

Birch Tree Farm

Foul Sewage and Surface Water Drainage Assessment

September 2025





DOCUMENT CONTROL

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1 Introduction

1.1 Background

- 1.1.1 Pelham Transport Consulting have been commissioned by Mr & Mrs R Upton of Birch Tree Farm, Ansty to prepare a Foul Sewage and Surface Water Drainage Assessment for the proposed application for a 3 bedroom property at Birch Tree Farm in Ansty.
- 1.1.2 The assessment is in response to the comments received from Mid Sussex District Council (MSDC) as a requirement following the approval of the permission in principle application in July 2025.
- 1.1.3 The assessment has been prepared in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance 'Flood Risk and Coastal Change' the SuDs Design Guidance (Lead Local Flood Authorities of the South of England, 2013) and West Sussex LLFA Policy for the management of surface water (West Sussex County Council 2018).

1.2 Report Structure

- 1.2.1 The report has been prepared by Pelham Transport Consulting (PTC) and is structured as follows:
 - Chapter 2 Site Description
 - Chapter 3 Flood Risk Assessment
 - Chapter 4 Proposals
 - Chapter 5 Surface Water Drainage Strategy
 - Chapter 6 Foul Sewer Drainage Strategy
 - Chapter 7 Summary and Conclusions

2 Site Description

2.1 Site Location

2.1.1 The site is located in Ansty accessed by a private lane to the north of the former Ansty Cross public house off Cuckfield Road. The private lane leads to Birch Tree Farm which includes a single-storey dwelling, an agriculture barn and a recently constructed dwelling Meadow View. To the east is a caravan site, Birch Tree Farm is surrounded by ploughed fields to the north and east. A further residential build Wellingtonia Lodge lies to the south, the former Ansty public house is now a small housing development to the west with a petrol station and Isuzu car garage to the south-west.

2.1.2 A site location plan is shown on Figure 2.1 below.



Figure 2.1 Site Location (Google Maps)



2.2 Existing Topography and Water Courses

- 2.2.1 The site generally falls from a height of 78 AOD falling in a southerly direction. An ephemeral pond lies 110m to the south with 75 AOD with a gradual fall of 1:35-1:40. There are no other natural watercourses or drainage features in the vicinity.

2.3 Existing Sewers/Drains

- 2.3.1 Southern Water (SW) sewer records show a 150mm Foul Sewer from a manhole Ref. No. 1303 at Birch Tree Farm Lane in a southerly direction behind the Cross Cottages and to a manhole Ref. No. 1205 behind the Shell petrol station.
- 2.3.2 A private 100mm foul sewer connects to the SW sewer from Birch Tree Farm and Wellingtonia Lodge. A branch connects from south of The Barn that provides a sluice for the caravan site. A recent connection from Meadow View includes a pumped system due to the upward gradient. The private foul sewer connects across Isuzu car garage to the SW foul sewer north of the Shell petrol station
- 2.3.3 A surface water drain connects The Barn to an ephemeral pond to the south of Birch Tree Farm.
- 2.3.4 An existing drainage layout plan is shown below on Figure 2.2.

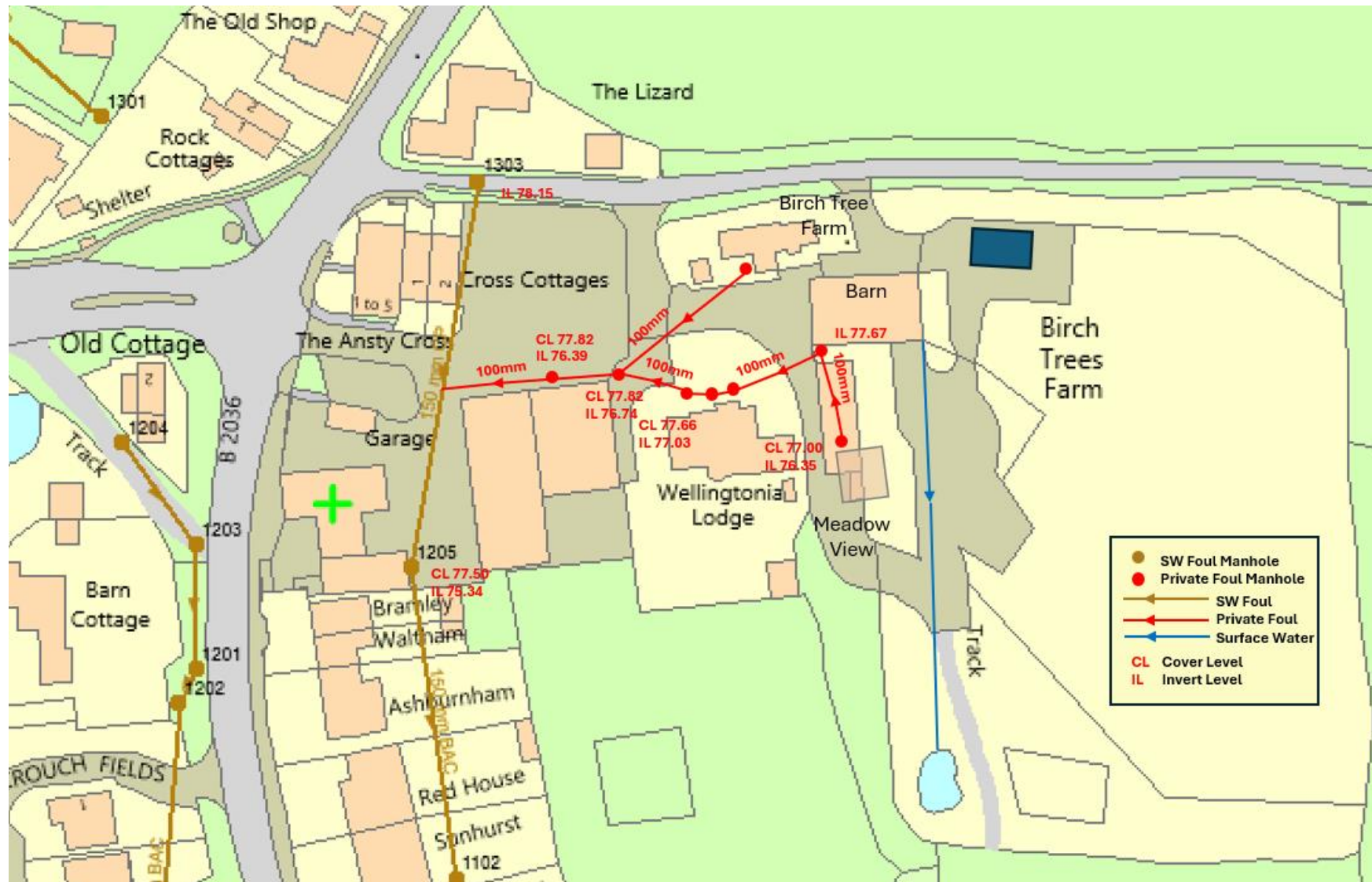


Figure 2.2 Existing Foul Sewer and Surface Water Drainage

3 Flood Risk Assessment

3.1 Introduction

3.1.1 The National Planning Policy Framework gives guidance on Flood Risk as follows.

- “areas at risk of flooding” means land within Flood Zones 2 and 3; or land within Flood Zone 1 which has critical drainage problems and which has been notified to the local planning authority by the Environment Agency;
- “flood risk” means risk from all sources of flooding - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

3.1.2 Properly prepared assessments of flood risk will inform the decision-making process at all stages of development planning. A Strategic Flood Risk Assessment is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future, taking account of the impacts of climate change, and to assess the impact that changes or development in the area will have on flood risk. It may also identify, particularly at more local levels, how to manage those changes to ensure that flood risk is not increased. A site-specific flood risk assessment is carried out by, or on behalf of, a developer to assess the risk to a development site and demonstrate how flood risk from all sources of flooding to the development itself and flood risk to others will be managed now, and taking climate change into account. There should be iteration between the different levels of flood risk assessment.

3.2 Flood Risk from Watercourses

3.2.1 The Environment Agency (EA) flood plain map shows that the site is within Flood Zone 1 and has low probability of flooding. This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding and is shown on Figure 3.1(a). below. Figure 3.1(b) shows areas in Flood Zone 2 and 3 to the north from stream leading to Mackerels Farm Mill Pond approximately 590m north of the site and woodland 430m to the south.

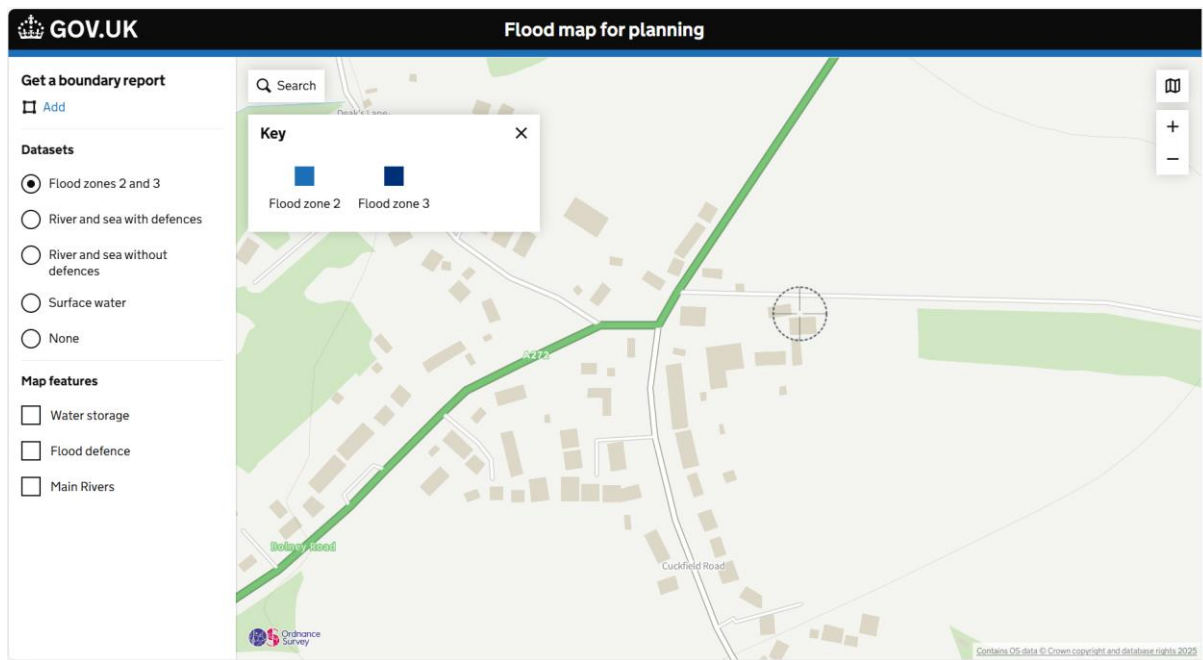


Figure 3.1(a) Flood Zone

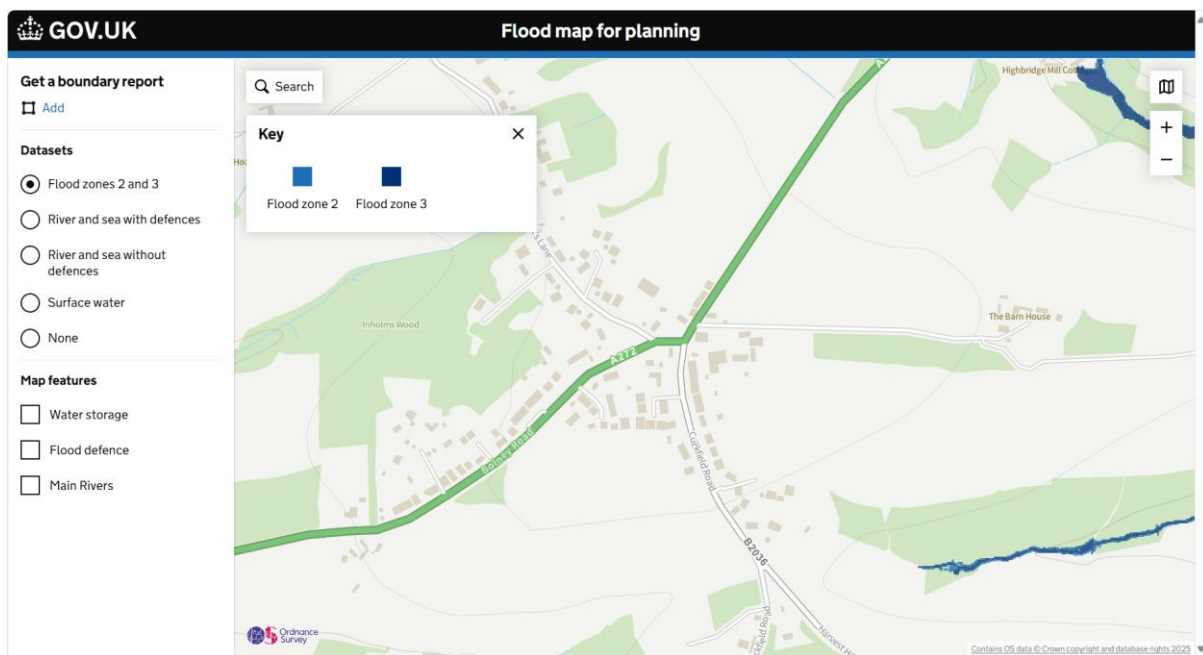


Figure 3.1(b) Flood Zone

3.3 Flood Risk from Surface Water

- 3.3.1 Surface water flooding occurs when rainfall is unable to infiltrate into the ground. Figure 3.2 shows that the site is at Low risk of surface water flooding for 1 in 30 and Figure 3.3 shows 1 in 100 years.
- 3.3.2 For 1 in 1000 year flood there is a risk to the west around the existing Birch Tree Farm single-storey dwelling shown in Figure 3.4. Chances of flooding to 20cm, 30cm and 60cm are Very Low for present day and 2040-2060.

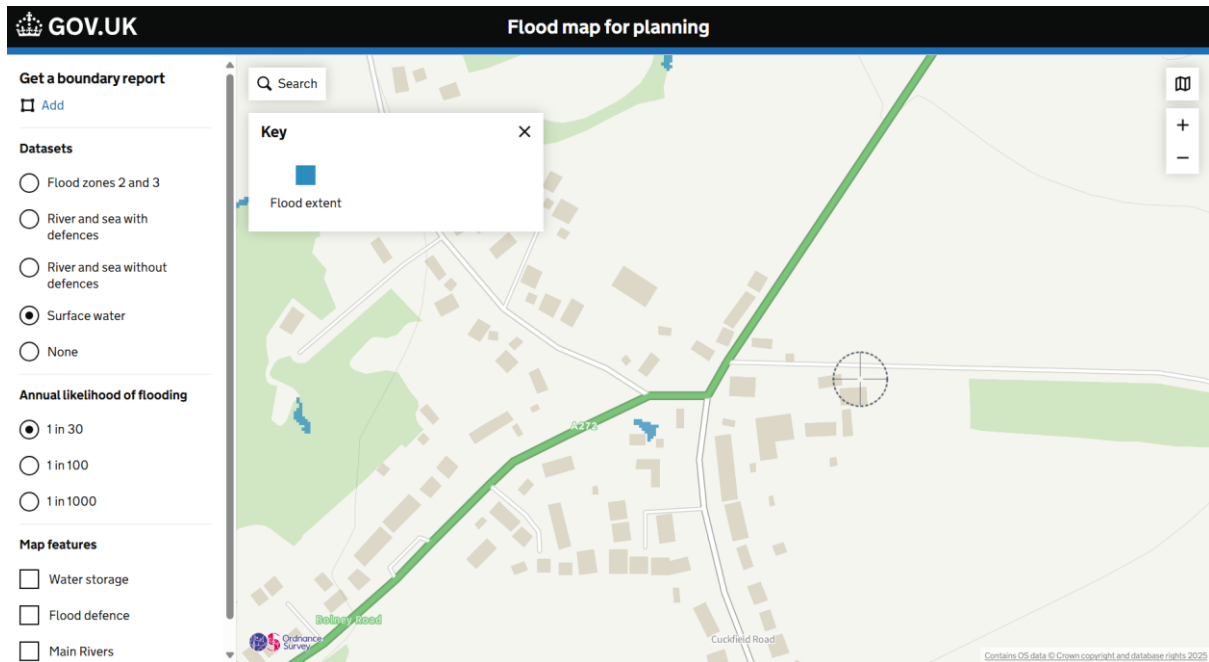


Figure 3.2 Surface Water 1 in 30 year Risk

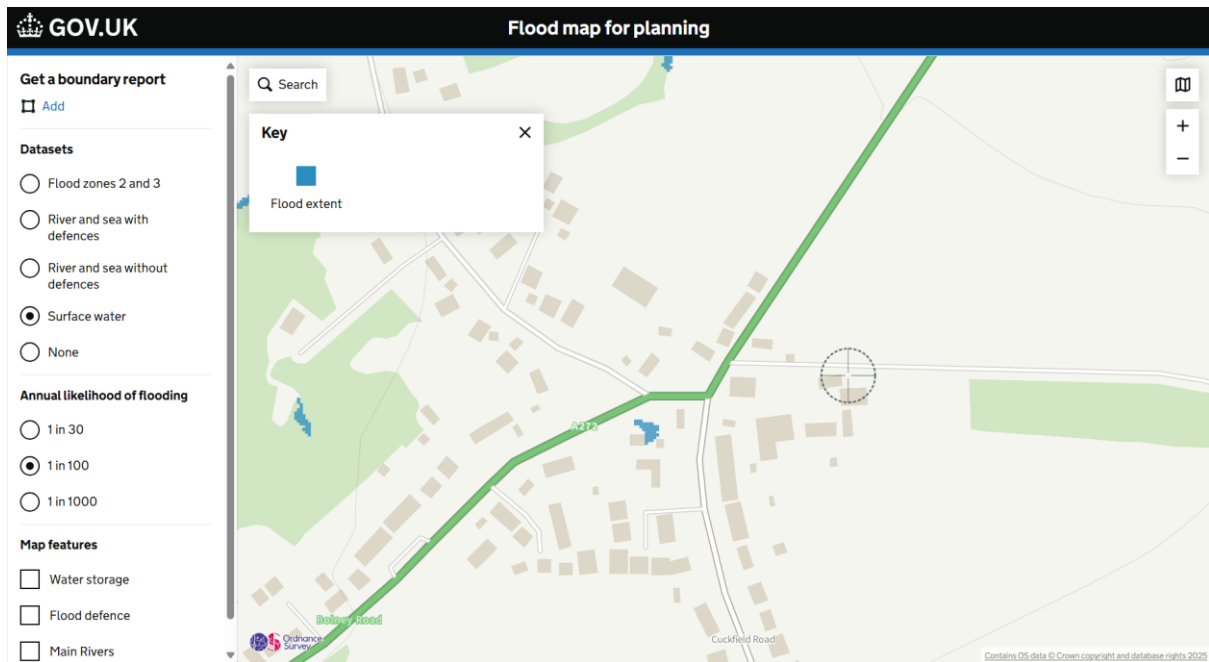


Figure 3.3 Surface Water 1 in 100 year Risk

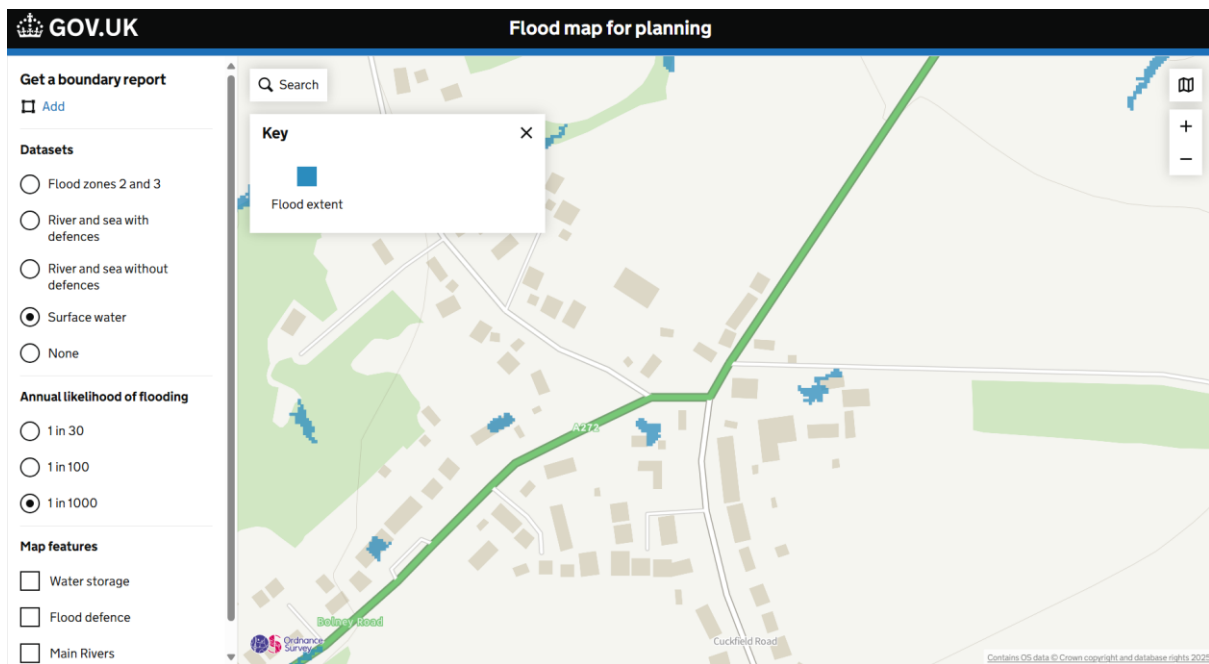


Figure 3.4 Surface Water 1 in 1000 year Risk

3.4 Risk from Rivers and Sea

3.4.1 Figure 3.5 below shows no risk of flooding from rivers and sea at the site.

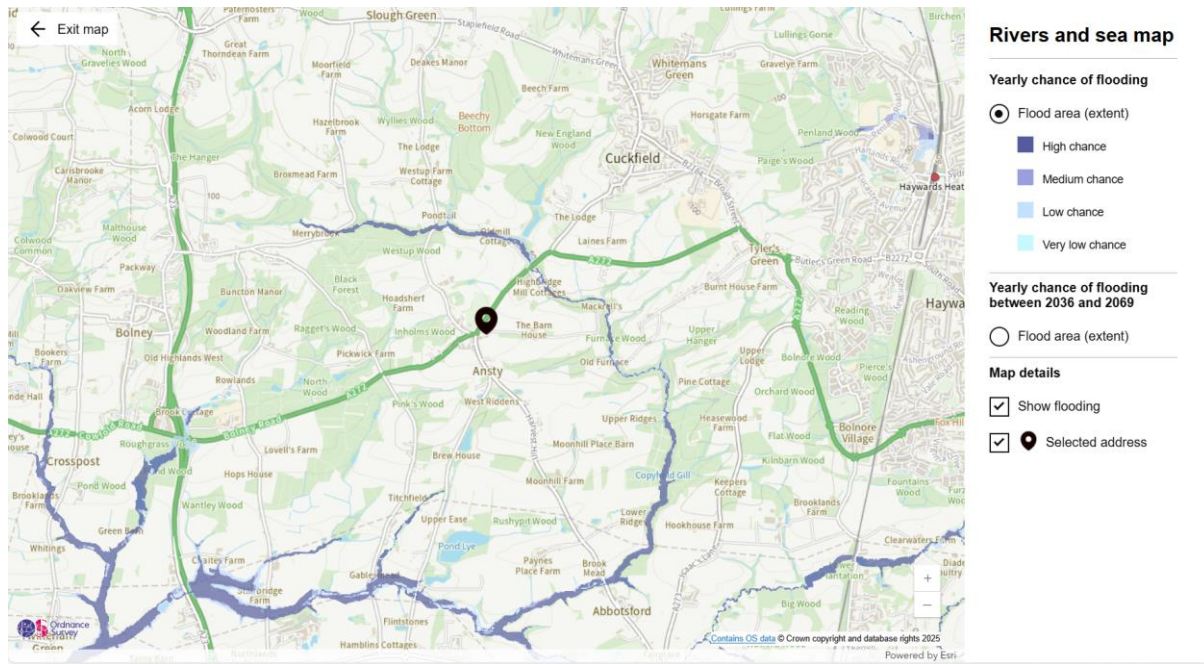


Figure 3.5 Rivers and Sea

3.5 Flood Risk from Groundwater

3.5.1 The BGS Hydrogeology map is shown on Figure 3.6 below and shows moderate productive aquifers with spring lines and perched aquifers common. The type of soil is a factor in determining the percolation of rainfall between gaps in soil to aquifers running to water courses. The site is Sandstone of the Ashdown Formation and Wadhurst Clay. Borehole testing shows Silty Clay in the vicinity of the property at the south known as Meadow View. There has been no reports of any groundwater flooding by the owner.

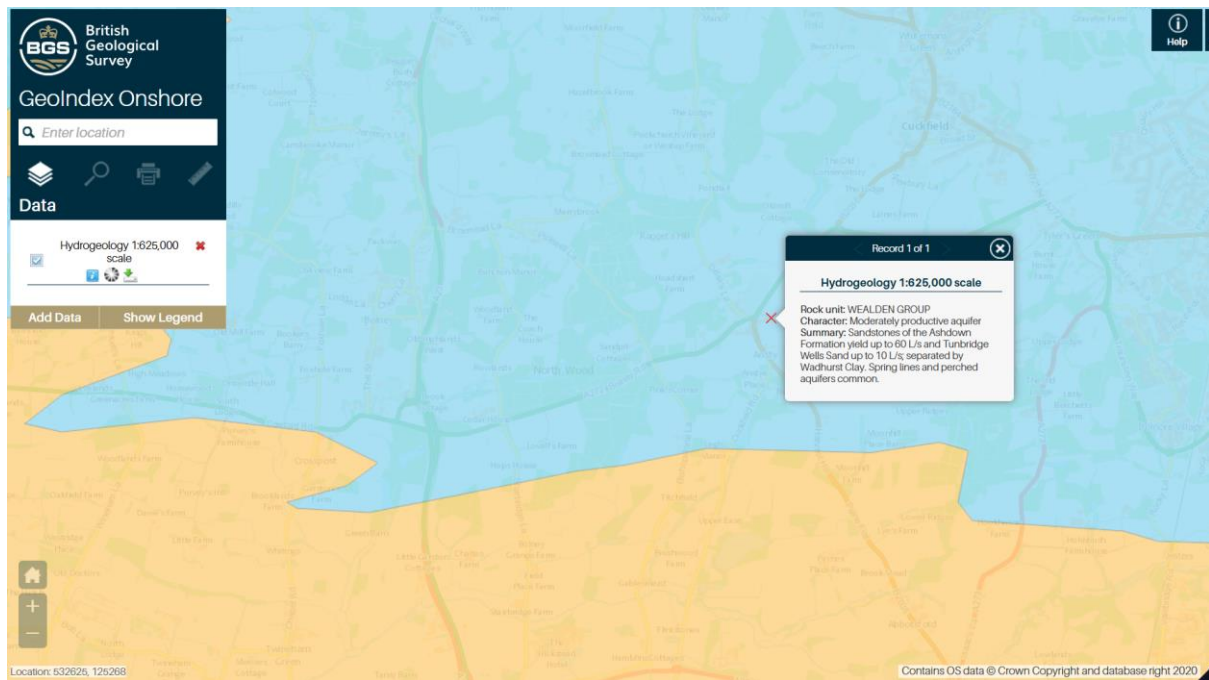


Figure 3.6 Hydrogeology Map

3.6 Historic Flooding

- 3.6.1 Records of historic flooding in West Sussex are included in The West Sussex County Council Report on June 2012 Flood Event (November 2012). The summer of 2012 saw unprecedented weather conditions with flooding experienced in many parts of the country. West Sussex recorded some of the highest rainfall with 192% above average for April to September and 400% for June in the Bognor to Chichester area. The report focuses on the events of 10th to 12th June 2012 which recorded storm frequencies of 1 in 200+ years.
- 3.6.2 The worst flooding and properties flooded were in areas of Littlehampton, Bognor Regis and Chichester with over 100mm of rainfall. Figure 3.7 below shows contours of rainfall coverage and properties affected. For site location at Ansty this received rainfall of 40-59mm. The report lists properties affected in detail and shows that the nearest property affected to the site was on Warninglid Road in Staplefield.

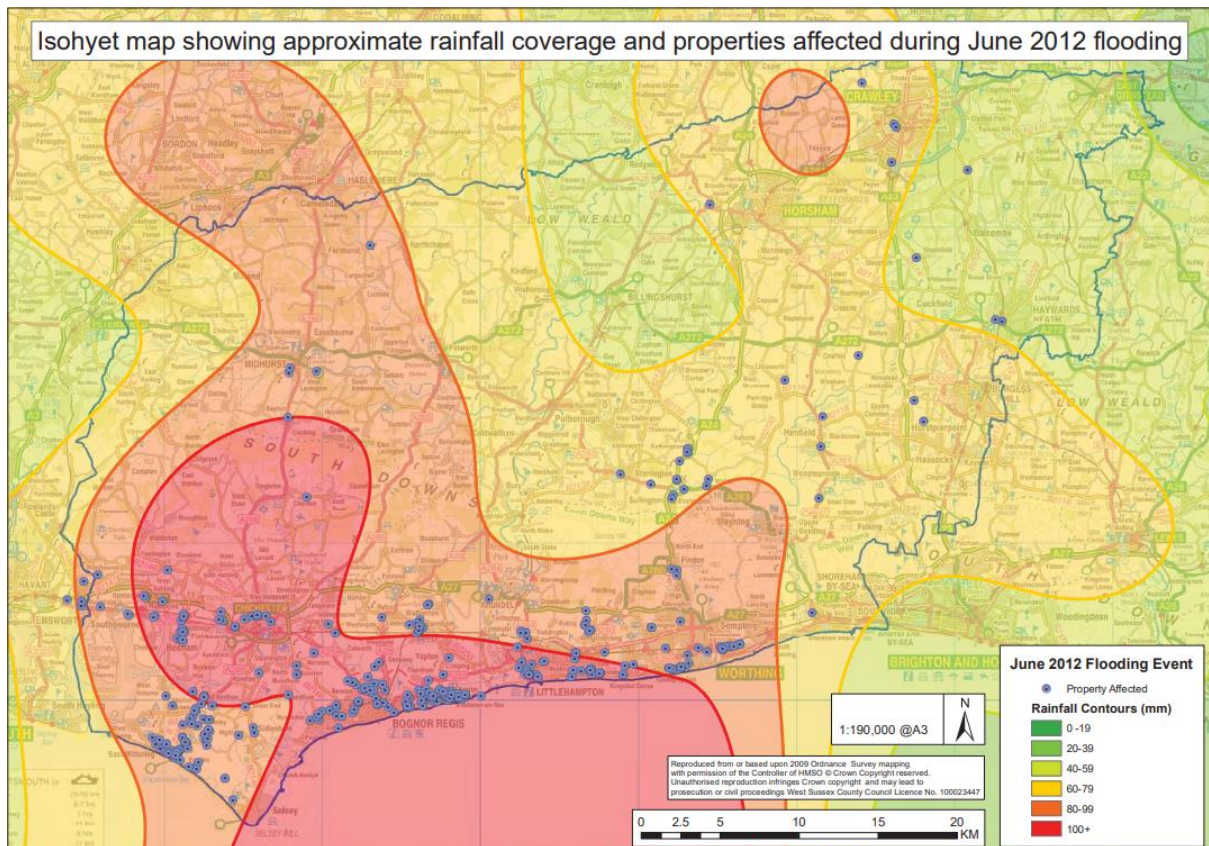


Figure 3.7 West Sussex June 2012 Flooding Event

- 3.6.3 Mid Sussex Strategic Flood Risk Assessment (SFRA) 2015 states that generally Mid Sussex is an area of low flood risk however there are areas affected by specific issues and careful management is necessary to ensure flood risk is not increased now or in the future. Analysis undertaken for the West Sussex Local Flood Risk Management Strategy identifies 'wet spots' where a limited number of properties are considered to be at risk. These are Burgess Hill, East Grinstead, Haywards Heath/Lindfield and Sayers Common (mostly surface water flood risk) and Copthorne and Hassocks (both surface water and fluvial flood risk). There are no areas identified at risk from coastal and tidal flooding. Locations where mapping identifies large areas considered to be at high risk of surface water flooding are rural locations south of Staplefield and around Hickstead, Twineham and Twineham Green.
- 3.6.4 The majority of the district is considered to have medium potential for groundwater flooding however a small area within the South Downs National Park is considered to have high potential for flooding from this source.
- 3.6.5 Ansty is not identified as an area of flood risk in the SFRA. It states that the ground condition consists of sandstone with moderately drained soils on gentle slopes. Combined infiltration and attenuation facilities are likely to be most appropriate form of SuDS in the locality. Land in this location overlies a minor aquifer and therefore high groundwater vulnerability will need to be addressed in any SuDS drainage.
- 3.6.6 With climate change predicted to bring about an increase in rainfall intensity, there is the likelihood that there will be increases in surface water run-off and therefore drainage schemes will need to be designed taking climate change into account. The Environment Agency recommends a 5% increase in rainfall intensities by 2025, a 10% increase between 2025 and 2055, a 20% increase between 2055 and 2085 and a 30% increase between 2085 and 2115. There are many methods available to reduce the impact of runoff from development throughout Mid Sussex and the 'Water.People.Places.' document provides a guide. A case study showing the potential impact of climate change has been developed below for flow attenuation in the form of ponds.

3.7 Flooding Risk Summary

- 3.7.1 A summary of the Flood Risk is shown on Table 3.1 below. This would suggest that the site has a low risk of surface water flooding.

Critical Flood Information	
Topographic elevation at ground level	78 AOD falling in a southerly direction. 75 AOD at 110m with a gradual fall of 1:35-1:40.
Lowest Point of Electrical Risk (LPER)	No electrical connections on site
Flooding from watercourses	0.1% -1% (1 in 1000yr) flood
Flooding from rivers	None
Flooding from sea	None
Surface water flooding	0.1% -1% (1 in 1000yr) flood there is a risk to the west around the existing Birch Tree Farm single-storey dwelling
Flooding from groundwater	Infiltration tests to determine percolation
Flood protection to site	None

Table 3.1 Flood Risk Summary

4.1.1 The site proposals are shown on Figure 4.1 and 4.2 below and include the following as set out in the Planning Application:

-
- The image displays two architectural floor plans for a house. The left plan is the Ground Floor, measuring 90.2 sq.m. It includes a Lounge, Bedroom 1, Kitchen, Dining area, Hall, Shower, and Utility. The right plan is the First Floor, measuring 65.4 sq.m. It includes Bedroom 2, Bedroom 3, and a Shower. Both plans include dimensions, a north arrow, and a scale bar.
- Ground Floor Plan 90.2 sq.m. flr area**
- First Floor Plan 65.4 sq.m. floor area**

The site plan illustrates the proposed dwelling, which is 12.9 metres wide and 8 metres deep. The dwelling is situated on a gravel surface. To the left of the dwelling, there is a bin store and two cars parked. The site is bounded by a property boundary and a site boundary. Surrounding the site are areas of shrubbery and grass. A foul drainage system is shown, with a pump connected to the main sewer. A north arrow and a scale bar are provided for reference.

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5 Surface Water Drainage Strategy

5.1 Introduction

- 5.1.1 It is a requirement of the NPPF to ensure that surface water run-off from any proposed development has negligible consequence on downstream areas, either in terms of impact upon downstream sewer capacity or flood risk impacts due to discharge to a watercourse. The existing and proposed surface water run-off regime is considered below.

5.2 Existing Site Drainage

- 5.2.1 The existing site is laid gravel permeable surface and there is no existing drainage system in place. It is assumed that runoff drains naturally via infiltration.
- 5.2.2 A surface water drain connects The Barn to an ephemeral pond to the south of Birch Tree Farm.

5.3 Surface Water Drainage Proposal

- 5.3.1 Based on the Block Plan shown in Section 4 above the proposal will comprise 103.2 m² impermeable area in the form of additional roof area. The current gravel surface that is existing on the site is a permeable surface and is often specified in SuDS scheme as a form of natural infiltration.
- 5.3.2 To reduce the impact of runoff from the development guidance has been used in 'Water.People.Places.' as recommended in Mid Sussex SFRA. The guidance outlines the process for integrating sustainable drainage systems (SuDS). Water.People.Places. The existing runoff from the other buildings around the site is via a pipe leading to an ephemeral pond to the south of Birch Tree Farm. For a cost-effective approach it is proposed to use this as part of the proposed solution. At low rainfall the ephemeral pond slowly infiltrates into the soil but overfills to the surrounding woodland in winter months. The ephemeral pond is shallow with a maximum depth of 800mm.
- 5.3.3 In accordance with MSDC and Sewers for Adoption requirements surface water system is required to accommodate a 1 in 100 year storm plus 30% for climate change. To accurately determine any infiltration will require testing and this can be carried out during detail design intrusive testing or site construction.
- 5.3.4 In order to not disturb the natural morphology it is proposed to create a permanent pool. The existing ephemeral pond will act as attenuation and filter into the permanent pond at an upper level through reed bed. An example of this system is shown on Figure 5.1 below. Ponds for SuDS should be designed in accordance with Section 23 of the CIRIA SuDS Manual that states that ponds should be a minimum depth of 1.2m and a maximum of 2m.

- 5.3.5 A preliminary calculation with a rainfall intensity of 50mm with a runoff coefficient of 0.70 and impervious surface of 70% would require a pond of 4 cubic metre based on the rooftop area. To allow for a 1.5 factor of safety 30% climate change and additional overspill from existing use it is proposed to provide 15 cubic metre capacity pond. Space requirements with 1.5m depth pond will be 4m x 2.5m and is able to be accommodated within the allowable land.

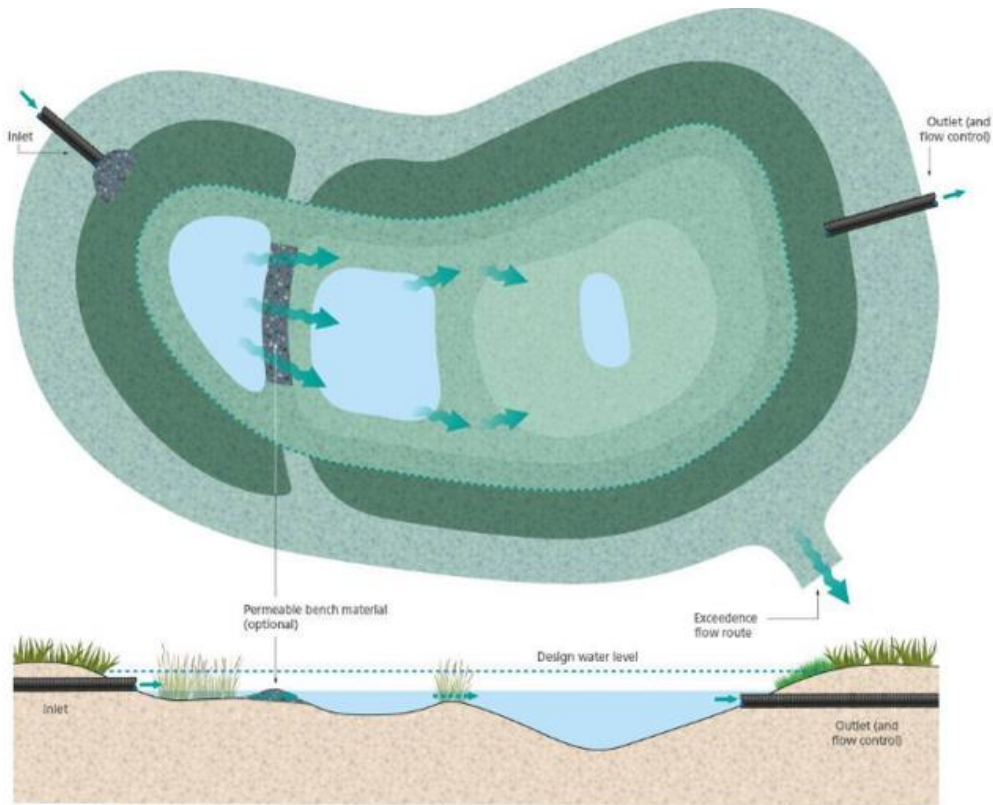


Figure 5.1 Plan view and profile of pond details

6 Foul Sewage Drainage Strategy

6.1 Introduction

- 6.1.1 This section sets out the proposed means of managing foul discharge from the development. Wherever feasible foul sewage should be discharges to the public foul sewer network so this can be treated and removed over any pollutants removing the need of any environmental permit.

6.2 Existing Site Drainage

- 6.2.1 There are no existing foul water drainage on the site. The nearest foul water supply are detailed in Section 2 and are shown on Figure 2.2.

6.3 Foul Water Drainage Proposals

- 6.3.1 It is proposed to connect to the existing Foul Water network through a series of manholes and pump to the existing lateral drain between The Barn and Wellingtonia Lodge. A proposed layout is shown on Figure 6.1 below.
- 6.3.2 In accordance with Sewers for Adoption and BS 752-4 the Domestic Flow Rate is calculated at 100-300 litres/occupant/day with an average DFR of 225 l/p/d. The Domestic Peak Design Flow Rate is 6 x DFR. For the proposed 3 bedroom dwelling the max occupants is 6 persons. The calculated Domestic Peak Design Flow Rate is 0.09375 l/s. Using a roughness k Value 1.5mm and pipes run at 75% full a 100mm lateral is adequate to cope with the expecting flow from the dwelling.
- 6.3.3 Survey spot levels and confirmation on existing manhole and lateral connections will be required at detail design. The Finished Floor Level (FFL) will confirm the location and design of pipeworks connecting to laterals and the cover and invert levels of required manholes. Based on Sewer for Adoption standards cover will be provided at 350mm for non vehicular areas and 900mm on carriageway and a gradient not more than 1:80. Due to the topography of the site and the depth of known lateral connections a rising main/pump is likely to be required. A pump will be designed in accordance with the requirements set out in Sewers for Adoption Type 1 - Having an incoming peak design flow rate of ≤ 0.25 litres per second (typically five dwellings or less). Standard details of Manhole and Pump are shown on Figure 6.2 and 6.3 below.

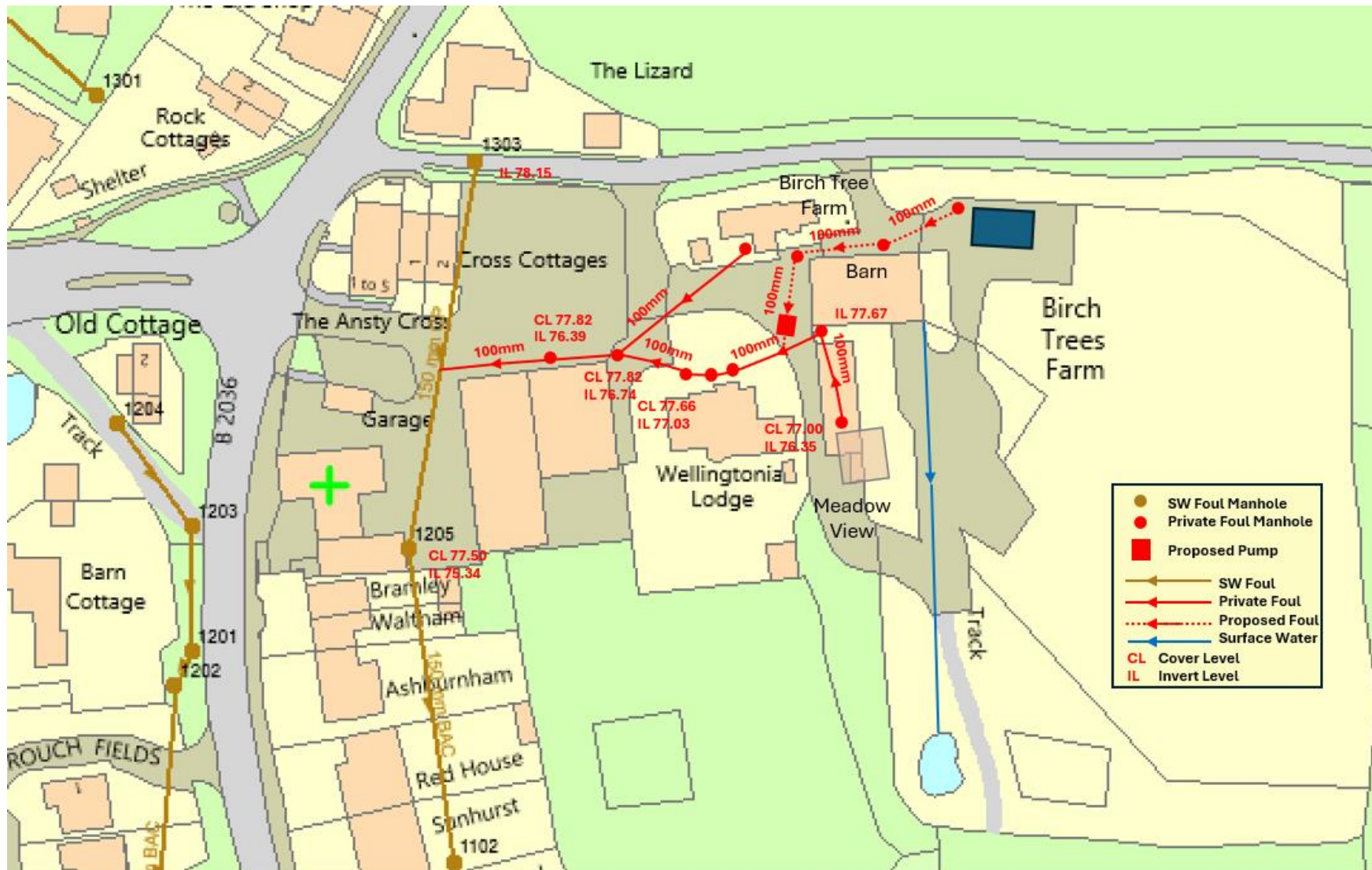
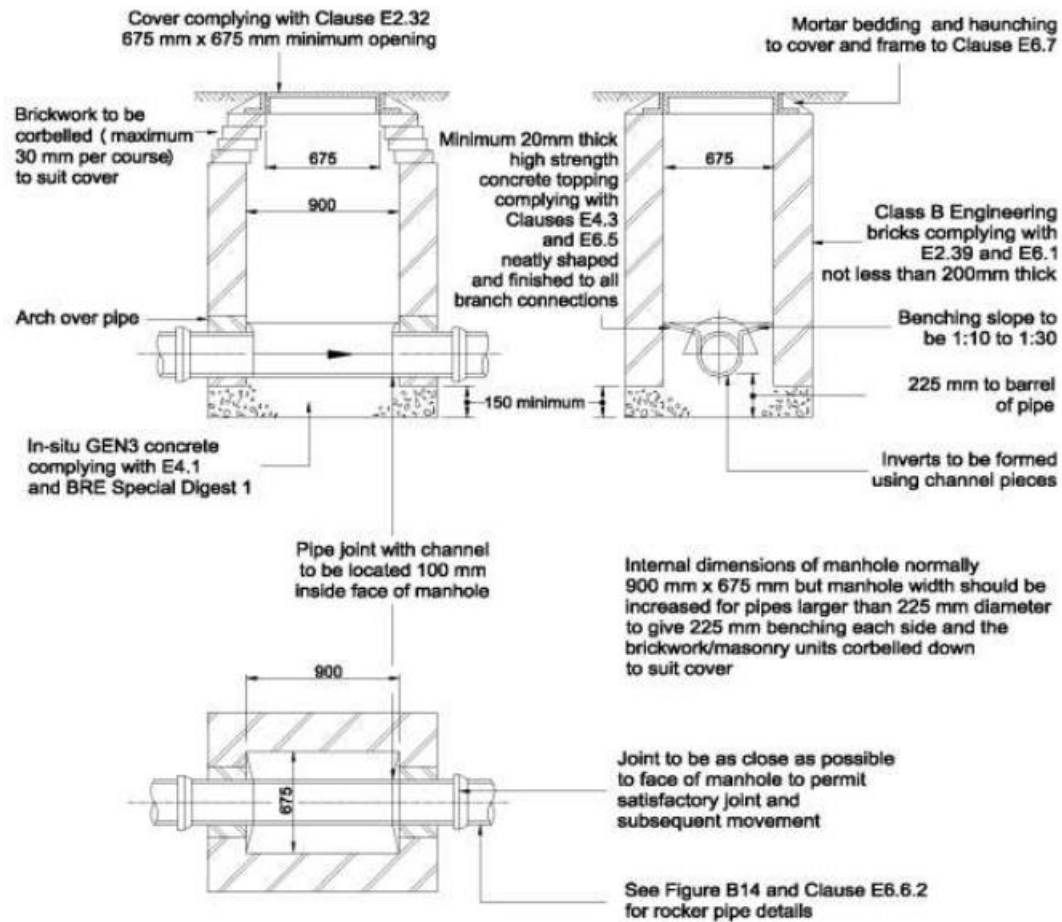


Figure 6.1 Existing and Proposed Foul Drainage Layout

FIGURE B16
TYPICAL MANHOLE DETAIL – TYPE D
Depth from cover level to soffit of pipe less than 1.0m

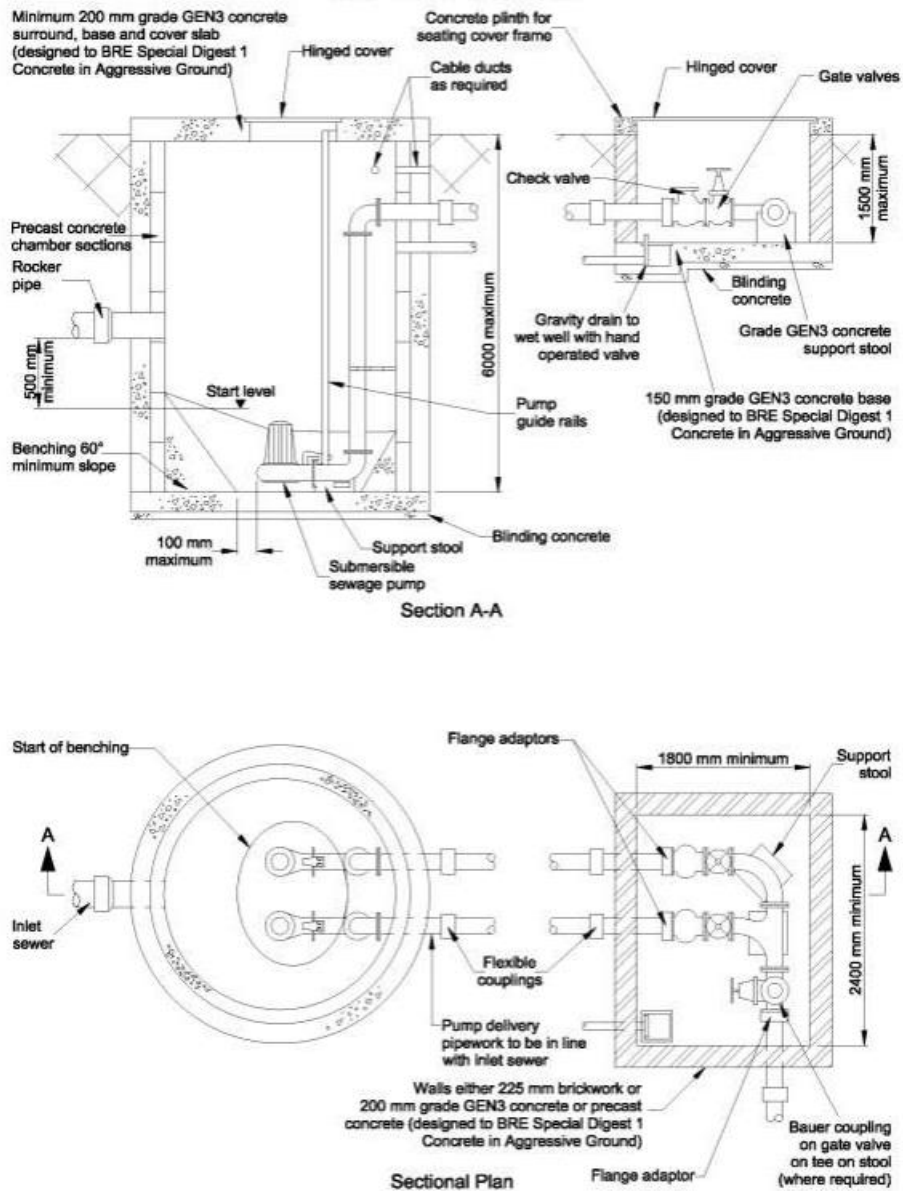


Note: The use of precast concrete chamber units to E2.29 with 150 mm GEN3 in-situ concrete surround complying with E4.1 and BRE Special Digest 1 in place of brickwork construction is permitted.

Not to scale, dimensions in millimetres
The design of manholes will need to comply with the Undertaker's safety policy.

Figure 6.2 Typical Manhole Detail

**FIGURE D4
TYPICAL ARRANGEMENT OF A WET WELL SUBMERSIBLE PUMPING STATION
AND VALVE CHAMBER**



Not to scale, dimensions in millimetres

Figure 6.3 Typical Pump Detail

7 Summary and Conclusion

- 7.1.1 This report has reviewed the existing foul and surface water connections surrounding the site and the public foul water records from Southern Water.
- 7.1.2 The report has assessed the flood risk associated with the proposed residential development at Birch Tree Farm in Ansty. A summary of the findings is on Table 7.1 below as low risk.

Critical Flood Information	
Topographic elevation at ground level	78 AOD falling in a southerly direction. 75 AOD at 110m with a gradual fall of 1:35-1:40.
Lowest Point of Electrical Risk (LPER)	No electrical connections on site
Flooding from watercourses	0.1% -1% (1 in 1000yr) flood
Flooding from rivers	None
Flooding from sea	None
Surface water flooding	0.1% -1% (1 in 1000yr) flood there is a risk to the west around the existing Birch Tree Farm single-storey dwelling
Flooding from groundwater	Infiltration tests to determine percolation
Flood protection to site	None

- 7.1.3 The surface water strategy is to utilise the existing ephemeral pond to the south of the site and provide an additional permanent pond to cater for the additional attenuation for the site and remove any pollutants through reed beds and is in accordance with SuDS requirements.
- 7.1.4 The foul sewer strategy is to connect to the existing Southern Water foul sewer network via the existing private sewer connection between The Barn and Wellingtonia Lodge and is in accordance with Sewers for Adoption requirements.
- 7.1.5 During the detail design process filtration testing can be carried out to confirm the ground water flood risk and a level survey and drainage survey so that foul drainage laterals and manhole connection can be confirmed.
- 7.1.6 The review, assessment and proposed strategy will inform the planning authority that the development proposals are low risk in regard of potential flooding and that adequate measures for surface water and foul drainage will be in place to approve the planning application.