

## **Harcombe Environmental Services Ltd**

*Flood risk, Drainage, Ecology, Contaminated land, Sewage treatment, Fly Nuisance*



**RESIDENTIAL DEVELOPMENT, BUILDING EXTENSION**

**WISTERIA COTTAGE, MILBURN LANE, HOLWELL**

**SITE FLOOD RISK ASSESSMENT**

## SITE FLOOD RISK ASSESSMENT (FRA)

OF: RESIDENTIAL DEVELOPMENT, BUILDING EXTENSION, WISTERIA COTTAGE,  
MILBURN LANE, HOLWELL, SHERBORNE

FOR: ANDREW AXTON (OWNER), THOMAS MAUNDER (AGENT)

PROJECT: 2302-03 HOLWELL MILBURN

REVISION: - COPY FOR SUBMISSION TO LPA 24/04/2023

PREPARED BY:



JOHN HARCOMBE *BSc (Hons), MSci*

HARCOMBE ENVIRONMENTAL SERVICES LTD

DATE: 24 / 04 / 2023

### Credentials of Harcombe Environmental Services Ltd and John Harcombe

Harcombe Environmental Services (HES) Ltd is responsible for all that is contained within this report. HES Ltd is owned and Directed by John Harcombe, the Principle Scientist and Design Engineer. The company was incorporated in April 2013, no. 8486597, the trading office is Stogursey, Somerset.

Harcombe Environmental Services is a competent environmental consultancy and holds current Employers and Public Liability, Professional Indemnity and Legal Cover, with Royal Sun Alliance (£1M) and DAS Ltd (£100K).

John Harcombe's credentials are as follows:

- Member of Institution of Environmental Management and Assessment (MIEMA) (pending).
- Master of Science Degree in Water and Environmental Management, Bournemouth University.
- Bachelor of Science (Hons) Degree in Applied Biology, maj. Environmental Biology, Coventry University.

John Harcombe's experience is as follows:

- 2013 to Present Director, Harcombe Environmental Services Ltd.
- 2010 to 2013 Principal Environmental Scientist, Harcombe Environmental Services.
- 2009 to 2010 Development and Flood Risk Officer, Environment Agency.
- 2003 to 2009 Senior Environmental Scientist, Wessex Water Services.
- 1999 to 2003 Process Commissioning Engineer, Wessex Water Services.
- 1998 to 1999 Scientific/Engineering roles during work and travel in Pacific and Australasia
- 1994 to 1998 Research Scientist (Biology/Engineering), Yorkshire Water Services.

**CONTENTS**

	EXECUTIVE SUMMARY	1
1	INTRODUCTION	2
1.1	Background - Commission	2
1.2	Background – Planning Need and FRA	2
1.3	Aims of the Report	2
1.4	Development Proposal	2
2	SITE DESCRIPTION	3
2.1	Location and Access	3
2.2	Existing Site Use	4
2.3	Topography and Land Drainage	4
2.4	Ground Permeability and Formal Drainage	5
2.5	Flood Risk Vulnerability Classification	6
3	IDENTIFICATION OF FLOOD RISK	7
3.1	Sources of Information	7
3.2	Flooding from Rivers and Sea	7
3.3	Flooding from Land (Surface Water)	9
3.4	Flooding from Groundwater	10
3.5	Flooding from Sewers	10
3.6	Flooding from Artificial Sources	10
3.7	Impact of the Development on Neighbouring Properties	11
3.8	Summary of Flood Risk	11
4	NPPF, THE DEVELOPMENT AND SITE TESTS	12
4.1	Sequential Test	12
4.2	Exception Test	12
5	SURFACEWATER AND FOUL DRAINAGE DESIGN	13
5.1	Existing Surfacewater and Foul Drainage	13
5.2	Proposed Surfacewater and Foul Drainage System	13
6	CONCLUSION AND RECOMMENDATIONS	14
APPENDIX A	Images of Site	a-b
APPENDIX B	Flood Maps	c-e

*Blank page*

Print double-side to save paper

## EXECUTIVE SUMMARY - FLOOD RISK ASSESSMENT OF DEVELOPMENT AT MILBURN LANE, HOLWELL

This report has outlined the potential flood risk posed by the residential development at the property of Wisteria Cottage, Milburn Lane, Holwell from a variety of sources, as defined by the Technical Guidance to the National Planning Policy Framework, the relevant policies of Dorset County Council, the EA and BS 8533:2011. The proposed development involves construction of an extension to the existing dwelling building. The development will result in no change in vulnerability of the site, of 'More' vulnerable.

Flood mapping was gained from the DEFRA data services platform (for EA sources) and the DCC SFRA mapping (2010). The property was surveyed for relative ground levels, hydrology, access and drainage issues by Harcombe Environmental Services. EA and SFRA mapping shows that the southern half of the property is within Flood Zones 2 and 3, however the existing dwelling building and the development area are in Flood Zone 1. The development area is at 'No' risk of flooding, the lower area of the garden is at a 'Medium' risk of flooding.

Flood depth analysis showed that during an extreme flood event the dwelling and development area are not impacted by flooding, a 'Danger to none'. The southern end of the garden is predicted to have a maximum flood depth (during a 1.0%AEP event) of 0.3m, a 'Danger to some'; however the lower garden does not need to be accessed during a flood. The development results in no displacement of flood water and flood resilience measures, raised electrics, hard flooring and water resistant plasterboard, will be used.

The property is potentially affected by flooding from surfacewater. The risk of surfacewater flooding at the dwelling and development area is Low to Medium, with a predicted maximum depth of 0.0 – 0.6m. The north and western boundaries of the property are protected by informal flood defences, which will offer adequate protection to the streaming water flowing past the property; the risk to the building from surfacewater flooding is considered to be Low. The risk from groundwater is Low and the risk from sewers and artificial sources is negligible.

The proposal results in no significant impact to neighbouring properties. The development will result in a negligible increase in surfacewater runoff, to be treated within the property. The development results in no increase in building footprint within the flood plain, with no displacement of flood water.

**In summary**, the proposal is for construction of an extension to the existing dwelling, with no change in vulnerability, no significant change to runoff and no increase in built volume within the flood plain. The development area is in Flood Zone 1, but is impacted by low to medium risk of surfacewater flooding, protected by informal defences. The proposed extension has potential for shallow surfacewater flooding, which can be mitigated by simple flood resilience matters of hard-flooring, water resistant plasterboard and raised electrics. There is no significant risk from groundwater, sewerage or artificial sources. The proposal is safe to occupy during a flood or storm event and will result in impact on neighbouring properties.

## **1 INTRODUCTION**

### **1.1 Background - Commission.**

This Flood Risk Assessment (FRA) report has been produced by Harcombe Environmental Services (HES) Ltd to accompany a planning application for proposed residential building extension, to Dorset County Council (DCC), by the applicant, Andrew Axten, at the property of Wisteria Cottage, Milburn Lane, Holwell. HES Ltd were appointed to complete this FRA report by Thomas Maunder, of Scope Architectural, on behalf of Mr Axten to assist with the planning application to be submitted to DCC. The planning application is being submitted by Thomas Maunder.

### **1.2 Background – Planning Need and FRA.**

The development area is located within the residential property of Wisteria Cottage, Milburn Lane, Holwell. The proposed development involves construction of a two-storey extension to the south side of the dwelling building, on the site of an existing paved patio.

This HES Ltd FRA report includes the details of the Site Specific Flood Risk Assessment and has been completed in accordance with the guidance set out in the National Planning Policy Framework (NPPF), the relevant policies of DCC, Environment Agency (EA) and the British Standard 8533:2011. Sequential and Exceptions Tests are considered not to be necessary for this assessment, as the proposal is not within Flood Zone 3, as outlined in the DCC Strategic Flood Risk Assessment (SFRA) (2008) and best practice, further information is outlined in Section 4 of this report.

### **1.3 Aims of the Report.**

This report aims to satisfy the Statutory Consultees of the planning application associated with this proposal, especially the EA and SDC, addressing the requirements of NPPF, through:

- Assessing the flood risk to the development site and whether the location of the elements of the proposal is appropriate;
- Assessing whether the development will result in changes in the flood risk to the local area and have an impact on flood risk or land drainage to any neighbouring properties;
- Assessment of the safety of the current and future users of the features of the development site and the need for any changes to the site or further local mitigation measures.

### **1.4 Development Proposal.**

The development proposal is for the following items, sought for in a single planning application:

- Construction of an attached two-storey extension to the existing dwelling building, with minor changes to attached surfaces;
- Installation of surfacewater drainage associated with the residential development.

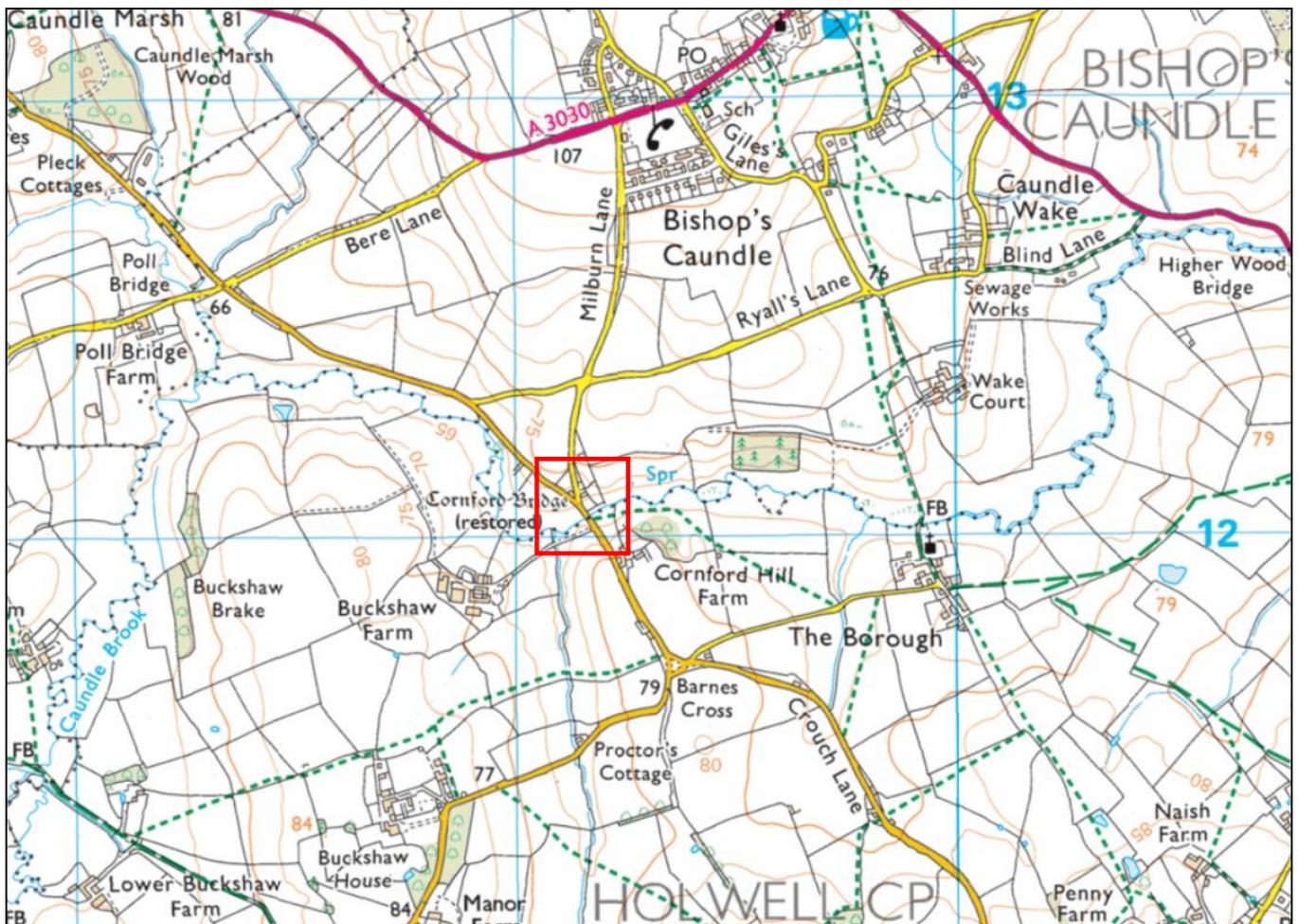
## 2 SITE DESCRIPTION

### 2.1 Location and Access.

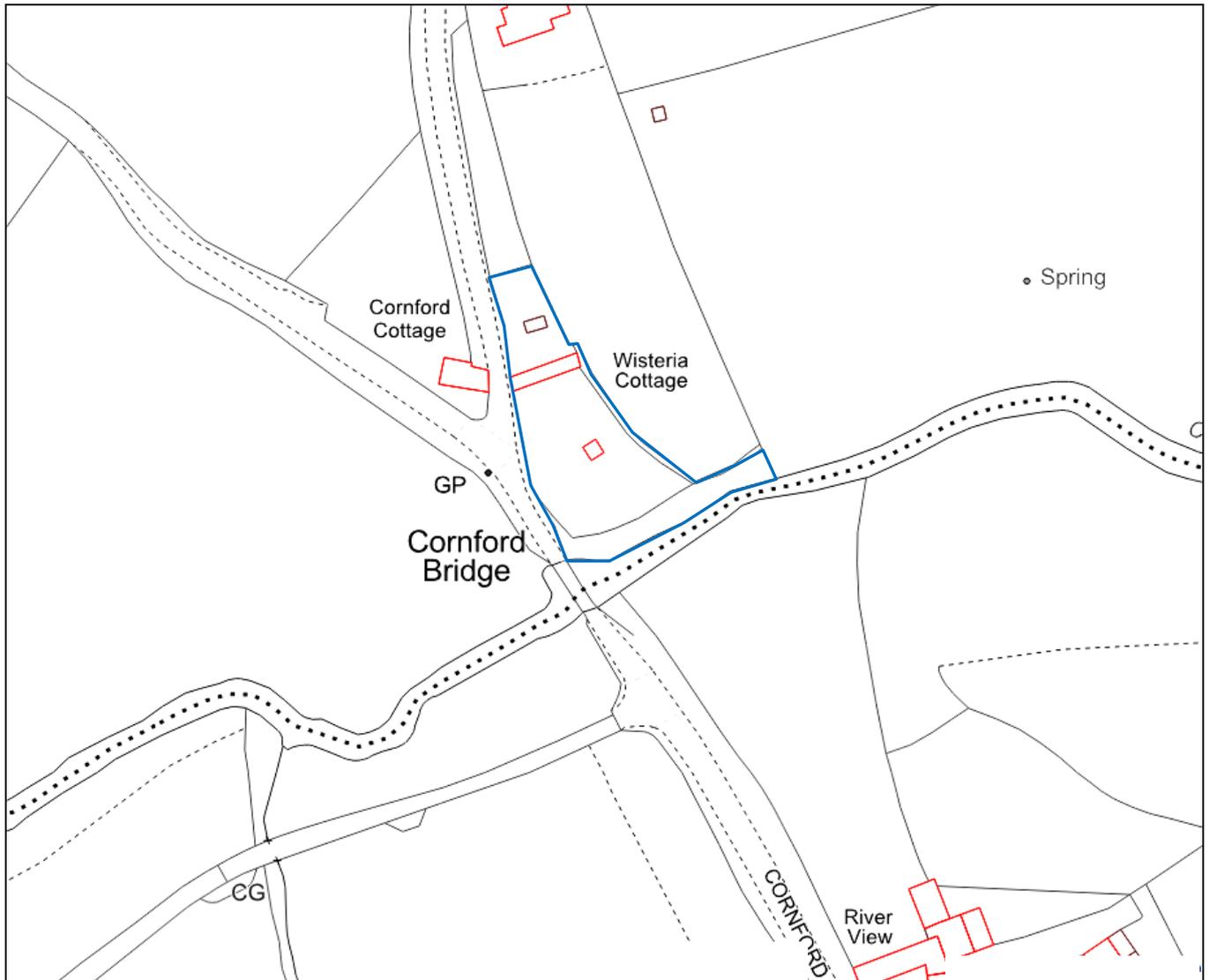
The development area is located within the property of Wisteria Cottage, off Milburn Lane, Cornford Hill, Holwell, approximately 6.5km southeast of Sherborne. The property is centred at Ordnance Survey grid reference ST 69155 12085, with an access and parking area for vehicles to the north of the dwelling building and a pedestrian access to the south of the dwelling, both off Milburn Lane.

The location of the property is shown in Figure 2.1 and the arrangement of the proposed development shown in Figure 2.2, with the property boundary outlined in blue. Images of the site are shown in Appendix A.

**Figure 2.1** Location of Property, Milburn Lane, Holwell



**Figure 2.2 Arrangement of the Property, Wisteria Cottage, Milburn Lane, Holwell**



## 2.2 Existing Site Use

The proposed development area is located within the residential property. The footprint of the proposal is currently occupied by an existing paved patio area, adjacent to a domestic lawn. The area of the residential property in which the proposed development is arranged (south of the dwelling building) is bound to the north by a low wall, to the west by a dense native hedgerow on a low bank, to the south by a small wooden palisade fence, separating the main area of the domestic lawn from the 'lower' area of the garden and the bank of the watercourse (Caundle Brook), and to the east by a wire fence and shrub planting.

### 2.3 Topography and Land Drainage

**Topography.** The property is in a rural setting, part way between Holwell and Bishop’s Caundle, in the low rolling hills of North Dorset. There is one ‘main country road’ (C-Class), Cornford Hill, to the south of the property, a smaller ‘country lane’, Milburn Lane, to the west of the property and the property is just west of Cornford Bridge. The property is just above the lowest point, locally, of the two adjacent roads, with the dwelling building approximately 35m north of and the southern part of the domestic garden area reaching the bank of the watercourse (which follows the bottom of the small valley, and the lowest point locally). The development site is relatively level, with a slight slope to the south, away from the existing dwelling building (towards the watercourse). At the property, there is a low wall to the north of the dwelling, separating it from the vehicle parking area and Milburn Lane and a hedge bank running along the west boundary of the garden, separating that from Milburn Lane. The agricultural field to the east of the site has a slightly steeper slope, leading down to the south. The lower (southern) area of the garden borders the northern bank of the watercourse (Caundle Brook), the bank on this side is significantly higher than the banks to the south, bordering agricultural fields. No topographical survey of the site has been completed; a relative ground level survey was completed by HES Ltd. Ordnance Survey mapping shows the property to be approximately 70m above sea level, with the top of the hill, 2.6km to the north, at 150m and the bottom of the valley at 60m.

**Drainage.** A desk-based assessment showed that there are no watercourses within the property, but the property is adjacent to the watercourse, Caundle Brook, a small river of approximately 6.0m width. The Brook flows from west to east, contained within natural (unmodified) banks. The Cornford Bridge is to west of the property, and is an old single-carriageway stone bridge, with three gothic arches and buttresses, dating from c1480, restored in c1800 and 1994. A further landform and hydrology survey was carried out by John Harcombe of HES Ltd in February 2023, to confirm site layout, relative site levels, access and drainage of the site.

### 2.4 Ground Permeability and Formal Drainage

The British Geological Survey ‘Geoindex Onshore’ viewer, was used to identify the ground and soil Parent Material and the Hydrogeology of the site. The site is composed mainly of Great Oolite Group, with Sandstone, Limestone and Argillaceous Rocks, with Heavy to Medium soil group (claystone and mudstone). The Hydrogeology identifies that the site is on the boundary of an area with a moderately productive aquifer (Limestone). A site, with bedrock and superficial layers like this, suggests that the subsurface layers of the ground would have the potential of having a moderate to poor permeability or soil porosity.

The existing dwelling building has existing surfacewater drainage and is served with foul drainage, foul to the public network and surfacewater to soakaways or runoff directly to the adjacent watercourse. The surface area and permeability of the drained areas of the development area are shown in Table 2.1; areas are based on calculations from proposal plans; impermeable area is based on the professional experience of John Harcombe.

**Table 2.1 Surface Areas and Permeability of the Development Area**

Surface	Detail	Existing	Proposed	Impermeability %	Impermeable area	
		m <sup>2</sup>	m <sup>2</sup>		Existing, m <sup>2</sup>	Prop'd, m <sup>2</sup>
Buildings	Tiles	69	112	85%	59	95
	Felt	45	45	80%	36	36
Patio/Paths	Paving/stone	86	72	50%	43	36
Lawn	Mang'd grass	197	168	25%	49	42
Lower garden	Rough grass	395	395	15%	59	59
<b>Totals</b>		<b>793</b>	<b>793</b>		<b>246</b>	<b>269</b>

**Note:** The proposal results in an increase in impermeable area of 22m<sup>2</sup>, equivalent to 10.5%.

## 2.5 Flood Risk Vulnerability Classification

The development area is a residential dwelling building and domestic garden. On consideration of the flood risk vulnerability classification, as outlined in Table 2 of the Technical Guidance to the NPPF and the SFRA of Dorset County Council (2008), the existing use of the land and buildings is considered to be 'land and building for residential dwelling', as classified in the Town and Country Planning Statutory Instrument 1987, no. 764. The proposed use of the site is considered to not change. The existing site use is considered to come under a flood risk designation of 'More' vulnerable. The vulnerability of the proposed (developed) site use is considered not to change. The development will therefore result in no increase to the Vulnerability classification of the development site.

### 3 IDENTIFICATION OF FLOOD RISK

#### 3.1 Sources of Information

The following Agencies, Local Authorities and information sources were consulted during the development of the design of the proposed scheme and in the preparation of this Flood Risk Assessment report. The results of the consultations and Desk-based Assessment are as follows:

- **Environment Agency (EA).** Flood mapping obtained from the EA published data sets in April 2023, from the DEFRA data services platform.
- **Local Planning Authority (Dorset County Council).** The Strategic Flood Risk Assessment (DCC Level 1 SFRA, 2008) was consulted to determine the flood risk issues, policies of the Local Authority and specifics and flood mapping of the site.
- **Wessex Water (Developer Enquiries).** The arrangement of the public water supply and foul sewerage in the area was gained from Wessex Water's online mapping resource.
- **Local Information.** Information on the proposed development was provided by the Planning Agent, Thomas Maunder and surface areas were measured from provided plans.
- **Site Investigation.** A survey of the site and the local area was undertaken by a John Harcombe (of HES Ltd) in February 2023. Land use, relative ground levels, drainage, access and evacuation routes of the site were investigated during this visit.

#### 3.2 Flooding from Rivers (Fluvial) and Sea (Tidal)

The information sources from the EA and DCC as well as local knowledge were used to determine the likely risk to the site from fluvial and tidal sources.

##### 3.2.1 Flood Zone Mapping

**EA Mapping.** The area of the whole property is shown on the EA flood map to being partly within Flood Zone 3, although the development area, including the dwelling building and patio area, is within Flood Zone 1. The EA Flood Map for Planning (Flood Zone 3) is shown Figure AB.1A, with the Flood Map for Planning (Flood Zone 2) in Figure AB.1B, in Appendix B.

**SFRA Mapping.** The Flood Zone mapping in the DCC SFRA shows a similar arrangement as the current (2023) EA mapping, but shows areas of Flood Zone 3 and 2. The DCC SFRA shows that the northern half of the property is in Flood Zone 1 and the southern part of the property is in Flood Zones 3 and 2. The DCC SFRA mapping is shown in Figure AB.2.

**Probability of Flood Zones.** On consideration of the EA and SFRA flood maps, the southern part of the property is assessed as being land having a 1.0% (1 in 100 years) chance of flooding each year, referred to as an Annual Exceedance Probability, AEP, the dwelling and development area is assessed as being land with a 0.01% chance (1 in 10,000 years) chance of flooding.

**Risk of Flooding.** The development site is within an area of 'Medium' risk area of flooding from rivers or sea. The EA Risk of Flooding from Rivers and Sea is shown in Figure AB.3.

### 3.2.2 Historic Events

**EA Mapping.** The EA map History of Flooding shows that there are no records of the site flooding and that the nearest site of flooding is approximately 2.2km to the south at Hamlet. EA Historic Flood map is shown in Figure AB.4.

### 3.2.3 Flood Defences

**Fluvial Flood Defences.** There are no formal fluvial flood defences located along the banks of the Caudle Brook, however, within the property there is a low wall along the southern perimeter of the 'lower garden' area, which would provide some protection from high fluvial levels in the watercourse.

**Surfacewater Defences.** A low wall, to the north of the dwelling building, and a hedgebank, to the west of the garden, offer protection from surfacewater streams entering the property from Milburn Lane, to an approximate depth of 0.4m.

### 3.2.4 The Hydrological Regime

**Summary.** The site is considered most at risk of an extreme fluvial flooding event, from the Caundle Brook over-topping its banks and spilling flood water to the south and north, to fill the lower agricultural fields and then spill into the lower areas of the property. The site is a significant distance from and height above areas of tidal influence and considered not to be at risk from a tidal flood event.

**Fluvial flood risk.** The property lies adjacent to the Caundle Brook, a relatively small watercourse that flows from spring sources in Middlemarsh and Cosmore, 7.0km to the south of the site, to meet with the larger River Lydden at Lydlinch, 6.5km to the east. The bank of the watercourse, at the property, is natural and the 'lower garden' is raised above this natural bank by approximately 0.7m, with a low wall of 0.3m raising the protected level to approximately 1.0m. There is an old stone bridge, C15, upstream of the property; and the adjacent agricultural fields are at a lower level, this civil structure poses a potential risk of blockage (by floating debris). If the flow of the Caundle Brook is blocked or significantly restricted, during a period of high river flows (during a significant storm event), the water level within the channel, upstream of the site, will rise and could potentially over-top the banks and spill onto the agricultural fields to north and south of the river channel. The area of agricultural land to the north of the channel and the highway (Mill Street) are lower than the south bank at the property and will therefore flood before the property is flooded. Once flood water in these areas reaches a significant depth the highway, Cornford Hill, will flood and flood water could spill on to the lower areas of the property. Flood water will fill the lower areas of the property first, the rough grass of the 'lower garden' and will rise north slowly to encroach on the garden; the likelihood of the 'upper area' of the garden or the dwelling being affected is considered to be low.

**Tidal flood risk.** The property is a significant distance (31km) from any area of tidal influence (English Channel) and a significant height (65m) above the Mean High Water limit. There is negligible risk of tidal sources impacted the site and there is no risk from tidal flooding.

### 3.2.5 Flood Levels and Depths.

**Assessment of Depth.** The flood maps show that the dwelling and development area is outside the area impacted by flooding, 10 1.0% event, and the flood depth, from fluvial sources, is 0.0m. The boundary with the ‘lower garden’ is approximately 0.3m lower than the ‘upper garden’ and would therefore have a maximum depth of flooding, from fluvial sources, of no more than 0.3m.

**Danger to People.** To make a comparison of depth of flooding to real hazard to people the EA have produced a Flood-depth Velocity Matrix, using this Matrix the development area, and domestic (‘upper’) garden area are considered a ‘Danger for none’. The area of the ‘lower garden’ would be considered a ‘Danger to some’; this area does not need to be accessed during a flood event.

**Flood Displacement.** The development area of the new extension is in Flood Zone 1 and therefore there is no flood displacement from fluvial sources, as a result of the development.

**Flood Resilience and Resistance.** Standard flood resilience and good practice measures should be used, as prescribed by current Building Control. The ground floor of the extension is proposed to be used as living and dining rooms, hard flooring (wood or vinyl) is advisable, but not obligatory. Electrics within the new build area will be set at a height of at least 0.6m above ground level. Walls will be clad with water resistant plasterboard. If external pavers are proposed these should be set on a bed of stone, to be semi-permeable.

### 3.2.6 The Flood Warning and Evacuation Measures

No specific flood warning and evacuation measures are considered necessary for the proposal. The development is outside of the Flood Zone (2 and 3) and the area within the Flood Zone (the ‘lower garden’) does not need to be accessed during a flood event.

## 3.3 Flooding from the Land (Surfacewater)

**EA Mapping.** The EA mapping of surfacewater flooding depth from a 1.0%AEP, 1 in 100 years, event, in Figure AB.5A, shows that the property (of Wisteria Cottage) and the watercourse to the south (Caundle Brook) are affected by surfacewater flooding. The mapping shows the predicted surfacewater flood depth within the property to be as follows:

- Vehicle parking area and garage      None (0.0m);
- Dwelling building and entrance      Low (0.0m – 0.3m);
- Development area                      Low – Medium (0.0m – 0.6m);
- Domestic and Lower Garden          Medium – High (0.3m – 0.9m).

**SFRA Mapping.** The SFRA mapping of modelled surfacewater flood risk, in Figure AB.5B, shows that the northern half of the property (including the vehicle parking and dwelling building) are not in an area of surfacewater flood risk, and that the southern half of the property (including the development area and garden) are in an area of Medium flood risk.

**Assessment of Risk.** The modelled flood maps show that the existing building is at a Low risk of flooding from surfacewater, with a maximum depth of 0.3m at the southern entrance, but a predicted flood depth of 0.0m within the building. The depth at the development area is predicted to be a mean of 0.3m, with a maximum of 0.6m. The property is at the lower end of Milburn Lane and Cornford Hill, both of which have the potential to collect surfacewater and stream it south, towards the property and Cornford Bridge. The depth of water streaming down the two highways, during a storm event, is considered to be no more than 0.15m and will only reach greater depths when it ponds in the lower areas of the valley, as in the agricultural fields and Brook channel. The dwelling building and upper garden area of the property are offered a significant amount of protection from the informal defences of the low wall (to the north) and hedgebank (to the west) of the perimeter of the property. These informal flood defences would offer adequate defence from a shallow stream of surfacewater, as is predicted to affect the property from Milburn Lane and Cornford Hill. The risk of surfacewater streams overtopping these flood defences and entering the development area is considered to be Low. The flood resilience measures, proposed in Section 3.2.4 will mitigate for any risk to the proposed extension to the dwelling building.

**Risk to Adjacent Properties.** There is no significant increase in surfacewater runoff created by the proposal. The proposal results in an increase of 22m<sup>2</sup> (10%) in impermeable area, the additional runoff will be captured by surfacewater drainage and treated within the site. There is negligible impact on flood displacement caused by the proposal. The new extension will be built on the footprint of the existing building and patio, and the impact of surfacewater within the property adjacent to the dwelling is considered to be minimal.

### 3.4 Flooding from Groundwater

There are no records of raised groundwater causing flooding at or near to the site in the SFRA. The geology of the site, being that of Great Oolite Group, with Sandstone, Limestone and Argillaceous Rocks, with Heavy to Medium soil group (claystone and mudstone), suggests that the subsurface layers of the ground would have the potential of having a moderate to poor permeability or soil porosity. Geology such as this is considered unlikely to pose a risk from Groundwater flooding and the risk of flooding from Groundwater is considered to be Low.

### 3.5 Flooding from Sewers

There have been no recorded recent incidents of Sewer flooding on the site in the SFRA. A detailed search was conducted with the sewerage provider, Wessex Water, the property and surrounding area is not public sewerage; the site is connected to a private sewage treatment plant, within the property. The development is unlikely to result in an increase in foul flows and so will result in no added demand on the existing treatment system. The risk of flooding from sewerage is negligible.

### 3.6 Flooding from Artificial Sources

The nearest artificial sources to the site are Sherborne lake (Sherborne Castle) 6.1km to the northwest, Sutton Bingham Reservoir, 13.5km to the west, and Garden Lake (Stourton House) 23.2km northeast of the site. The discharges from the water bodies flow into the channels and valleys of the adjacent watercourses downstream of each water body, in each case, either flowing away from the

site (Sherborne and Sutton Bingham) or flowing in the general direction of the site, but not impacting it (Stourton), respectively. The EA have conducted theoretical breach analysis from English reservoirs and have published flood mapping for the 'dry-day' and 'wet-day' scenarios. The flood mapping from the more severe of these, wet-day, is shown in Figure AB.6 and show that in the event of a significant breach Cornford Bridge and the development site would not be impacted by the resultant flood water. The risk of the property from flood water resulting from artificial sources is negligible.

### 3.7 Impact of the Development on Neighbouring Properties

**Fluvial risk.** The existing dwelling building and development area are within Flood Zone 1 and the increase in building footprint will result in no flood displacement, from fluvial sources.

**Surfacewater risk.** The development results in a minimal (10%) increase in surfacewater runoff, the additional runoff will be captured by surfacewater drainage and treated within the site. There is a minimal potential for displacement of surfacewater by the proposal, however the depth of surfacewater at the development area is shallow and any resultant displacement is considered to be negligible.

### 3.8 Summary of Flood Risk to the Development

**Flood Zones and Risk.** Flooding mapping was gained from the DEFRA data services platform (for EA flood mapping) and the DCC Level 1 SFRA (2010) in April 2023. The site was also surveyed for hydrology, access and drainage issues by John Harcombe of HES Ltd. EA and SFRA flood mapping shows that the property is partly within Flood Zones 2 and 3, however the dwelling building and development area are within Flood Zone 1 and not affected by fluvial or tidal flooding. The EA 'Risk of flooding' map shows the south half of the property to be in an area of 'Medium' risk of flooding.

**Flood Depth and Hazard.** The existing dwelling and development area are outside of the area impacted by Flood Zone 3 and have a flood depth of 0.0m. The area of 'lower garden' is within the area impacted by a 1.0%AEP flood and has a maximum predicted flood depth of 0.3m. Using the EA's Flood-depth Velocity Matrix, during a 0.1%AEP event the vehicle entrance, dwelling building, pedestrian access and development area are a 'Danger to none', the area of 'lower garden' is a 'Danger to some'; this area does not need to be accessed during a flood event.

**Surfacewater, Groundwater, Sewers and Artificial Sources.** EA and SFRA mapping predicts the risk of surfacewater flooding at the dwelling building to be Low and the risk at the development and 'upper' garden area to be Medium; informal flood defences at the property perimeter are considered to protect the dwelling entrance and garden from impact of surfacewater. Standard flood resilience measures such as hard-flooring, water resistant plasterboard and electrics at 0.6m above ground level will mitigate any risks. The flood risk from groundwater is considered to be Low, from sewers is Negligible and with no risk from artificial sources.

**Impact to Neighbours.** The proposal results in no displacement of fluvial flood water. The development will result in a small increase in surfacewater runoff (10%), however this will be treated appropriately within the property, with no excess runoff released.

## **4 NPPF, THE DEVELOPMENT AND SITE TESTS**

### **4.1 Sequential Test**

The proposed development involves the construction of an extension to an existing residential dwelling building and other ancillary works. The development will be undertaken within an area of Flood Zone 1, and there is no change to the Vulnerability classification of the building or development area. According to guidance of the NPPF a Sequential Test is not required for a building extension.

### **4.2 Exception Test**

As with the Sequential Test, the completion of the Exceptions Test is not required.

## 5 SURFACEWATER AND FOUL DRAINAGE DESIGN

### 5.1 Existing Surfacewater and Foul Drainage

A brief survey of the drainage within the residential property was conducted during the initial HES site visit.

**Surfacewater Drainage.** Surfacewater runoff from the existing building roofs is captured via guttering and drains to subsurface sewerage, considered likely to drain to a soakaways within the garden of the property. Drainage from the front (north) of the building is considered likely to drain to surfacewater sewerage within the property and drain to soakaway(s) in the garden. It is possible that there is a high-level overflow to the Brook, although a discharge point was not noted during the survey.

**Foul Drainage.** The property and surrounding area is not served by public foul sewerage. Foul discharges from the dwelling building drain directly to a package plant treatment unit, within the southern part of the garden, with an appropriate discharge most probably directly to the watercourse (not confirmed during the survey) or potentially to an infiltration (drainage) field. There is no foul sewerage serving the development area.

### 5.2 Proposed Surfacewater and Foul Drainage System

**Surfacewater drainage.** There will be little change to the surfacewater drainage of the building. The drainage to the north of the building will not be affected. The drainage to the south of the building will be re-routed to a new soakaway unit located within the garden of the property, at least 5.0m from the building footings. All excess runoff from the area of new building roof will be captured by guttering, directed to downpipes and drain to new and existing surfacewater sewerage. The majority of runoff from the new patio is expected to discharge directly to ground; any excess runoff from the patio will be collected by surface gullies and channel drains and directed to the surfacewater sewerage. The surfacewater sewerage will drain to the south and discharge into an appropriate surfacewater soakaway, potentially, with an overflow to the Brook, as required.

**Foul drainage.** The development results in no proposed increase in foul flows from the property and the flows and loads from the dwelling will not change. The foul sewerage may need to be altered to accommodate connections to the new extension, but there are no plans to alter the existing connection to the private treatment unit or discharge (to ground or watercourse).

## 6 CONCLUSION AND RECOMMENDATIONS

This report has outlined the potential flood risk posed by the residential development at the property of Wisteria Cottage, Milburn Lane, Holwell from a variety of sources, as defined by the Technical Guidance to the National Planning Policy Framework, the relevant policies of Dorset County Council, the EA and BS 8533:2011. The proposed development involves construction of an attached extension to the existing dwelling building on the site of an existing patio. The development will result in no change in vulnerability of the site, of 'More' vulnerable.

Flood mapping was gained from the DEFRA data services platform (for EA sources) and the DCC SFRA mapping (2010). The property was surveyed for relative ground levels, hydrology, access and drainage issues by Harcombe Environmental Services. EA and SFRA mapping shows that the southern half of the property (the lower garden) is within Flood Zones 2 and 3, however the existing dwelling building and the development area are in Flood Zone 1. The development area is in an overall 'No' risk of flooding area, the lower area of the garden is in a 'Medium' risk of flooding area.

Basic flood depth analysis showed that during an extreme flood event (to 1.0%AEP) the existing dwelling and development area are not impacted by flooding, classed as a 'Danger to none'. The southern end of the domestic garden is predicted to have a maximum flood depth (during a 1.0%AEP event) of 0.3m, classed as a 'Danger to some'; this area does not need to be accessed to evacuate the site. The development results in no displacement of flood water and 'standard' flood resilience measures, such as raised electrics, hard flooring and water resistant plasterboard will be used.

EA mapping predicts that the property is potentially affected by the risk of flooding from surfacewater. The risk of surfacewater flooding at the existing dwelling building and development area is Low to Medium, with a maximum predicted depth of 0.0 – 0.6m. The north and western boundaries of the property are protected by informal flood defences (of a low wall and earth bank, respectively) which are considered to offer adequate protection to the shallow streaming water flowing past the property (on Milburn Lane); the risk to the building from shallow surfacewater flooding is considered to be Low. The risk from groundwater is considered to be Low and the risk from sewers and artificial sources is negligible.

The proposal results in no significant impact to neighbouring properties. The development will result in a negligible increase in surfacewater runoff, to be treated within the property. The development results in no increase in building footprint within the flood plain, with no displacement of flood water.

**In summary**, the proposal is for construction of an extension to the existing dwelling, with no change in vulnerability, no significant change to runoff and no increase in built volume within the flood plain. The development area is in Flood Zone 1, but is impacted by low to medium risk of surfacewater flooding, protected by informal defences. The proposed extension has potential for shallow surfacewater flooding, which can be mitigated by simple flood resilience matters of hard-flooring, water resistant plasterboard and raised electrics. There is no significant risk from groundwater, sewerage or artificial sources. The proposal is safe to occupy during a flood or storm event and will result in impact on neighbouring properties.

**APPENDIX A - Images of Property and Development Area**

AA.1. Milburn Lane, garden boundary hedge, dwelling and vehicle parking, looking North



AA.2 Milburn Lane to Cornford Bridge, vehicle parking and dwelling, , looking South



AA.3 Caundle Brook north bank and lower garden area of property, looking Northwest



AA.4 Lower garden into domestic garden and Summerhouse, looking North



AA.5 Domestic garden, paved path and dwelling building, looking North



AA.6 Dwelling building, patio and domestic garden, looking West



### APPENDIX B - Flood Maps

Figure AB.1A EA Flood Map for Planning (Rivers and Sea) – Flood Zone 3, Cornford Bridge, February 2023



Figure AB.1B EA Flood Map for Planning (Rivers and Sea) – Flood Zone 2, Cornford Bridge, February 2023



Figure AB.2 DCC Level 1 SFRA, Map Set 1-#3, Flood Zones, Cornford Bridge, Nov 2010



Figure AB.3 EA Risk of Flooding from Rivers and Sea, Cornford Bridge, February 2023



Figure AB.4 EA Historic Flood Map, Holwell, February 2023

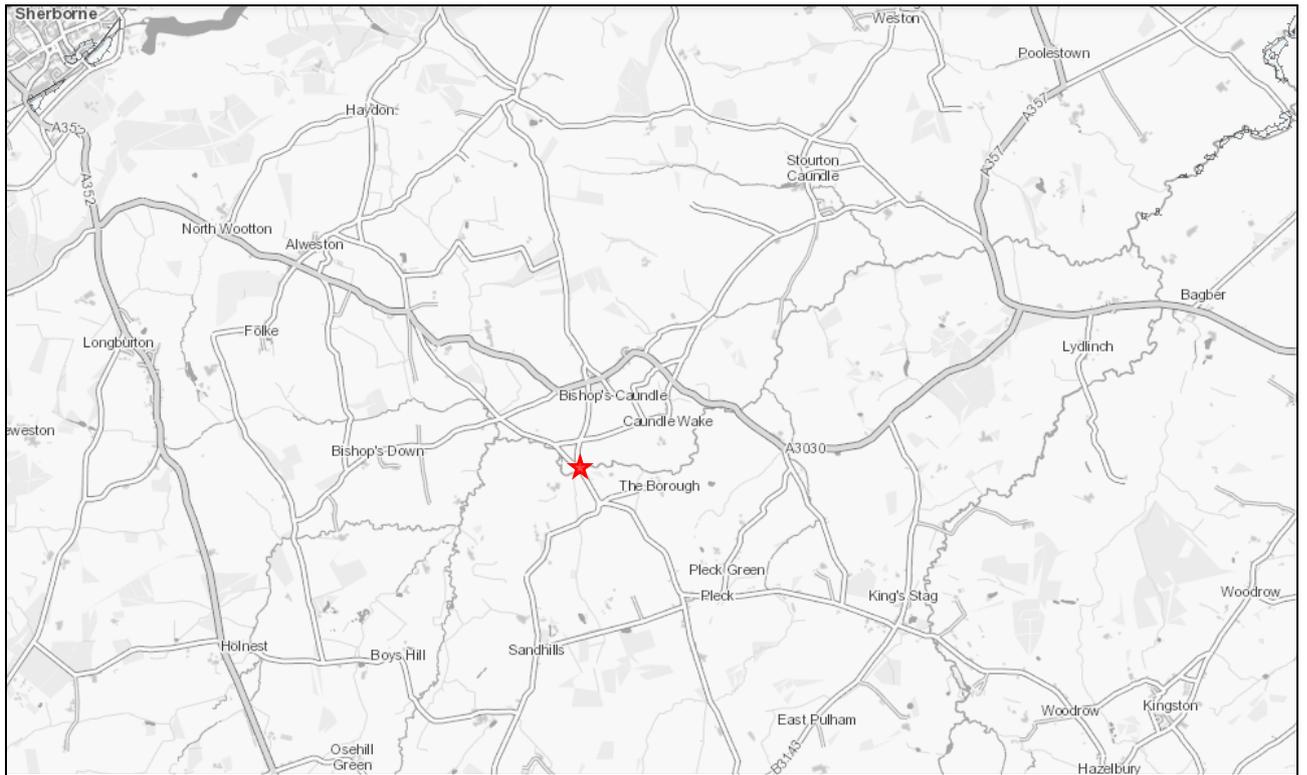


Figure AB.5A EA Risk of Flooding from Surface Water Depth, 1.0% AEP, Cornford Bridge, February 2023

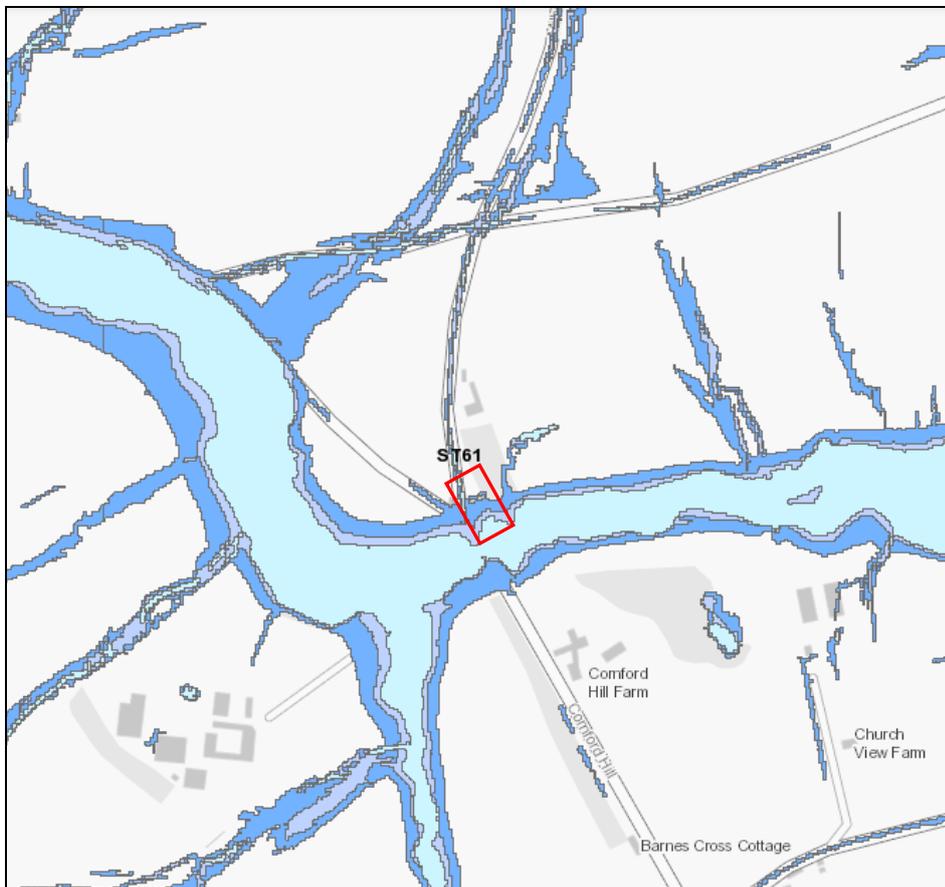
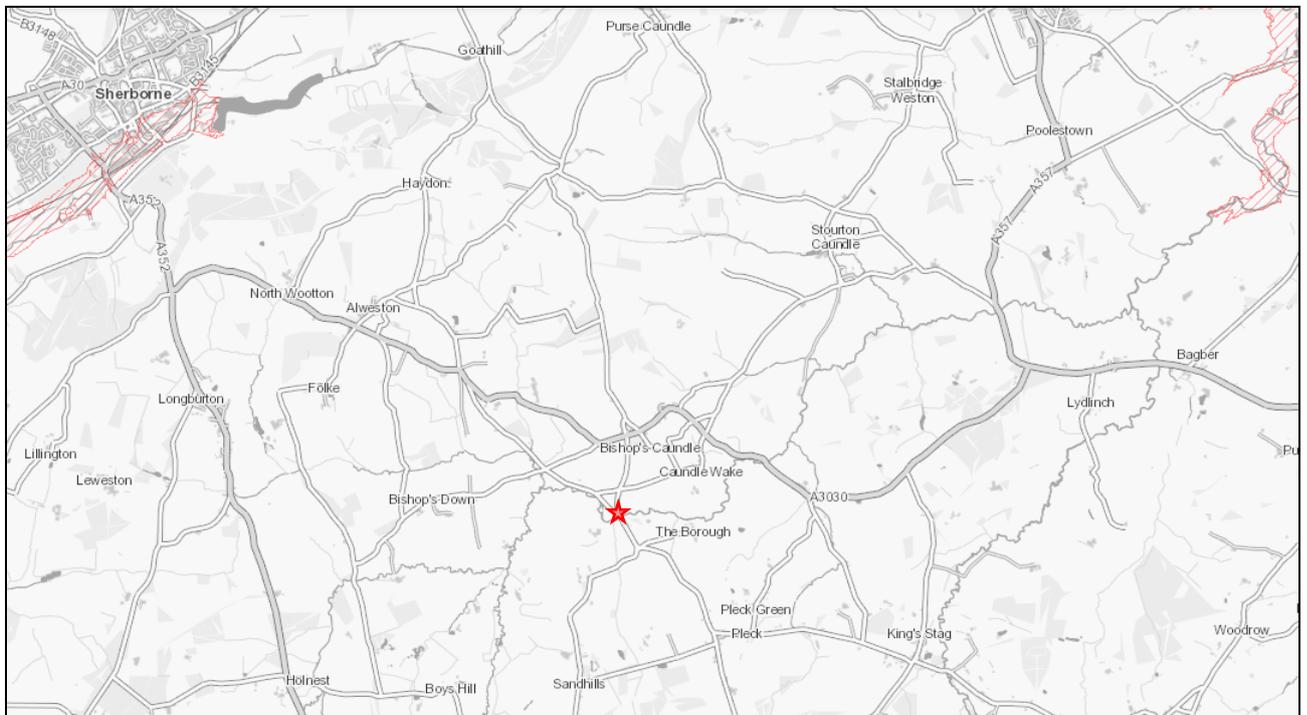


Figure AB.5B DCC Level 1 FRA, Map Set 2-#3, Surface Water Flood Risk, Cornford Bridge, Nov 2010



Figure AB.6 EA Reservoir Flood Extents (Wet-day), Holwell, February 2023



*Blank page*

Print double-sided to save paper

## **Harcombe Environmental Services Ltd**

*Flood risk, Drainage, Ecology, Contaminated land, Sewage treatment, Fly nuisance*