fentonwilliams



Abdon Close

Flood Risk Assessment

31/12/2023-Rev B

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0.0 Introduction

This Site Specific Flood Risk Assessment has been prepared in support of planning application PL/2023/10517, made to Wiltshire Council on 04/12/23 for 18 Abdon Close, Chitterne, Warminster, BA12 0LB.

This document outlines the types of flooding which may affect the site, and where these are likely or unlikely to occur in order to ensure the proposal can minimise the risk of adverse effects caused by flooding.

Project Location
The site is located in the village of Chitterne, located between the towns of Warminster, Codford and Shrewton.

Scope of Works
The application is for the installation of a new sewage treatment plant and associated drainage field to improve effluent quality and management for the property, which is not served by mains sewerage.

The sewage treatment plant will supersede the existing sewage treatment plant, which discharges into the Chitterne Brook, and which is located on the site in a compound owned by Selwood Housing, a third party.

Report data
The data in this report has been accessed on 31/12/2023.

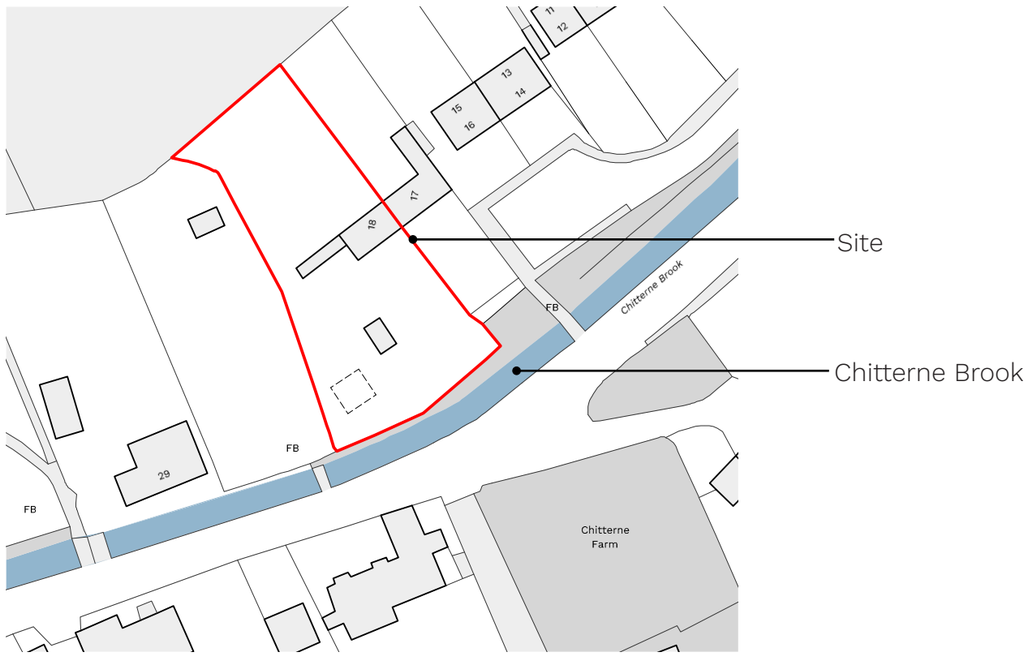
It has been determined that a Sequential Test will not be required as the property is for a minor householder development.

It has been determined that an Exception Test will not be required as the project is for sewage treatment works, classified as “low vulnerability” in Table 2: Flood risk vulnerability and flood zone ‘incompatibility’, (available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change#table2). The domestic property on the site is not included in the scope of works.

As the application is for a minor, householder development, the level of data in this report has been tailored to suit the site and scale of the proposed works. All of the works proposed are to the external drainage only, the existing buildings are unaffected.



Location map



Block plan

1.0 Site Analysis

Flood Risk Zones
Site analysis

The majority of the site is in flood risk zone 1, the lowest classification. The front boundary of the site overlaps with flood risk zone 2 and 3. This is due to the proximity to the Chitterne Brook, a winterbourne stream which borders the front of the site.

Types of flooding
Coastal
The site is at “very low risk” of coastal flooding according to the goverment dataset* (<0.1% each year).

Fluvial (Rivers)
The majority of the site is at “very low risk” of fluvial flooding (<0.1% each year).

However, the risk of flooding from the nearby Chitterne Brook at the front of the site only is high (>1% each year), as shown in the Environment Agency map opposite**.

Pluvial (Surface water)
The site is at “very low risk” of surface water flooding according to the goverment dataset* (<0.1% each year). The LLFA - Local Lead Flood Authority - for the site is Wiltshire Council.

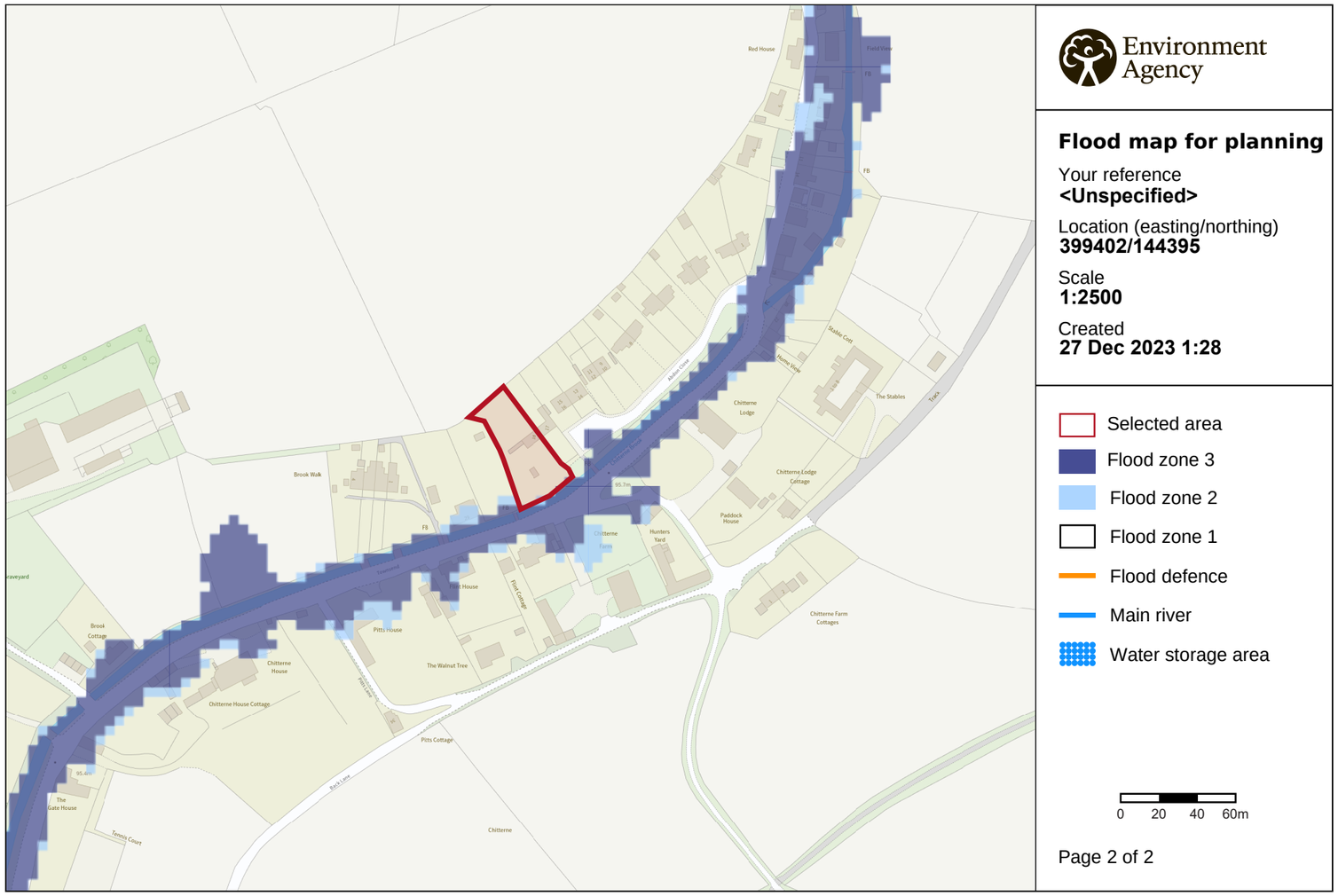
Reservoirs
Flooding from reservoirs is unlikely in the area.

Groundwater
Flooding from groundwater is possible in this area.

The are two active flood alerts covering this area, although the risk to Abdon Close is considered very low.

*The dataset can be accessed:
https://check-long-term-flood-risk.service.gov.uk/risk#

**https://flood-map-for-planning.service.gov.uk



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Site location plan NTS

Detailed maps of flooding extents
Site analysis

The majority of the site is at “very low risk” of fluvial flooding (<0.1% each year).

It is estimated that there is a “high” risk of flooding from the adjacent river at the front of the site only.

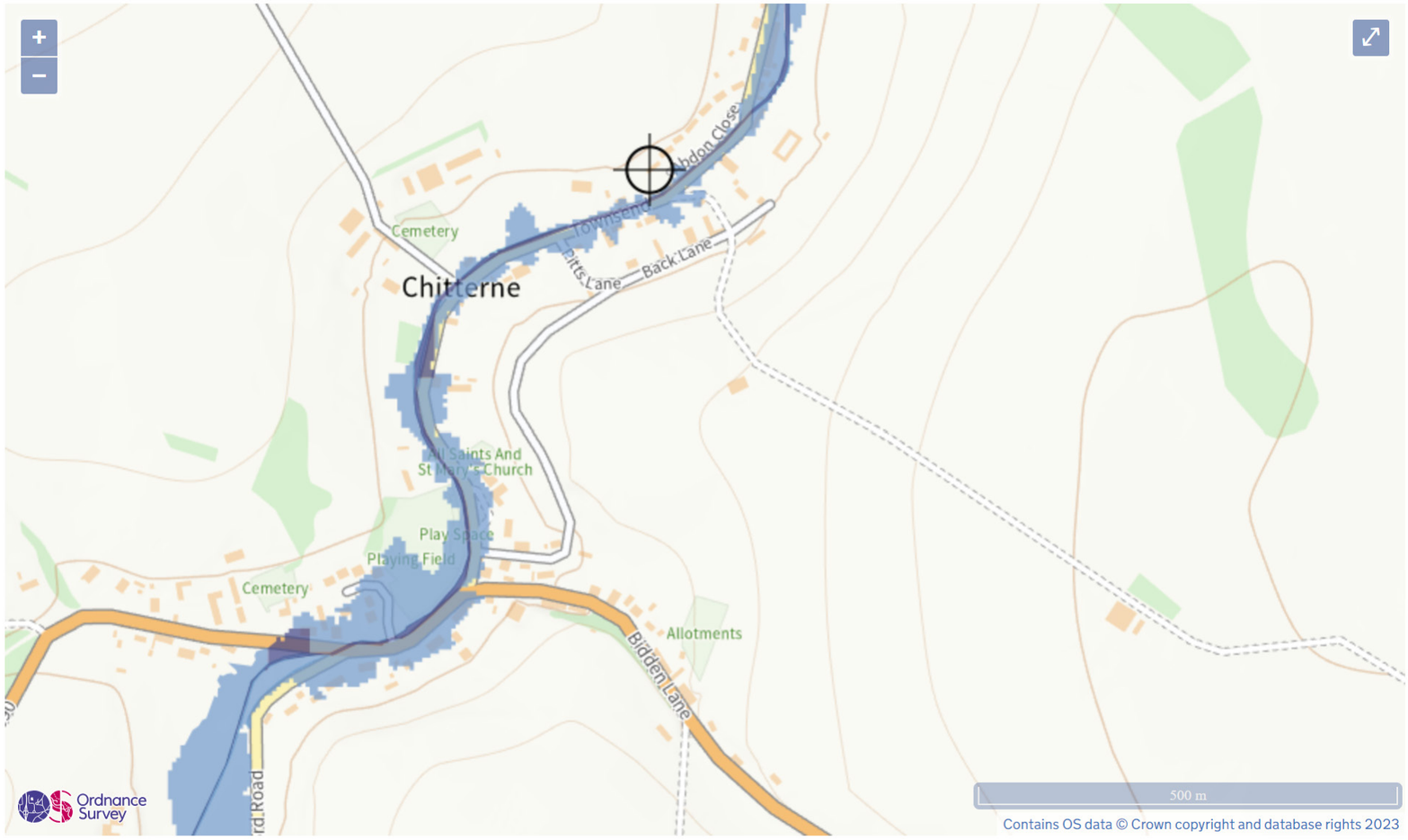
This is confirmed by the modelling shown on the adjacent map which shows that the extent of flooding is likely to be contained to the river bank and the very front of the site in the event of flooding from rivers or sea levels.

Flood risk

Extent of flooding

Location

Enter a place or postcode



Extent of flooding from rivers or the sea

High Medium Low Very low Location you selected

Detailed maps of flooding extents
Site analysis

It is estimated that there is “very low risk” of surface water flooding.

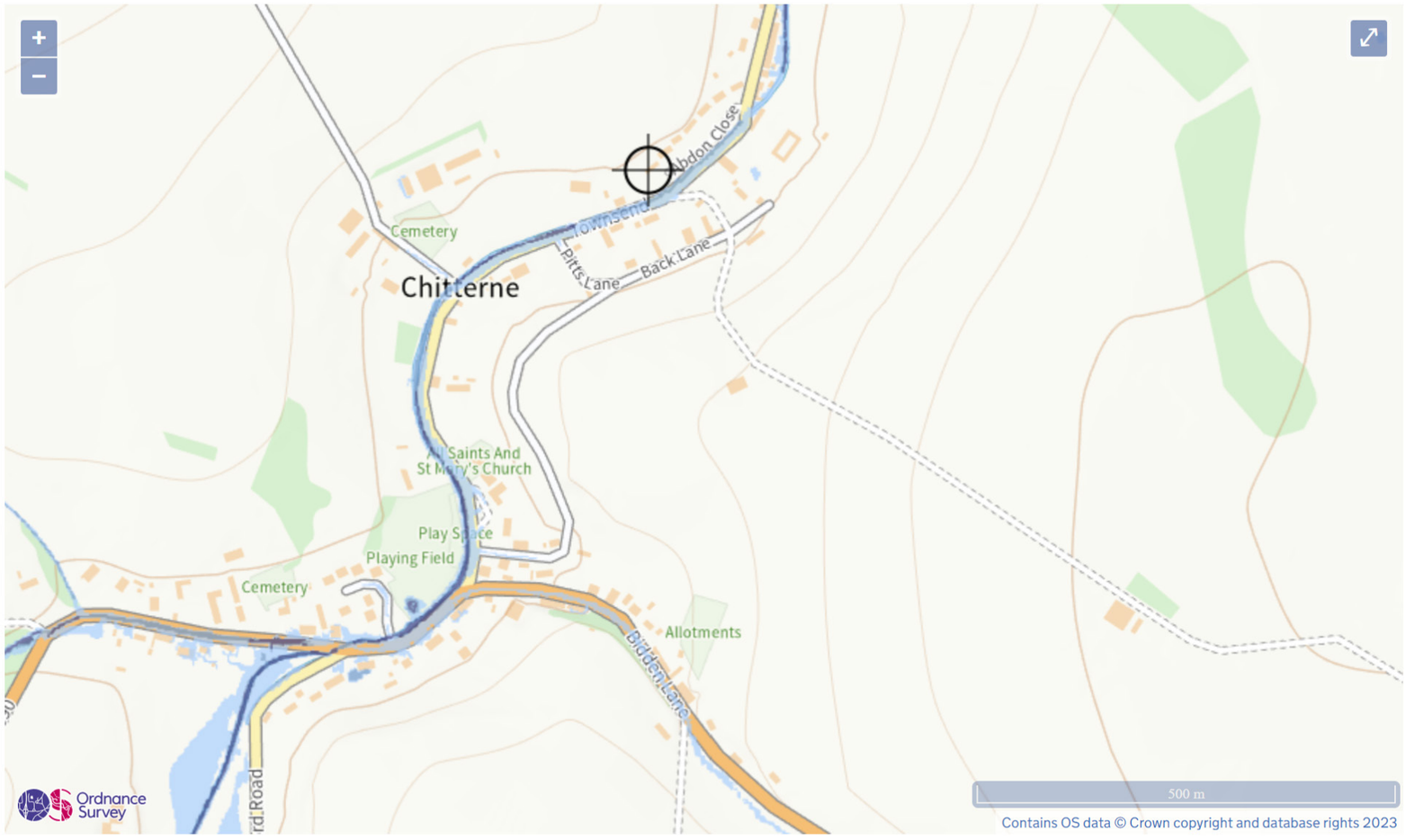
This is confirmed by the modelling shown on the adjacent map which shows that the extent of flooding is likely to be contained to the river bank and the very front of the site in the event of flooding from surface water.

Flood risk

Extent of flooding

Location

Enter a place or postcode



Extent of flooding from surface water

High Medium Low Very low Location you selected

Historic flooding
Site analysis

Widespread flooding affected many locations in Wiltshire in 2014. Chitterne was an affected area:

"*Chitterne has been subject to flooding from the Chitterne Brook, a winterbourne. During recent storm events (December 2013 - February 2014) runoff from the upland catchment exceeded the capacity of the Chitterne Brook and structures inundating roads and causing property flooding. Surface water flood maps show 40 properties are at risk of flooding in a 3.3% AEP event.*

Flooding from groundwater sources is also an issue in Chittern".

Excerpt from Appendix 1 - Wiltshire Local Flood Risk Management Strategy.

The historic flood data available shows that the highest level recorded was 0.9m above the top of the normal range of the Chitterne Brook at the measurement site.

The Wiltshire Council Local Flood Risk Management Strategy details flood mitigation measured being taken to prevent further flooding due to climate change/rising river levels:

"Construction of an upstream flood storage area to attenuate flow so the existing drainage system operates within the limitations of its capacity. This attenuation will aim to reduce risk flooding of infrastructure and properties. This lost cost, innovative scheme based solution will seek to reduce the risk of groundwater flooding but PLP may still be required to mitigate against groundwater flood risk. Scheme details are being developed to confirm standards of protection (current and proposed) and construction costs. Additional works to be carried out in water meadows to improve conveyance."

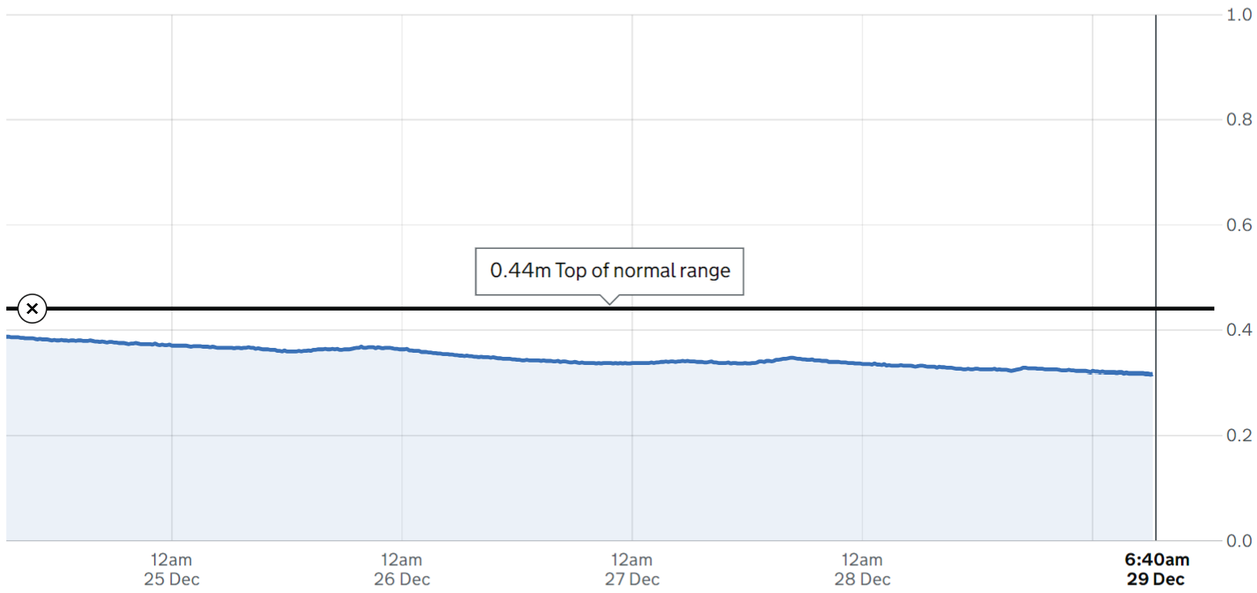
During the course of this desktop study, there has been no evidence found of flooding to 18 Abdon Close, although the village of Chitterne was affected by flooding in 2014. This LFRMS further shows that the risk of flooding is being monitored with a view to implementing flood mitigation measures in the future.

Latest at 6:15am on 29 December

Height	Trend	State
0.32m	Steady	Normal

Normal range 0.03m to 0.44m

Height in metres over the last 5 days



Download data CSV (12KB)

How levels here could affect nearby areas

1.35m	Water reaches the highest level recorded at this measuring station (recorded on 9 January 2014)	Show on chart
0.44m	This is the top of the normal range	Show on chart
0.32m	**Latest level**	

Chitterne Brook average water levels

The site is located in the Avon Hampshire Management Catchment area shown in the map below.

The data tables shown opposite show that the central allowances for peak river flow allowances are projected to increase by 16% by 2050 and 38% by 2080.

In a 1% and 3.3% annual exceedance scenario, peak rainfall is projected to increase by 20-25%

Whilst this dataset is useful in anticipating future flood risks, it covers a large area and is difficult to model for a small, householder development.

The flood data of 2014 shown on the previous page, however, indicates that although the Chitterne Brook water level rose to 1.35m (3x higher than the top of the normal range) flooding still did not occur on the specific site. This is provided as a conservative assessment of the effect of increased rainfall and peak river flow in lieu of modelling. During this flooding period, there was flooding elsewhere in Chitterne, therefore it is important that any proposal on the site does not increase the risk of flooding elsewhere.



Map of the Avon Hampshire Catchment area

*https://environment.data.gov.uk/hydrology/climate-change-allowances/river-flow?mgmtcatid=3006
**https://environment.data.gov.uk/hydrology/climate-change-allowances/rainfall

Avon Hampshire Management Catchment peak river flow allowances

	Central	Higher	Upper
2020s	12%	19%	33%
2050s	16%	27%	52%
2080s	38%	56%	102%

This map contains information generated by UK Centre for Ecology and Hydrology using UK Climate projections.

Avon Hampshire Management Catchment peak rainfall allowances

3.3% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	35%
2070s	25%	40%

1% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	25%	40%
2070s	25%	45%

*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

This map contains information generated by Met Office Hadley Centre (2019): UKCP Local Projections on a 5km grid over the UK for 1980-2080. Centre for Environmental Data Analysis, 2022

2.0 Proposal

Flood resilience measures
Proposal

Plant location
The location of the plant has been selected to allow for sufficient distance from the Chitterne Brook, whilst keeping to a suitable proximity for maintenance access. With this in mind, the plant could not be located elsewhere, i.e. the rear garden.

As per Building Regulations Part H, the new sewage treatment plant and associated drainage field will be located more than 10m from a watercourse; in this case, the Chitterne Brook. This will reduce the likelihood of flooding if the river levels rise, as in 2014.

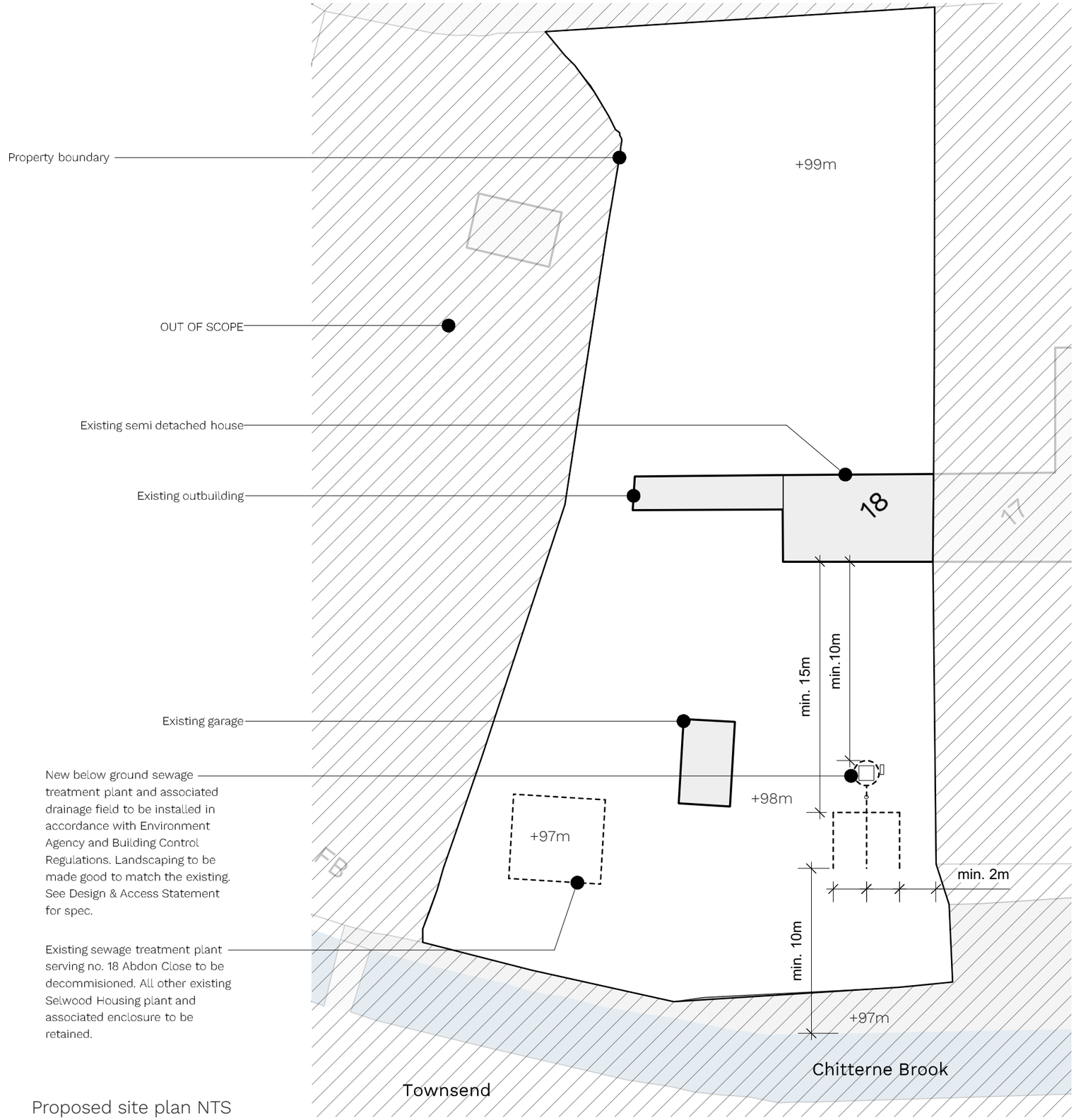
Plant specification
The Clenviro system incorporates an above ground blower and failure alarm which reduces the risk of damage to the system in a flooding event.

A percolation test will be carried out in Stage 4 to confirm that the system will not overly saturate the ground.

Site levels
The site slopes downwards towards the Chittern Brook at the front of the site which significantly minimises the risk of flooding. Indicative spot heights above sea level are shown on the site plan opposite.

The internal levels of the existing buildings on the site are not affected by the proposal. There is no known previous history of flooding on the site.

Effluent quality and amount
As there is already a sewage treatment plant serving the property, and located on the site, the amount of effluent being discharged onto the site will not be increased. The effluent produced will be of higher quality than the existing and furthermore the effluent will be filtered into the ground via a drainage field, rather this discharged into the Chitterne Brook. This is of significant benefit to the local environment as the Brook is a winterbourne stream which dries up in summer and is therefore not suitable for surface water discharge. Details of this are available in the Planning Report.



Proposed site plan NTS

3.0 Conclusion

Conclusion
Safeguarding against future flooding events

Likely location of flooding
The analysis in this report shows that the majority of the site is at very low risk of flooding and that, as the site slopes down towards the Chitterne Brook, flooding is most likely to occur at the front of the site, immediately adjacent to the Brook. This is reflected in the designation of flood risk zone 2 & 3 for these areas only.

Likely sources of flooding
The analysis within this report shows that the two main sources of flooding which are likely to affect this site are from fluvial flooding from the Chitterne Brook adjacent, and from groundwater. The worst recent flooding event which affected the local area saw a 0.9m rise in the level of the Chitterne Brook in 2014. This is 3x higher than the top of the normal range. During this flood, there was no known flooding of 18 Abdon Close.

Flood mitigation integrated into the proposal
The new sewage treatment plant and associated drainage field, outlined in this application, are sited more than 10m from the watercourse as per building regulation BS 6297: 2007.

The above ground blower and integrated failure alarm reduces the risk of damage to the system in a flooding event.

As there is already a sewage treatment plant serving the property, located on the site, the amount of effluent being discharged is not set to increase and the quality of effluent will be greatly increased, providing a clear benefit to the local surroundings.

The proposed location and specification of the sewage treatment plant and drainage field mean the risk of flooding and the potential risk to health in a flooding event is minimised. This is important for the future as evidence shows that climate change is likely to increase the risk and severity of flooding events/unusual rainfall patterns.

Thank you

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