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FLOOD RISK & DRAINAGE

FLOOD RISK REVIEW
Land on the south side of Bampton Road, Aston, OX18 2BT

Doc ref. JOF0134-RP-FRA-001 REV 01
The Parish Council of Aston, Cote, Shifford and Chimney

Flood risk. Drainage. Hydraulic Modelling.

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enquiries@joflows.co.uk
07857 447987
joflows.co.uk

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Flood Risk Review
December 2024

REPORT REF: JOF0134-RP-FRA-001 REV 01

CLIENT: The Parish Council of Aston, Cote, Shifford and Chimney

ENGINEER: JOFLOWS
Lytchett House, 13
Freeland Park, Wareham
Road, Poole, Dorset
BH16 6FA

Tel: +44 (0) 7857 447987
Email enquiries@joflows.co.uk

REGISTRATION OF AMENDMENTS

Date	Rev	Comment	Status	Prepared By
December 2024	(-)	First issue	Issue for comment only	**Joao Gil** **BSc. MSc. GMICE** Civil Engineer
December 2024	01	Issue to address Client's comments	Issue to inform planning application	**Joao Gil** **BSc. MSc. GMICE** Civil Engineer

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EXECUTIVE SUMMARY

Site Address	Land on the south side of Bampton Road, Aston, OX18 2BT
Site Description and Setting	At the date of this review, the Site comprises an undeveloped plot of land with unmaintained short vegetation and a combination of trees and hedges along its boundaries.
Proposed Development	It is understood that there are plans for the development of 40 residential dwelling houses at the Site, with associated access infrastructure and amenity areas.
Historic Flooding	The areas surrounding Aston have recorded various flood events over the past years. These events were particularly severe for the residents at Kingsway Cottages and St Josephs Court, immediately adjacent to the Site. A long photographic evidence was recorded by local residents and shows various flood events in Aston between 2007 and 2024, at least. The Site is also regularly affected by flooding, with photographic evidence showing the land becoming a temporary ponding area (or floodplain) for surface and fluvial waters. A number of sewer flooding records have also been experienced by residents in the area, who have seen sewage backflowing into their properties. These events have been acknowledged by Thames Water and prompted various refunds of water bills as a compensatory measure. The main reason for the lack of capacity in the public sewer network is believed to be groundwater, which infiltrates into the local foul sewer network, and has prompted Thames Water to line some extents of the network. According to Thames Water, ground water infiltration accounts for 46% of the current drainage capacity of the foul sewer in Bampton Road.
On-Site Flood Risk	The Site is found to be located at a *flood hotspot*, at risk of flooding from a combination of multiple sources, including fluvial, surface water, groundwater and reservoir inundation. Therefore, the standard approach of reviewing flood risk sources on their own would not be sufficient to translate the true meaning of flood risk at the Site and in its immediate vicinity. According to the Environment Agency's Flood Map for Planning, the Application Site is partly affected by Flood Zone 2 i.e. at an yearly risk of flooding between 1% and 0.1% from fluvial sources. **However, after reviewing the Environment Agency's hydraulic model, it was found that Aston Ditch is not included in the hydraulic model developed to inform the revision of the *gov.uk* Flood Map for Planning and associated datasets in 2008-2010.** A desktop assessment of LiDAR derived contours shows that the elevation dataset does not align with the Flood Zone 2 outlines and available in the *gov.uk* Flood Zone *wms* dataset. Therefore, it is of essence that site specific hydraulic modelling is undertaken to ascertain the 1%AEPCC fluvial flood extents in this area. Any site-specific hydraulic modelling should consider the peak river flow higher central climate change allowance when assessing floodplain compensation and impacts off-site, as Bampton Road appears to be the only dry evacuation route for residents to egress Aston during a major fluvial flood events. The Application Site is shown to be significantly affected by surface water flooding for both the 1%AEP and 0.1%AEP storm events. Approximately 72.3% of the Site (2.156ha) were found to be affected by the 0.1%AEP storm event, which is taken as the 1%AEPCC flood event for the purpose of this assessment. It is worth highlighting that the surface water flood risk mapped by the Environment Agency may very likely interact with the fluvial floodplain, and therefore any site specific hydraulic modelling should reflect the combination of pluvial and fluvial

	sources in the area. Albeit the *gov.uk* webservice does not highlight groundwater as a likely source of flood risk to the Site, groundwater monitoring undertaken by the Parish Council of Aston, Cote, Shifford and Chimney in west Aston shows relatively high groundwater levels (between 600mm to 800mm BGL), highly correlated with rainfall events recorded in the vicinity of the Site. The Site is approximately 400mm to 800mm below the level of St Joseph's Court, where groundwater probes were installed. These measurements are compatible with the publicly available borehole records in the vicinity of the Site, which show significant depths of permeable soils (gravel), which allow the percolation of ground water flows. **It is important to note that ground levels at Joseph's Court (where groundwater probes are installed) are circa 400mm to 800mm higher that the Site, which suggests that groundwater levels are closer to ground surface at the Site, possibly even arising at surface.** The desktop assessment does also highlight the risk of reservoir flooding to the Site, which is known to be a residual flood risk in light of the Reservoirs Act 1975.
Off-Site Flood Risk	The Site is deemed to play a fundamental role in delivering surface water floodplain storage to accommodate overland surface water runoff. This suggests that any development at the Site will likely obstruct the passage of overland flows from north to south, thus putting Kingsway Cottages and St Josephs Court further at risk of flooding. Therefore, it is unlikely that any development at the Site does not lead to an increase of flood risk off-site, especially at the adjacent Kingsway Cottages and St Joseph's Court, unless specifically demonstrated by site specific hydraulic modelling and difference maps to compare water levels prior to a post development. Not only should the hydraulic modelling exercise reflect the interaction between fluvial, pluvial and groundwater flood risk sources, but it should output flood difference maps to depict the difference in flood water levels off-site and the difference in flood hazard along Bampton Road. Given the presence of permeable soils (gravel) in the upper layers of soil within and to the north of the Site, it is believed that the compaction and replacement of soils may lead to a loss in the storage of groundwater, with sub-surface runoff potentially arising at surface upstream of the Site. This is consistent with the ground levels of the plot of land opposite the Site and to the north of Bampton Road, which are relatively identical to the ground levels found at the Site. Therefore, any development at the Site will likely result in the displacement of groundwater, which will either exacerbate surface water flood risk in the fields to the north of the Site, or will introduce further surface water runoff into the public foul sewer network in Aston, which is known to have limited capacity caused by the infiltration of groundwater flows during wet periods. A development of 40 dwellings may also have significant impacts on the public sewer network that serves Aston, if upgrades are not delivered. Note that the public network is known to have a lack of capacity associated with groundwater flows into the public foul network. According to Thames Water, ground water infiltration accounts for 46% of the Sewage Treatment Works at Bampton Road. Any displacement of groundwater and surface water arising as a result of a development at the Site will likely raise flood levels to the north of Bampton Road, which may prompt further overland flows to affect Bampton Road, **thus increasing the hazard for drivers along the only mass evacuation route leading out of Aston.**
Sequential & Exception Tests	The latest *gov.uk* guidance stipulates that the Sequential Test should take into account all sources of flooding and climate change. **The Sequential Test should bear in consideration that Aston Ditch is not**

	included in the hydraulic model developed to inform the gov.uk Flood Map for Planning and associated datasets. Given the presence of a major evacuation route (Bampton Road) adjacent to the Site, it is expected that the higher central climate change allowance should inform the Sequential Test. On the other hand, the Exception Test should demonstrate that the development provides wider sustainability benefits to the community that outweigh the potential increase in flood risk off-site. This item should take in consideration the recurring flood events that affect the residents around Bampton Road on a regular basis. Furthermore, the proposals should also demonstrate that the future residents at the Site will be safe throughout the lifetime of the development.
This summary should be read in conjunction with the full report and reflects an assessment of the site based on information received at the time of production. No liability is accepted for issues arising as a result of the limited information a	

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APPENDICES

A. THAMES WATER SEWER RECORDS

B. MEETING MINUTES

1.0 INTRODUCTION

1.1 Joflows has been commissioned by the Parish Council of Aston, Cote, Shifford and Chimney (hereafter referred to as 'the Client') to produce a Flood Risk Review to ascertain the impacts arising as a result of a potential residential development at the plot of land to the south of Bampton Road (hereafter referred to as the 'Site').

1.2 The proposals are for a residential development of 40 dwelling houses, with associated access roads and amenity areas. The proposed development would take place at E433688 N202797. The total footprint of the Site covers 2.9ha.

1.3 The assessment has been prepared using our best engineering judgement however there are levels of uncertainty implicit in the historical data, lack of information and methods of analysis. The report is based on the following information:

- The Environment Agency's Flood Map for Planning [1];
- The Environment Agency's Long-Term Flood Risk Map [2];
- British Geological Survey (BGS)[3];
- The Soilscape Viewer, by LandIS[4];
- West Oxfordshire DC Level 1 Updated Strategic Floor Risk Assessment (AECOM, 2016)[5];
- Parish Flood Report: Aston, Cote, Shifford & Chimney, by West Oxfordshire District Council (July 2008)[6];
- Flood Review July 2007 Aston (Environment Agency, 2008);
- Local groundwater monitoring undertaken by a residents of Aston;
- Photographic evidence of flood events provided by residents at Bampton Road.

Disclaimer

1.4 Joflows has completed this report for the benefit of the individuals referred to in paragraph 1.1 and any relevant statutory authority which may require a reference in relation to approvals for the proposed development.

[1] https://flood-map-for-planning.service.gov.uk/
[2] https://www.gov.uk/check-long-term-flood-risk
[3] https://mapapps2.bgs.ac.uk/geoindex/home.html
[4] https://www.landis.org.uk/soilscapes/
[5] https://www.westoxon.gov.uk/media/0adg2zs5/env9-west-oxfordshire-district-council-strategic-flood-risk-assessment-update-report-november-2016.pdf
[6] https://www.westoxon.gov.uk/environment/flooding/flood-reports-and-reviews/

1.5 Joflows accepts no responsibility or liability for:

- The consequence of this documentation being used for any purpose or project other than that for which it was commissioned i.e. inform comments to a future planning application for the residential development at the Site;
- Any damages to third-parties resulting from the limited information and dataset(s) available at the date this report was written;
- The issue of this document to any third party with whom approval for use has not been agreed.

2.0 SITE DESCRIPTION & FLOOD RISK

Site Location and Features

2.1 The Site covers an area of approximately 2.9ha and comprises an undeveloped plot of land with unmaintained short vegetation and a combination of trees and hedges along its boundaries.. The site is bound by Bampton Road to the north, and undeveloped plots of land to the south, east and west, with the exception of the northeast corner that is bound by the residential curtilage of 1 St Josephs Court.

2.2 The Site is listed as title number ON225077 in the *gov.uk* HM Land Registry; and described as 'Land on the south side of Bampton Road, Aston, Cote.

Figure 1 – Location plan of Site (solid red) and Aston Ditch (solid cyan). Imagery extracted from Google Earh Pro.

EA's Flood Maps: Fluvial and Surface Water Flood Risk

2.3 Information relating to the current flood risk to the Application Site has been obtained from the Environment Agency and *gov.uk* websites and *wms* datasets.

2.4 The Site is affected by Flood zone 2 i.e. land with a yearly chance of flooding of between 0.1% to 1% from fluvial sources – Figure 2. **Note that Flood Maps were reviewed after 2008, with the modelling approach ignoring the presence of tributaries, as discussed in further detail in 3.24 to 3.22.**

2.5 The Long-Term flood risk map from the Environment Agency shows **72.3% of the area of the Site (2.156ha) to be affected by the 0.1%AEP surface water flood extents**, and 27.7% of the area of the Site (0.795ha) to be affected by the 1%AEP surface water flood extents – Figure 3. The surface water runoff generated in the fields to the north of Bampton Road appears to flow southwards, over Bampton Road, into the Site. Due to its flat topography, the Site is therefore a natural place for surface water runoff to pond, acting as natural storage to protect the wider area.

Figure 2 – EA's Risk of Flooding from Rivers and the Sea. Application Site shown in red. Extract from EA's Flood Zone *wms* layer.

2.6 An extract from the EA's surface water flood extents *wms* layer is shown in Figure 3.

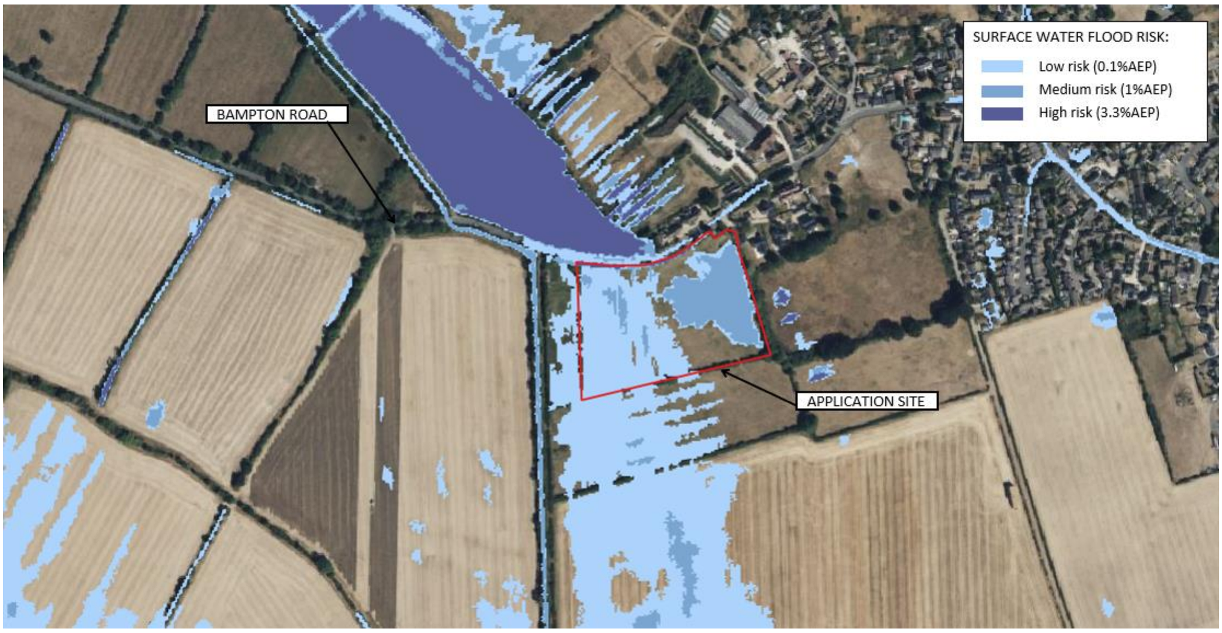
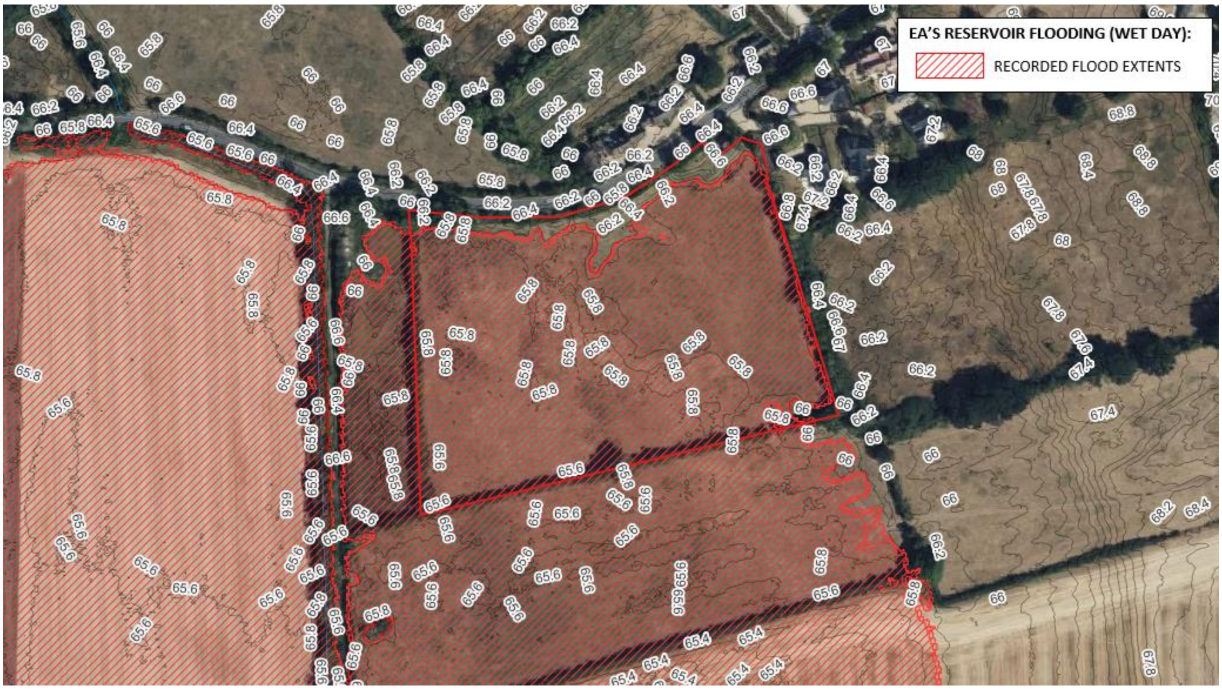


Figure 3 – EA's surface water flood depth for the 3.3%AEP, 1.0%AEP and 0.1%AEP storm event. Application Site shown in red. Extract from EA's surface water flood extent *wms* layer.

EA's Flood Maps: Reservoir Flooding

2.7 The flood maps available in the *gov.uk wms* datasets show the **Site to be at risk of reservoir flooding**. Albeit deemed a residual risk, it is deemed to lead to a significant hazard when combined with other sources of flooding.

2.8 These extents of reservoir flooding are well aligned with the LiDAR derived contours and shows similar extents in the western part of the site when compared with Flood Zone 2. However, the eastern part of the Site appears to be largely affected by reservoir flooding, whilst remaining relatively flood free from Flood Zone 2.



Geological Data

2.9 Information published by the BGS indicates that the site is directly underlain by upper layers of Alluvium (clay, silt, sand and gravel) and the Northmoor Sand and Gravel Member, which are in turn underlain by the Oxford Clay Formation and West Walton Formation (Mudstone).

2.10 An extract of the nearby publicly available borehole records provided by the BGS viewer is included in Figure 4. The records suggest thick layers of gravel (in excess of 4m) where Alluvium Soils are recorded near the Site, with soils becoming clayey towards the centre of Aston, where gravelly soils are limited to the upper layers near the surface.

Figure 4 – Borehole records (purple dots) extracted from the BGS GeoIndex Onshore map.

Rivers & Watercourses

2.11 The closest watercourse to the Site is Aston Ditch, which runs 50m to the west of the Site. Aston Ditch is an Environment Agency designated main river.

2.12 Aston Dtich is a tributary of Shill Brook, which flows into Great Brook, both forming part of the Wider River Thames Catchment.

Hydrology

2.13 The Application Site falls within an rural water catchment, part of the wider Aston Ditch catchment (with an approximate area of 4.32km^2).

2.14 According to the *uksuds.com* web platform, the Standard Percentage Runoff at the Site is 47%, which is considered relatively high for soils with high content of gravel and sand. Any site-specific hydrology assessment should therefore seek to interpret factual information based on ground investigations to inform the hydrology at the Site.

2.15 The Standard Average Annual Rainfall at the Site was found to be 631mm, within hydrological region 6.

Topographic Information

2.16 No site specific topographic information was available to inform this review and therefore publicly available LiDAR elevation was used as an alternative – Figure 5. The publicly available DeFRA's LiDAR dataset is known to have an RMSE of 150mm, and its accuracy can be compromised depending on the coverage of land e.g. dense vegetation, water and buildings.

2.17 The elevation within the Site is shown to generally vary between 65.60m AOD and 65.80m AOD, with the eastern part of the Site potentially slightly lower. The LiDAR elevation dataset shows a smooth elevation pattern on the eastern part of the site, which is normally associated with the presence of bodies of water. In this instance, it is likely that water was ponded at this location at the time of the LiDAR survey. This is compatible with the Environment Agency's surface water flood extents shown in Figure 3.

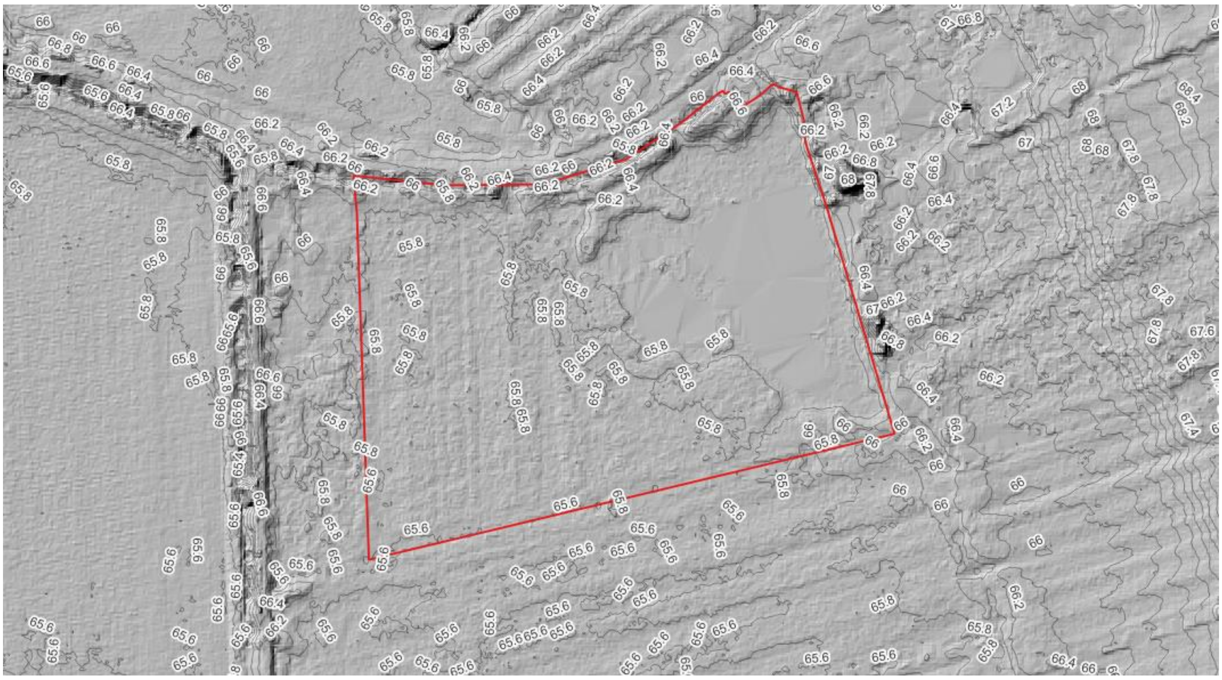


Figure 5 – LiDAR derived contours (200mm) and *hillshade* representation at the Site (solid red line), by Environment Agency 2022.

2.18 Bampton Road is located at an average elevation level of between 66.10m AOD and 66.20m AOD, with the western extent slightly over 66.20m AOD.

2.19 The development platform of Kingsway Cottages, located opposite the Site to the north of Bampton Road, appears to be located at an elevation of 66.15m AOD to 66.20m AOD in the west, with levels increasing to circa 66.35m AOD to east, at the junction with Bampton Road.

2.20 The residential estate at St Josephs Court forms the northeast boundary with the Site. The ground levels for the internal access road that provides access from Bampton Road to St Josephs Court vary between 66.20m AOD at the junction with Bampton Road to over 66.90m AOD at the eastern part of the access road.

2.21 The plot of land to the north of the Site is located at an average ground level of between 65.80m AOD and 65.90m AOD, with the central parts of the Site falling within a topographic depression at 65.70m AOD.

2.22 The ground levels of the northeast corner of the plot of land to the west of the site (highlighted in light orange in Figure 5), across Aston Ditch, generally vary between 65.60m AOD and 65.80m AOD.

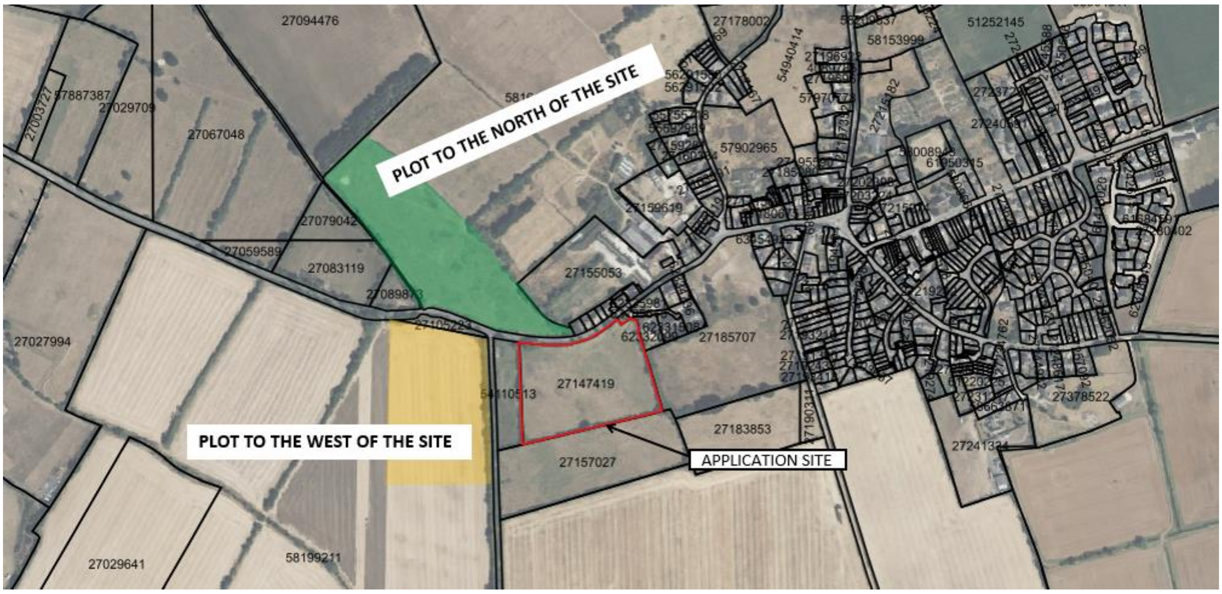


Figure 6 – LiDAR derived contours (200mm) and *hillshade* representation at the Site (solid red line), plot of land to the west (light orange) and plot of land to the north (light green), by Environment Agency 2022.

Public Sewers

2.23 Public sewer records of the area were obtained from Thames Water and are included in **Appendix A**.

2.24 The records made available in the vicinity of the Bampton Road SPS show a foul sewer conveying sewage effluent into Bampton Road SPS, with a rising main directing flows along Bampton Road towards west. The sewer records available at the date of this review do not show a surface water sewer in the vicinity of the Site.

2.25 The minute of the meeting held between the ACSC Parish Council, West Oxfordshire District Council and Thames Water (15/02/2024) suggests that there is limited capacity in the public foul sewer network in the vicinity of the Bampton road (including the local sewage pump station ref. 'Bampton Road SPS'), near the Site. The limitation in the local sewage network is deemed to be associated with groundwater infiltrating into the network, which has been acknowledge by Thames Water and a remediation plan is shown in **Appendix B**. According to Thames Water, ground water infiltration accounts for 46% of the capacity of the Sewage Treatment Works at Bampton Road. The measures appear to comprise a series of upgrades to the local network of ditches to facilitate the natural drainage of surface water around the perimeter of Bampton Road SPS, alongside the lining of pipework.

Groundwater Monitoring

2.26 The Parish Council of Aston, Cote, Shifford and Chimney undertook groundwater monitoring in the vicinity of the Site. The location of the boreholes can be found in Figure 7. The equipment used consist of a self-contained robust surface water and groundwater level loggers (OTT ecology 1000) in a plastic casing to an average depth of 1.3m BGL. The loggers were connected to a web platform, with live data (groundwater levels) being transferred every 15min.

Figure 7 – Locations of Probe 1 and Probe 2 (St James Court) and Probe 3 (St Josephs Court)

2.27 The groundwater level logs charts provided in Figure 8 to Figure 10 show the groundwater level at different location at St James Court (Probe 1 and 2) and at St Josephs Court (Probe 3). **It is important to note that ground levels at Joseph's Court (where groundwater probes are installed) are circa 400mm to 800mm higher that the Site, which suggests that groundwater levels are closer to ground surface at the Site, possibly even arising at surface.**

2.28 As shown in Figure 8 to Figure 10, the groundwater levels recorded throughout Aston are circa 600mm to 1000mm BGL when no rainfall is recorded for Brize Norton, whilst rising up to near ground level (40mm to 400mm BGL) for wet periods. Albeit no statistical correlation analysis has been undertaken, the charts show a clear rigid correlation between rainfall and groundwater levels, with groundwater levels rising sharply after wet days and receding following dry days.

2.29 Figure 10 presents the records for Probe 3 (St Josephs Court), near the Site. The records show groundwater levels to range between 530mm to 750m BGL for dry and wet periods, respectively. It is worth highlighting that St Josephs court is located approximately 600mm to 800mm above the Site, which may indicate that groundwater levels are generally closer to surface at the Site.

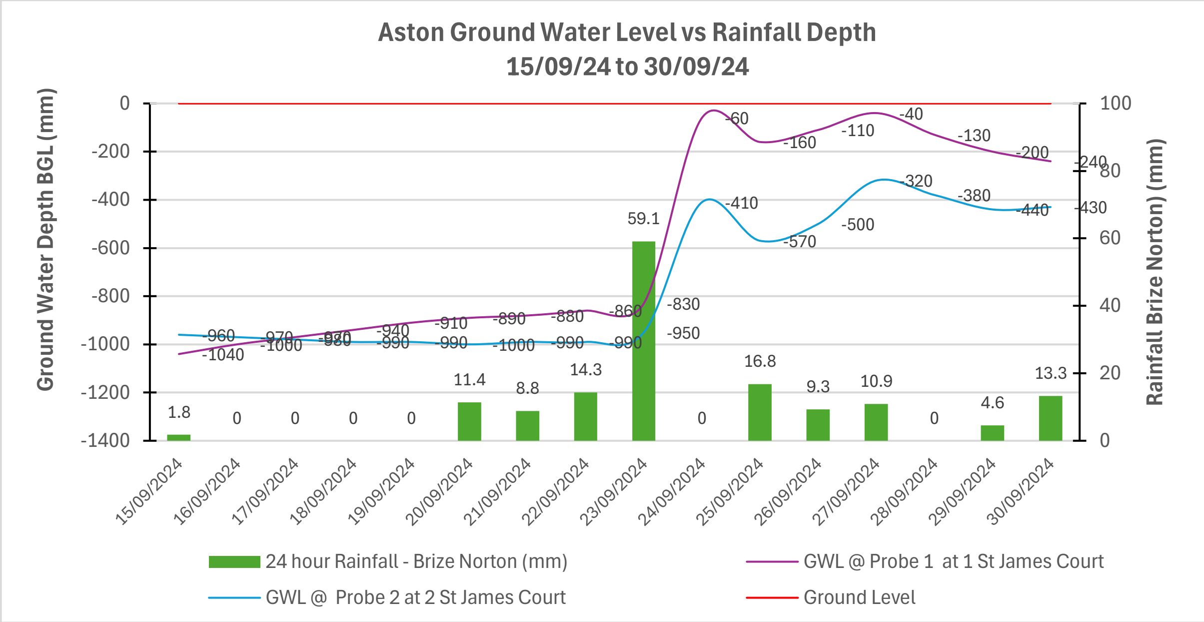


Figure 8 – Groundwater monitoring records at Probe 1 (1 St James Court) and Probe 2 (2 St James Court). Data recorded by OTT ecolog 1000 data loggers between 15/09/2024 and 30/09/2024. Ground levels shown in millimetres below ground level.

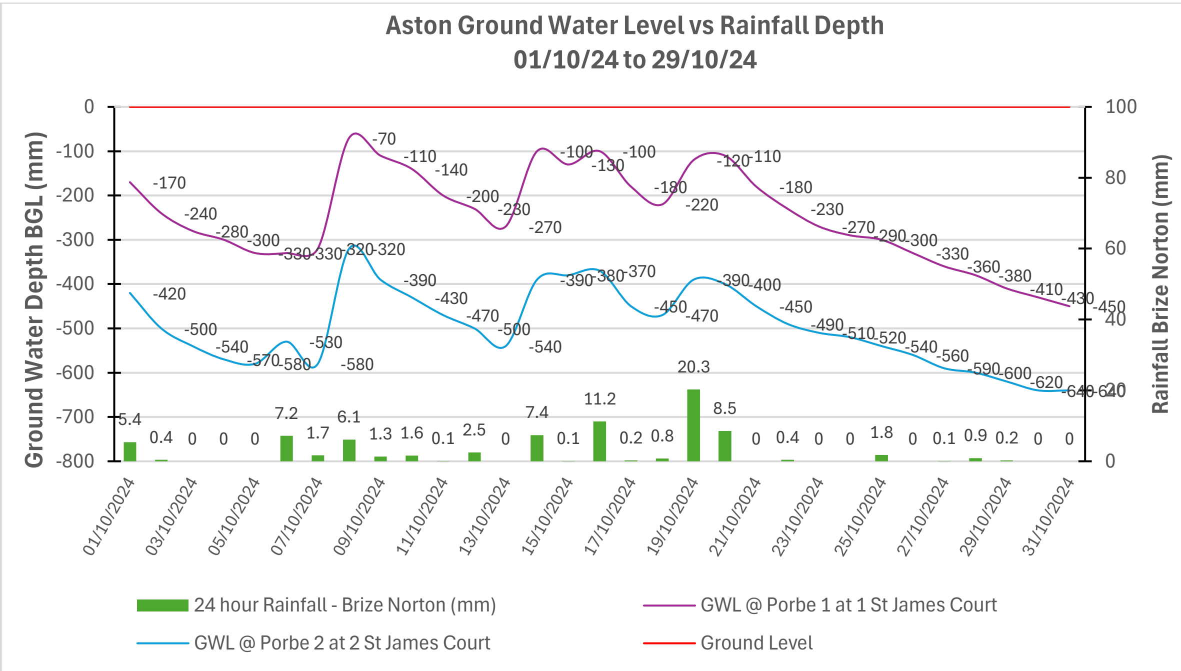


Figure 9 - Groundwater monitoring records at Probe 1 (1 St James Court) and Probe 2 (2 St James Court). Data recorded by OTT ecolog 1000 data loggers between 01/10/2024 and 29/10/2024. Ground levels shown in millimetres below ground level.

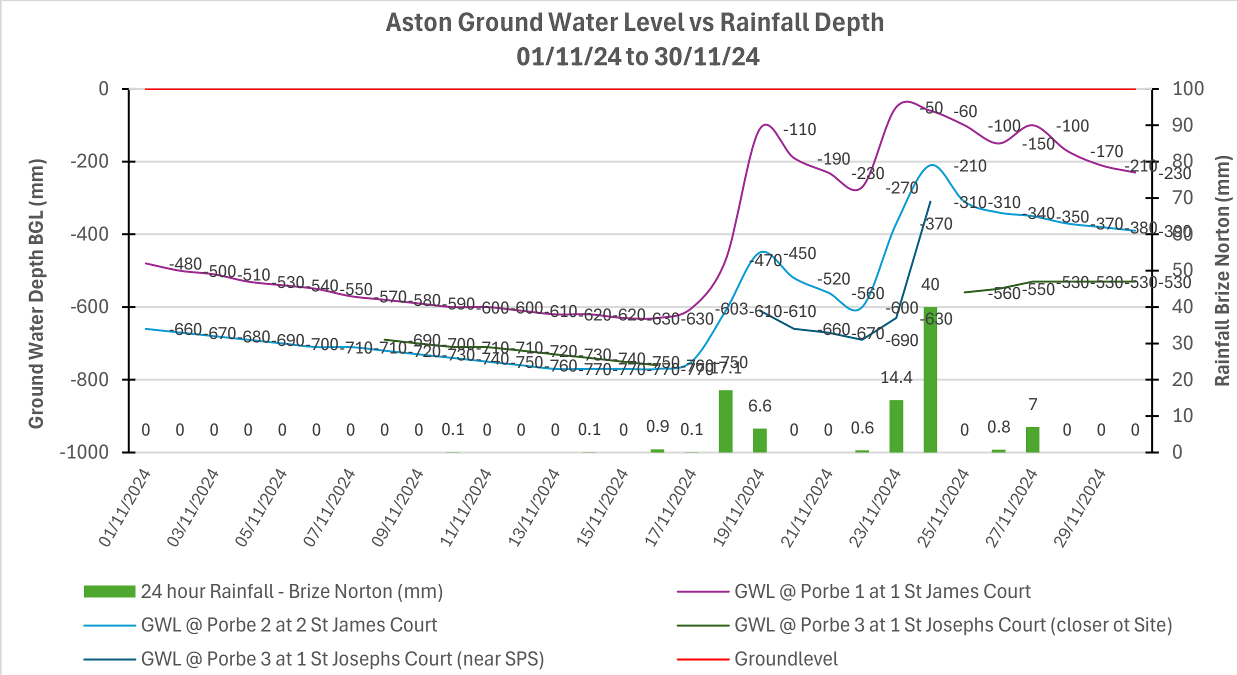


Figure 10 - Groundwater monitoring records at Probe 1 (1 St James Court), Probe 2 (2 St James Court). And Probe 3 (1 St Joseph's Court). Data recorded by OTT ecolog 1000 data loggers between 01/11/2024 and 30/11/2024. Ground levels

3.0 CONSULTATION

National Planning Policy Framework

3.1 The National Planning Policy Framework sets out strict tests to protect people and property from flooding which all local planning authorities are expected to follow. Measures to avoid, control, manage and mitigate flood risk should also not increase flood risk elsewhere.

3.2 The National Planning Policy Framework (NPPF) and its associated technical guidance states that priority should be given to sustainable drainage and discusses the impact of new development on flood risk.

3.3 The NPPF maintains a strong policy on avoiding and managing flood risk, based on local planning authorities preparing local plans and deciding planning applications and granting planning permissions.

3.4 The NPPF also states that development should remain safe throughout their lifetime, without increasing flood risk elsewhere.

Non Technical Standards (NTSS) for SuDS (DeFRA, 2016)

3.5 The NTSS set out that for developments previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

3.6 Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.

West Oxford District Council Level 1 Strategic Flood Risk Assessment (Level 1SFRA)

3.7 The Level 1 SFRA stipulates that Sites in Flood Zone 2 and Flood Zone 3 should be subject to a Sequential Test.

3.8 The Level 1 SFRA excludes developments within Flood Zone 1 from the requirement of the Sequential Test, unless other references show flooding issues now or in the future.

3.9 Following the Sequential Test, the Exception Test should also be applied to proposals in Flood Zone 2 and Flood Zone 3 to demonstrate that the development has wider sustainability benefits to the community that outweigh flood risk and that the development is safe for its lifetime (taking in account climate change), without increasing flood risk elsewhere.

3.10 The Level 1 SFRA stipulates that the Environment Agency should be consulted for developments greater than 1ha.

3.11 **Appendix B of the Level 1 SFRA shows a number of sewer flood records in the vicinity of Bampton Road, in the proximity of Kingsway Cottages and St Josephs Court**.

3.12 Appendix B of the Level 1 SFRA shows a number of flood records associated with Aston Ditch, in the vicinity of the Site.

3.13 Appendix B of the Level 1 SFRA shows the Site an its immediate vicinity to lie in an area at over 75% susceptibility to groundwater flooding.

Parish Flood Report: Aston, Cote, Shifford & Chimney ('Parish Flood Report')

3.14 West Oxfordshire District Council prepared a number of reports to explore the main reasons behind the floods in July 2007, which are known to have affected Aston, Cote, Shifford and Chimney.

3.15 The Parish Flood Report highlights a total of nine properties flooded within Area 1, which corresponds to the area surrounding the western part of Bampton Road, including Kingsway Cottages and St Josephs Court.

3.16 The Flood Report attributes the cause of flooding around Kingsway Cottages to flooding of Aston Ditch, which prompted field run-off from the fields to the north of the Site and to the north of Bampton Road and drainage/runoff into the Site.

Flood Review July 2007 ('Environment Agency Flood Report')

3.17 Following the flooding of 2007 the Environment Agency undertook a flood review to understand the meteorological conditions and mechanism of flooding that contributed to the flooding.

3.18 In July 2007, the River Thames received 121mm of rainfall compared to the long term monthly average rainfall amount of 49mm. The wet weather across much of the Thames Region resulted in lower than average soil moisture deficits.

3.19 The flooding in July was from several sources: rivers, surface water and sewers. In July, properties flooded as a result of the capacity of the channel, causing inundation of the flood plain. In some location, high river levels prevented the discharge of surface water sewers and drains, which surcharged and caused flooding.

3.20 The water levels in Aston Ditch were already rising on 20th July due to the runoff from fields. The larger rivers started to flood in the 21st July, preventing discharge from smaller rivers and watercourses. A total of 6 properties were flooded from the Aston Ditch.

3.21 The Flood Map for Aston shown in Appendix A of the Flood Review July 2007 **shows most of the Site to be affected by Flood Zone 3, which constitutes a significant departure from the subsequent modelling that is used to inform the current Flood Map for Planning**. This is corroborated by the Environment Agency's hydraulic model provided as part of Product 6, which is shown to exclude Aston Ditch from its 1D domain, including the respective inflow hydrograph.

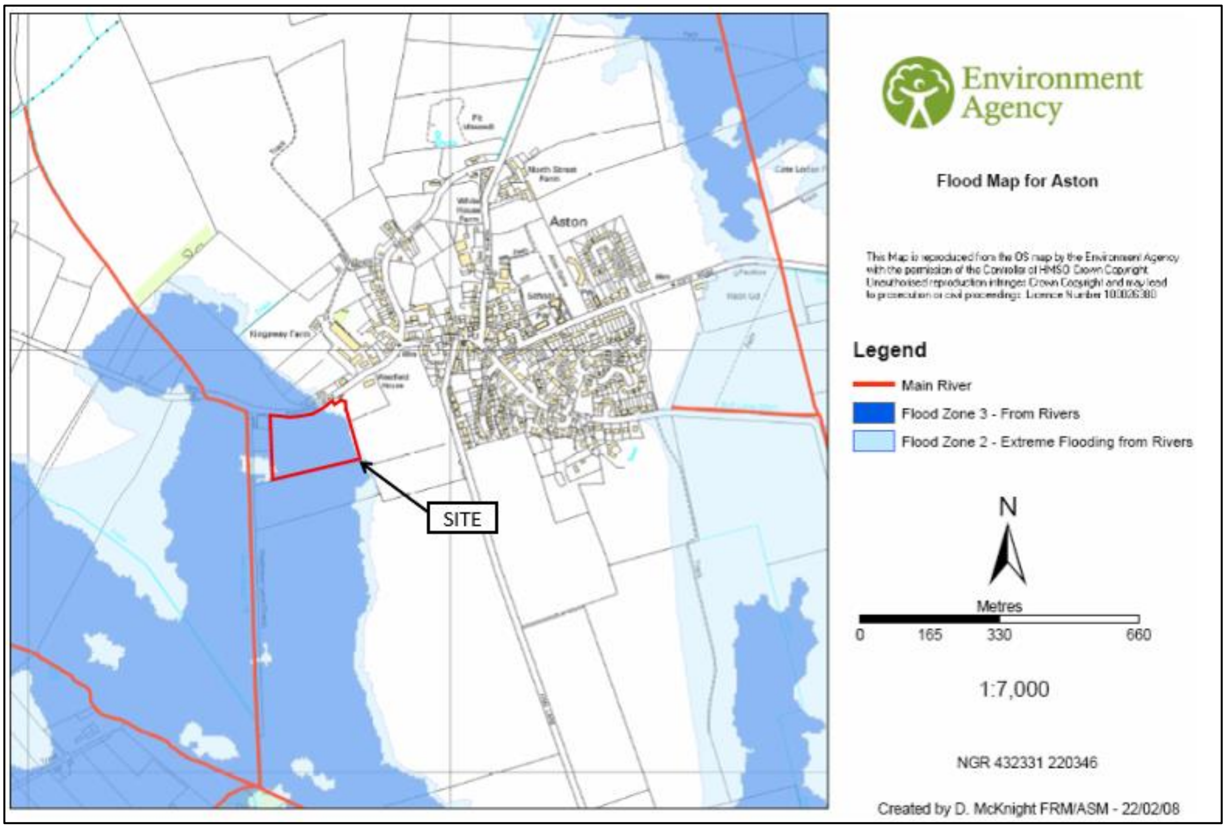


Figure 11 – Flood Map for Aston. Extract from the Flood Review July 2007 Aston (Environment Agency, 2008).

Environment Agency's detailed Hydraulic Model (Product 6)

3.22 The Product 6 detailed hydraulic modelling information was requested from the Environment Agency, including the respective hydraulic modelling and hydrology reports.

3.23 The hydraulic model was briefly inspected and showed that albeit Shill Brook had been incorporated in the 1D domain, Aston Ditch and the respective inflow hydrograph were not incorporated in the 1D domain of the hydraulic model (Figure 12), likely explaining the differences in the extents of Flood Zones after the revision of the Flood Map for Planning in 2008-2010.

3.24 The Environment Agency's 'Hydraulic Modelling Report[7] shows the difference between the modelled 1%AEP flood extents and the Flood Zone 3 prior to the update of the Flood Map for Planning in 2008-2010. As expected, the map included in **Figure 13 shows a significant reduction of the flood zone extents associated with Aston Ditch, after the hydraulic modelling study that led to the revision of the Flood Map for Planning in 2008-2010**. The catchment and immediate vicinity of Aston Ditch are highlighted in a orange dashed circle in Figure 13.

[7] Thames: St Johns to Evenlode Confluence Flood Risk Mapping Study (TH001) Hydraulic Modelling Report, by Environment Agency (August 2010)

Figure 12 – Extract from the Environment Agency's 'Thames: St Johns to Evenlode Confluence Flood Risk Mapping Study (2010)'. Site identified in solid red line.

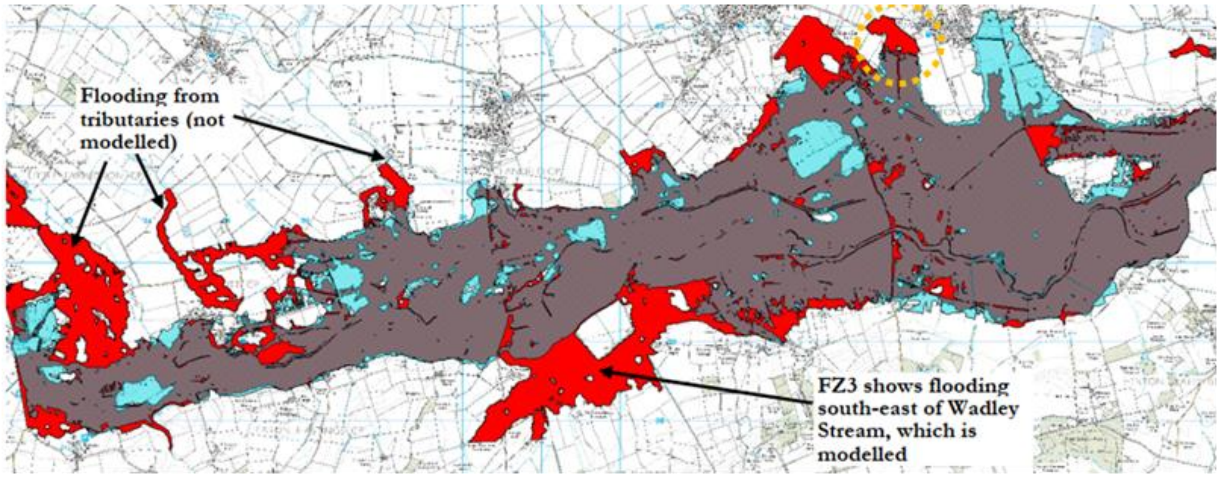


Figure 13 – Extract from the Environment Agency's 'Hydraulic Modelling Report (2010'. Site identified in solid red line. Catchment of Aston Ditch highlighted as a dashed orange circle.

4.0 FLOOD RISK TO THE SITE AND ITS IMMEDIATE VICINITY

General Considerations

4.1 This section aims to review the risk of flooding from the different sources of flooding within the Site and in its immediate vicinity, with an emphasis on Kingsway Cottages and St Josephs Court – where flooding has been recorded several times in the past recent years.

4.2 Albeit this section assesses the various sources of flood risk in separate subsections, **the Site is found to be located at a *flood hotspot,* at risk of flooding from a combination of multiple sources**, including fluvial, surface water and groundwater. Therefore, the standard approach of reviewing flood risk sources on their own would not be sufficient to translate the true meaning of flood risk at the Site and in its immediate vicinity.

Historic Flooding to the Site and its Immediate Vicinity

4.3 Under the EA's *wms* historic flood maps, the Site is shown to have been affected by flooding in the past, as shown in Figure 14. The plot of land to the north of the Site is also shown to have been affected by flooding in the past. The reason for this detached area of flooding to the north of Bampton Road, opposite the Site, is unknow but it is believed that it could be related with the local granular Terrace Deposits, which create a groundwater flow link between the north and the south of Bampton Road, caused by the lower topographic depression at the centre of the plot of land as discussed in 2.21.

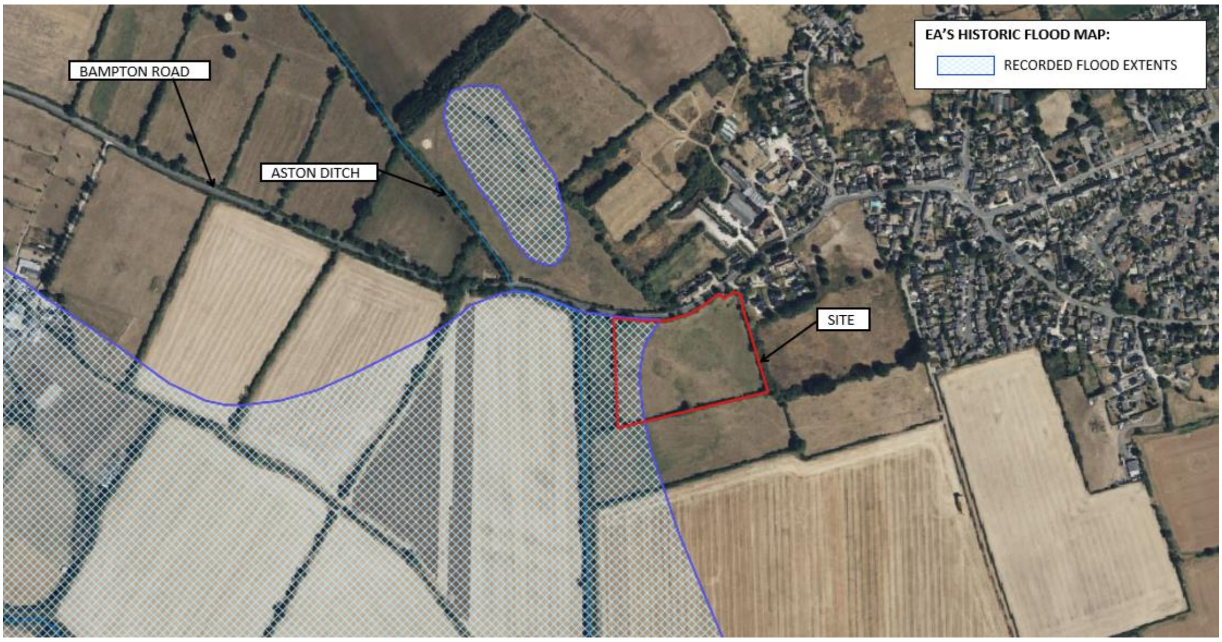


Figure 14 – Extract from the Environment Agency's Historic Flood Map *wms* dataset.

4.4 The local residents in West Aston have recorded various flood events at the Site. Figure 15 shows a number of flood events at the Site, between 2003 and 2024. Based on the photographic evidence provided by residents, the Site appears to act as a flood storage reservoir for the exceedance flows from Aston Ditch, the fields to the north of Bampton Road and the flooded Kingsway Cottages, as shown in Figure 15b and Figure 16b.

4.5 Figure 15a shows the Site to be used as for recreational purposes by local residents, including the use of a small boat. Flood events of similar magnitude were also witnessed on the following years, including twice in 2024.

a) 2003 January. Photo taken from St Josephs Court looking at the Site east to west, showing local residents using the ponding area at the Site for recreational purposes. Aston ditch at the bottom of the image alongside the line of trees.

b) 2007 July. Photo taken from Kingsway Cottages looking at the Site north to south. Entrance to the site shown to act as a conveyance route for highway runoff. Flood of the public highway (Bampton Road) also shown.

c) 2024 January. Drone footage looking at the Site east to west. Kingsway Cottages, St Josephs Court and plot to the north of Bampton Road also shown.

d) 2024 November. Drone footage looking at the Site east to west (closer view).

Figure 15 – Recorded flood events at the Site between 2007 and 2024. Photographic evidence provided by local residents in West Aston.

4.6 Photographic evidence of the flood events in the immediate vicinity of the Site is also presented in Figure 16. The evidence shows a number of flood events affecting the internal furniture of Kingsway Cottages, due to a combination of surface/fluvial water flooding and sewer flooding. Thames Water was contacted by the residents and acknowledged the flooding incidents. Following similar incidents, Thames Water provided compensation for the issues arising as a result of poor drainage capacity, whilst also being involved in the upgrade of the local sewer network to improve the drainage in the area.

a) 2007 July. Photo taken inside one of the properties at Kingsway Cottages.

b) 2007 July. Flooding within public highway(Bampton Road), against the outer wall at Kingsway Cottages.

c) 2024 January. Sewer flooding at Kingsway Cottages..

d) 2024 November. Still water indicating poor drainage at the ditch alongside the boundary of the Site, adjacent to Bampton Road.

Figure 16 – Flood records inside and in the vicinity the properties at Kingsway Cottages and St Josephs court. Photographic evidence provided by the residents at West Aston.

Review of Flood Risk from Rivers (Fluvial)

4.7 The Environment Agency's Flood Zone *wms* dataset included in Figure 2 suggests that the Site is partly affected by Flood Zone 2 only.

4.8 **The premise above is however a significant departure from the old Environment Agency's Flood Zones dated from 2008, which showed the vast majority of the Site affected by Flood Zone 3**. Any site specific Flood Risk Assessment should therefore seek to identify the reasons behind this change, which was likely dictated by a refined and updated model approach or the inclusion/exclusion of smaller tributaries (i.e. contributing catchments) in the model domain.

4.9 **The above was confirmed upon receipt of the Environment Agency's Product 6, which excludes Aston Ditch from its 1D domain, including inflow hydrographs.** This hydraulic model is known to have informed the extents of Flood Zone 2 and Flood Zone 3, as part of the Flood Map for Planning and respective associated datasets.

4.10 When Comparing the extents of the current Flood Zone 2 against the LiDAR deriver contours, it appears that the contours do not match the outline of the flooding, arising questions as to the accuracy of the dataset. In fact, the outlines of Flood Zone 2 at the Site appear to be dictated by the Historic Flood Records, rather than site specific hydraulic modelling. Any site specific Flood Risk Assessment should be informed by a site specific hydraulic modelling with higher resolution to capture the true variation in the 2D elevation dataset, which shows flat areas around the Site, likely to cause significant errors in models with low resolution grids.

4.11 Furthermore, it is likely that the Environment Agency's Flood Zones ignore the direct flow contribution from Aston Ditch, to the north of Bampton Road, which is shown to be a direct cause of flooding to the Site and its immediate vicinity. The flooding from Aston Ditch is exacerbated by high fluvial flood levels in the local watercourse network, which prevents drainage of the Ditch and prompts flooding in the upper parts of the catchment. This flood mechanism is described in the EA's Flood Review 2007 in paragraphs 3.17 to 3.21.

4.12 Therefore, it is fundamental that any site specific hydraulic model does not assess fluvial and surface water flood risk on its own, as part of an isolated modelling approach. Instead, the hydraulic modelling study should acknowledge the flood mechanism in the area and should seek to simulate the combination of flood risk sources to the Site i.e. surface water flooding with higher levels in the local network of watercourses and potentially fluvial flooding, alongside the saturated soils in the area.

4.13 Furthermore, it appears that the Flood Warning Area that comprises the stretch of Aston Ditch near the Site is informed by the 2008 Flood Zone 2 extents outlined in Figure 11. This suggests that the Environment Agency still acknowledges the fluvial flood risk at locations upstream of Bampton Road, despite of current Flood Zones not extending to this area.

4.14 It is worth noting that the Flood Zone 3 extents shown in the Environment Agency's Flood Map for Planning do not include climate change allowances, which should be taken in account when assessing flood risk at the Site and in its immediate vicinity, as part of the site specific hydraulic modelling exercise.

4.15 In terms of climate change allowances, please refer to section 4.30 for more information.

Review of Surface Water (Pluvial) Flood Risk

4.16 The surface water flood extents presented in Figure 3 show the vast majority of the Site to be affected by the 0.1%AEP surface water flood extents (74.3% of the area), and the eastern part of the Site to be affected by the 1%AEP surface water flood extents.

4.17 In terms of the surface water flooding mechanism, the overland runoff generated in the fields to the north of Bampton Road is shown to pond in the fields immediately to the east of Kingsway Cottages, making its way towards the south, over Bampton Road and into the Site, where overland flows are also shown to pond.

4.18 Therefore, the Site is deemed to play a fundamental role in delivering surface water floodplain storage to accommodate overland surface water runoff. This suggests that any development at the Site will likely obstruct the passage of overland flows from north to south, thus putting Kingsway Cottages and St Josephs Court further at risk of flooding.

4.19 Albeit Kingsway Cottages are not shown to be at risk of flooding from surface water flooding, this could be explained by the limitations in the RoFSW national modelling approach[8] :

- The national modelling approach is unlikely to include the culvert underneath Bampton Road. Instead the EA's surface water flood maps typically burn the DTM dataset to allow the passage of water, thus overestimating the flows passing towards downstream.
- The EA's surface water flood maps may not be informed by the high groundwater levels in the area, which prevent infiltration into the soil, thus underestimating the potential for overland surface water runoff.
- The severe flood event recorded in 2007 (Figure 16a and Figure 16b) contradict the (apparent) desktop conclusion that Kingsway Cottages are not at risk of flooding for the 0.1%AEP surface water flood event.

4.20 Any site specific Flood Risk Assessment should therefore be informed by a site specific hydraulic modelling study that comprises pluvial surface water runoff. In addition to the points raised in 3.17, this study should also represent the combination between fluvial and pluvial sources, giving particular attention to high fluvial flood levels in the network of ditches and watercourse caused by flooding in the local significant rivers prior to a potential rainfall events – as described in the flood mechanism presented in paragraphs 3.17 to 3.21.

Review of Groundwater Flood Risk

4.21 Albeit the Environment Agency's *gov.uk* Long-Term Flood Risk Map does not flag the Site to be at an immediate flood risk from groundwater, the Level 1 SFRA shows the susceptibility of groundwater flooding to be over 75% for the Site and its immediate vicinity.

[8] What is the Risk of Flooding from Surface Water map? Report v 2.0 (by Environment Agency, April 2019)

4.22 A review of the local geology (including publicly available borehole records), shows relatively thick layers of granular Terrace Deposits, which creates a conductive media for ground water flows to move freely both horizontally and vertically.

4.23 The groundwater level investigations undertaken by the Parish Council of Aston, Cote, Shifford and Chimney (paragraphs 2.26 to 2.29) corroborate this assumption, showing groundwater levels as high as 60mm BGL in north Aston and as high as 600mm BGL in St Josephs Court, highly influenced by pluvial events. It is worth noting that the Site is located approximately 600mm to 800mm below St Joseph's Court, with groundwater levels potentially raising to the surface at some locations of the Site.

4.24 Therefore, any development at the Site will likely result in the displacement of groundwater, which will either exacerbate surface water flood risk in the fields to the north of the Site, or will introduce further surface water runoff into the public foul sewer network in Aston, which is known to have limited capacity caused by the infiltration of groundwater flows during wet periods, leading to flooding within properties as reported by residents and acknowledged by Thames Water.

Review of Sewer Flood Risk

4.25 Sewer flood risk is known to be a relevant source of flooding to the local properties in the immediate vicinity of the Site. Thames Water have acknowledged this issue and, whilst the problem is being addressed, flooding incidents are recurring and were recorded in 2024.

4.26 As such, any development at the Site should give attention to the lack of capacity in the public network to drain foul effluent in a sustainable manner. It is likely that upgrades to the local Sewage Pump Station are required and further lining of the pipework is also required to prevent infiltration of groundwater into the network.

Review of Reservoir Flood Extents

4.27 The Site is largely affected by reservoir flooding during wet days, albeit this risk is acknowledged to be residual, as such structures are typically well maintained under the requirements of the Reservoirs Act 1975.

Emergency Flood Evacuation Routes

4.28 As shown in Figure 17, Bampton Road is shown to be the only flood route allowing dry vehicular egress out of Aston, during extreme fluvial flood events i.e. that remains unaffected by Flood Zone 2. The route enables the safe escape from Aston towards west, away from the fluvial flood extents in the River Thames Catchment.

4.29 Any displacement of groundwater and surface water arising as a result of a development at the Site will likely **raise flood levels to the north of Bampton Road**, which may prompt further overland flows to affect Bampton Road, **thus increasing the hazard for drivers along the only mass evacuation route leading out of Aston**.

4.30 The *gov.uk* guidance stipulates that the higher central peak river flow allowances should be adopted when assessing impacts of flood risk off-site that may affect essential infrastructure (e.g. mass evacuation routes). This assessment includes:

- Flood Storage Compensation to prevent the increase of risk elsewhere, and;
- Impacts on the flood hazard and water levels off-site, namely to Kingsway Cottages and St Josephs Court, and Bampton Road as an emergency evacuation route;

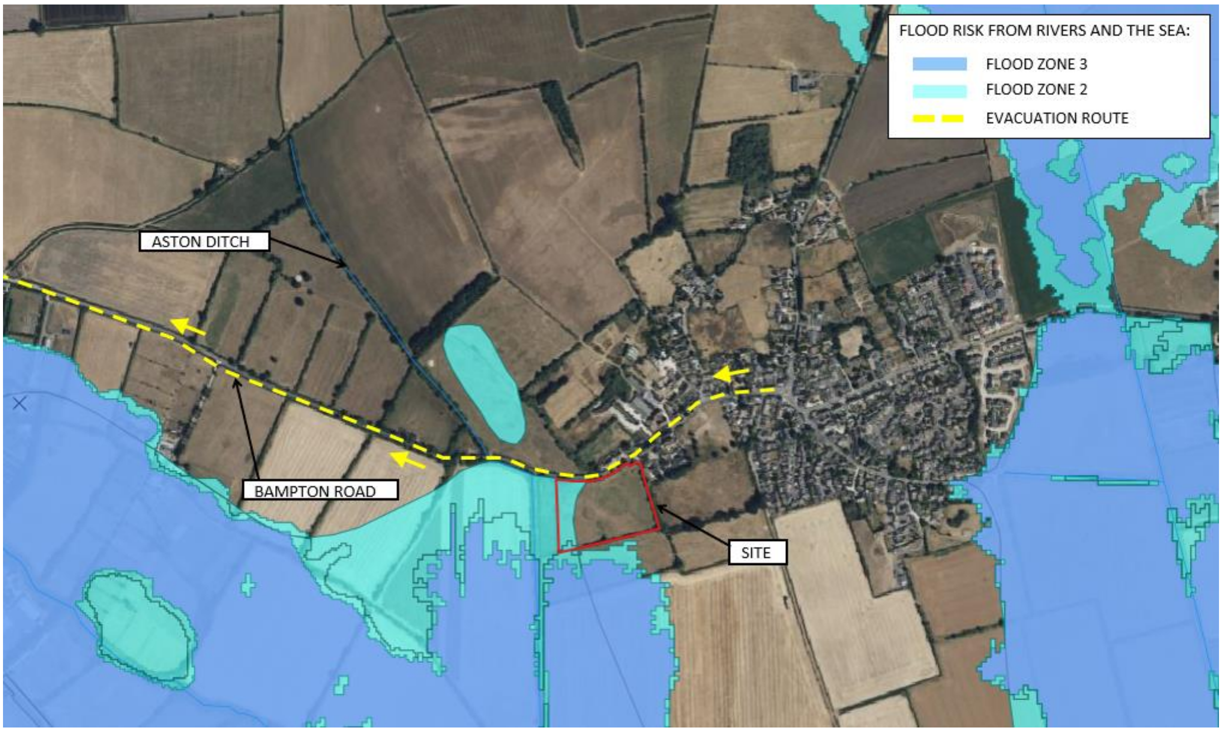


Figure 17 – Mass Evacuation Egress Route out of Aston, towards west. Bampton Road is shown to be the only route that allows vehicular dry egress i.e. that remains unaffected by Flood Zone 2.

Flood Storage Compensation

4.31 Any development at the Site will need to demonstrate compensation for the loss of floodplain storage associated with the development of buildings, roads and its foundations.

4.32 Whilst the displacement of surface and fluvial flood water can be partly prevented with the use of voids underneath buildings, the displacement of groundwater flows is almost inevitable upon construction of foundations, compaction of soils and replacement on natural granular material with soils to a standard specification.

Sequential & Exception Tests

4.33 The latest *gov.uk* guidance stipulates that the Sequential Test should take in consideration all sources of flood risk, which includes surface water, fluvial and groundwater flood risk.

4.34 The purpose of the Sequential test is to guide development to areas at lowest risk of flooding, by requiring applicants to demonstrate that there are no alternative lower risk sites available where the development could take place.

4.35 Given the flood extents, magnitude and number of flood risk sources affecting the Site, it is almost inevitable that the proposals are subject to the Sequential Test.

4.36 From a quick overview of Aston, it is possible to identify a number of sites of similar and greater size to the Site, which are located at a lower flood risk or have significant parts at lower flood risk from fluvial and surface water.

4.37 Should the Sequential Test be successful, the Exception Test should demonstrate that the development is safe throughout its lifetime, and provide wider sustainable benefits to the local community, without increasing flood risk elsewhere.

5.0 CONCLUSIONS & RECOMMENDATIONS FOR SITE SPECIFIC FLOOD RISK ASSESSMENT

5.1 Joflows was commissioned by the Parish Council of Aston, Cote, Shifford and Chimney t to undertake a Flood Risk Review of the Land on the South Side of Bampton Road, including its immediate vicinity in light of the recent flood events in West Aston, namely at Kingsway Cottages and at St Josephs Court. The conclusions and recommendations of this review are as follows:

- The Site is located at a *flood hotspot*, at risk of flooding from various sources, including fluvial, surface water and groundwater. In this review, it was found that a future site specific flood risk assessment should not assess each flood risk source on its own as these were found to be intrinsically linked at the Site. Instead, the assessment should seek to assess the combined flood risk sources at the Site

- From a desktop assessment, the Site is affected by Flood Zone 2. However, this is a significant departure from the 2008 flood extents, where Flood Zone 3 affects most of the Site. Also, the LiDAR derived contours do not appear to be aligned with the outlines of Flood Zone 2, raising questions about the accuracy of the results. Furthermore, it is likely that the mapping of Flood Zones ignores the contribution of flows from Aston Ditch due to its relatively small catchment. Therefore, it is of essence that a site specific hydraulic model is produced to ascertain the accuracy of the current flood datasets, and takes into account the combination between the different flood risk sources contributing to the Site.

- In terms of surface water runoff generated within the fields to the north of the Site, overland runoff appears to pond in the fields to the east of Kingsway Cottages, and make its way towards south, over Bampton Road and into the Site. Therefore, the Site is deemed to play a fundamental role in delivering surface water floodplain storage to accommodate overland surface water runoff. This suggests that any development at the Site will likely obstruct the passage of overland flows from north to south, thus putting Kingsway Cottages and St Josephs Court further at risk of flooding.

- Groundwater monitoring undertaken in Aston shows relatively high groundwater levels throughout the village, with some locations in north Aston showing recorded groundwater levels as high as 60mm BGL, after rainfall events. The groundwater levels recorded at St Joseph's Court, adjacent to the Site, reached levels of between 600mm to 800mm BGL. As the Site is 600mm to 800mm below St Josephs Court, groundwater levels at the Site are deemed to be very close to surface. This suggests that any development at the Site will likely exacerbate groundwater flooding to the wider community, triggered by the construction of foundations and by the compaction and replacement of natural soils.

- Given the lack of accuracy in the publicly available Flood Zone dataset and the combination of multiple sources of flooding at the Site, it is of essence that any site specific Flood Risk Assessment is informed by site specific hydraulic modelling, which should incorporate the different flood risk sources affecting the development in combination.

- Bampton Road appears to be the only dry egress route out of Aston that is not affected by fluvial Flood Zones. As such, any site specific hydraulic model should take in consideration the higher central peak river flow allowances when assessing the impacts of flood risk offsite, including water levels before and after development in the form of difference maps.
- Given the magnitude of flooding to the Site, it is unlikely the Sequential Test can be avoided and therefore proposals should seek to demonstrate that there are no available Sites in areas at lowest risk of flooding – by taking in account all sources of flooding.

APPENDIX A
THAMES WATER SEWER RECORDS

Asset Location Search

Thames Water Property Searches

joflows
Lytchett House
13 Freeland Park
POOLE
BH16 6FA

Search address supplied Westfield House
Bampton Road
Aston
Bampton
OX18 2BU

Your reference JOF0134 BAMPTON RD

Our reference ALS/ALS Standard/2024_5088868

Search date 2 December 2024

Notification of Price Changes

From 1st April 2024 Thames Water Property Searches will be increasing the prices of its CON29DW Residential and Commercial searches along with the Asset Location Search. Costs will rise in line with RPI as per previous years, which is sat at 6%.

Customers will be emailed with the new prices by February 28th 2024.

Any orders received with a higher payment prior to the 1st April 2024 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk.

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540

Asset Location Search

Thames Water Property Searches

Search address supplied: Westfield House, Bampton Road, Aston, Bampton, OX18 2BU

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

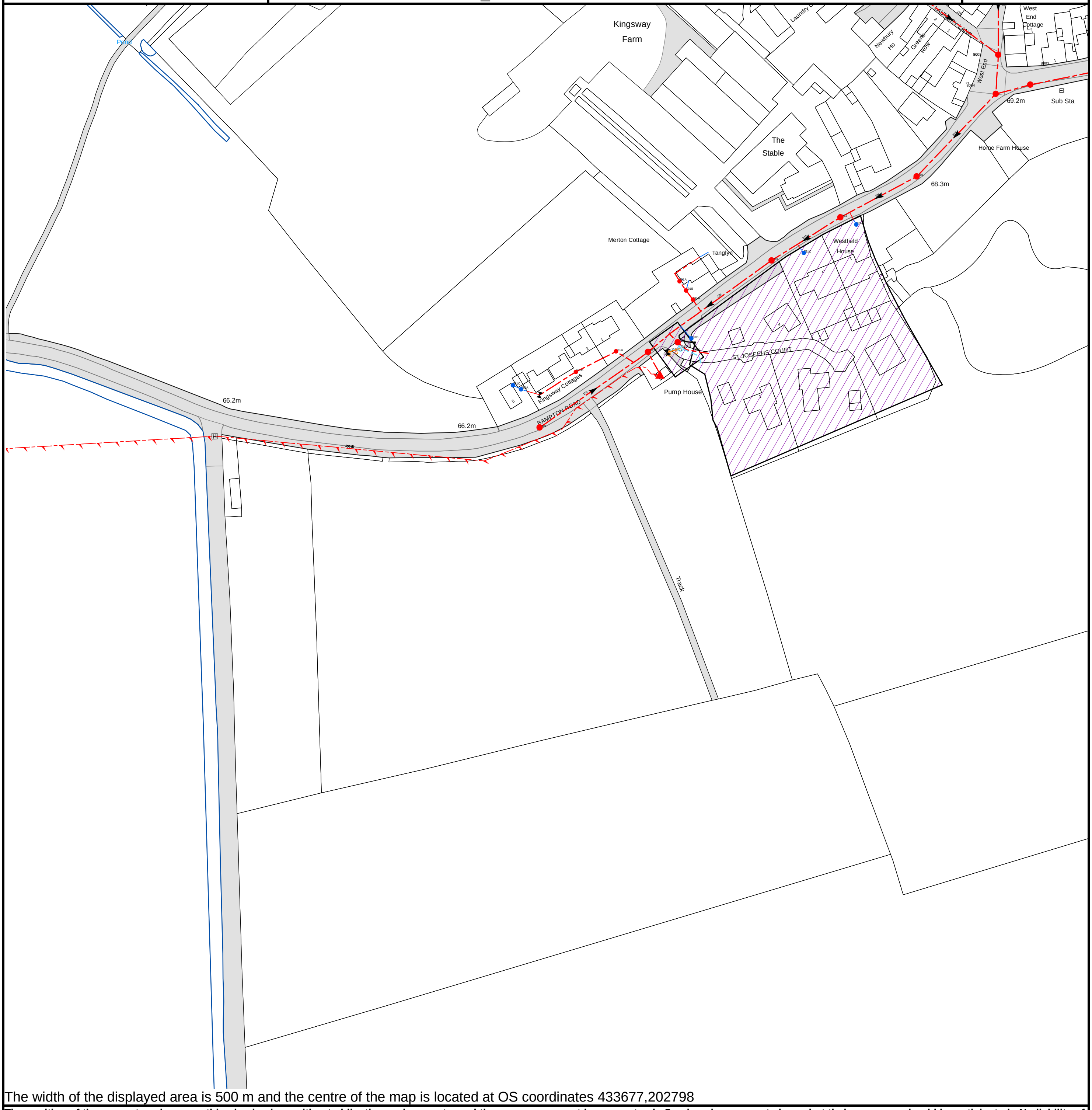
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2024_5088868



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 433677,202798

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

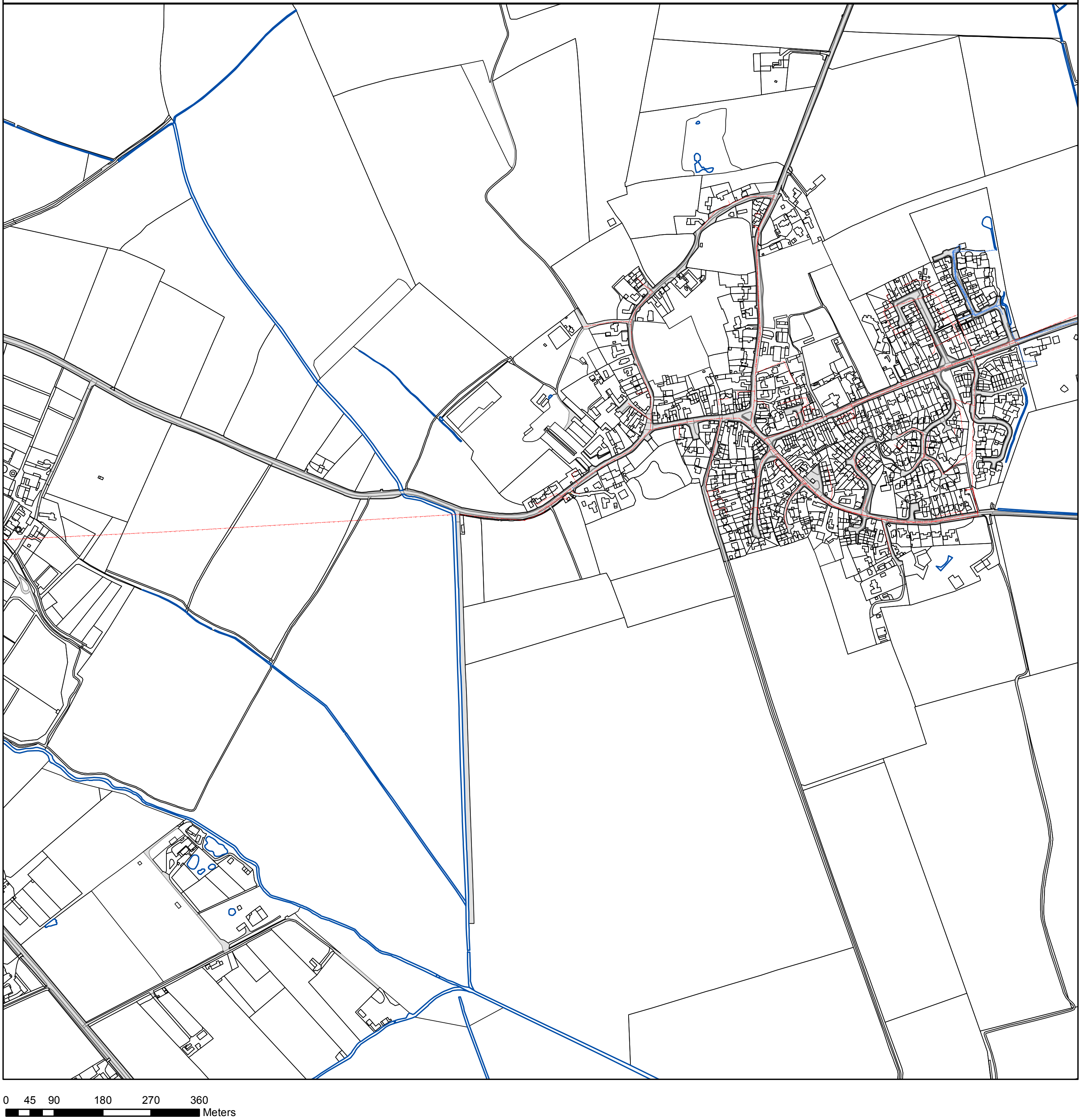
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
8005	69.24	n/a
8003	69.22	66.02
681C	n/a	n/a
681A	n/a	n/a
6801	66.18	64.7
681D	n/a	n/a
781A	n/a	n/a
791A	n/a	n/a
8901	68.047	65.647
8004	69.011	65.91
7801	66.197	63.927
781C	n/a	n/a
781D	66.29	64.77
781B	66.45	64.84
791B	n/a	n/a
791A	n/a	n/a
7901	66.23	64.65
791C	n/a	n/a
8902	66.66	65.15
891A	67	65.83

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the sanction of the Controller of H.M Stationary Office License Number 10019345

ALS/ALS Standard/2024_5088868



The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale:	1:7161
Width:	2000m
Printed By:	ASuji
Print Date:	02/12/2024
Map Centre:	433677,202797
Grid Reference:	SP3302NE

Comments:

ALS/ALS Standard/2024_5088868

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
2001	69.36	67.36
0803		
0806		
0804	69.53	68.94
4207	67.24	66.39
1905	68.47	67.09
1903	68.48	66.94
1004	69.51	67.78
0103	69.16	67.3
1003	69.87	67.85
8001	69.26	66.3
9902	69.96	67.1
8206	69.68	69.05
1901	69.15	67.75
3904	67.66	65.82
1803	69.15	67.67
1804	69.13	67.86
3210	67.36	66.33
3207	67.39	66.74
4112		
4111		
4215	66.77	65.95
8205	69.61	68.8
2904	69.02	68.39
4212		
4904	67.43	64.67
4209	67.22	66.53
4101	67.3	65.68
1401	66.85	64.87
9301	67.39	65.79
9801	69.8	68.97
0301	67.55	66.18
3701	66.9	65.38
4205		
4206	66.87	65.76
1006		
8203	70.02	67.7
8002		
8101	69.55	67.07
3102	67.9	67.41
3903	67.88	65.81
3205		
1902	69.03	67.69
7101	70.21	68.39
4204	66.67	65.47
4105	66.99	66.08
4902	66.51	64.08
1001		
8207		
2902		
2804	68.38	67.65
2801	67.53	66.01
0805	69.61	69.11
0809	69.41	68.93
3217		
3215		
3212	37.58	37.2
3214		
8202	69.51	67.66
4801	65.22	63.5
4001	66.41	64.51
3209	67.46	67.05
3902	68.13	65.02
3220	67.92	67.31
3201	66.63	66.18
291B		
0102	69.38	67.8
391B		
0201	68.99	66.95
0807	69.46	68.83
1012		
291E		
191A		
191C		
681C		
291C		
001A		
2008	69.49	69.17
2006		
2004		
681D		

REFERENCE	COVER LEVEL	INVERT LEVEL
0401	67.04	65.53
0801	69.72	69.01
0802	69.68	69.1
4210		
1016	69.74	68.76
1011		
1005		
0302	67.36	64.53
1904	68.48	66.96
8005	69.24	
9001	69.53	66.39
0810	69.65	68.06
2003	69.82	67.95
3204		
3802	65.68	64.29
1101		
1802	68.91	67.34
3002	68.22	65.23
3203	66.78	66.4
4214		
4213	66.67	65.98
4110		
1013		
2903		
4805	65.4	63.89
4108	67.59	66.7
4211	66.57	65.81
4208		
0004	69.62	67.06
9901	70.06	67.62
0101	69.42	67.5
3101		
4107		
4903	66.64	64.36
1009	69.31	68.33
1008	69.63	69.09
1801	68.03	66.44
8204	69.49	67.52
3211	67.35	66.89
3103	68.18	67.61
3104		
3105	68.3	67.98
8003	69.22	66.02
0002	69.68	66.76
4106		
4002	67.19	65.04
2802	66.97	65.26
1015	69.58	68.39
2901		
2806		
2805		
2002	69.66	67.76
0808	69.48	69
3801	66.53	64.75
3216		
3218		
3219		
0402	66.74	65.2
4103		
4104		
3208		
3202		
3901	67.95	64.7
3206		
101C		
4201	66.947	65.167
391A		
391C		
3213	67.56	67.3
1010	69.31	68.4
291D		
8201	69.4	67.93
191B		
681A		
291A		
101A		
991A		
2007		
2005		
781A		
2014	69.51	69.22

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ALS/ALS Standard/2024_5088868

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
2013		
2011		
2009	69.48	68.94
411A		
4109	67.61	66.83
1014		
511A		
901A		
4901	66.065	63.815
511C	66.193	64.953
8901	68.047	65.647
7901	66.23	64.65
8902	66.66	65.15
3001	68.446	66.566
0001	69.475	66.775
8004	69.011	65.91
0901	69.253	66.9
201A		
081A		
391D		
391F		
001B		
791A		
801B		
081D		
091B		
041A	67	65.5
311B		
491A		
081E		
081G		
791C		
481B		
001F		
001H		
991D		
041B		
041E		
511H		
511G		
091D		
781D	66.29	64.77

REFERENCE	COVER LEVEL	INVERT LEVEL
2012		
2010		
401A		
411B		
1007		
101B		
401B		
481A		
0003	69.381	66.581
6801	66.18	64.7
4202		
4203	66.992	65.242
1002	70.08	67.48
511D	66.025	65.165
4102	66.426	64.726
7801	66.197	63.927
4802	65.472	63.202
081C		
081B		
391E		
391G		
001C		
791B		
801A		
091A		
791A		
311A		
401C		
281A		
081F		
891A	67	65.83
781B	66.45	64.84
001E		
001G		
991C		
991B		
041C		
041D		
511F		
511E		
091C		
781C		

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Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

Storm Sewer

Sludge Sewer

Foul Trunk Sewer

Surface Trunk Sewer

Combined Trunk Sewer

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Vacuum

Thames Water Proposed

Vent Pipe

Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

Sewer

Culverted Watercourse

Proposed

Decommissioned Sewer

Content of this drainage network is currently unknown

Ownership of this drainage network is currently unknown

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

Air Valve

Meter

Dam Chase

Vent

Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

Ancillary

Drop Pipe

Control Valve

Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

Inlet

Outfall

Undefined End

Other Symbols

Symbols used on maps which do not fall under other general categories.

Change of Characteristic Indicator

Public / Private Pumping Station

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Chamber

Operational Site

Ducts or Crossings

Casement

Ducts may contain high voltage cables. Please check with Thames Water.

Conduit Bridge

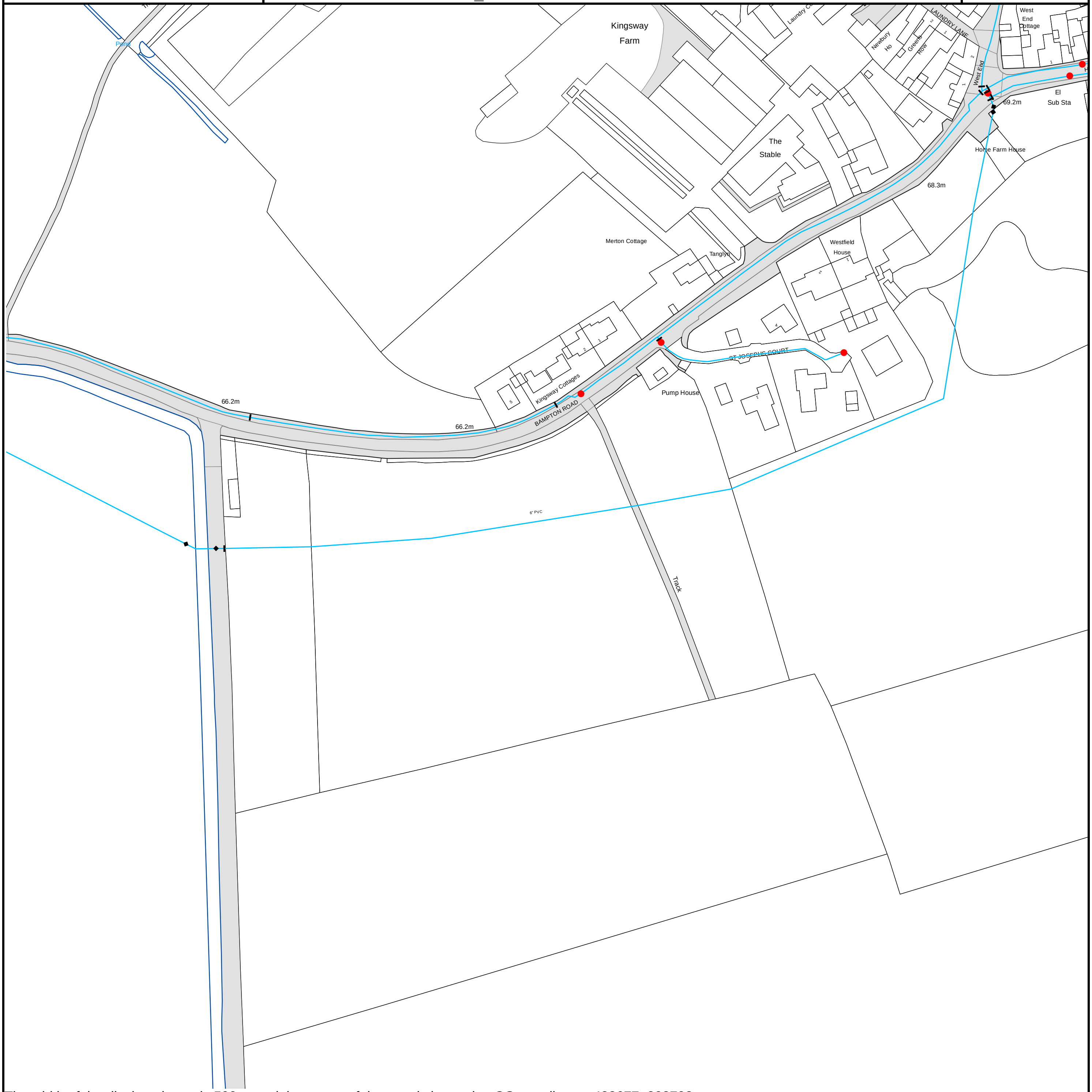
Subway

Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters.
Text next to a manhole indicates the manhole reference number and should not be taken as a measurement.
If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS Standard/2024_5088868



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 433677, 202798.

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

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Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

4"

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16"

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

General Purpose Valve

Air Valve

Pressure Control Valve

Customer Valve

Hydrants

Single Hydrant

Meters

Meter

End Items

Symbol indicating what happens at the end of a water main.

Blank Flange

Capped End

Emptying Pit

Undefined End

Manifold

Customer Supply

Fire Supply

Operational Sites

Booster Station

Other

Other (Proposed)

Pumping Station

Service Reservoir

Shaft Inspection

Treatment Works

Unknown

Water Tower

Other Symbols

Data Logger

Casement: Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Payment Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment within 14 days of the date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service or will be held to be invalid.
4. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
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6. A charge may be made at the discretion of the company for increased administration costs.

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If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0300 034 2222 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**
Please Call **0800 009 4540** quoting your invoice number starting CBA or ADS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number

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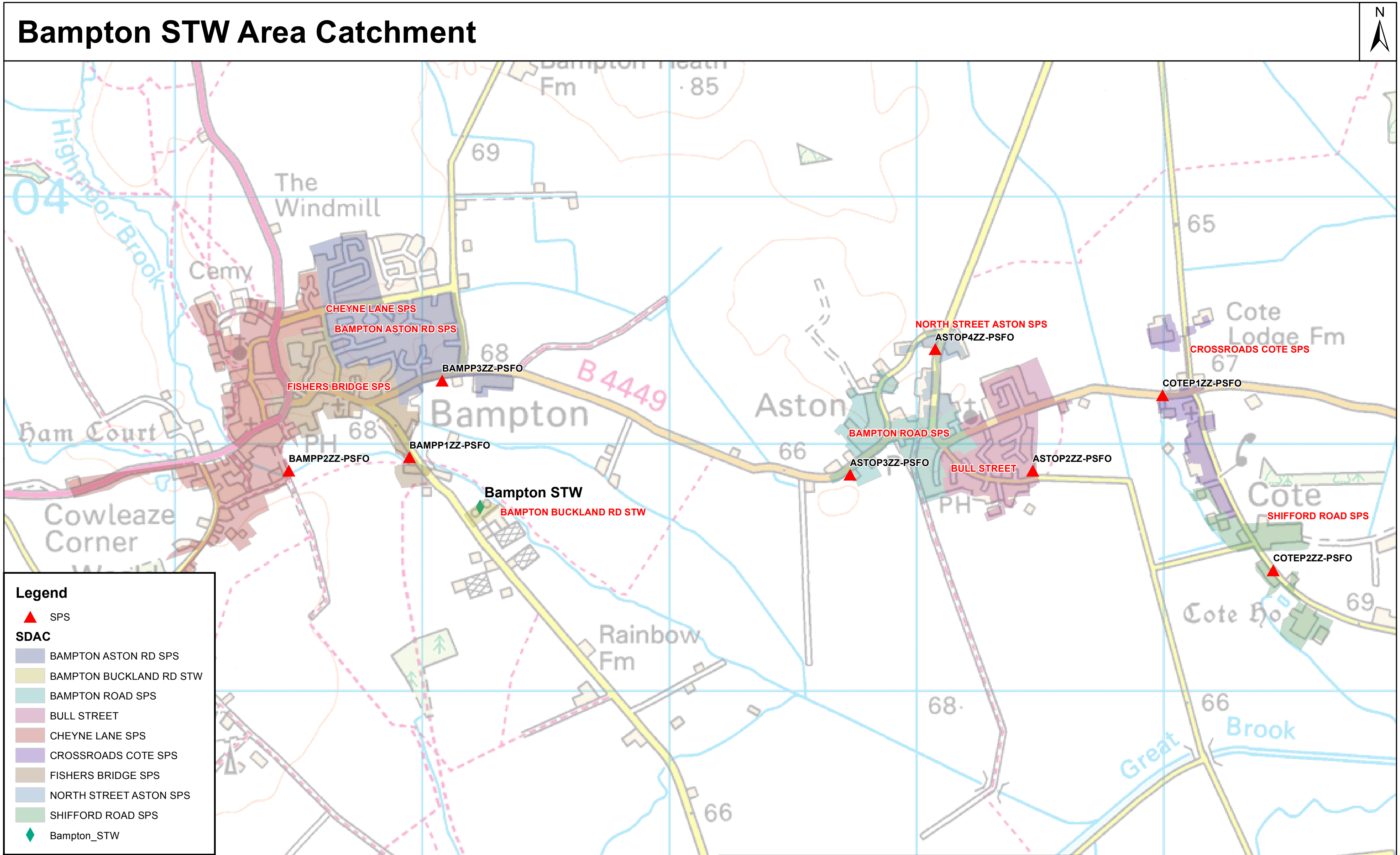
Bampton STW Area Catchment



Date Created: 24/11/2022

TI Reference No: [Enter No]

Scale: 1:13,700

0 0.125 0.25 0.5 0.75 1 Kilometers

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Thames Water

TECHNICAL INFORMATION

CLEARWATER COURT (THIRD FLOOR EAST), READING

Email: technical.information@thameswater.co.uk
Portal: Business Area > Asset & Operational> Technical Information

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APPENDIX B
MEETING MINUTES

Bampton and District Flood Prevention Group

Minutes of the meeting held on Thursday 15th February 2024

Present

Parishes

Keith Glazier, (Chairman); Brize Norton: Paul Sparrowhawk, Aston; Peter Miles, Black Bourton; Lynne Chard, Clanfield; Steve McLaren, Bampton, (Secretary).

Agencies

Lydia Arciszewska, WODC Environment Portfolio; Alistair Wray, WODC District Councillor; Kevin Jack, WODC; Jake Morley, Thames Water.

Apologies

Apologies were received from James Spicer, Environment Agency. He noted that "Incident Response Work" was taking priority over other matters

Chairman's Opening Remarks

Keith circulated his opening remarks and in particular thanked Alec Jones for all his hard work on behalf of Black Bourton over many years and wished him a happy retirement. He then went on to welcome Peter Miles who will now represent Black Bourton.

He noted the severity of the wet weather over the December/January period which had led to near record high levels in the Thames. Fortunately, the rainfall had been spread over a longer period, unlike 2007. This has led to significant surface water flooding in the district but with only one incident of property damage. Mitigation/Resilience measures taken since 2007 have provided some relief but we must be continually on our guard to prevent problems in the future. Teamwork between Parish representatives with their local knowledge and OCC, WODC, Thames Water and the Environment Agency is the best way of deal with issues of flooding and river pollution.

We must address three issues: "Where does it come from", "Where **should** it go" and "can we slow it down".

Agency Updates and Parish Issues.

Environment Agency

James Spicer forwarded a report to the secretary and it was agreed that this should be circulated to all via email. He asked that he should be contacted direct if there are any issues not covered by his report. His email address is james.spicer@environment-agency.gov.uk

Paul noted that the number trees blocking the Great Brook is ten and that planning to remove them from September onwards is not sensible due to worsening ground conditions.

It was also noted that the road alongside the Great Brook has been closed on several occasion due to it flooding over since it can no longer take the amount of water entering it from the catchment area.

Thames Water

Jake reported that due to the high number of call-outs waiting times are increasing and therefore internal rather than external flooding is being prioritised.

1. Aston

The redirection of surface water from the foul sewer at St, James's Court in Aston is being addressed. A copy of the planned works has been sent to Paul. The work is planned for completion by the end of 2024.

Paul reported that plans for 36 more houses have been approved by OCC in spite of Thames Water saying they could not cope with the sewage from them.

Jake reported that there is to be a flow survey at Aston Sewage Pumping Station to estimate the levels of ground water infiltration. This will start at the end of March and last for 3 to 4 months. Remedial work will then be planned.

2. Clanfield

Further sewer lining work is fully funded. Lynne noted that the success of the recent lining work has led to more street flooding. Jake agreed that with the current high ground water levels this would be inevitable since it could no longer enter the foul sewer.

3. Bampton

Steve again expressed the disappointment felt in Bampton due to the delay in the sewage works upgrade into the 2025-2030 time period. Jake said it was hoped to carry out the works early on, possibly late 2025/early 2026. Steve agreed to circulate the correspondence he had had with our MP Robert Courts.

4. Black Bourton

Pete expressed concern about the number of tankers that had been travelling up Burford Lane recently and the damage caused to the grass verges. Jake confirmed that it was weather related and normally only one local tanker would be used. He agreed to arrange the reinstatement of the verges.

Pete reported that one property had been flooded during a recent storm.

5. Brize Norton

Keith noted the cable to the pumping station was being installed at last. He also asked what was the purpose of the manhole chamber and non-return valve on Station Road and how many houses did it serve. Jake replied that it was only one house. Keith requested that House No. 111 Station Road also be considered for the fitting of a non-return valve since it suffered from the same problem as House No. 113 and the outlet is adjacent to House No. 113

Concern was expressed that Station Road was closed for a week for this work without any of the normal prior notification. Emergency Services were unable to get through.

OCC

There was no representative from OCC at the meeting. Both Pete and Lynne reported that residents had had to clear out roadside gullies in Black Bourton and Clanfield respectively to alleviate flooding from the road into properties.

WODC

Kevin reported that a section of the transverse ditch at Tannery Gardens in Bampton had now been filled in and Blue Cedar Homes had paid for the work. A photograph of the ditch showed it was full of water which must mean that the water is not flowing away to the Station Road ditch.

Steve asked Kevin to contact Blue Cedar Homes to point out that is their responsibility to clear out the ditch alongside their property and Station Road. H also asked Kevin to look at the possibility of creating a drainage system to take water from Pembroke Play Park into the surface water sewer in Pembroke Place.

Kevin reported that flooding in Weald Street in Bampton which comes from the Paddocks is still causing problems. The correct solution would be to culvert the water under the road to a suitable ditch opposite. OCC are reluctant to do this because they are concerned about the possible maintenance costs in the future.

Lynne expressed concern about drainage issues at the Clover Court development where changes had been made apparently without permission. Kevin said he thought the current road surface design would improve drainage.

Keith closed the meeting thanking everyone for their contributions and reiterated that the current representation was the best way to ensure that the important issues are raised and dealt with.

Date of next meeting.

Either Thursday 6th or Friday 7th June 2024.

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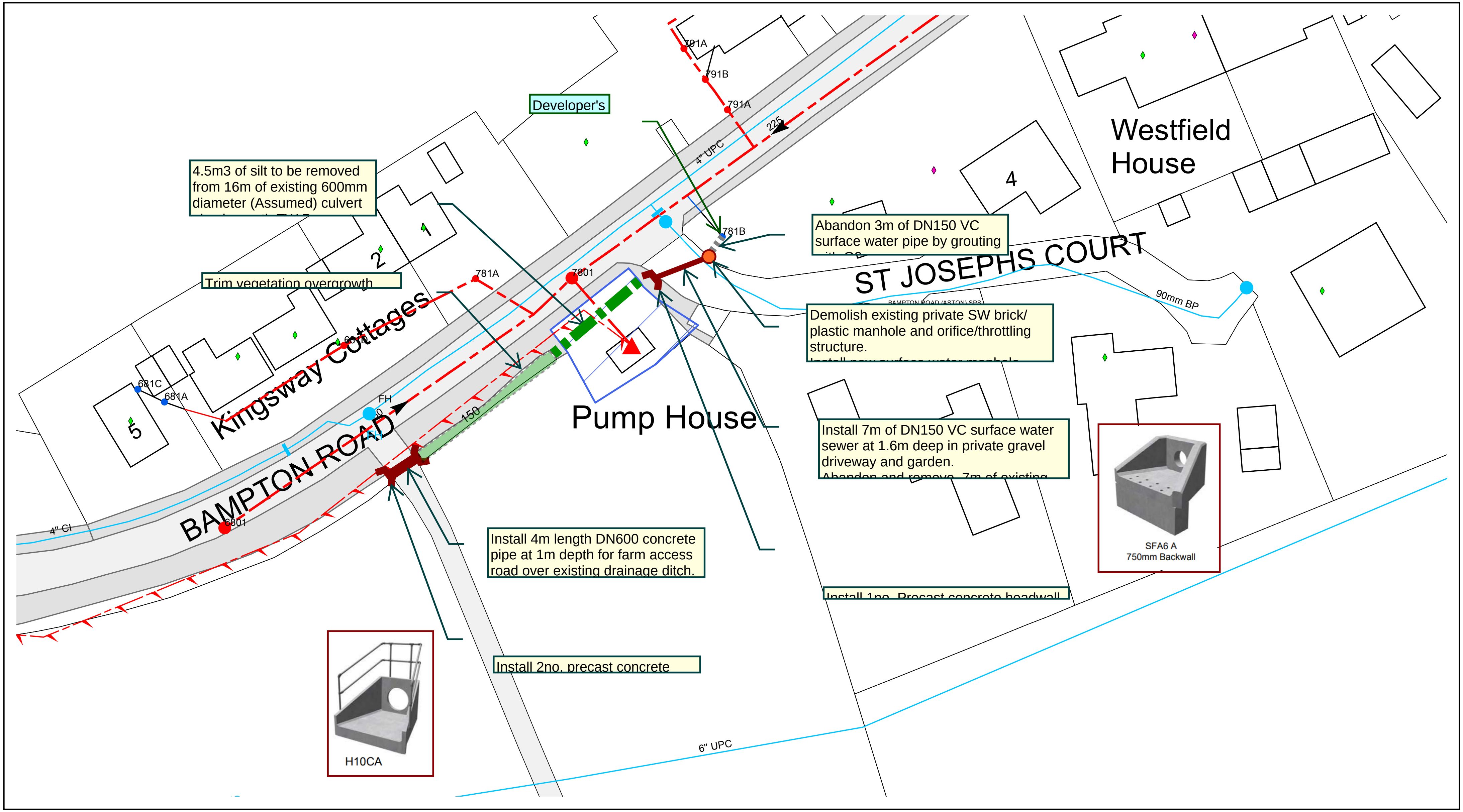
Thames Water



0 5 10 20 30 40
Metres

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J086 ASTON GROWTH
OX18 2BT
WASTE WATER OPTION 1

24/01/2022