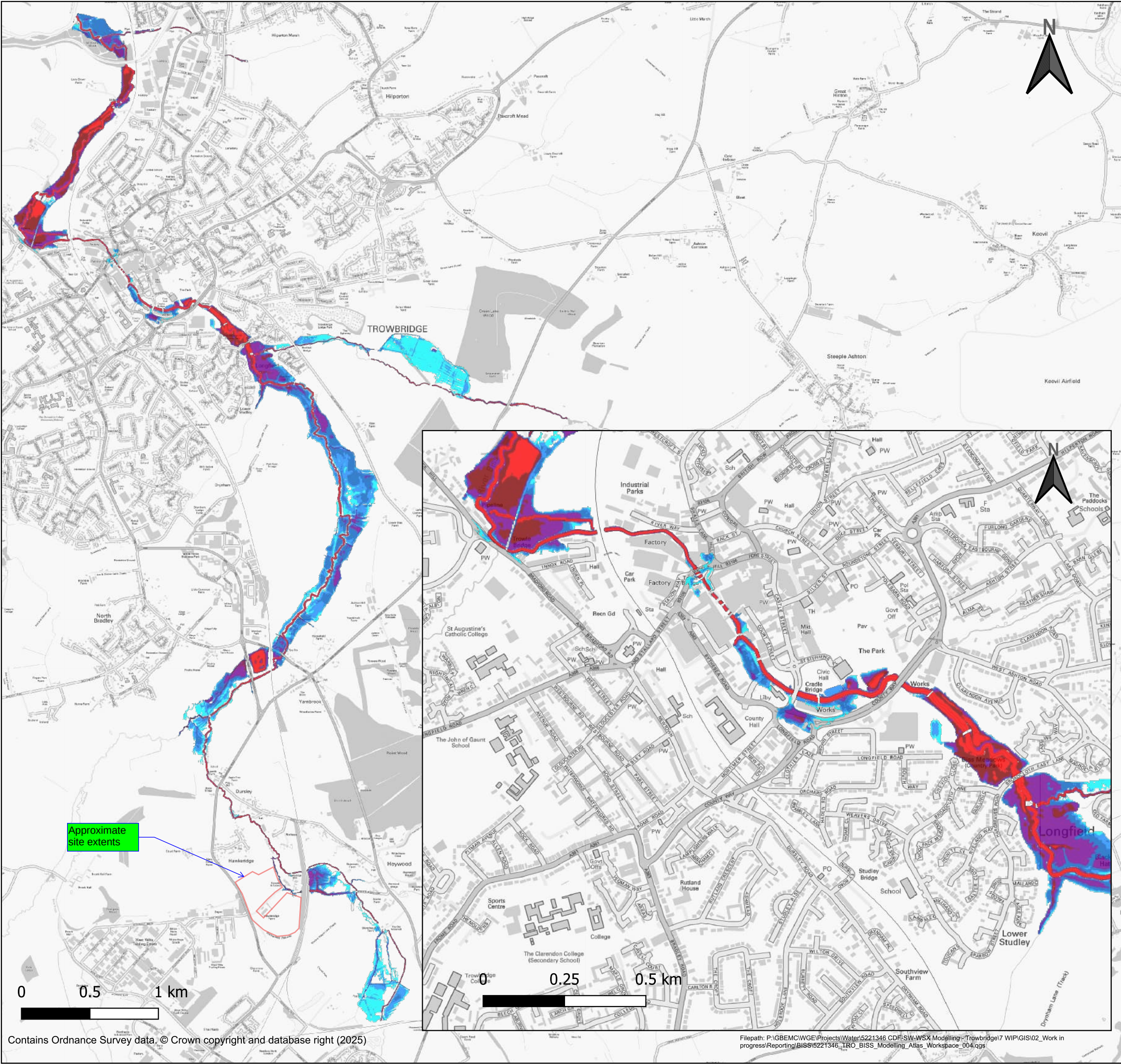
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0.25

0.5 km

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Legend

□ Model Domain

Maximum Depth (m)

<0.1

0.10 - 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

> 1.50

|                |      |             |    |             |       |
|----------------|------|-------------|----|-------------|-------|
| Rev            | Date | Description | By | Chk'd       | App'd |
| Drawing Status |      |             |    | Suitability |       |
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Environment

Agency

Project Title

Trowbridge (Biss Model) Flood Modelling

Drawing Title

Trowbridge (Biss Model) Flood Modelling Report  
Catchment Extent - De facto defences removed Maximum  
Depth 1% AEP 2080s 'higher central' (39%) allowance Fluvial  
Event

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|---------------|------------|------------|------------|------------|
| Scale         | Drawn      | Checked    | Reviewed   | Authorised |
| SCALE         | JB         | JD         | HC         | TR         |
| Original Size | Date       | Date       | Date       | Date       |
| A3            | 14/08/2025 | 14/08/2025 | 14/08/2025 | 14/08/2025 |

Drawing Number

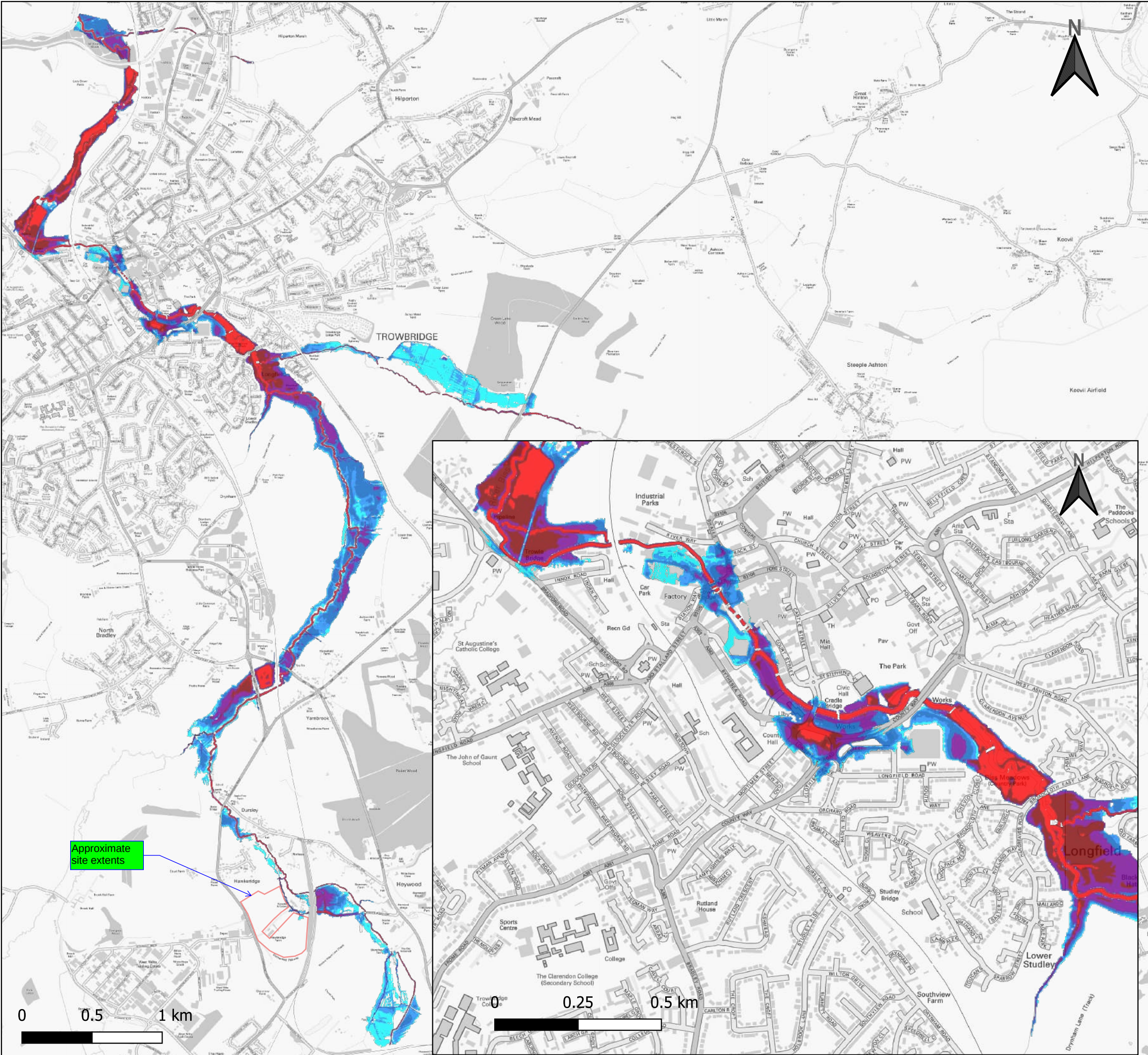
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Revision:

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Key

Legend

□ Model Domain

Maximum Depth (m)

<0.1

0.10 - 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

> 1.50

|                |      |             |    |             |       |
|----------------|------|-------------|----|-------------|-------|
| Rev            | Date | Description | By | Chk'd       | App'd |
| Drawing Status |      |             |    | Suitability |       |
| FOR ISSUE      |      |             |    | S0          |       |

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Client

Environment Agency

Project Title

Trowbridge (Biss Model) Flood Modelling

Drawing Title

Trowbridge (Biss Model) Flood Modelling Report  
Catchment Extent - De facto defences removed Maximum  
Depth 1% AEP 2080s 'upper' (71%) allowance Fluvial Event

|               |            |            |            |            |
|---------------|------------|------------|------------|------------|
| Scale         | Drawn      | Checked    | Reviewed   | Authorised |
| SCALE         | JB         | JD         | HC         | TR         |
| Original Size | Date       | Date       | Date       | Date       |
| A3            | 14/08/2025 | 14/08/2025 | 14/08/2025 | 14/08/2025 |

Drawing Number

5221346\_BISS\_Defac-D-013-00

Revision:

00

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