FLOOD RISK ASSESSMENT

Substation at Avonbridge House
Bath Road
Chippenham
SN15 2BB

Project No: 10160APH7

DATE	REVISION	ISSUE PURPOSE	ISSUED BY
10/08/23	0	Draft for Comment	RV
14/08/23	1	Minor Amendments	RV
22/08/23	2	Site Plans updated	RV
20/11/23	3	Updated to suit substation requirements and to incorporate Product 4 data	DT
21/11/23	4	Proposed Site Plan updated	DT

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1.0 INTRODUCTION

APPOINTMENT AND BRIEF

1.1. Structural Solutions has been appointed by Alliance Pharmaceuticals Limited to produce a Flood Risk Assessment to support a planning application for the proposed development at Avonbridge House, Chippenham. The development consists of the installation of a new substation and electric vehicle charging points within the existing car park area of Avonbridge House.

1.2. Avonbridge House is a Grade II listed building located along Bath Road close to Chippenham town centre. The building runs parallel to the River Avon on its north bank and lies east of the Bridge Centre Gyratory Roundabout. The site postcode is SN15 2BB and has an approximate central Ordnance Survey Grid Reference of X 391845, Y 173280. The total site area is less than 0.160ha.

1.3. The Lead Local Flood Authority (LLFA) is Wiltshire Council and the Water Authority is Wessex Water.

1.4. A site location plan is included in **Appendix A** and shown in the figures below.

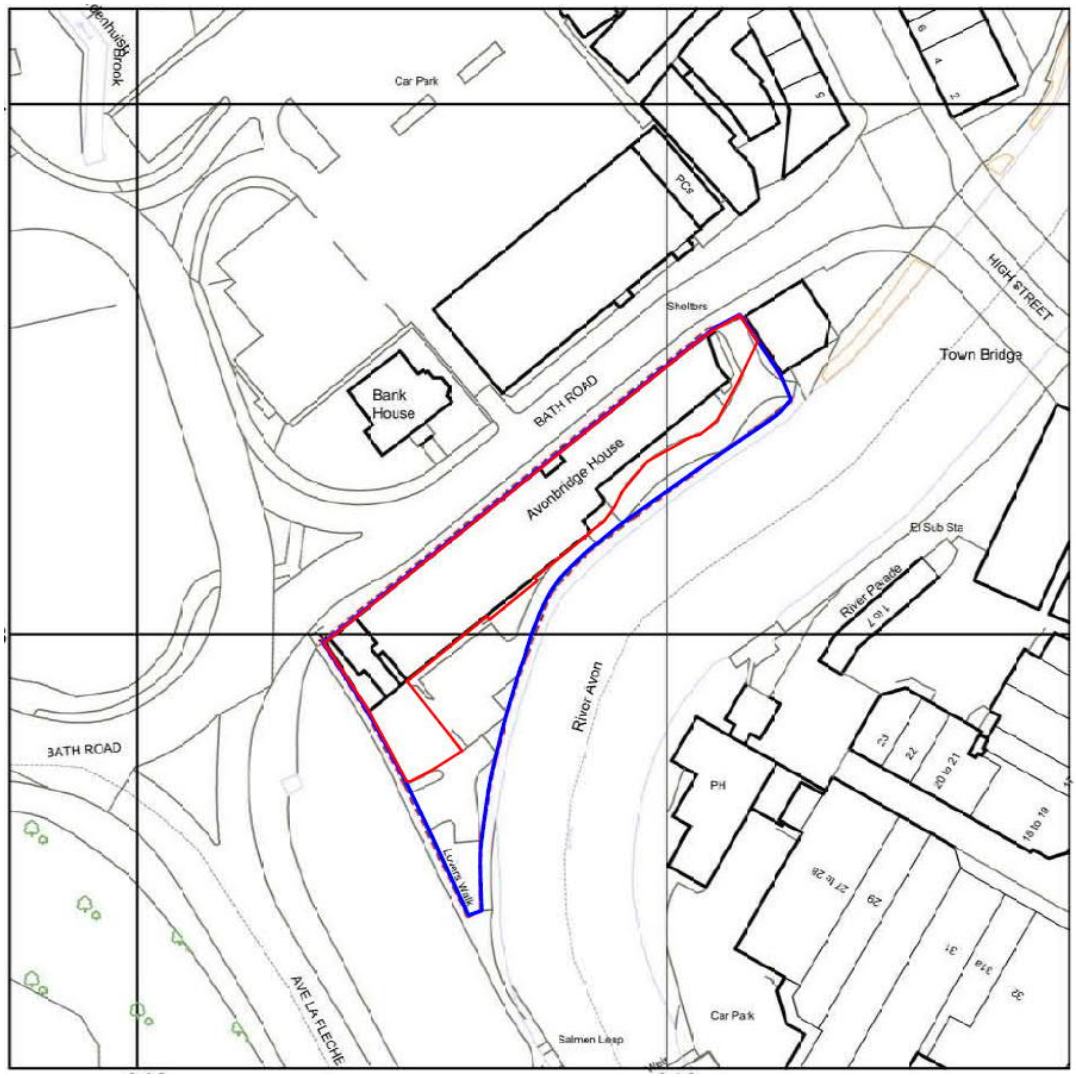


***Figure 1** Site Location – OS Map*

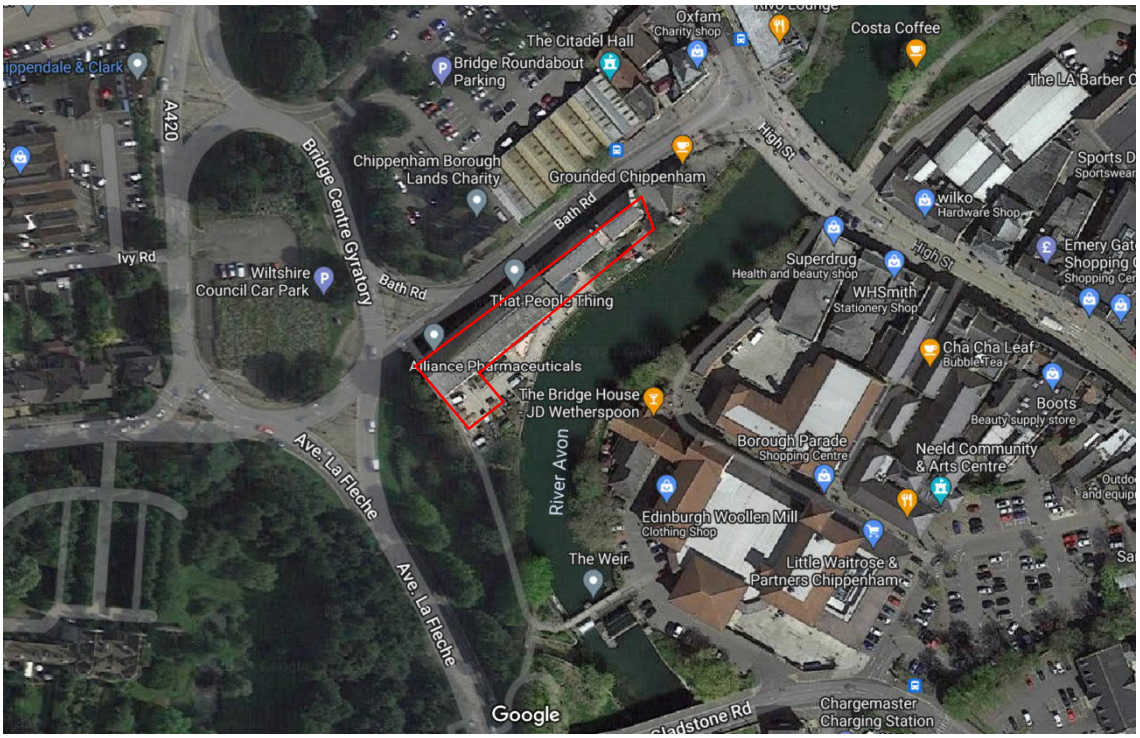


***Figure 2** Site Location – Satellite Imagery (Google)*

SITE BACKGROUND

1.5. The site Design and Access Statement (**Appendix F**) and associated Heritage Statement provide a detailed analysis of the building, heritage significance, setting and effect of the proposed development.

1.6. Alliance Pharmaceutical have a global commitment to reduce their carbon emissions. They have an ongoing programme reducing the carbon cost of their business operations, product manufacture, packaging and distribution. Following a strategy to improve the efficiency of mechanical and electrical systems in place within the building, they have now turned their attention to the use of renewable energy solutions to further reduce carbon and solar power has been identified as the most viable option.

1.7. This application follows an application for the replacement of existing roof covering, including installation of Photovoltaic solar panels.

1.8. The mains electrical supply to the building dates from the conversion of the building and has been running at capacity for a number of years. In order to optimise the functionality of the new solar panels, serve the EV charging points and provide resilience for an anticipated increase in staff occupation numbers, it is necessary to replace the existing supply and install a new electrical substation.

STUDY OBJECTIVE

1.9. This report investigates flood risk on site and in the area and establishes the mitigation measures required to ensure the sustainability and safety of the proposed development over its lifetime.

1.10. The report has been produced in line with the requirements of the National Planning Policy Framework (NPPF) and the Environment Agency (EA) Standing Advice, as well as the requirements of Wiltshire Council.

1.11. Development must be located, designed and laid out to ensure that it is safe; the risk from flooding is minimised whilst not increasing the risk of flooding elsewhere; and that residual risks are safely managed. The site lies fully in Flood Zone 3, that is having a high probability of flooding from rivers and an FRA is required as part of the planning application.

1.12. The following documents and guidance have been reviewed to inform this report:

- Flood Risk Assessment (FRA) from planning application reference 18/08080/LBC, Clive Onions Limited (August 2018).
- Environment Agency Product 4 data (October 2023)
- Scottish and Southern Electricity Networks (SSEN) guidance document TG-NET-SST-009 - Siting of New Ground Mounted Secondary Distribution Substations in Flood Zones
- Site Design & Access Statement by Designscape Architects (August 2023)
- Chippenham One Plan, Radial Gate and River Avon Improvements Project (June 2023)
- Wiltshire Council Level 1 Strategy Flood Risk Assessment (SFRA) v5.0 (May 2019) and online map viewer
- West of England Sustainable Drainage Developer Guide Section 1 (March 2015)
- Site Topographical Survey by Astro Surveys Ltd (March 2018)
- Wessex Water Sewer Asset Records (July 2022)
- DEFRA Non-statutory technical standards for sustainable drainage systems (2015)
- CIRIA SuDS Manual (CIRIA C753) (2015)
- British Geological Society (BGS) Online Viewer
- DEFRA's online Multi-Agency Geographical Information for the Countryside (MAGIC) Map
- GOV.UK's online Flood Map for Planning and Long Term Flood Maps.
- Cranfield Soil and AgriFood Institute (CSAI) Soilscapes mapping.

LIMITATIONS

1.13. This report is based on the interpretation and assessment of data provided by third parties.

1.14. Whilst every care has been taken to ensure this information is accurate and up-to-date, Structural Solutions is not responsible for the accuracy of the third party data and the conclusions and findings of this report may change if the data is amended or updated after the date of consultation.

2.0 EXISTING SITE

SITE LOCATION

2.1. The development is located at Avonbridge House, Chippenham. The closest postcode is SN15 2BB and has an approximate central Ordnance Survey Grid Reference of X 391845, Y 173280. A Site Location Plan is included in **Appendix A**.

SITE DESCRIPTION

2.2. Table 1 describes the general site characteristics, a copy of the site topographical survey is included in **Appendix B**.

TABLE 1		EXISTING SITE CHARACTERISTICS
Site Area		The total site area within the red line boundary is less than 0.160ha and falls within the Avonbridge House land ownership.
Existing Use		The site is currently used as a tarmac surfaced car park serving Avonbridge House, a Grade II listed building.
General Topography		The site is generally level with a slight north to south fall from the high point of 44.86m AOD in the north east corner to 44.37m AOD in the south east corner.
Boundaries	**North**	Avonbridge House building, beyond which is Bath Road and other commercial properties.
	South	Avonbridge House car park and River Avon.
	West	Lovers Walk public footpath, woodland area and the Bridge Centre Gyratory Roundabout.
	East	Avonbridge House car park and River Avon.
Access		Site access is off Bath Road to the north east.
Flood Zone		The site lies in flood zone 3 (high risk).

GEOLOGY AND HYDROGEOLOGY

2.3. British Geological Survey (BGS) mapping indicates superficial deposits of Alluvium – Clay, silt, sand and gravel. The underlying bedrock geology consists of Cornbrash Formation - Limestone.

2.4. The Soilscapes mapping identifies the site comprising of loamy and clayey floodplain soils with naturally high groundwater.

2.5. According to DEFRA's online Magic Map for Source Protection Zones (SPZ), the site is located in a Zone II - Outer Protection Zone groundwater Source Protection Zone. The site is not in a Drinking Water Safeguard Zone (Surface Water).

2.6. Based on DEFRA's online Magic Map for Groundwater Vulnerability Zones, the bedrock is classified as having a medium - high vulnerability to pollutant discharge. The Magic Map also identifies that significant soluble rocks are likely to be present which are considered to enable the rapid movement of a pollutant.

2.7. The Environment Agency (EA) classifies the underlying bedrock as a Secondary A Aquifer.

EXISTING HYDROLOGY, FLOOD DEFENCES AND STRUCTURES

2.8. The River Avon flows in a north to south direction approximately 10m south of the site.

2.9. SFRA mapping shows no formal flood defences and no known artificial watercourses in the vicinity of the site. The EA Product 4 data identifies natural high ground flood defence assets on either side of the river adjacent to the site.

2.10. Salmon Leap weir crosses the river approximately 40m south of the site.

CHIPPENHAM ONE PLAN, RADIAL GATE AND RIVER AVON IMPROVEMENTS PROJECT

2.11. The Chippenham Town Centre Partnership Board has produced the One Plan for Chippenham which is the development of a new and comprehensive Town Centre Masterplan for Chippenham to help boost Chippenham's economy, enhance the environment and celebrate the town's heritage. One of the initiatives as part of the One Plan is the Chippenham Radial Gate and River Avon Improvements Project. Details are on the Wiltshire Council website which states the following

> *The key driver for the scheme is that the existing radial sluice gate is nearing the end of its design life. In addition to this there is an existing fish pass alongside the weir, but this is only passable for a small number of fish, and there is a desire to increase fish migration through this river. The structure also acts as a barrier to other animals moving along the river channel. Any preferred option will need to improve the ecological value of this watercourse.*
>
> *The existing sluice gate is only there to provide an amenity water level upstream, i.e. to ensure a fairly constant upstream water level over a wide range of flows. The gate opens automatically as water levels rise based on floats within a chamber alongside the gate. There are no motors to enable manual control of the gate.*
>
> *The sluice gate does not provide a flood risk function, and however the gate is operated it will have minimal impact downstream. However, if the gate was to fail to open during a flood event then there would be a large increase in flood risk through Chippenham, with around 200 residential and commercial properties (including the High Street and shopping centres) being at risk of regular flooding.*

2.12. While there will be no direct improvement in flood risk as a result of the scheme, the One Plan project will ensure the performance of the sluice gate during a flood event.

EXISTING SITE DRAINAGE

2.13. An extract from the Wessex Water Statutory Sewer Map is shown in **Figure 3** below and copies included in **Appendix C**. The following Wessex Water assets have been identified within and in the vicinity of the site:

- 150mm diameter foul water sewer running northeast to southwest across the site and discharging to 1 300mm / 450mm diameter foul sewer in Lovers Walk at manhole reference 8203.
- 300mm diameter foul sewer, running north to south along Lowers Walk before crossing the River Avon as a siphon.

2.14. The 150mm diameter sewer described above serves Avonbridge House and its neighbouring building. The 150mm diameter surface water sewer crossing through the site will be subject to a minimum offset easement of 3m on either side of the pipe where buildings will not be allowed. While installation of infrastructure is not affected, the location of the substation will take the sewer location into consideration.

2.15. There is no evidence of any existing private on-site drainage identified in the topographical survey within the site (**Appendix B**).

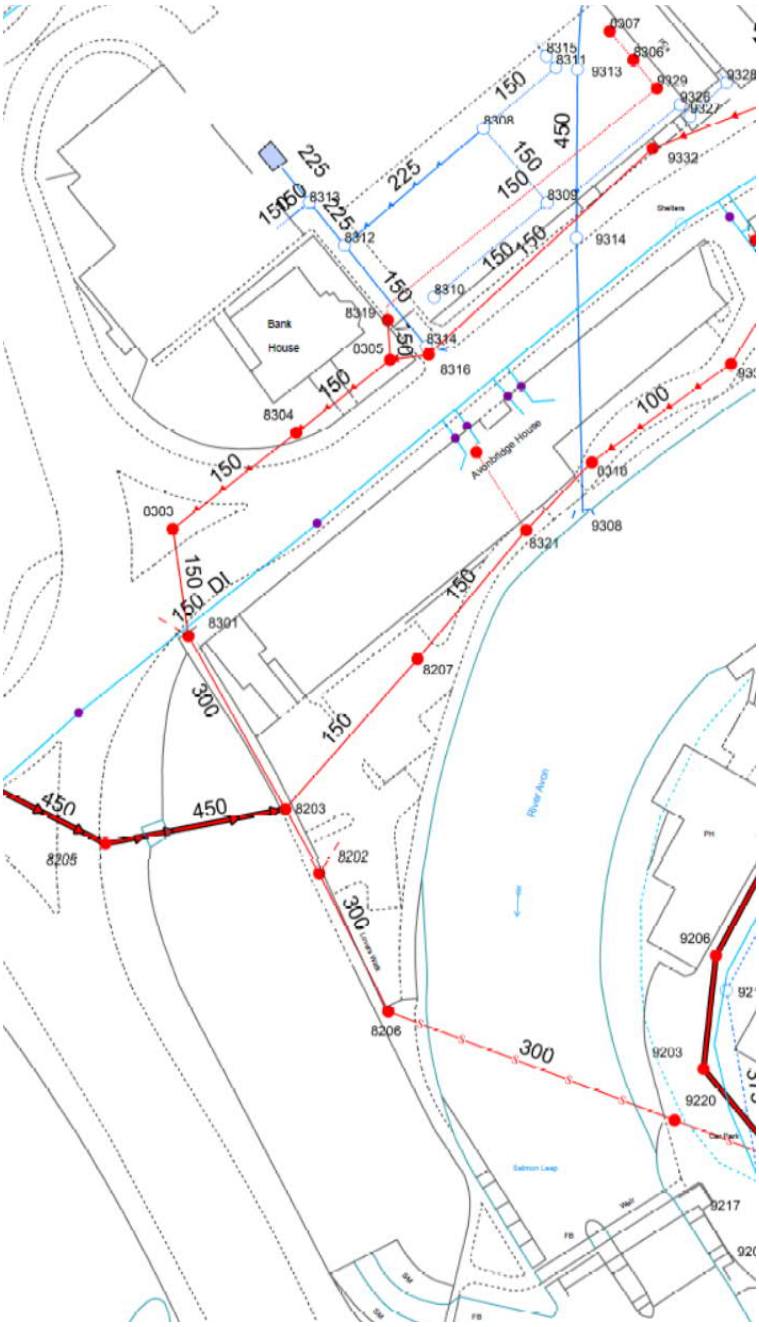


Figure 3 *Extract from Wessex Water Sewer Records*

3.0 PROPOSED DEVELOPMENT

SUMMARY

3.1. The development consists of the installation of a new SSEN substation and electric vehicle charging points within the existing car park area of Avonbridge House, Bath Road, Chippenham.

3.2. A copy of the development proposals is shown in **Figure 4** and is included in **Appendix D**.

3.3. A copy of SSEN's guidance document for secondary distribution substations in flood zones is included in **Appendix G**.

VULNERABILITY CLASSIFICATION

3.4. As an electrical substation, the site use is classified as "Essential Infrastructure" based on Annex 3 in the GOV.UK Flood risk and coastal change guidance."

3.5. The site lies in Flood Zone 3a.

SEQUENTIAL AND EXCEPTION TESTS

3.6. As stated in the NPPF (July 2021), a sequential risk-based approach to determine the suitability of land for development in flood risk areas should be applied at all stages of the planning process giving precedence to low flood risk areas wherever possible.

3.7. The development falls in Flood Zone 3 and from Table 2 of the NPPF (extract below), an exception test would normally be required. This means ensuring that the development will be safe for its lifetime, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. However, the NPPF notes that some minor development (non residential with site area less than 1ha) should not be subject to the Exception Test and this applies to the proposed development. Details of how flood risk will be managed at the site are included in **Section 5**.

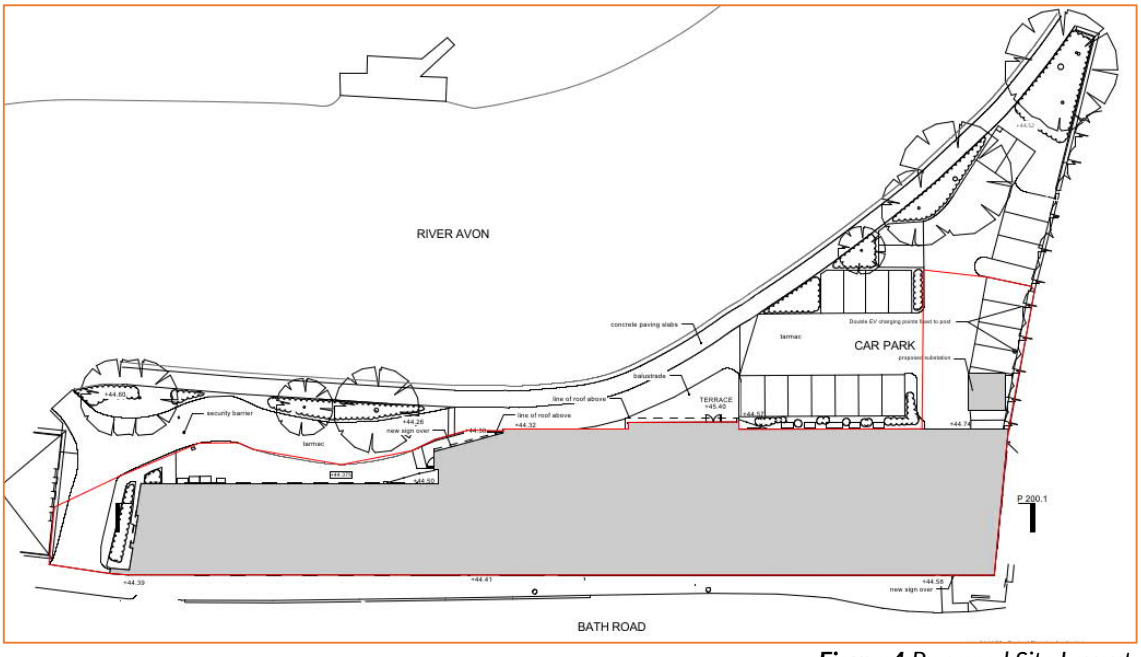


***Figure 4** Proposed Site Layout*

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✔	✔	✔	✔	✔
Zone 2	✔	Exception Test required	✔	✔	✔
Zone 3a †	Exception Test required †	X	Exception Test required	✔	✔
Zone 3b *	Exception Test required *	X	X	X	✔ *

Key:

✔ Exception test is not required

X Development should not be permitted

SSEN SUBSTATION REQUIREMENTS

3.8. Appendix 1 of the SSEN guidance document TG-NET-SST-009 (**Appendix G**) gives the methodology for calculating the anticipated flood level depth at a substation location. The 1:20 year flood level depth (FD1) is used against topographical survey levels at the proposed substation plinth location (FD2).

3.9. Where FD2>FD1 no additional height is required. And where FD1>FD2 then the minimum height of plinth above ground is FD1-FD2 subject to a minimum of the plinth being 150mm above finished level, see sketch extract in the figure below.

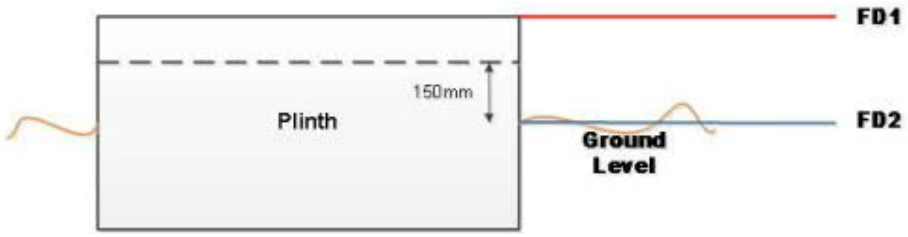


***Figure 4a** Calculation of minimum plinth height*

4.0 FLOOD RISK ASSESSMENT

4.1. The SFRA and other LLFA documents have been used, where appropriate, along with UK Government Flood Mapping in this section of the report to identify fluvial, tidal, groundwater, reservoir, and surface water flooding. Relevant maps are included in **Appendix E**.

FLUVIAL/TIDAL FLOODING

4.2. Based on the online GOV.UK Flood Map for Planning, the site is located in Flood Zone 3 (**Figure 5**) where the probability of river flooding is 1% (1 in 100) chance or more in any given year. The Wiltshire SFRA confirms the site lies in Flood Zone 3a.

4.3. Historical flood records included in the SFRA maps show no recorded road or property flooding in the vicinity of the site but indicate that the site lies within the 1703 – 1947 recorded flood outlines. EA Product 4 data (**Appendix E**) historic records indicate that there was flooding in the area in 1894 (fluvial), 1925 (fluvial), 1932 (fluvial), 1960 (fluvial), 2000 (unconfirmed source) and 2012 (fluvial).

4.4. The SFRA mapping confirms the site lies within a Flood Warning area and a Flood Alert area.

4.5. The EA Product 4 data contains modelled fluvial flood levels for the river Avon and tributaries. The modelled data is taken from the Chippenham and Calne Mapping and Modelling Study 2016 model The predicted flood levels at the node closest to the site are as follows:

TABLE 3	DEFENDED / UNDEFENDED FLOOD LEVELS
1% AEP (100yr):	**45.09 mAOD**
1% AEP (100yr) with 30% increase in flow	**45.41 mAOD**
1% AEP (100yr) with 40% increase in flow	**45.50 mAOD**
1% AEP (100yr) with 85% increase in flow	**45.91 mAOD**
0.1% AEP (1000yr):	**45.73 mAOD**
25yr Level	**44.49 mAOD**

4.6. The lowest existing ground level at the proposed substation is 44.61m AOD. The modelled data shows that the defended and undefended levels are the same and the 20 year flood level is not available. The 25 year level of 44.49m AOD has been used instead and is found to be 0.12m below the existing ground level. The 30 year flood level also falls below the existing ground level. Flood management measures to mitigate any potential risk are outlined in **Section 5**.

4.7. Based on the information available, the probability of fluvial and tidal flooding can be assessed as **medium**.

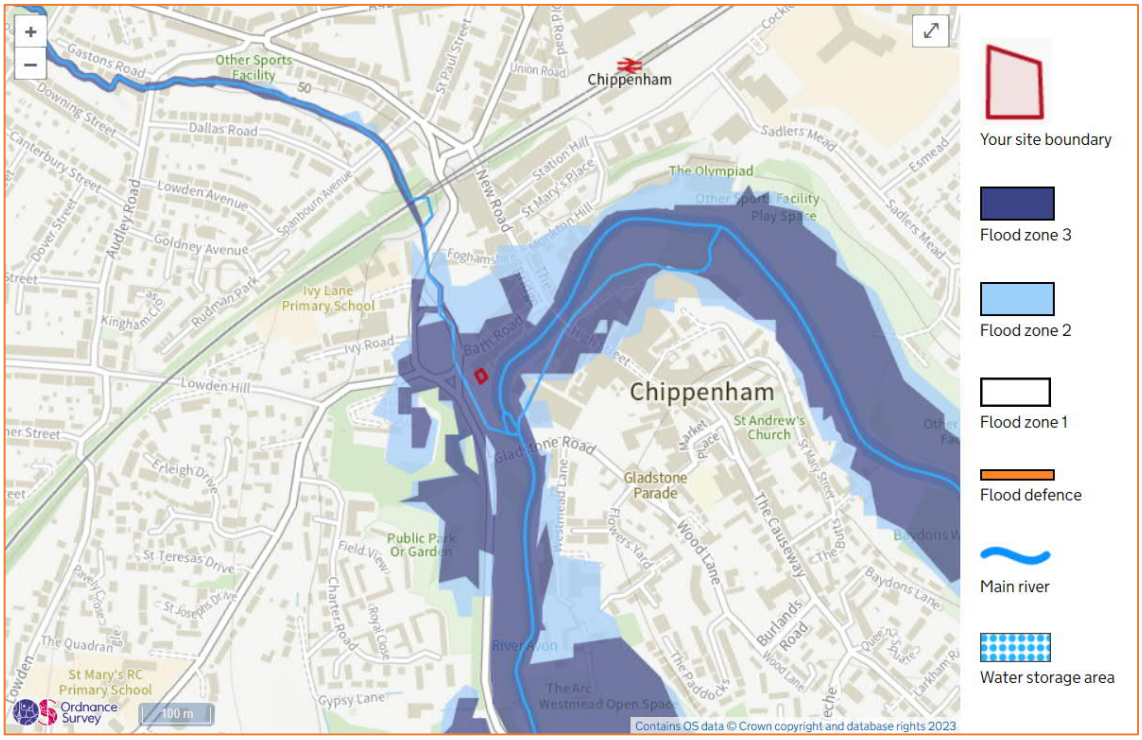


Figure 5 *Flood Map for Planning*

GROUNDWATER FLOODING

4.8. Groundwater flooding usually occurs in low lying areas underlain by permeable rock and aquifers that allow groundwater to rise to the surface through the permeable subsoil following long periods of wet weather.

4.9. Risk of Groundwater Flooding maps included in the Wiltshire SFRA (**Figure 6**) identify the groundwater levels between 0.025m and 0.5m below ground level.

4.10. Based on the information available and the assessment undertaken, the probability of groundwater flooding impacting the site is assessed as being **medium**.

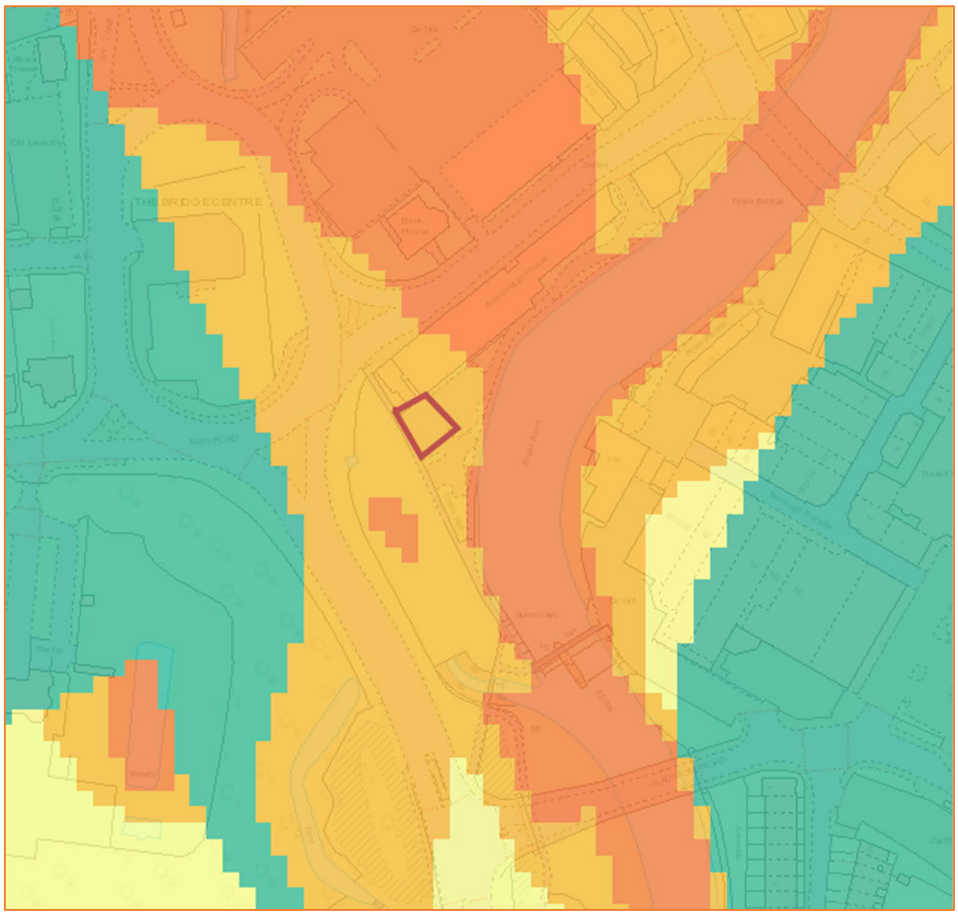


***Figure 6** SFRA Groundwater Flood Risk*

SURFACE WATER FLOODING

4.11. Overland flow and surface water flooding typically arise following periods of intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems. It can run quickly off land and result in localised flooding. Localised flooding can be attributed to topographic depressions, insufficient capacity within ordinary watercourses and culverts, as well as obstructions to surface water flow paths.

4.12. The online GOV.UK Long Term Flood Risk map identifies that there is generally a very low risk of surface water flooding across the site, refer to Figures 7a, 7b and 7c. There is a high risk route along the western site boundary following Lovers Walk towards the Bridge Centre Gyratory Roundabout. This is echoed in the SFRA Surface Water Flood Risk mapping where the risk is identified as 1 in 30 year. There is also a high risk surface water flow path along Bath Road and at the access point to Avonbridge House.

4.13. Based on the available information, the probability of surface water flooding is considered **low**.



Figure 7a *GOV.UK's Long Term Flood Risk Map for Surface Water Flooding*

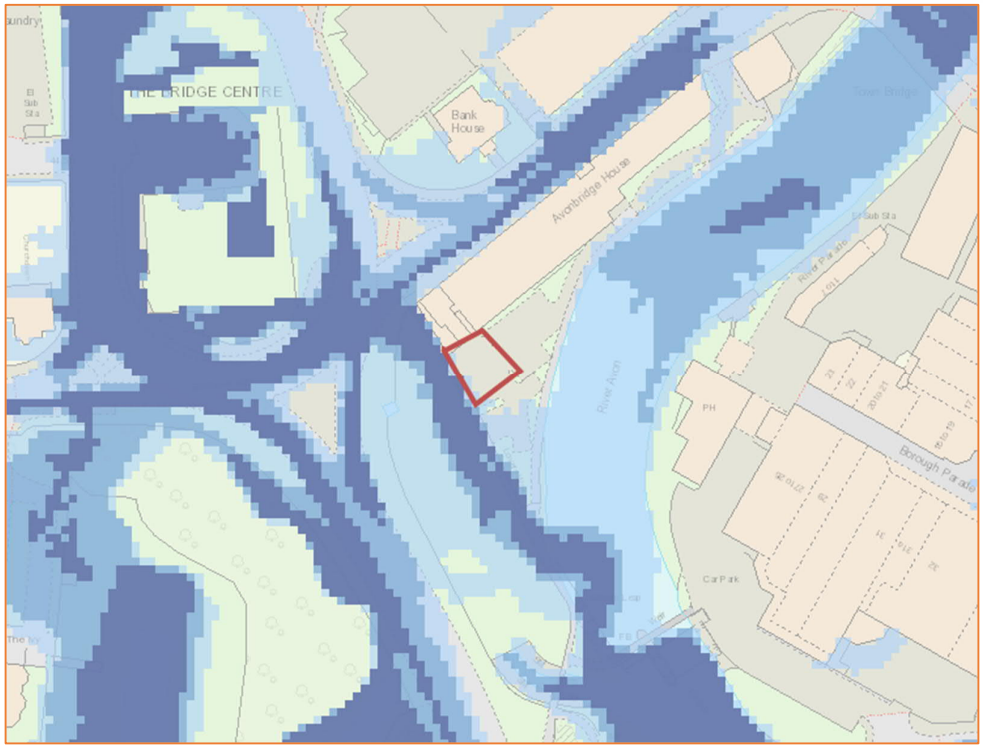


Figure 7b *SFRA Risk of Surface Water Flooding Map (source EA)*



Figure 7c *SFRA Risk of Flooding from Surface Water 1 in 100 year + Climate Change*

SEWER FLOODING

4.14. During heavy rainfall, flooding from the sewer system can occur if:

- The rainfall event exceeds the capacity of the sewer system/drainage system
- The system becomes blocked by debris, sediment or fat
- The system surcharges due to high water levels in receiving watercourses

4.15. The Wiltshire SFRA notes that sewer flooding incidents are recorded by Wessex Water and have been mapped however this information is not available to review in the SFRA mapping. Notwithstanding this, based on its location and proximity of manholes, it is possible that the site could be affected by sewer flooding.

4.16. Based on the information available the probability of sewer flooding impacting the site can be assessed as **low-medium**.

RISK OF FLOODING FROM RESERVOIRS AND ARTIFICIAL SOURCES

4.17. The failure of a reservoir has the potential to cause catastrophic damage due to the sudden release of large volumes of water. An area is considered at risk if people's lives could be threatened in the event of a dam or reservoir failure. According to the online GOV.UK's Long Term Flood Risk Map, the site lies within the maximum extent of flooding from a breach in reservoirs (**Figure 8**).

4.18. The EA confirm that the likelihood of reservoir flooding is much lower than other forms of flooding as current reservoir regulations aim to make sure that all reservoirs are properly maintained and monitored in order to detect and repair any problem in advance.

4.19. The SFRA includes mapping showing flood risk from canals, which is not a risk in Chippenham.

4.20. Based on the available information, the probability of flooding from artificial sources can be assessed as **low**.



Figure 8 *GOV.UK's Flood Risk Map for Reservoir Flooding*

IMPACT OF CLIMATE CHANGE ON THE PROPOSED DEVELOPMENT

4.21. The site is located within Flood Zone 3 where the probability of fluvial flooding is greater than 1% in any year.

4.22. The SFRA includes mapping which identifies Flood Zone 3a outlines with allowances for climate change included (2080's Epoch) (**Figure 9**) and also Risk of Surface Water Flooding (1 in 100) with 40% climate change (**Figure 7c**). The site is affected by Flood Zone 3a plus climate change.

4.23. Based on the information available, the risk of flooding from the impacts of climate change can be assessed as **medium**.

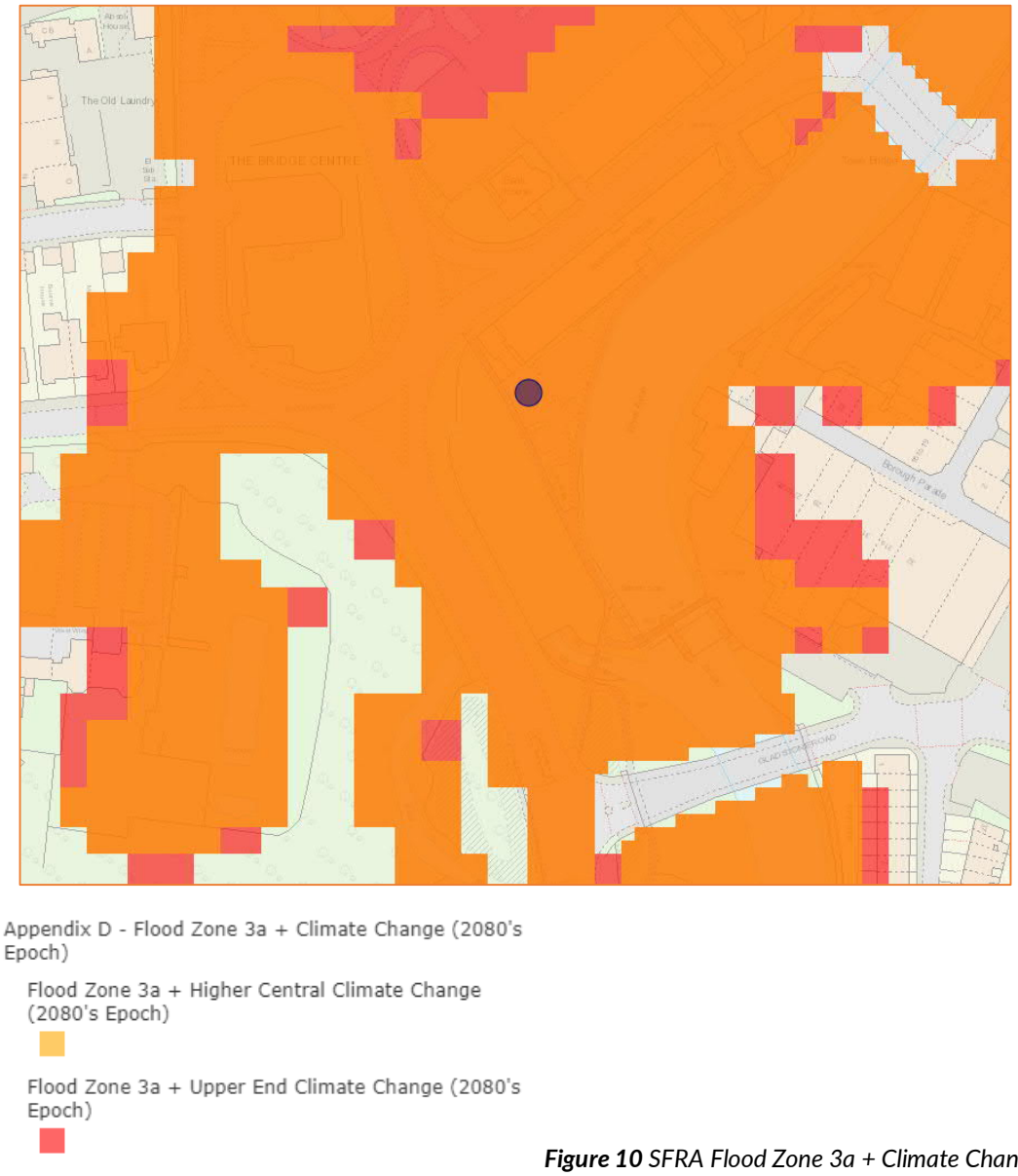


Figure 10 *SFRA Flood Zone 3a + Climate Change*

SUMMARY OF FLOOD RISK

4.24. Structural Solutions have assessed the risk of flooding to the site from all current and future potential sources of flooding. Table 4 summarises the findings of the assessment.

TABLE 4: DEGREE OF RISK FROM EACH SOURCE OF FLOODING	
Source	**Risk**
Fluvial / Tidal	Medium
Groundwater	Medium
Surface Water	Low
Sewer	Low-Medium
Reservoir	Low
Climate Change	Medium

5.0 FLOOD RISK MANAGEMENT AND MITIGATION MEASURES

5.1. This section of the report details the flood risk mitigation measures required to manage the identified risk of flooding from different sources. The information below is based on best practice as well as EA, LLFA and SSEN advice.

5.2. As discussed in the previous sections, the potential sources of flooding identified that have a reasonable probability of affecting the site area, based on the information collected, are fluvial, and groundwater. The effects of climate change could also have an impact on the site.

SITE LOCATION AND LAYOUT

5.3. The Environment Agency's Flood Map for Planning indicates that the development is located within Flood Zone 3. Typically an Exception Test is required for locating 'essential infrastructure' (electrical substation) in Flood Zone 3 as stated in Table 2 of the Flood Risk and Coastal Change Chapter of the Planning Practice Guidance. However, with the area of the proposed substation works expected to be less than 30m^2, the Exception Test is not required.

5.4. Although the Exception Test does not have to be passed, it is noted that development has been steered away from the river, to the furthest point away, which has a lower risk of flooding.

5.5. The Design & Access Statement (**Appendix F**) outlines the sustainability benefits from the development. Alliance Pharmaceutical Limited are aiming to reduce their carbon emissions, hence the need for the new substation and EV charging points.

5.6. There will be no change in the occupation numbers in the building and therefore the vulnerability of users will not be changed.

SITE LEVELS AND FLOOD RESISTANCE

5.7. Existing site levels in the car park area will remain unchanged. However this could result in the substation being inundated in extreme storm events. Electrical substations are normally required to be designed so that they are inherently dry internally and to ensure the substation remains operational and safe in times of flood, flood water will be prevented from entering the building. SSEN requires the minimum substation plinth height to be at the 1:20 year flood level which is achieved at the site.

5.8. From the modelled data, the 1:20 year flood level is not available and the 1:25 year flood level of 44.49m AOD has been used instead. This level is found to be 0.12m below the lowest point of the existing ground at the substation of 44.61m AOD. Therefore no ground raising will be required.

SITE ACCESS AND EGRESS

5.9. The development will not change the arrangement for site access and egress and there should be no impact on this for users.

SURFACE WATER DRAINAGE STRATEGY

5.10. The new substation will not change the impermeable area at the site and the existing site surface water drainage strategy will not be affected. It is therefore also unlikely that development on the site would increase flood risk elsewhere.

COMPENSATION STORAGE

5.11. As the ground levels will not need raising to provide flood mitigation there will be no need to provide compensation storage.

CHIPPENHAM RADIAL GATE AND RIVER AVON IMPROVEMENTS PROJECT

5.12. There are three options being considered for the river improvement works but none are specifically designed with the effect of improving flood risk at the site. If completed, the scheme will reduce the risk of flooding in the event of failure of the sluice gate.

6.0 CONCLUSION

6.1. This FRA has been prepared to support the planning application for the proposed development at Avonbridge House, Chippenham. The development consists of the installation of a new substation and electric vehicle charging points within the existing car park area of Avonbridge House. Avonbridge House is a Grade II listed building located along Bath Road close to Chippenham town centre. The site postcode is SN15 2BB and the total site area is less than 0.160ha.

6.2. The GOV.UK Flood Map for Planning identifies that the site is located in Flood Zone 3 where the probability of river or sea flooding is greater than 1% (1 in 100) chance in any given year and the probability of fluvial flooding is therefore assessed as medium. Groundwater, sewers and the effects of climate change could in theory also be a source of flood risk.

6.3. Scottish and Southern Electricity Networks (SSEN) guidance for secondary distribution substations in flood zones requires the substation plinth to be set at a the 1:20 year flood level as a minimum. The existing ground is above the 1:30 year flood level and this requirement is therefore achieved. The proposed development will not affect the probability of fluvial flooding at the site and in the surroundings.

6.4. By providing flood management measures the risks can be reduced to low. The site is at low risk or not at risk from all other sources of flooding.

APPENDIX A

Site Location



KEY

Site boundary

Adjacent land under same ownership

S 001 SITE LOCATION PLAN

0 25 50 M

N

Notes:

Responsibility is not accepted for errors made by othe from this drawing.

All construction information should be taken from figur dimensions only. Dimensions are in millimeters unless stated.

All dimensions and conditions to be checked on site prior to preparing drawings or commencing any work.

Any variations or supplementary drawings are to be approved by The Architect.

Rev:	Date:	Description:
S8	22/08/23	Update for substation LBC
S7	22/06/22	Update for substation LBC
S6	22/06/22	Updated for car park LBC

Status:
CONSTRUCTION

Project:
AVONBRIDGE HOUSE
CHIPPENHAM

Title:
SITE LOCATION PLAN

Reference:
389 S 001

Revision:
S8

DESIGNSCAPE
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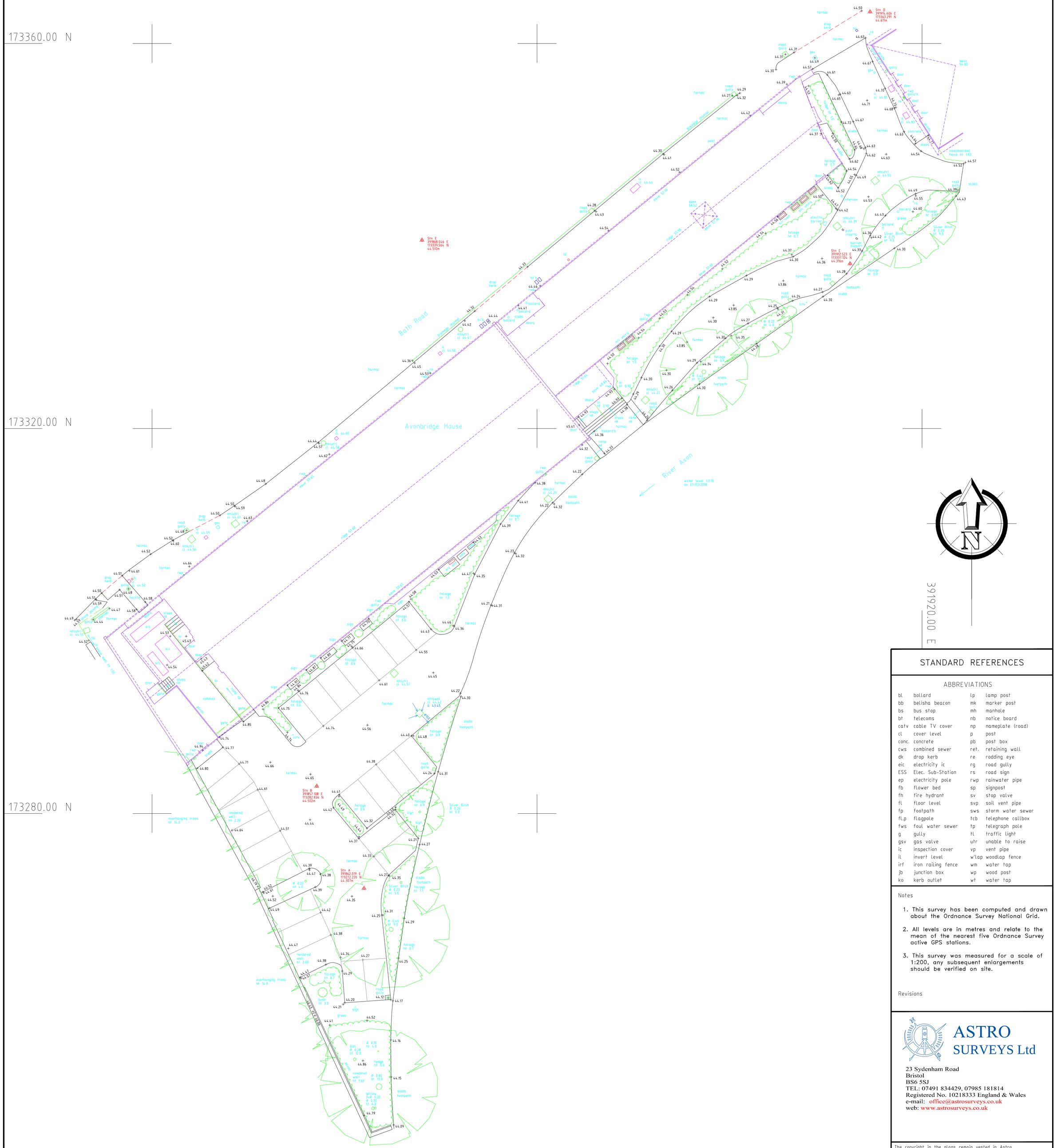
Date drawn: 04/04/18

Scale @ A3: 1:1000

Scale @ A1: 1:500

APPENDIX B

Topographical Survey



STANDARD REFERENCES

ABBREVIATIONS

bl	bollard	lp	lamp post
bb	belisha beacon	mk	marker post
bs	bus stop	mh	manhole
bt	telecoms	nb	notice board
catv	cable TV cover	np	nameplate (road)
cl	cover level	p	post
conc.	concrete	pb	post box
cws	combined sewer	ret.	retaining wall
dk	drop kerb	re	rodding eye
eic	electricity ic	rg	road gully
ESS	Elec. Sub-Station	rs	road sign
ep	electricity pole	rwp	rainwater pipe
fb	flower bed	sp	signpost
fh	fire hydrant	sv	stop valve
fl	floor level	svp	soil vent pipe
fp	footpath	sws	storm water sewer
fl.p	flagpole	tcb	telephone callbox
fws	foul water sewer	tp	telegraph pole
g	gully	tl	traffic light
gsv	gas valve	utr	unable to raise
ic	inspection cover	vp	vent pipe
il	invert level	w'lap	woodlap fence
irf	iron railing fence	wm	water tap
jb	junction box	wp	wood post
ko	kerb outlet	wt	water tap

Notes

1. This survey has been computed and drawn about the Ordnance Survey National Grid.
2. All levels are in metres and relate to the mean of the nearest five Ordnance Survey active GPS stations.
3. This survey was measured for a scale of 1:200, any subsequent enlargements should be verified on site.

Revisions

ASTRO SURVEYS Ltd
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Registered No. 10218333 England & Wales
e-mail: office@astrosurveys.co.uk
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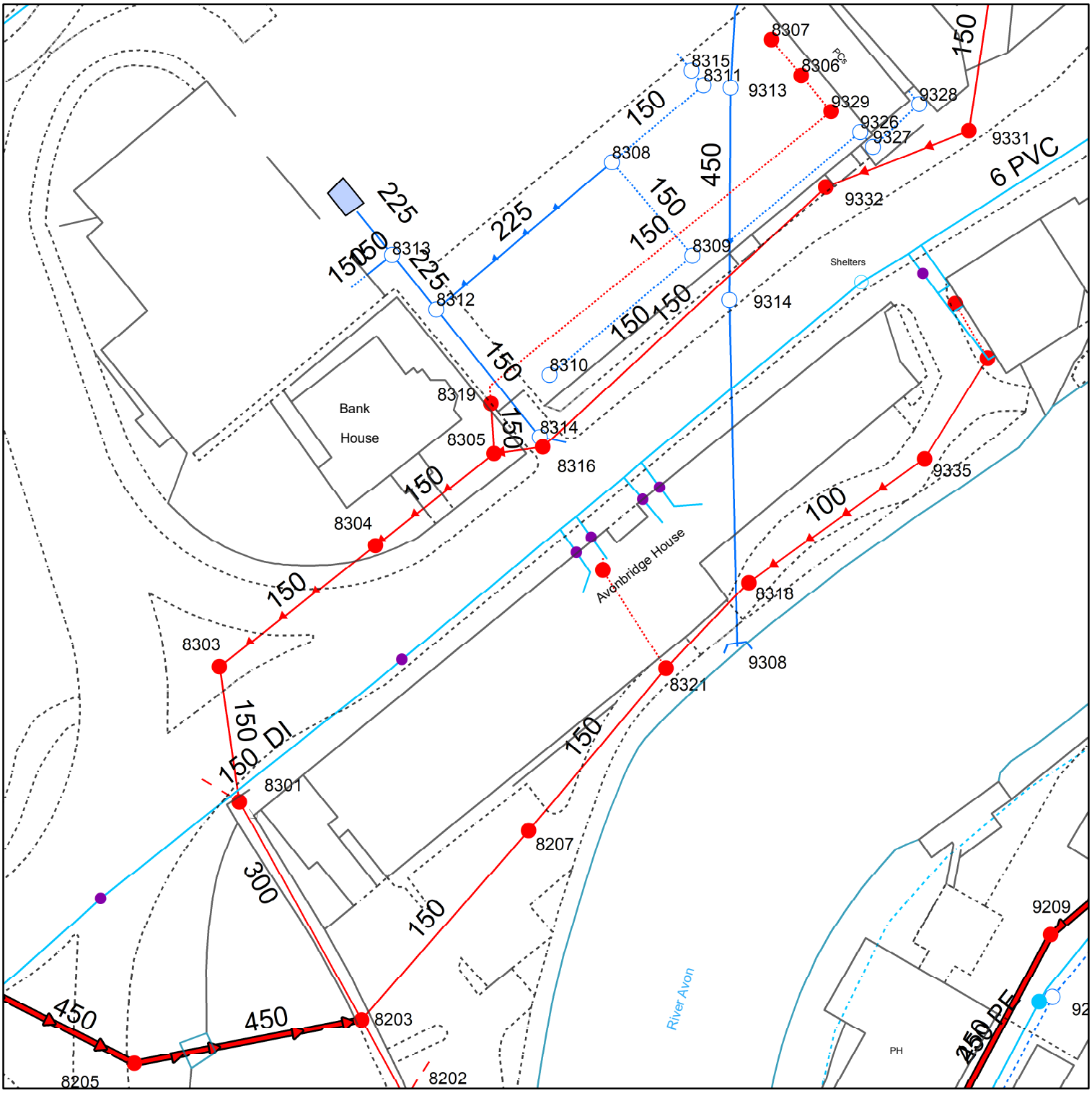
The copyright in the plans remain vested in Astro Surveys Ltd who will grant an irrevocable licence for use by the client upon receipt of full payment. No liability for accuracy shall extend beyond the specified scale of graphical mapping. All services and critical dimensions should be field verified.

Client	Designscape Architects Bath Brewery Toll Bridge Road Bath BA1 7DE
Project	Avonbridge House Bath Road Chippenham, SN15 2BB
Title	TOPOGRAPHICAL SURVEY
Drawing number	A20/146/1
Date	Mar 2018
Surveyed	K Saj
Scale	1:200
Drawn	K Saj
Sheet size	A1
Checked	B Bobkowski

APPENDIX C

Wessex Water Sewer Record Drawings

Wessex Water Network Map



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WATER MAINS
- Distribution
- Washout
- Raw Water
- Abandoned
- Private

FITTINGS
- Hydrant
- Other

SEWERS — STRATEGIC / PUBLIC / PRIVATE / SECTION 104
- Foul
- Surface
- Combined
- Abandoned

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

STRUCTURES
- Manhole - Foul
- Manhole - Surface
- Manhole - Combined
- Inlet
- Outfall
- Lamphole
- Bifurcation - Foul
- Bifurcation - Surface
- Bifurcation - Combined
- Combined Sewage Overflow
- Pumping Station - Surface
- Pumping Stn - Foul/Combined
- Gully
- Vent Column
- Rodding Eye
- Catchpit
- Flushing Chamber
- Soakaway
- Non Return Valve
- Air Valve
- Hatch Box
- Washout

OTHER WESSEX PIPES
- Rising Mains
- Standby Rising Mains
- EDM — Effluent Disposal
- Overflow
- S — Syphon

NON-WESSEX / UNKNOWN
- Private Rising Mains
- CW — Culverted Watercourse
- H — Highway Drain
- ? — Use Unknown
- SU — Status Unknown

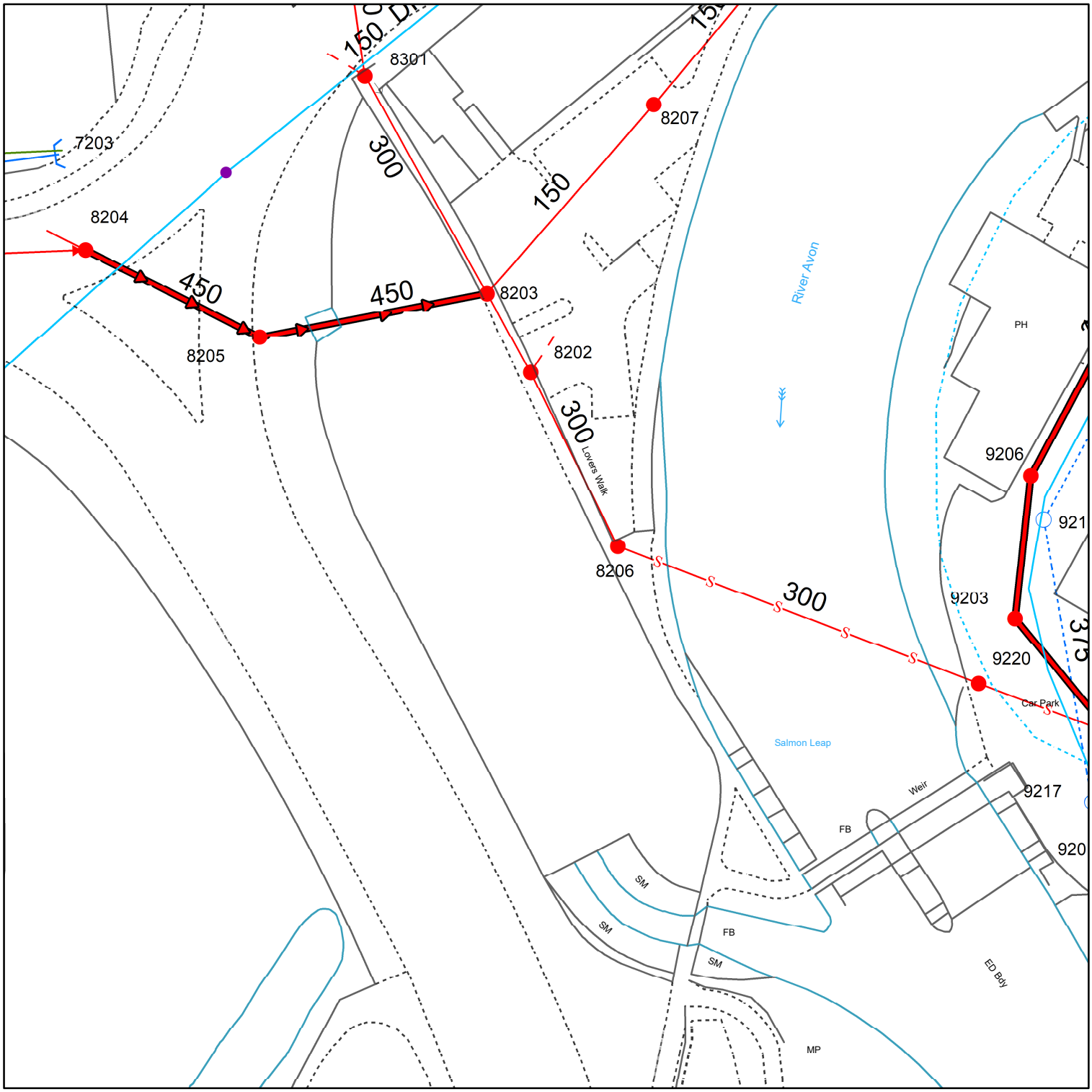
OTHER STRUCTURES
- Attenuation Tank
- Storage Tank
- Chamber
- Tunnel
- Interceptor

Wessex Water
YTL GROUP

Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.

Date: 14/07/2023
Centre: 391869, 173329
Scale: 1:625
(when printed at A4 size)

Wessex Water Network Map



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WATER MAINS
- Distribution
- Washout
- Raw Water
- Abandoned
- Private

FITTINGS
- Hydrant
- Other

SEWERS — STRATEGIC / PUBLIC / PRIVATE / SECTION 104
- Foul
- Surface
- Combined
- Abandoned

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

STRUCTURES
- Manhole - Foul
- Manhole - Surface
- Manhole - Combined
- Inlet / Outfall
- Lamphole
- Bifurcation - Foul
- Bifurcation - Surface
- Bifurcation - Combined
- Combined Sewage Overflow
- Pumping Station - Surface
- Pumping Stn - Foul/Combined
- Gully
- Vent Column
- Rodding Eye
- Catchpit
- Flushing Chamber
- Soakaway
- Non Return Valve
- Air Valve
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- Washout

OTHER WESSEX PIPES
- Rising Mains
- Standby Rising Mains
- EDM — Effluent Disposal
- Overflow
- S — Syphon

NON-WESSEX / UNKNOWN
- Private Rising Mains
- CW — Culverted Watercourse
- H — Highway Drain
- ? — Use Unknown
- SU — Status Unknown

OTHER STRUCTURES
- Attenuation Tank
- Storage Tank
- Chamber
- Tunnel
- Interceptor

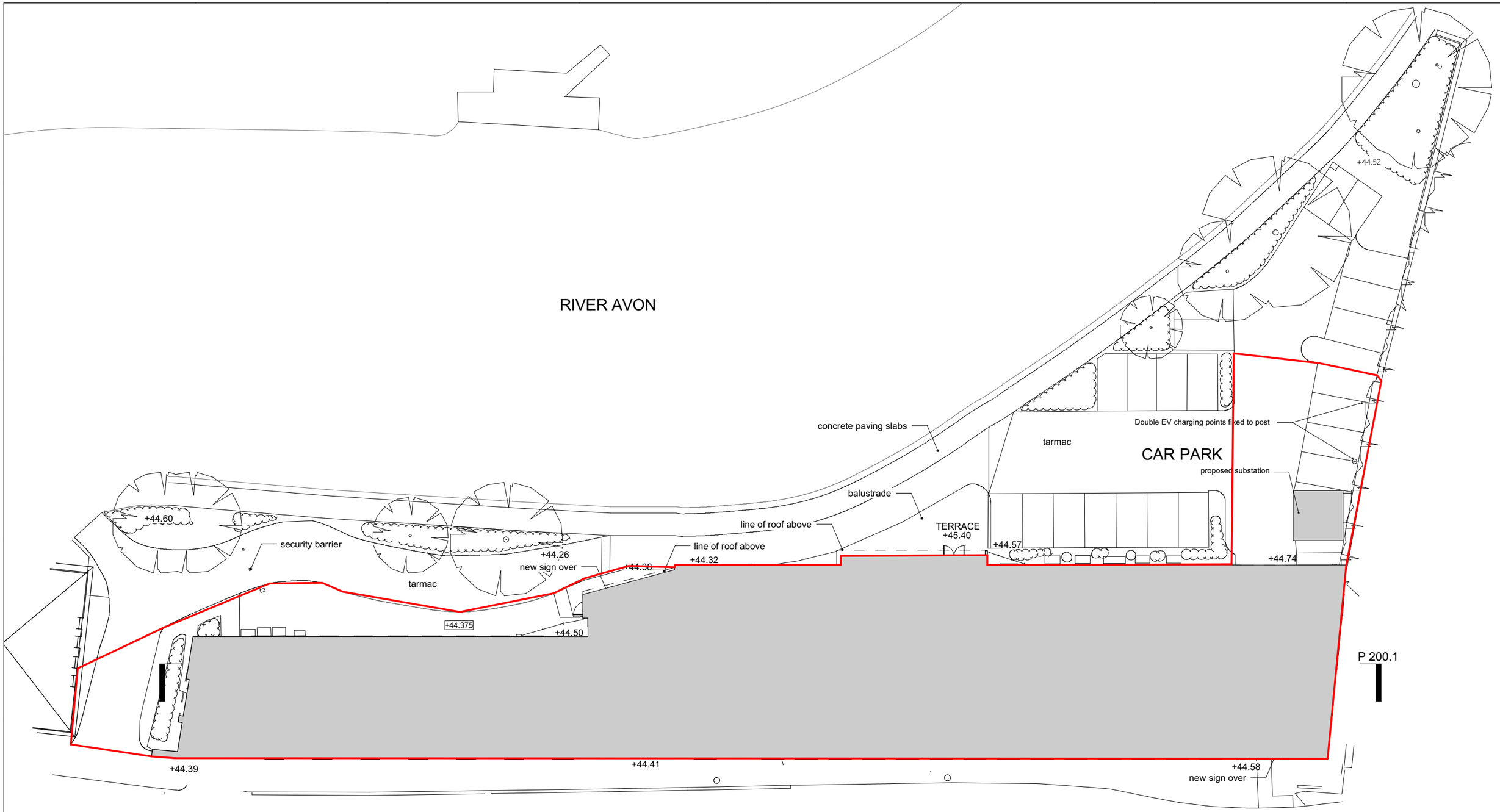
Wessex Water
YTL GROUP

Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.

Date: 11/08/2023
Centre: 391855, 173246
Scale: 1:625
(when printed at A4 size)

APPENDIX D

Proposed Site Layout



Notes:

Responsibility is not accepted for errors made by others scaling from this drawing.

All construction information should be taken from figured dimensions only. Dimensions are in millimeters unless otherwise stated.

All dimensions and conditions to be checked on site prior to preparing drawings or commencing any work.

Any variations or supplementary drawings are to be approved by The Architect.

KEY

+00.00 Existing floor level

+00.00 Proposed floor level

0 5 10 M

N

Rev:	Date:	Description:
P6	21/11/23	Revised Planning Application
P5	22/08/23	Flood compensation area added
P4	18/08/23	Substation relocated/charging posts added
P3	14/08/23	Flood compensation area added
P2	22/06/22	Susbtation application
P1	22/06/22	Car park

Status:
PROPOSED

Project:
AVONBRIDGE HOUSE
CHIPPENHAM

Title:
SITE PLAN PROPOSED

Reference:
389 P 010

Revision:
P6

DESIGNSCAPE
ARCHITECTS
Bath Brewery
Tollbridge Road
Bath BA1 7DE
T: 01225 858500
E: enquires@dscape.co.uk
www.dscape.co.uk

Drawn by: JW

Date drawn: 04/04/18
21/11/2023

Scale @ A3: 1:300

Scale @ A1: 1:50

APPENDIX E

Flood Maps and EA Product 4 Data

Flood map for planning

Your reference	Location (easting/northing)	Created
<Unspecified>	**391853/173281**	**11 Aug 2023 11:44**

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

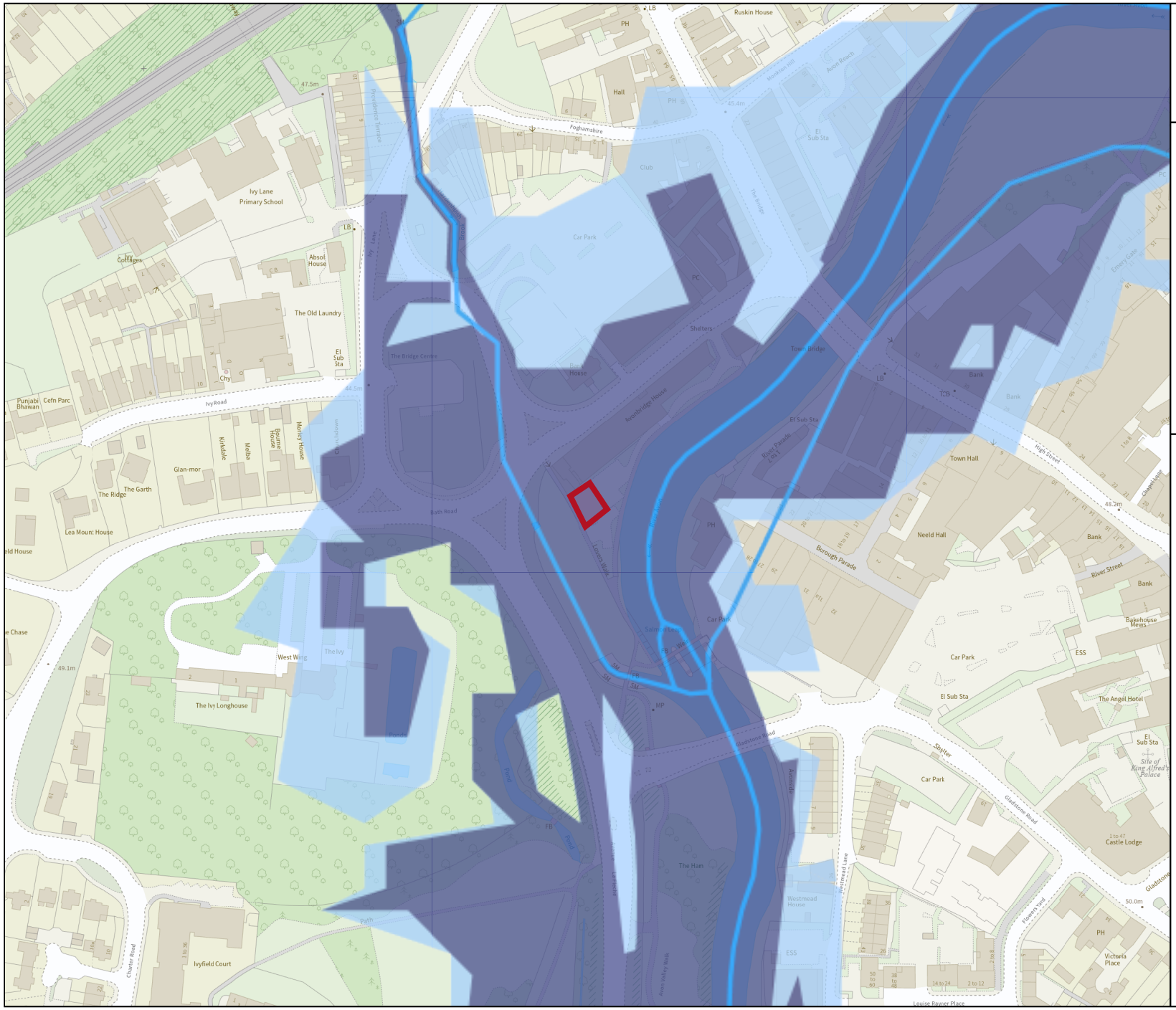
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. https://flood-map-for-planning.service.gov.uk/os-terms



Environment Agency

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
391853/173281

Scale
1:2500

Created
11 Aug 2023 11:44

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60m

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creating a better place

Environment Agency

Dee Tawha
Structural Solutions
dee@structuralsolutions.co.uk

Our ref: 328489-WX
Date: 27th October 2023

Dear Dee Tawha,

Thank you for your enquiry which was received on 29th September 2023. We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Abstract

Name	Product 4
Description	Flood Risk Information for land at **Avonbridge House, Bath Road, Chippenham, SN15 2BB** NGR: ST9186173311
Licence	Open Government Licence
Information Warnings	*The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply.*
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2020 Ordnance Survey 100024198.

Open Data

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

Environment Agency published datasets: https://data.gov.uk/data/search?publisher=environment-agency&unpublished=false

You will need to search and select the name of the following datasets to take you directly to the weblink to enable you to download the data:

- Flood Map for Planning (Rivers and the Sea) – Flood Zones 2 and 3
- Flood Map for Planning (Rivers and Sea) – Areas Benefiting from Defences
- Flood Map for Planning (Rivers and Sea) Spatial Flood Defences
- Flood Map for Planning (Rivers and Sea) Flood Storage Areas
- Recorded Flood Outlines
- Historic Flood Map
- Risk of Flooding from Surface Water Extent for:
  - → 3 percent annual chance
  - → 1 percent annual chance

→ 0.5 percent annual chance

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

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

Recorded Historic Flood Events

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

- Recorded Flood Outlines
- the Historic Flood Map

Our historic records indicate that there was flooding in the area in **1894** (fluvial), **1925** (fluvial), **1932** (fluvial), **1960** (fluvial), **2000** (unconfirmed source) and **2012** (fluvial).

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

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

Modelled Fluvial Water Levels

The attached map contains a set of modelled (within the river channel) fluvial flood level node locations/unique identifiers, for the river Avon and tributaries. The modelled data is taken from the Chippenham and Calne Mapping and Modelling Study 2016 model. A sheet is also attached providing the associated flood levels, flood flows if available and NGRs relating to each of these nodes.

Please note: Modelled water levels and flows are in channel values only. There may be a variation in water levels and flows across the flood plain in the 2D domain.

2D Modelled Flood Plain Water Levels

Please see below for maximum 2D level information for your site for a range of return periods. This information is taken from the Chippenham and Calne Mapping and Modelling Study 2016 model.

Maximum 2D modelled water levels for the investigation area:

Undefended Levels

1% AEP (100yr) undefended:	**45.09 mAOD**
1% AEP (100yr) with 30% increase in flow - undefended:	**45.41 mAOD**
1% AEP (100yr) with 40% increase in flow - undefended:	**45.50 mAOD**
1% AEP (100yr) with 85% increase in flow - undefended:	**45.91 mAOD**
0.1% AEP (1000yr) undefended:	**45.73 mAOD**

Defended Levels

1% AEP (100yr) defended:	**45.09 mAOD**
1% AEP (100yr) with 30% increase in flow - defended:	**45.41 mAOD**
1% AEP (100yr) with 40% increase in flow - defended:	**45.50 mAOD**
1% AEP (100yr) with 85% increase in flow - defended:	**45.91 mAOD**
0.1% AEP (1000yr) defended:	**45.72 mAOD**

N.B. 0.00 (m or mAOD) indicates the data does not reach the site.
N.B. Levels have been extracted based upon the site boundary plan provided.
N.B. Please note not all models contain climate change runs.

For more information on climate change allowances please see the guidance on the Gov.UK website here: Flood risk assessments: climate change allowances - GOV.UK. **Please be aware that this information is subject to change, please check the guidance regularly.**

Environmental Permit for Flood Risk Activities

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

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

For further information and to check whether a permit is required please visit: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits.

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

Flood Asset Information

Please find enclosed details of Flood Assets within the area. This information has been taken from our Asset Information Management System database (AIMS).

Please note that flood defences can increase water levels elsewhere eg through channels being restricted by defences, or because defences prevent flood water flowing back into the river channel.

Planning

If you have questions regarding the planning nature of your enquiry, or require advice on floor levels, please contact our Sustainable Places team on SWX.SP@environment-agency.gov.uk. Please be aware that we now charge for planning advice when consulted on pre-application enquiries. This new approach provides advice to developers in two ways. Firstly, there is the provision of 'free' advice available to everyone where we give a preliminary opinion on a proposed development. This sets out the environmental constraints together

with any issues this raises for us. Should you wish us to review in detail any of these issues then we can do this through a chargeable scheme aimed at recovering our costs.

Strategic Flood Risk Assessment (SFRA)

When preparing a FRA to support a development proposal in this location you should refer to Wiltshire Council's SFRA Reports Level 1 which is available to download via the following link: https://www.wiltshire.gov.uk/media/5691/Strategic-Flood-Risk-Assessment-Level-1/pdf/Wiltshire_Council_Level_1_SFRA_v5.0.pdf?m=637459765054370000

The Wiltshire Council Local Plan is available via this link: https://www.wiltshire.gov.uk/planning-policy-local-plan-review-consultation

Further Information

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

Further details about the Environment Agency information supplied can be found on our website: https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

We hope you find this information helpful. It is provided subject to the attached notice 'Use of Environment Agency Information for Flood Risk Assessments', which we strongly recommend you read.

Yours sincerely

Dawn Fullthorpe

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

Enc: Use of Environment Agency Information for Flood Risk Assessments (below)
328489-WX Node Location Map
328489-WX Node Data
328489-WX Defence Map
328489-WX Defence Data

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

Important
Use of Environment Agency data: you should note that

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk Assessment (FRA) where one is required, but the use of Environment Agency information does not constitute such an assessment on its own.

2. As part of your data request, we have provided all of the modelled data we hold for your location. Please note that some of our modelled information may have been produced for purposes other than for flood zone generation. This may mean that some of the modelled data you have been provided with has a lower confidence level, and has not been used in producing our flood map, nor definitively reflects the predicted flood water level at the property/development site scale. To check the suitability of the use of this information in your FRA please contact your local Partnership & Strategic Overview (PSO) team.

3. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or surface water runoff. The information produced by the Local Planning Authority and the Lead Local Flood Authority (LLFA) may assist in assessing other sources of flood risk.

4. Where a planning application requires a FRA and this is not submitted or deficient, the Environment Agency may well raise an objection.

5. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your Local Planning Authority.

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

Pre-application Preliminary Opinion:
https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

Pre-application Charged Service:
https://www.gov.uk/government/publications/planning-advice-environment-agency-standard-terms-and-conditions

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

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

National Planning Policy Framework Planning Practice Guidance:
http://planningguidance.planningportal.gov.uk/

Environment Agency advice on FRAs:

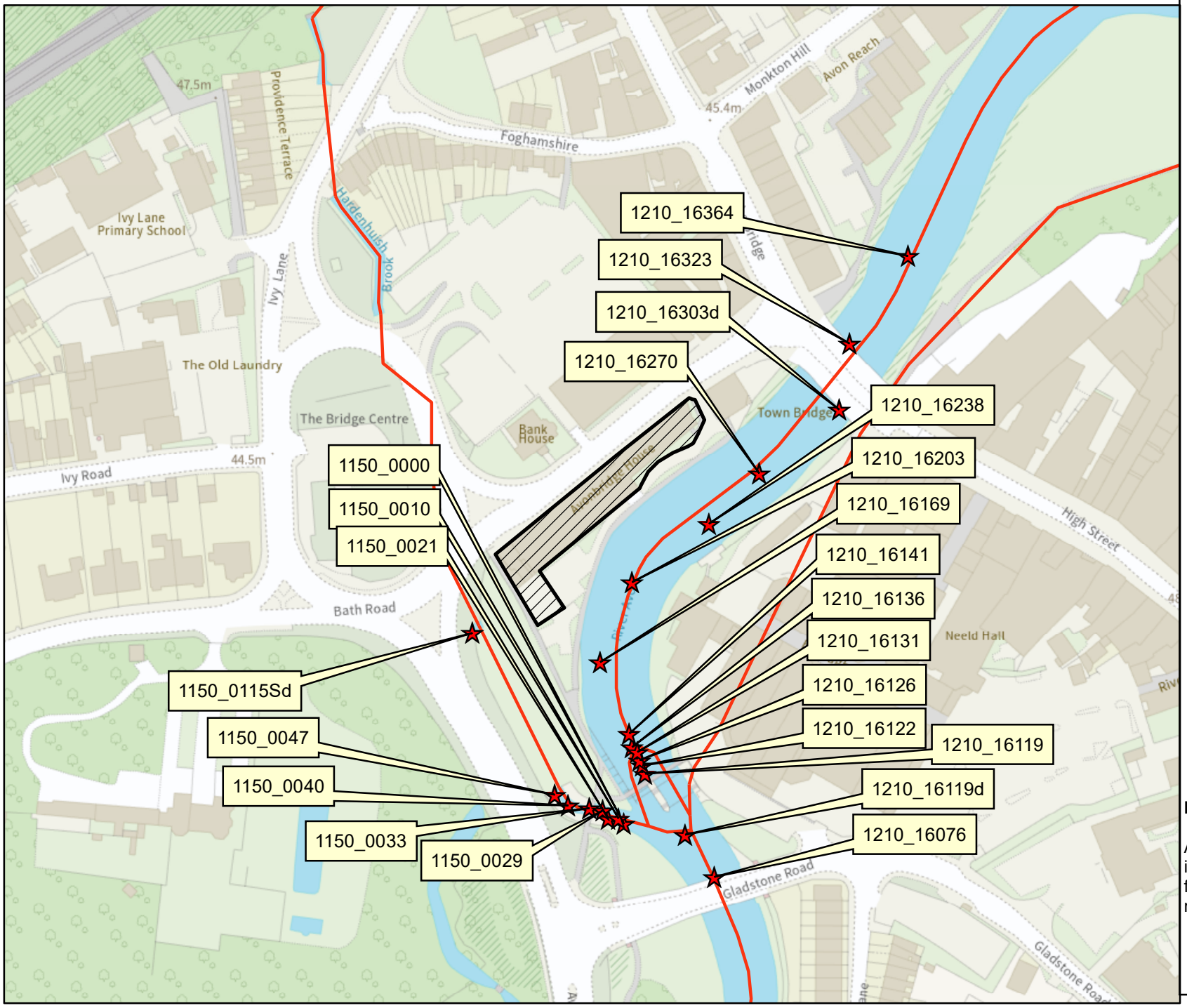
Customer & Engagement, Wessex
Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS
Email: wessexenquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

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

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

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

Node location map centred on ST 91861 73311 - created 27/10/2023 [Ref: 328489-WX]



Environment Agency

Scale:1:2,000 At A3

N
W E
S

Legend

NODE_TYPE

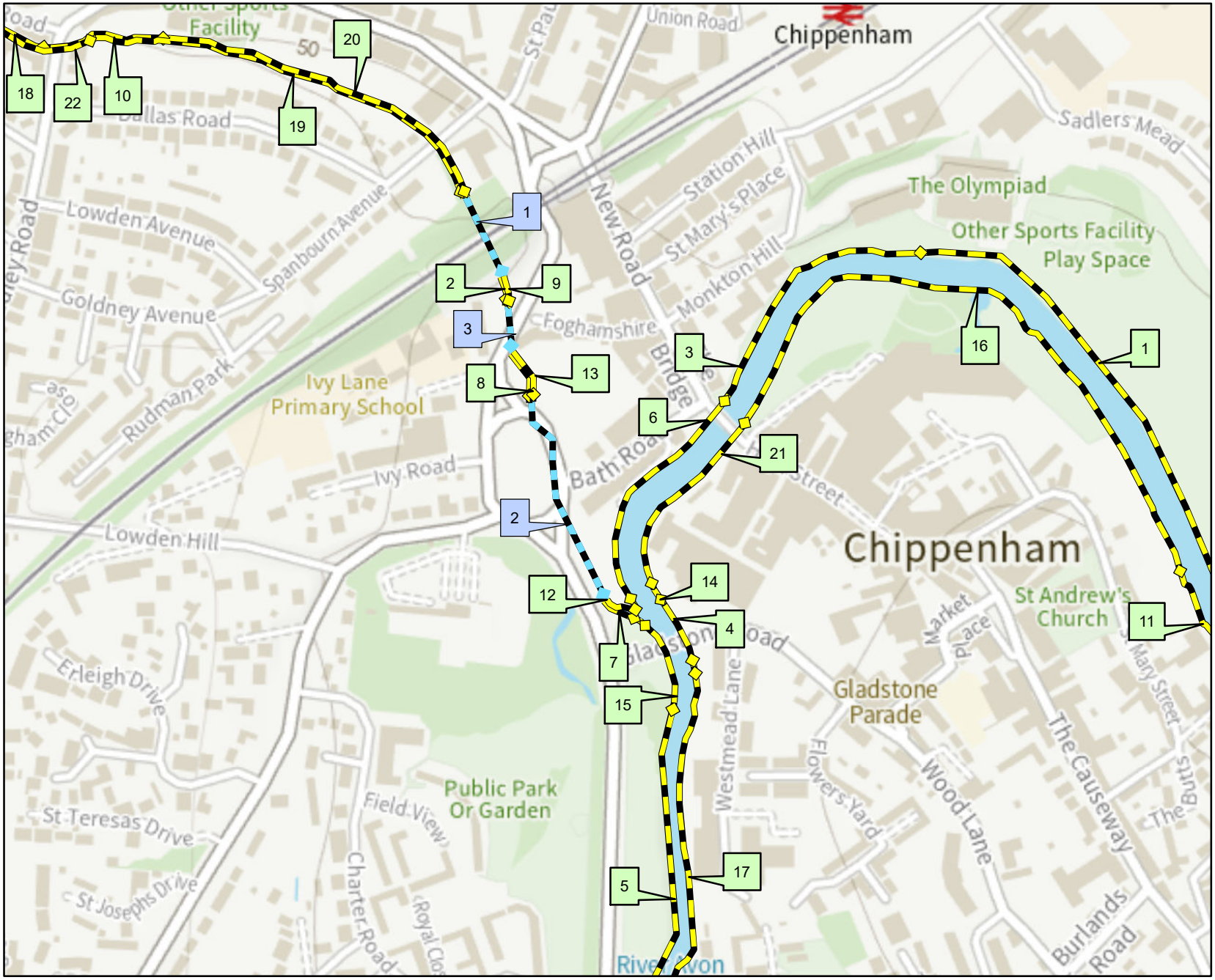
- 1D_RiverSection
- 2D_RiverSection
- Interpolate
- Replicate
- Reservoir
- Statutory_Main_Rivers
- Converted_Graphics_2

Modelled Flood Level Nodes

A table that references the node locations/unique identifiers is also attached, giving associated flood levels, NGRs and further information for the river channel and model.

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Current Flood Defences centered on NGR ST 91861 73310 Created 05/10/2023 Ref: 328489-WX



Environment Agency

Scale: 1:5,000

N W E S

Legend

Defences

- Barrier Beach
- Beach
- Bridge Abutment
- Cliff
- Demountable Defence
- Dunes
- Embankment
- Engineered High Ground
- Flood Gate
- Natural High Ground
- Promenade
- Quay
- Spillway
- Wall

Culverts

- Simple Culvert
- Complex Culvert

This data has been extracted from the Asset Information Management System (AIMS OM) which was created to draw various data sources into one database and has been populated with information of varying quality.

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Product 4 - AIMS Information **328489-WX** **Date:** **05/10/2023**

Map Ref	Asset ID	Asset Type	Right or left bank	Asset Description	Approx length (m)	Actual fluvial downstream crest level (mAOD)	Actual fluvial downstream crest level accuracy	Actual fluvial upstream crest level (mAOD)	Actual fluvial upstream crest level accuracy	Actual fluvial coastal crest level (mAOD)	Actual fluvial coastal crest level accuracy	NGR	Most recent inspection	Overall condition
1	160043	Natural High Ground	Right	Natural Bank	461.30	DNR	DNR	DNR	DNR	DNR	DNR	ST92257348	10/07/2023	3 - Fair
2	39993	Natural High Ground	Right	Masonry Wall	26.89	DNR	DNR	DNR	DNR	DNR	DNR	ST91777348	11/05/2022	3 - Fair
3	40456	Natural High Ground	Right	Natural Bank	251.05	DNR	DNR	DNR	DNR	DNR	DNR	ST92047351	10/07/2023	3 - Fair
4	40577	Natural High Ground	Left	Gabion Wall	62.08	DNR	DNR	DNR	DNR	DNR	DNR	ST91927317	10/07/2023	3 - Fair
5	40578	Natural High Ground	Right	Natural Bank	446.04	DNR	DNR	DNR	DNR	DNR	DNR	ST91907282	10/07/2023	3 - Fair
6	40579	Natural High Ground	Right	Concrete Wall	220.79	DNR	DNR	DNR	DNR	DNR	DNR	ST91887330	10/07/2023	2 - Good
7	4779	Natural High Ground	Right	Stone Lined Bank	37.96	DNR	DNR	DNR	DNR	DNR	DNR	ST91867320	11/05/2022	3 - Fair
8	4780	Natural High Ground	Right	Masonry Wall	49.89	DNR	DNR	DNR	DNR	DNR	DNR	ST91797341	11/05/2022	3 - Fair
9	4793	Natural High Ground	Left	Masonry Wall	28.85	DNR	DNR	DNR	DNR	DNR	DNR	ST91777348	11/05/2022	2 - Good
10	4795	Natural High Ground	Left	Natural Bank	112.26	DNR	DNR	DNR	DNR	DNR	DNR	ST91407372	11/05/2022	2 - Good
11	4898	Natural High Ground	Left	Walled Bank	125.48	DNR	DNR	DNR	DNR	DNR	DNR	ST92407318	10/07/2023	3 - Fair
12	5027	Natural High Ground	Left	Stone Lined Bank	34.95	DNR	DNR	DNR	DNR	DNR	DNR	ST91877320	11/05/2022	3 - Fair
13	5029	Natural High Ground	Left	Masonry Wall	50.95	DNR	DNR	DNR	DNR	DNR	DNR	ST91797341	11/05/2022	3 - Fair
14	5061	Natural High Ground	Left	Concrete Wall	16.96	DNR	DNR	DNR	DNR	DNR	DNR	ST91907321	10/07/2023	2 - Good
15	5169	Natural High Ground	Right	Concrete Lined Bank	83.82	DNR	DNR	DNR	DNR	DNR	DNR	ST91917316	10/07/2023	3 - Fair
16	56124	Natural High Ground	Left	Natural Bank	608.15	DNR	DNR	DNR	DNR	DNR	DNR	ST92227347	10/07/2023	3 - Fair
17	56536	Natural High Ground	Left	Walled Bank	335.74	DNR	DNR	DNR	DNR	DNR	DNR	ST91937296	10/07/2023	3 - Fair
18	57189	Natural High Ground	Left	Concrete wall	208.78	DNR	DNR	DNR	DNR	DNR	DNR	ST91267372	11/05/2022	2 - Good
19	57226	Natural High Ground	Right	Natural Bank	384.08	DNR	DNR	DNR	DNR	DNR	DNR	ST91537370	11/05/2022	3 - Fair
20	57229	Natural High Ground	Left	Masonry Wall	321.64	DNR	DNR	DNR	DNR	DNR	DNR	ST91617367	11/05/2022	3 - Fair
21	58205	Natural High Ground	Left	Natural Bank	181.36	DNR	DNR	DNR	DNR	DNR	DNR	ST91897328	10/07/2023	2 - Good
22	58210	Natural High Ground	Right	Masonry Wall	110.07	DNR	DNR	DNR	DNR	DNR	DNR	ST91347370	11/05/2022	3 - Fair

Map Ref	Asset ID	Asset Type	Right or left bank	Asset Description	Approx length (m)	Actual fluvial downstream crest level (mAOD)	Actual fluvial downstream crest level accuracy	Actual fluvial upstream crest level (mAOD)	Actual fluvial upstream crest level accuracy	Actual fluvial coastal crest level (mAOD)	Actual fluvial coastal crest level accuracy	NGR	Most recent inspection	Overall condition
1	4794	Simple Culvert	DNR	Culvert	79.02	DNR	DNR	DNR	DNR	DNR	DNR	ST91757353	11/05/2022	2 - Good
2	5028	Simple Culvert	DNR	Culvert	198.39	DNR	DNR	DNR	DNR	DNR	DNR	ST91817331	11/05/2022	2 - Good
3	5030	Simple Culvert	DNR	Culvert	41.06	DNR	DNR	DNR	DNR	DNR	DNR	ST91777345	11/05/2022	2 - Good

Notes

Map Ref	Asset ID	Asset Type	Right or left bank	Asset Description	Approx length (m)	Actual fluvial downstream crest level (mAOD)	Actual fluvial downstream crest level accuracy	Actual fluvial upstream crest level (mAOD)	Actual fluvial upstream crest level accuracy	Actual fluvial coastal crest level (mAOD)	Actual fluvial coastal crest level accuracy	NGR	Most recent inspection	Overall condition
* Overall Condition has been taken from the most recent inspection * Inspections are of a purely visual nature and do not necessarily reflect the true condition of the asset * Condition: 1 = very good, Condtion 2 = good, Condition 3 = fair, Condition 4 = poor, Condition 5 = very poor * Crest level accuracy: 1 = ± 0.01 to 0.05m, 2 = ± 0.05 to 0.15m, 3 = ± 0.15 to 0.75m, 4 = ± 0.75 or greater														

TITLE Chippenham & Calne Mapping & Modelling Study 2016
MODEL DATE 08/11/2016
SOFTWARE Flood Modeller Pro-TUFLOW

SCENARIO Defended

NODE	1150_0000	1150_0010	1150_0021	1150_0029	1150_0033	1150_0040	1150_0047	1150_0115Sd	1210_16076	1210_16119	1210_16119d	1210_16122	1210_16126	1210_16131	1210_16136	1210_16141	1210_16169	1210_16203	1210_16238	1210_16270	1210_16303d	1210_16323	1210_16364
WATERCOURSE	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries
2YR Level	43.10	43.10	43.10	43.10	43.10	43.10	43.10	44.20	43.09	43.70	43.10	43.70	43.71	43.72	43.72	43.72	43.73	43.74	43.76	43.77	43.78	43.79	43.80
2YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
5YR Level	43.50	43.50	43.50	43.50	43.50	43.50	43.50	44.20	43.49	43.82	43.50	43.82	43.83	43.84	43.85	43.85	43.87	43.89	43.91	43.92	43.94	43.95	43.97
5YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
10YR Level	43.75	43.75	43.75	43.75	43.75	43.75	43.75	44.20	43.74	44.07	43.75	44.08	44.09	44.10	44.12	44.12	44.13	44.15	44.17	44.19	44.21	44.23	44.25
10YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
20YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
20YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
20YR 20%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
20YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
25YR Level	44.03	44.03	44.03	44.03	44.04	44.04	44.04	44.20	44.02	44.37	44.03	44.38	44.40	44.42	44.43	44.43	44.44	44.47	44.49	44.51	44.53	44.56	44.58
25YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
30YR Level	44.08	44.08	44.09	44.09	44.09	44.09	44.09	44.20	44.08	44.43	44.09	44.44	44.46	44.48	44.50	44.50	44.51	44.54	44.56	44.58	44.60	44.63	44.65
30YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
50YR Level	44.27	44.27	44.28	44.28	44.28	44.28	44.28	44.72	44.27	44.63	44.28	44.65	44.67	44.69	44.71	44.71	44.72	44.75	44.77	44.79	44.81	44.88	44.90
50YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
75YR Level	44.43	44.43	44.43	44.44	44.44	44.44	44.44	44.92	44.42	44.82	44.43	44.83	44.86	44.88	44.90	44.90	44.92	44.94	44.97	44.98	45.00	45.13	45.15
75YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR Level	44.54	44.54	44.54	44.54	44.55	44.55	44.55	45.04	44.53	44.94	44.54	44.96	44.98	45.00	45.02	45.02	45.04	45.06	45.09	45.10	45.12	45.29	45.32
100YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 20%CC Level	44.81	44.81	44.80	44.80	44.83	44.83	44.84	45.26	44.80	45.21	44.81	45.22	45.24	45.25	45.27	45.27	45.26	45.28	45.32	45.33	45.35	45.65	45.69
100YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 30%CC Level	44.92	44.92	44.91	44.91	44.96	44.96	44.97	45.34	44.91	45.32	44.92	45.33	45.34	45.36	45.36	45.37	45.34	45.37	45.40	45.41	45.44	45.80	45.85
100YR 30%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 40%CC Level	45.03	45.03	45.02	45.02	45.09	45.09	45.11	45.42	45.02	45.43	45.03	45.43	45.44	45.45	45.46	45.46	45.41	45.44	45.49	45.50	45.53	45.95	46.02
100YR 40%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 85%CC Level	45.52	45.52	45.51	45.51	45.55	45.57	45.57	45.77	45.50	45.87	45.52	45.87	45.87	45.87	45.86	45.86	45.73	45.80	45.86	45.89	45.96	46.58	46.63
100YR 85%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
200YR Level	44.76	44.76	44.76	44.75	44.78	44.78	44.78	45.23	44.75	45.16	44.76	45.17	45.19	45.21	45.22	45.22	45.23	45.25	45.28	45.29	45.31	45.58	45.63
200YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
200YR 20%CC Level	45.02	45.02	45.01	45.01	45.07	45.08	45.09	45.41	45.01	45.42	45.02	45.42	45.43	45.44	45.45	45.45	45.40	45.44	45.48	45.49	45.52	45.94	46.00
200YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
500YR Level	45.05	45.04	45.04	45.03	45.10	45.11	45.12	45.43	45.03	45.44	45.04	45.44	45.45	45.47	45.47	45.47	45.42	45.45	45.50	45.51	45.54	45.97	46.03
500YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
1000YR Level	45.30	45.30	45.29	45.28	45.37	45.38	45.39	45.60	45.28	45.67	45.30	45.67	45.67	45.68	45.68	45.68	45.58	45.63	45.69	45.71	45.76	46.30	46.35
1000YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
1000YR 20%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
1000YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
TIDE 200YR	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
TIDE 1000YR	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
Eastings	391884	391882	391878	391876	391871	391863	391858	391827	391918	391892	391907	391891	391890	391889	391887	391886	391875	391887	391916	391935	391965	391969	391991
Northings	173197	173199	173199	173202	173203	173204	173208	173269	173177	173216	173193	173219	173221	173224	173226	173231	173258	173288	173310	173329	173353	173378	173411

SCENARIO **Undefended**

NODE	1150_0000	1150_0010	1150_0021	1150_0029	1150_0033	1150_0040	1150_0047	1150_0115Sd	1210_16076	1210_16119	1210_16119d	1210_16122	1210_16126	1210_16131	1210_16136	1210_16141	1210_16169	1210_16203	1210_16238	1210_16270	1210_16303d	1210_16323	1210_16364
WATERCOURSE	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries	Avon and tributaries
2YR Level	43.10	43.10	43.10	43.10	43.10	43.10	43.10	44.20	43.09	43.70	43.10	43.70	43.71	43.72	43.72	43.72	43.73	43.74	43.76	43.77	43.78	43.79	43.80
2YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
5YR Level	43.50	43.50	43.50	43.50	43.50	43.50	43.50	44.20	43.49	43.82	43.50	43.82	43.83	43.84	43.85	43.86	43.87	43.89	43.91	43.92	43.94	43.95	43.97
5YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
10YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
10YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
20YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
20YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
20YR 20%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
20YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
25YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
25YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
30YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
30YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
50YR Level	44.28	44.28	44.28	44.28	44.29	44.29	44.29	44.72	44.27	44.63	44.28	44.65	44.67	44.69	44.71	44.71	44.73	44.75	44.78	44.79	44.81	44.88	44.91
50YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
75YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
75YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR Level	44.53	44.54	44.54	44.54	44.55	44.55	44.55	45.04	44.53	44.94	44.54	44.96	44.98	45.00	45.02	45.02	45.04	45.06	45.09	45.10	45.12	45.29	45.32
100YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 20%CC Level	44.81	44.81	44.80	44.80	44.83	44.83	44.84	45.26	44.80	45.21	44.81	45.22	45.24	45.26	45.27	45.27	45.26	45.28	45.32	45.33	45.35	45.64	45.69
100YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 30%CC Level	44.92	44.92	44.92	44.91	44.96	44.97	44.98	45.34	44.91	45.32	44.92	45.33	45.35	45.36	45.37	45.37	45.33	45.37	45.41	45.41	45.44	45.80	45.86
100YR 30%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 40%CC Level	45.03	45.03	45.02	45.02	45.09	45.09	45.11	45.42	45.02	45.43	45.03	45.43	45.44	45.46	45.47	45.47	45.39	45.45	45.49	45.50	45.53	45.96	46.02
100YR 40%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 85%CC Level	45.52	45.52	45.51	45.51	45.55	45.56	45.57	45.77	45.50	45.87	45.52	45.87	45.87	45.87	45.87	45.86	45.71	45.80	45.87	45.89	45.96	46.58	46.63
100YR 85%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
200YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
200YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
200YR 20%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
200YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
500YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
500YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
1000YR Level	45.30	45.29	45.28	45.28	45.36	45.38	45.39	45.60	45.28	45.67	45.29	45.67	45.67	45.68	45.68	45.68	45.56	45.63	45.69	45.71	45.76	46.30	46.35
1000YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
1000YR 20%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
1000YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
TIDE 200YR	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
TIDE 1000YR	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
Eastings	391884	391882	391878	391876	391871	391863	391858	391827	391918	391892	391907	391891	391890	391889	391887	391886	391875	391887	391916	391935	391965	391969	391991
Northings	173197	173199	173199	173202	173203	173204	173208	173269	173177	173216	173193	173219	173221	173224	173226	173231	173258	173288	173310	173329	173353	173378	173411

Level of confidence	**Moderate**	The model was produced to assess our flood risk management assets and the results are fit for this purpose. We have MODERATE confidence in its input data, and subsequently its results. The reason that we have MODERATE confidence in the model and its results is because the model requires verification against a known flood event. You will need to contact our Partnership and Strategic Overview Team to discuss whether the flood levels from this model are suitable for your FRA or whether they require you to carry out further work to update the modelling.
NMD	No Modelled Data	
UNITS	LEVELS:	mAOD
	FLOW:	cumecs

APPENDIX F

Design and Access Statement

14/08/2023
Y:\389 - Avon Bridge House\01 Admin\06.0 Stat Authorities\6.1 Planning\application 10 - substation (withdrawn)\20220814 substation works DAS 389.docx



Avonbridge House

Bath Road, Chippenham

Design and Access Statement.

Listed Building Consent – Installation of substation and electric vehicle charging points.

August 2023

1.0 Introduction

This statement accompanies an application for Listed Building consent for installation of substation and electric vehicle charging points within the existing car park area and should be read in conjunction with the accompanying drawings and Heritage Statement.

2.0 Background

The accompanying Heritage Statement provides a detailed analysis of the building, heritage significance, setting and effect of the proposed development on the significance of the asset. This includes photographs of the building and areas affected.

This application follows an application for the replacement of existing roof covering, including installation of Photovoltaic solar panels, now approved.

3.0 Requirement for works

3.1 The Exterior – Riverside Car Park

Alliance Pharmaceutical have a global commitment to reducing their carbon emissions. They have an ongoing programme reducing the carbon cost of their business operations, product manufacture, packaging and distribution. Whilst the carbon component associated with the running of their various premises around the world is a relatively small element of the business as a whole, they are further committed to improvements in this area, especially at this building their global HQ.
A large proportion of the work undertaken within the building as part of recent projects has been to improve the efficiency of mechanical and electrical systems in place within the building. All lighting within the building is now 'Low Energy'. The company have now turned their attention to the use of renewable energy solutions to further reduce carbon. Off-site options have been considered, but have not been found to be viable. As a result, an on-site solution is sought, with solar power having been identified as the most viable option.
This forms part of a separate application for Listed Building Approval, now approved.
As part of the Alliance drive to reduce carbon, it is proposed to install four Electric Vehicle (EV) charging points located to serve bays against the SW boundary wall.
The mains electrical supply to the building dates from the conversion of the building. It has been running at capacity over a number of years. Notwithstanding the reduced electrical demand achieved by the renewed building services, in order to optimise the functionality of the PV array, allowing for export to the grid, serve the EV charging points and provide resilience for an anticipated increase in staff occupation numbers, it is necessary to replace the existing supply and install a new electrical substation. The substation will be in a grey coloured GRP enclosure, positioned within the space previously occupied by 2 parking spaces, close to the archway beneath the south western end of the building.

4.0 The Contribution of the Asset to the Setting

The contribution of Avonbridge House to its setting rests primarily in its role as a former industrial complex close to the centre of Chippenham. The main Bath Road frontage remains imposing and a good reminder of its former use. By contrast the riverside frontage

is not authentic from a heritage perspective, instead it retains an important role as a backdrop to the River Avon and views of the site from the town centre. It also reveals the scale and massing of the two linked structures (east and west wings). The loss of the structures between Avonbridge House and the river may be lamented, however the current riverside elevation maintains its own interest as part of a continuing history of adaptation to the changing needs of the building's occupants.

5.0 Planning Considerations.

The National Planning Policy Framework (July 2021) provides guidance to how the proposals should be considered. Of particular relevance, in bold for emphasis are the following paragraph extracts:

> *"152. **The planning system should support the transition to a low carbon future in a changing climate**, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; **encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.** ."*
>
> *'158. When determining planning applications for renewable and low carbon development, **local planning authorities should: a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions;** and b) approve the application if its impacts are (or can be made) acceptable…'*
>
> *202. **Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including**, where appropriate, securing its optimum viable use.*

6.0 Conclusion

The proposed works will create a very minor change to the current setting of the Listed Building, however by virtue of the location and scale of the proposals, these are not considered to be of any harm to the asset. Provision of the Sub-station and EV charging points represents a benefit in reducing reliance upon fossil fuels and improving local air quality.

APPENDIX G

SSEN Siting of New Ground Mounted Secondary Distribution Substations in Flood Zones - Design Standard

Scottish & Southern Electricity Networks

TG-NET-SST-009

SSEN and Third Party Designers

Siting of New Ground Mounted Secondary Distribution Substations in Flood Zones - Design Standard



Inveralmond House, 200 Dunkeld Road, Perth PH1 3AQ ssen.co.uk

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TG-NET-SST-009	Siting of New Ground Mounted Secondary Distribution Substations in Flood Zones - Design Standard		Applies to	
			Distribution	Transmission
			✓	
Revision: 1.00	**Classification:** Public	**Issue Date:** November 2017	**Review Date:** November 2022	

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1 Introduction

1.1 Guidance for the risk assessment of Primary and Grid substations is covered in Energy Networks Association Technical Report 138 and TG-PS-821. An equivalent document for secondary substations does not exist as these have been viewed as lowest risk.

1.2 This technical guidance document details the requirements for ground mounted secondary distribution substations.

1.3 Both river and sea flooding shall be taken into account. Where surface water flooding information is available this must also be taken into account.

1.4 Ideally substations shall not be situated in areas prone to flooding, however, it is acknowledged that this may not always be possible and therefore suitable mitigation must be applied.

1.5 These guidelines are not retrospective.

2 References

2.1 The documents detailed in Table 2.1 – Scottish and Southern Electricity Networks Documents, shall be used in conjunction with this document.

Table 2.1 – Scottish and Southern Electricity Networks Documents

Reference	Title
TG-NET-SST-016	Overhead Line and Secondary Substation Risk Assessment Calculator
TG-NET-ENG-011	Deviations from 'G81' Design, Specification and Operational Documents or Approved Designs
TG-NET-SST-005	Secondary Distribution Substations - common clauses
TG-PS-821	Resilience to Flooding of Grid and Primary Substations

3 Acronyms

3.1 The acronyms shown in table 3.1 are used in this document;

Table 3.1

Acronym	Definition
SSEN	Scottish and Southern Electricity Networks
BS	British Standard
DMS	Document Management System
EA	Environment Agency
ENA	Energy Networks Association
ESQCR	Electricity Safety, Quality and Continuity Regulation
SEPA	Scottish Environment Protection Agency

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4 Deviations from this Standard

4.1 There may be times when it is necessary to propose a deviation from this Design Standard.

4.2 Where this is required a Deviation Request must be submitted to SSEN in accordance with TG-NET-ENG-045. This process also applies to SSEN Connection Designers.

4.3 SSEN can refuse, or require, an alteration to a request. It is therefore imperative that signed agreement is obtained before installation to avoid the possibility of rework or rejection of the scheme. Requests for deviations which could compromise the safety of the Public or SSEN staff will be rejected.

5 Determination of Locations Susceptible to Flooding

5.1 There are different websites for England, Wales and Scotland which can be used to verify the flood risks. The websites are below:

- https://flood-warning-information.service.gov.uk/long-term-flood-risk
- https://naturalresources.wales/?lang=en
- https://www.sepa.org.uk/

5.2 The flood risk assessment shall take into account three different scenarios;

- Sea and River Flooding
- Surface Water Flooding
- Flooding from failures of reservoirs and dams

Each assessment has 4 risk categories;

- High
- Medium
- Low
- Very Low

5.3 Local knowledge can also be used but care must be taken to ensure its accuracy.

6 Mitigation for substations in flood zone

6.1 It is essential to know the anticipated flood level depth at a substation location. This shall be done using the methodology detailed in appendix 1. The minimum height of the plinth of the switchgear shall as the calculation. For plinths over 300mm above finished surface level consideration must be given to installing access platforms and railings.

6.2 Substations liable to flood can contain automated switchgear. In these situations all the automation plant and equipment must be installed above the predicted flood level.

6.3 Where the majority of the network supplied from the substation is not in a flood zone, then the substation shall either be sited out of the flood zone or be sited at a height above the mean flood level.

6.4 Substations required for flood alleviation (such as supplying pumps) shall be sited at a height above the mean flood level. The design of the site should take account of the need to gain access to the substation by boat.

6.5 Where a developer installs a flood prevention scheme the substation shall be installed within the scheme or be sited at a height above the mean flood level.

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6.6 Feeder substations on either side shall preferably be fitted with ring main units although it is not justified to change existing gear to cater for this.

6.7 There is no requirement to install non-oil gear in these situations.

6.8 The Risk Calculator MA-NET-SST-650 gives guidance when a flood risk assessment is required and the generic solution.

7 Design of substation sites above ground level

7.1 Where substations are situated above ground level facilities must be made for locating vehicles and cranes adjacent to the site to enable installation and maintenance to be undertaken.

7.2 The SSEN unit substation shall be used in these situations although care needs to be taken in the accesses arrangements for cables. It is suggested that a duct system be installed from normal ground level to the substation level.

7.3 Emergency egress needs to be catered for through the provision of steps and guard rails.

7.4 The minimum site dimensions shall be 5 m x 8 m with the access from the 8 m direction. This size is required to allow for the opening of doors or gates and to allow a platform for equipment to be landed by crane.

8 Associated Documents

8.1 The following documents were used in the compilation of this Design Standard.

Table 8.1

Document Reference	Document Title	Code
PR-PS-311	Procedure for Evaluating and Recording Risk Assessments on Overhead Lines and Substations - ESQC Regulations	D

9 Applicable Standards

9.1 Third Parties must obtain copies of non SSEN Standards, such as BS or ENA documents, from the issuing organisations at their own expense. These documents may be subject to copyright.

9.2 Documents for use by third parties are classified as Public and are available on the SSEN website,

https://www.ssen.co.uk/competitioninconnections/

9.3 Documents not displayed on the internet are not publicly available as they are deemed not to be needed by third parties. Where third parties require copies of these SSEN documents they can be requested from the SSEN DMS Administrator, Inveralmond House, 200 Dunkeld Road, Perth PH1 3AQ.

9.4 There will be a cost of £150 for each copy of each document (irrespective of size). This cost is due to

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the administration required to ensure that updates to the documents (which are controlled) are sent out to third parties.

10 Revision History

No	Overview of Amendment and Text affected	Previous Document	Revision	Authorisation
01	Updated and reformatted for inclusion in the Substation Systems Manual	TG-PS-894	1.00	Matthew Thomas
02				

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Appendix 1, Calculation of minimum plinth height

1) Obtain the 1:20 year flood level depths (FD1), Above Ordnance Datum (AOD), from EA or SEPA.

   If the 1:100 year only is available multiply this by 0.975 to get the 1:20 year value.
2) Undertake a precision ground line survey (AOD), accuracy +/-10mm, within the substation in the position of where the plinth, or plinths, are to be installed (FD2).
3) Where FD2>FD1 no additional height is required.
4) Where FD1>FD2 then the minimum height of plinth above ground is FD1-FD2 subject to a minimum of the plinth being 150mm above finished level.
5) The sketch below shows pictorially the arrangement;

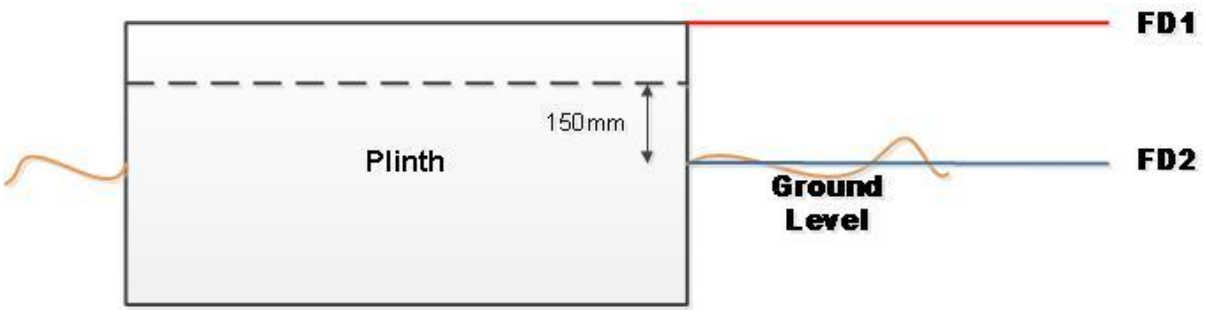


Figure - 1

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