Flood Risk Assessment for Planning

Prepared for:
Jane Bray

Location:
Land adjacent to Braeside House
49 Bishopstoke Road
Bishopstoke, Hampshire
S050 6BF

August 2022

Our reference:
91927-ABPlanning-BraesideHs

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Contents

1. Key Facts 4
   1.1 Flood Risk Posed: 4
   1.2 Flood Risk Mitigation: 4
2. Introduction 5
3. Existing Situation 6
   3.1 Site Usage: 6
   3.2 Geography: 6
   3.3 Topography: 7
   3.4 Geology and Soil: 8
4. Development Proposal 11
5. Assessment of Flood Risk 12
   5.1 Flood Zones: 12
   5.2 Fluvial Itchen Navigation: 13
      5.2.2 Flood Storage Areas: 15
      5.2.4 Flood Defences: 15
      5.2.5 Residual risk (breach or overtopping of flood defences): 15
      5.2.6 Historical flood events: 15
   5.3 Pluvial (Surface Water): 16
   5.4 Groundwater: 17
   5.5 Sewer Surcharge: 17
   5.6 Other Sources: 17
6. Flood Risk Management 19
   6.1 Vulnerability to flooding: 19
   6.4 Safe Escape and Flood Action Plan: 20
   6.5 Flood Warning: 21
   6.6 Flood Plan: 22
   6.7 Off-Site Impacts: 23
      6.7.1 Fluvial floodplain storage: 23
      6.7.2 Surface Water Drainage: 24
7. Sequential and Exception Test 25
8. Discussion and Conclusions 26

Appendix 28

1. Key Facts

1.1 Flood Risk Posed:

- The site is situated partially within Flood Zones 1, 2 and 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea).
- Modelled flood levels and flood extents have been requested from the EA.
- The risk would appear to be predominantly fluvial. The proposed development site is located adjacent to the Itchen Navigation.
- The EA has provided no records of historic flooding at the site previously.
- The EA Risk of Flooding from Surface Water Map suggests that the site lies predominantly in an area of "Very Low" risk of flooding from surface water.

1.2 Flood Risk Mitigation:

- The NPPF requires the finished ground floor level to be raised to 300mm above the 1:100 year flood level plus 35% climate change allowance. As such, the finished ground floor level of the proposed house will be set at least 11.95mAOD.
- Flood proofing of the building will be incorporated as appropriate.
- A flood warning and evacuation plan will be implemented post development.
- The applicant will register with the free Environment Agency Floodline Alert Direct service.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

2. Introduction

Unda Consulting Limited have been appointed by Jane Bray (hereinafter referred to as "the applicant") to undertake a Flood Risk Assessment for the proposed development at Land adjacent to Braeside House, 49 Bishopstoke Road, Bishopstoke SO50 6BF hereinafter referred to as "the site"). The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The purpose of the study is to support a planning application for the proposed development.

The site appears to be located partially within Flood Zones 1, 2 and 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea). Under the National Planning Policy Framework (NPPF), a FRA is required if a proposed development:

- includes building or engineering works in Flood Zone 2 or 3;
- includes building or engineering works on land classified by the Environment Agency as having critical drainage problem;
- changes the use of land or buildings in a location at risk of flooding from rivers or the sea, or with critical drainage problems;
- changes the use of land or buildings in a way that increases the flood vulnerability of the development where it may be subject to other sources of flooding;
- is larger than 1 hectare.

The assessment should demonstrate to the Local Planning Authority (LPA) and EA how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its potential users.

- whether the proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate.

3. Existing Situation

3.1 Site Usage:

The proposed application is for the Construction of a single new dwelling.

The existing site is occupied by a garage and residential gardens.

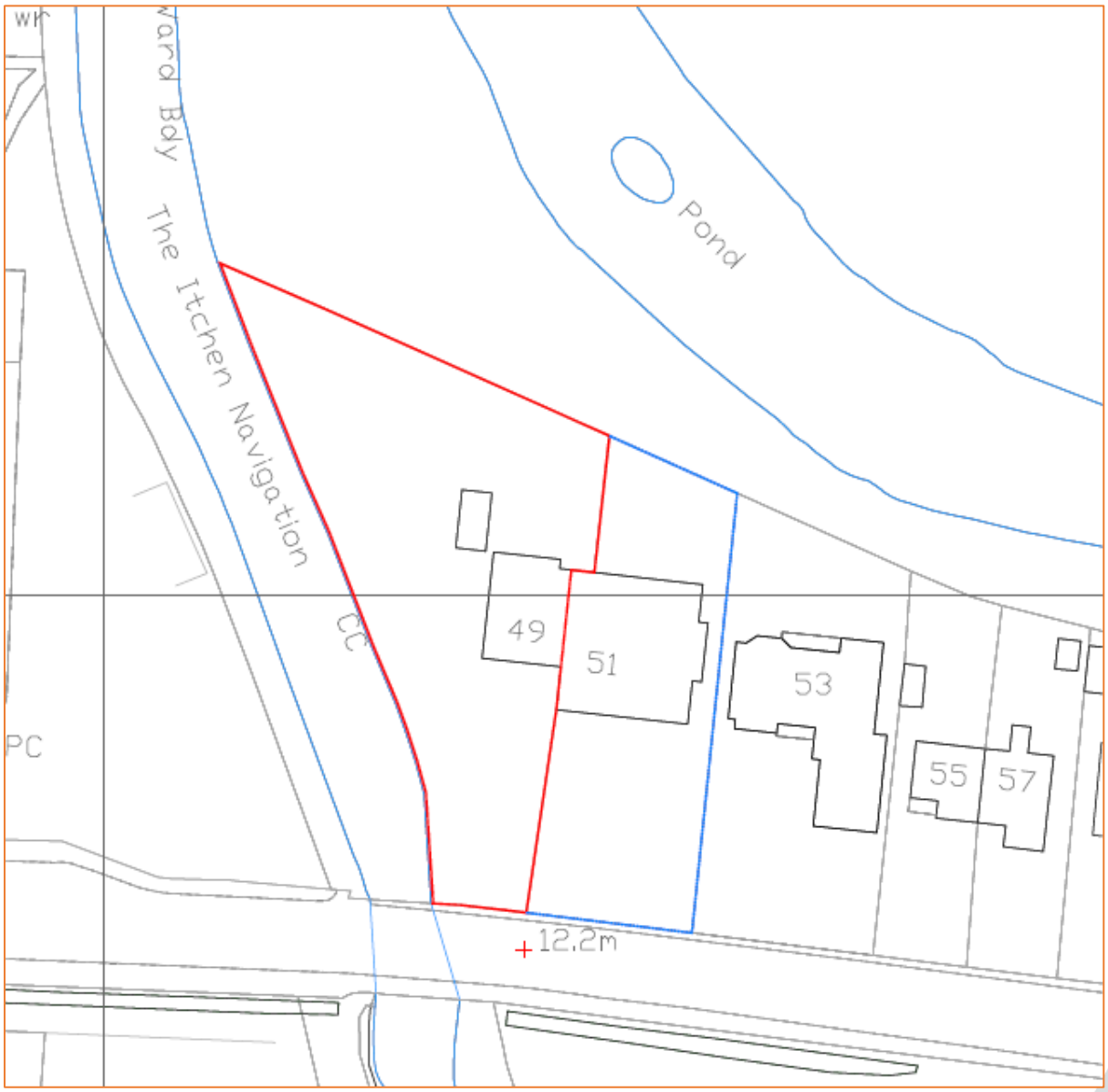

Figure 1: Site Location Plan (Source: Temple Ford Design Ltd)

3.2 Geography:

The proposed development site is located to the east of The Itchen Navigation.

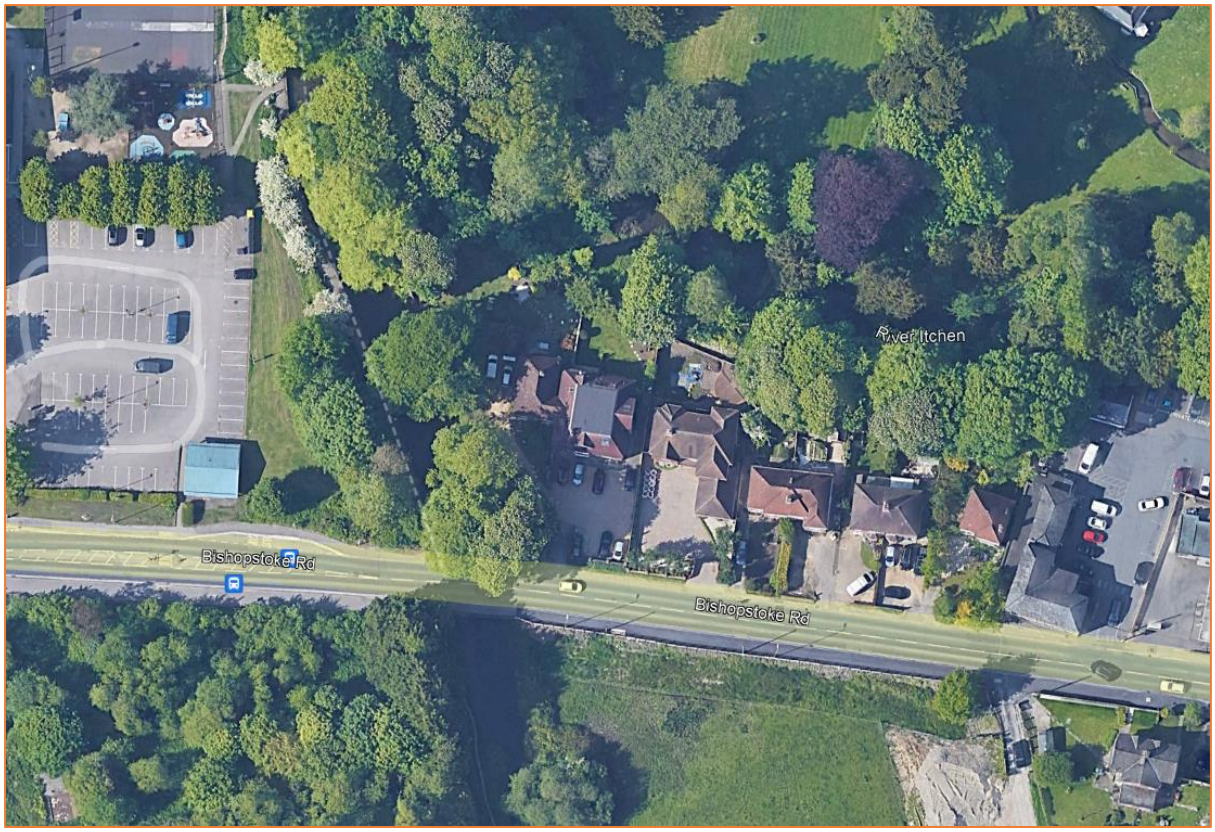

Figure 2: Aerial photograph of site and surrounding area (Source: Google Earth)

3.3 Topography:

Environment Agency LiDAR has been used to assess the topography across the site and wider area. Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground surface. Up to 100,000 measurements per second are made of the ground, allowing highly detailed terrain models to be generated at high spatial resolutions. The EA's LIDAR data archive contains digital elevation data derived from surveys carried out by the EA's specialist remote sensing team. Accurate elevation data is available for over 70% of England. The LiDAR technique records an elevation accurate to +0.3m every 2m. This dataset is derived from a combination of the full dataset which has been merged and re-sampled to give the best possible coverage. The dataset can be supplied as a Digital Surface Model (DSM) produced from the signal returned to the LIDAR (which includes heights of objects, such as vehicles, buildings and vegetation, as well as the terrain surface) or as a Digital Terrain Model (DTM) produced by removing objects from the Digital Surface Model. 1.0m horizontal resolution DTM LiDAR data has been used for the purposes of this study.

Topographic site levels are shown to range between approximately 11.90mAOD to 12.50mAOD.

A topographical site survey has also been provided, which shows site levels in the area of the existing garage and proposed new house range between 12.26mAOD and 12.37mAOD.

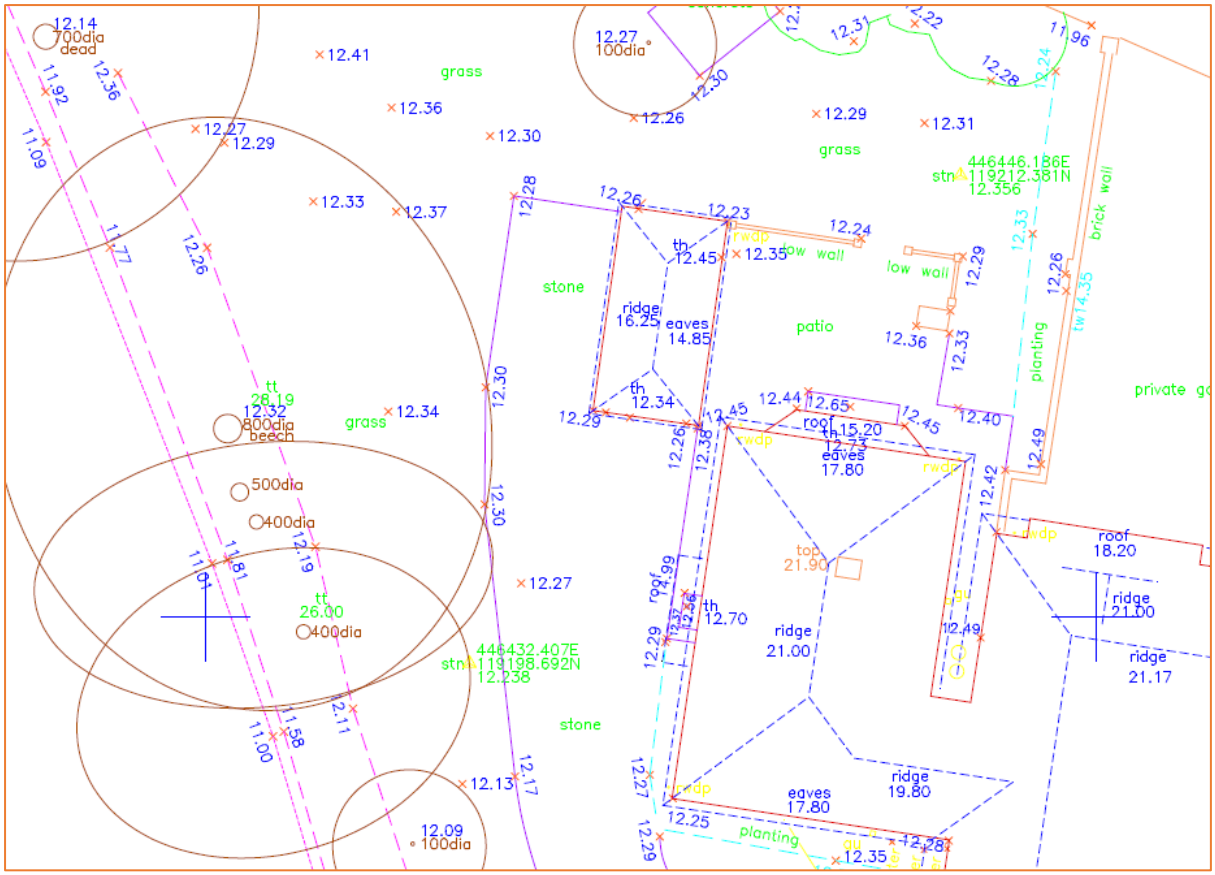

Figure 3: Extract from topographic site survey (Source: P Stubbington Land Surveys Ltd)

3.4 Geology and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site is Whitecliff Sand Member – Sand, and London Clay Formation – Clay, Silt and Sand.

The British Geological Survey (BGS) Map indicates the superficial deposits underlying the site are Alluvium – Clay, Silt, Sand and Gravel.

Data taken from the UK Soil Observatory website shows relatively deep soils from Riverine Clay, Sands and Gravels soil parent material. The soil texture is shown to be clay to sandy loam.

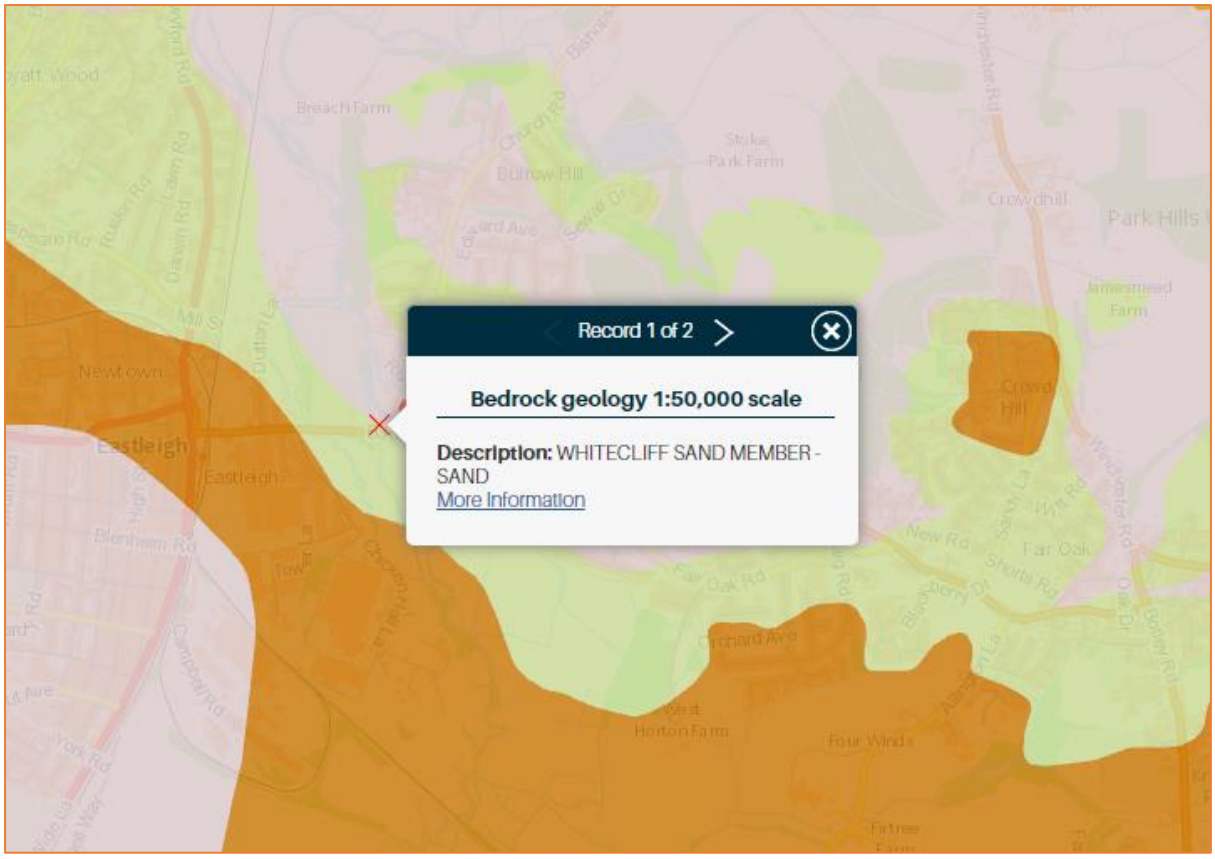

Figure 4: Local bedrock geology (Source: BGS)

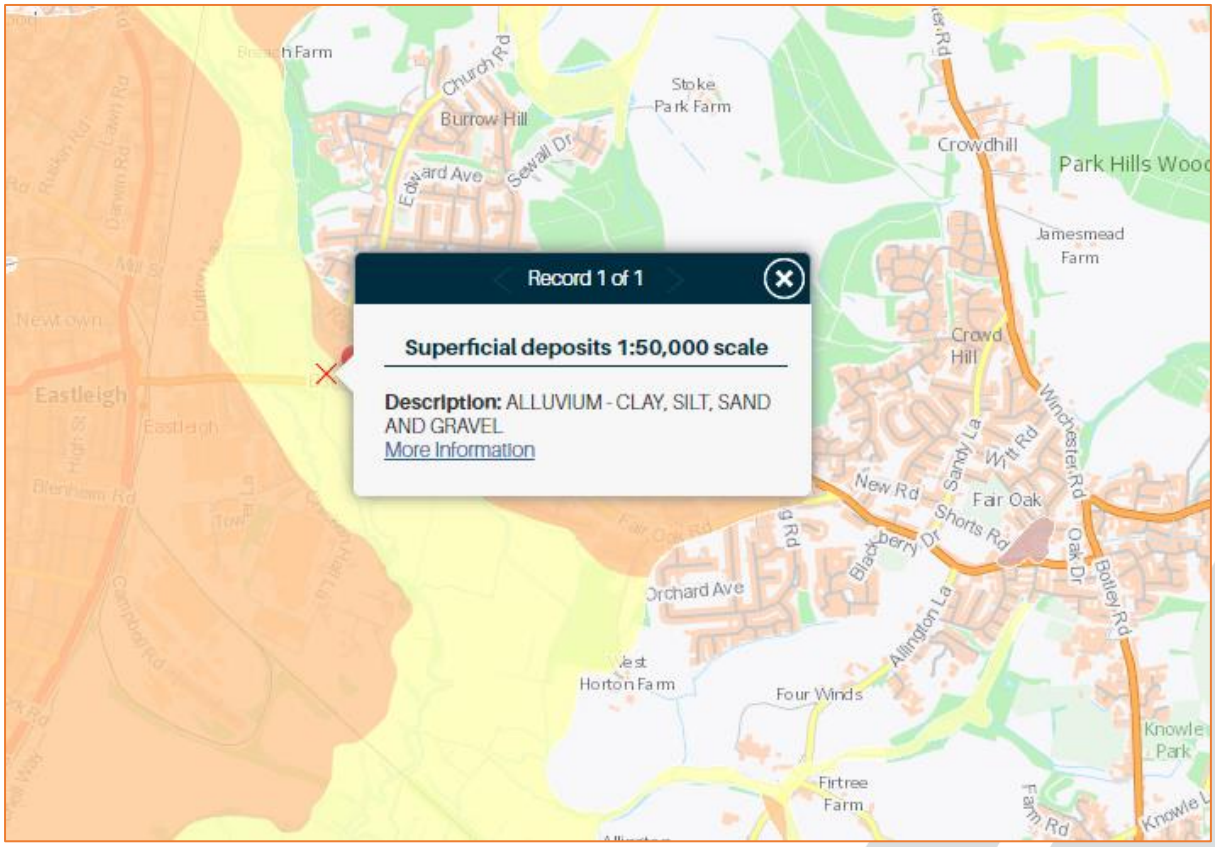

Figure 5: Superficial deposits geology (Source: BGS)

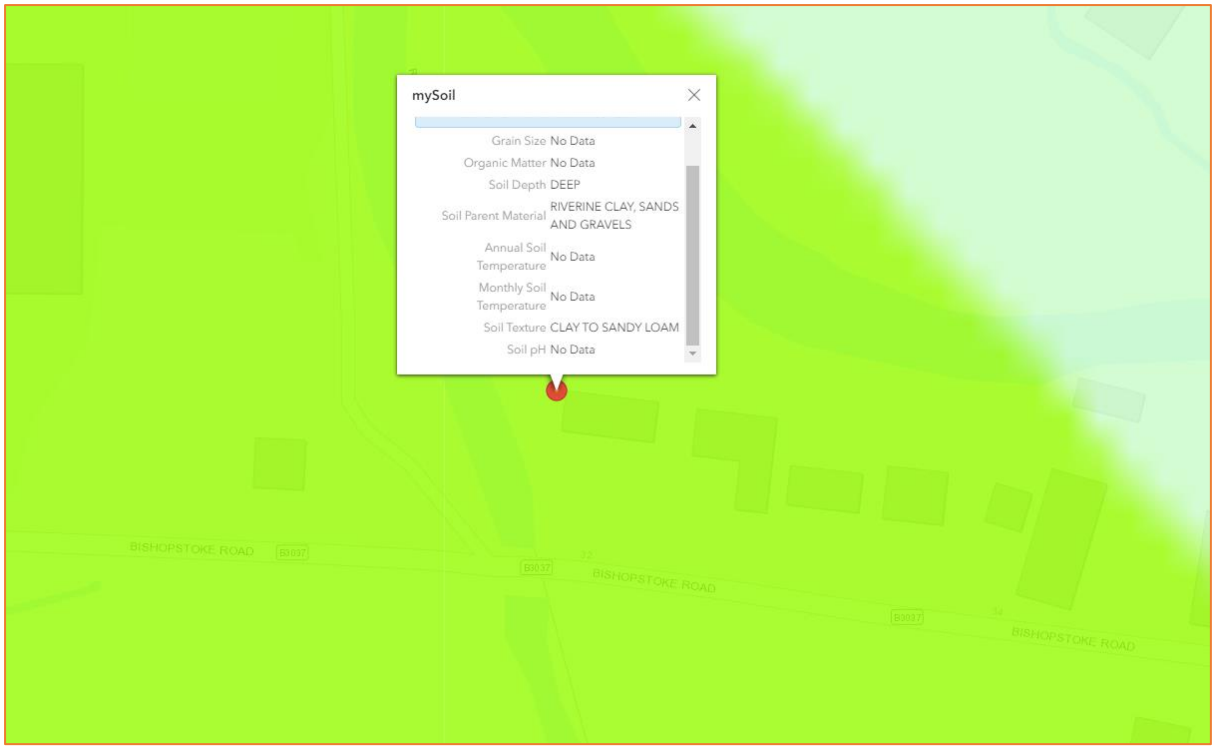

Figure 6: Local soil types (Source: UKSO)

4. Development Proposal

The proposed application is for the Construction of a single new dwelling.

Proposed plans can be found in the report Appendix.

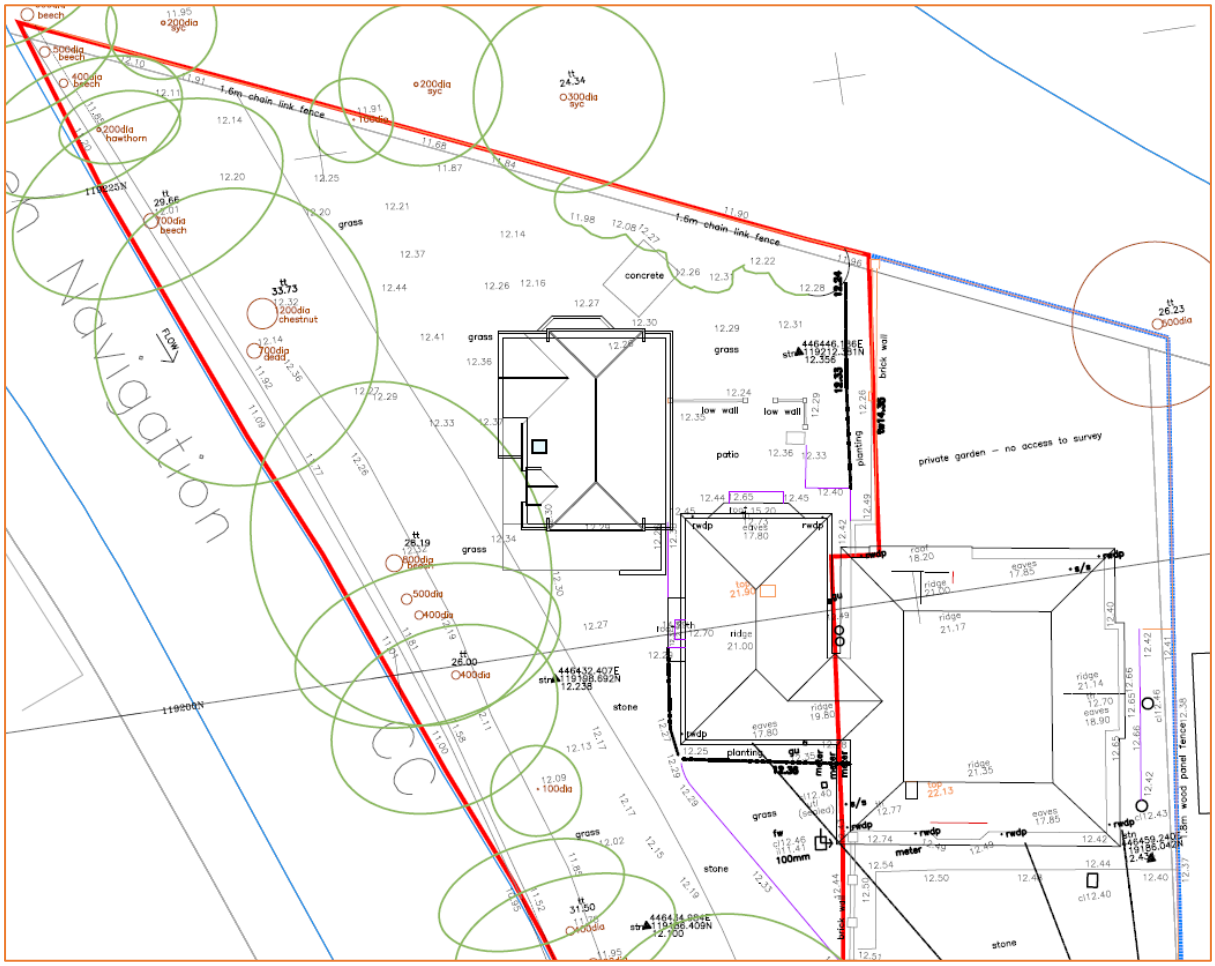

Figure 7: Proposed Block Plan (Source: Temple Ford Design Ltd)

5. Assessment of Flood Risk

5.1 Flood Zones:

Within planning, Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea), available on the Environment Agency's website.

Flood Zone	Definition
Zone 1 **Low Probability**	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 **Medium Probability**	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a **High Probability**	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b **The Functional Floodplain**	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 1: Flood Zones

The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

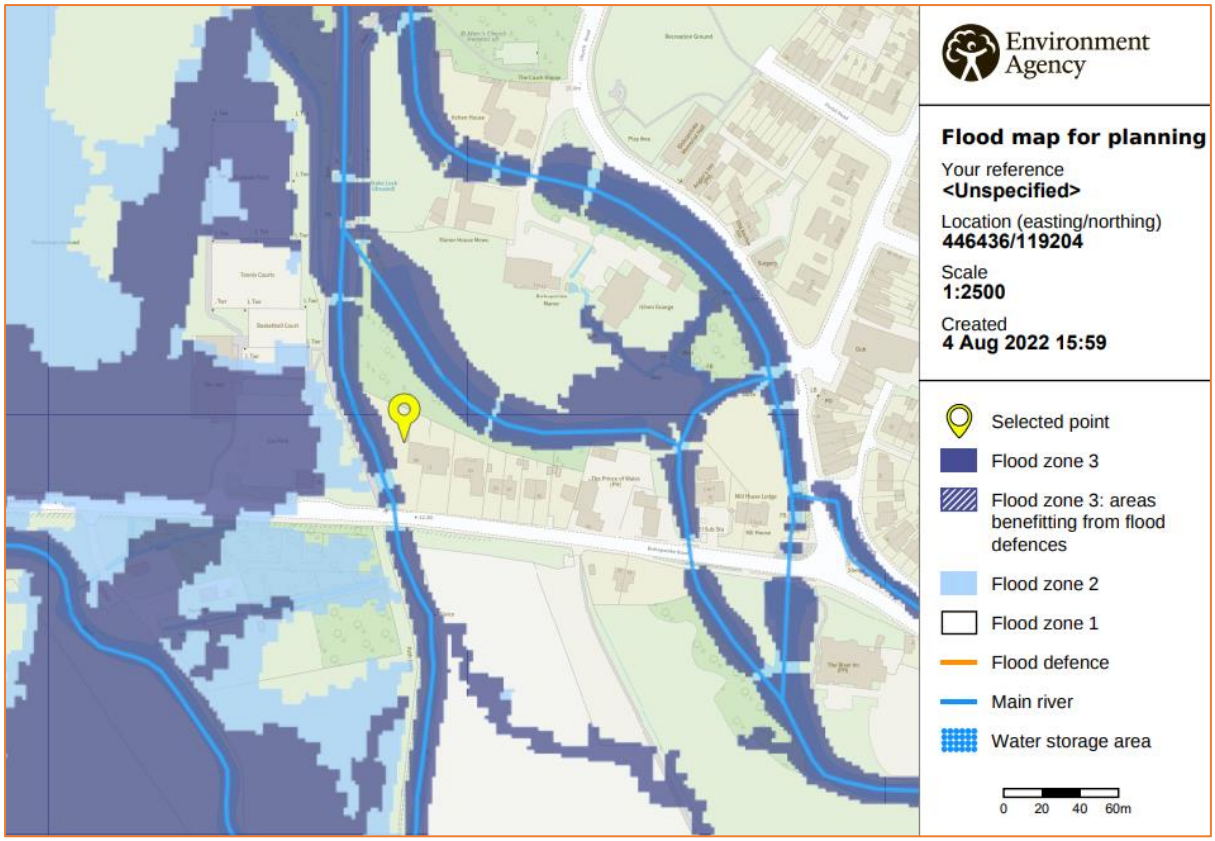

Figure 8: Environment Agency Flood Map for Planning (Rivers and Sea) (Source: EA)

The site is situated partially within Flood Zones 1, 2 and 3 when using the Environment Agency Flood Map for Planning.

The risk would appear to be predominantly fluvial. The proposed development site is located adjacent to the Itchen Navigation.

5.2 Fluvial Itchen Navigation:

The Itchen Navigation is a 10.4-mile (16.7 km) disused canal system in Hampshire, England, that provided an important trading route from Winchester to the sea at Southampton for about 150 years. The River Itchen in Hampshire, England, rises to the south of New Alresford and flows 26 miles (42 km) to meet Southampton Water below the Itchen Bridge.

5.2.1 Modelled flood levels and events:

Modelled flood data has been requested from the Environment Agency. The EA has provided modelled flood data from the River Itchen Model 3 which was produced in 2019 by JBA.

Return Period	1:100 year	1:100 year + 35% climate change	1:1000 year
Modelled flood level	11.63mAOD	11.65mAOD	11.65mAOD

Table 2: Modelled on-site flood levels (Source: EA)

The site is located partially within Flood Zones 1, 2 and 3, and is classified as "more vulnerable" (residential). The Flood Risk Assessments: climate change allowances guidance – updated May 2022, states that the Central climate change allowance should be applied. The site falls within the Test and Itchen Management Catchment, where the Central climate change allowance for the 2080's is a 35% increase in river flows. As such, the most suitable modelled flood data provided in the Itchen modelling is a 35% increase in flows, and as such this will be used for this assessment.

Comparison of the modelled flood levels provided with topographic site levels in the area of the proposed house (12.26mAOD and 12.37mAOD) shows that the site is entirely above all of the modelled flood levels provided.

The location of the proposed house is also shown to be entirely outside of the maximum modelled 1:100 year plus 35% climate change flood extent.

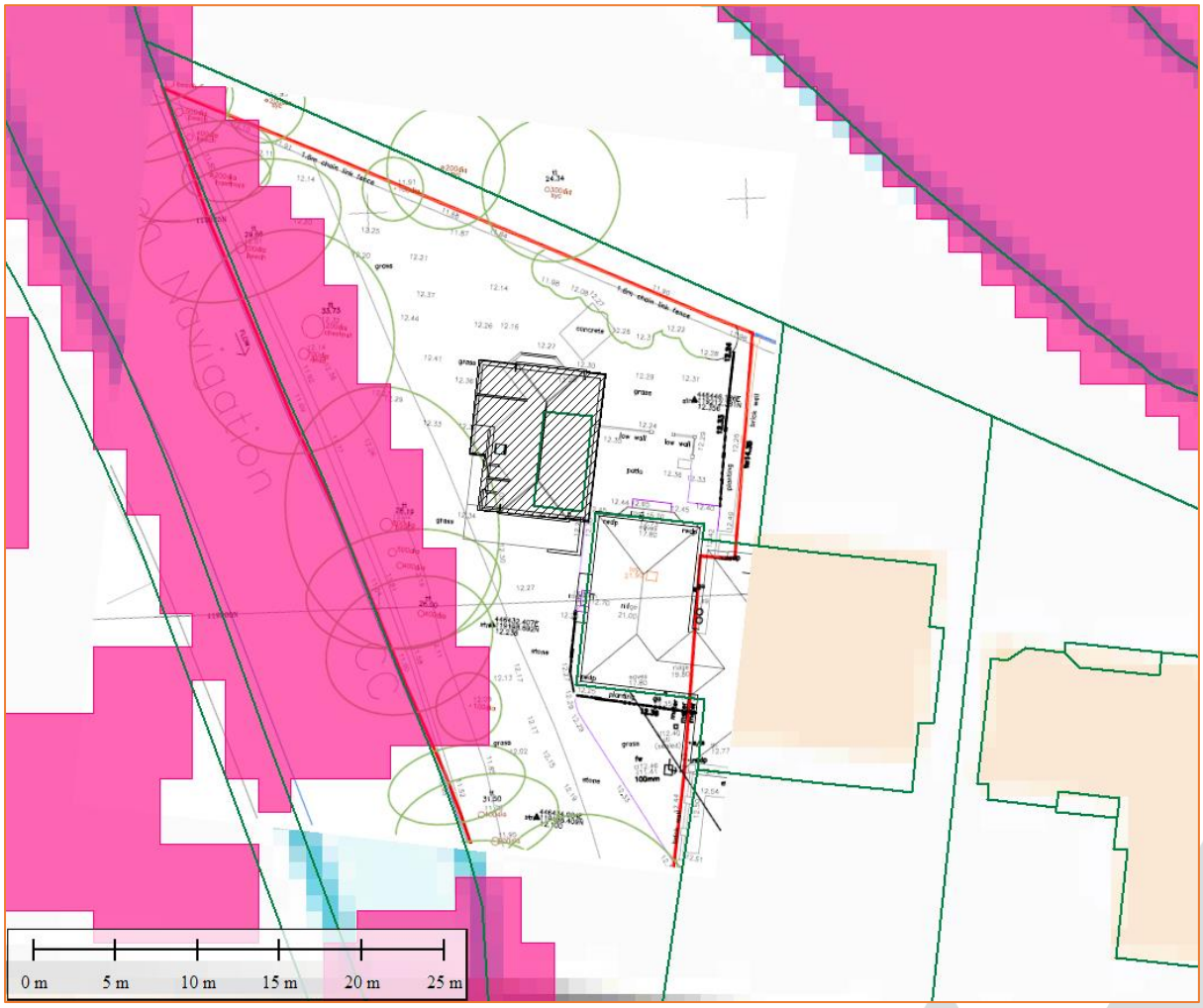

Figure 9: Modelled 1:100 year +35% climate change flood extent (pink). Existing buildings shown by green outline. Proposed house shown as hatched. (Source: EA, OS Mapping)

5.2.2 Flood Storage Areas:

Flood Storage Areas are areas that act as a balancing reservoir, storage basin or balancing pond. Their purpose is to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel. It may also delay the timing of a flood peak so that its volume is discharged over a longer time interval. Flood storage areas do not completely remove the chance of flooding and can be overtopped or fail in extreme weather conditions.

According to Environment Agency data, there are no Flood Storage Areas located in close proximity to the site.

5.2.4 Flood Defences:

A flood defence or EA Asset is any man-made or natural feature – such as a raised defence, retaining structure, channel, pumping station or culvert – that performs a flood defence or land drainage function.

The flood defences at the site have a design standard of protection of 1:25 year, and are in the form of natural high ground.

5.2.5 Residual risk (breach or overtopping of flood defences):

Breaching of flood defences can cause rapid inundation of areas behind flood defences as flow in the river channel discharges through the breach. A breach can occur with little or no warning, although they are much more likely to concur with extreme river levels or tides when the stresses on flood defences are highest. Flood water flowing through a breach will normally discharge at a high velocity, rapidly filling up the areas behind the defences, resulting in significant damage to buildings and a high risk of loss of life. Breaches are most likely to occur in soft defences such as earth embankments although poorly maintained hard defences can also be a potential source of breach.

Overtopping of flood defences occurs when water levels exceed the protection level of raised flood defences. The worst case occurs when the fluvial or tidal levels exceed the defence level as this can lead to prolonged flooding. Less severe overtopping can occur when flood levels are below defence levels, but wave action causes cyclic overtopping, with intermittent discharge over the crest level of the defence. Flood defences are commonly designed with a freeboard to provide protection against overtopping from waves. The risk from overtopping due to exceedance of the flood defence level is much more significant than the risk posed by wave overtopping. Exceedance of the flood defence level can lead to prolonged and rapid flooding with properties immediately behind the defences at highest risk.

5.2.6 Historical flood events:

The EA has provided no records of historic flooding at the site previously.

5.3 Pluvial (Surface Water):

Pluvial (surface water) flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

In 2013 the EA, working with Lead Local Flood Authorities (LLFAs), produced an updated Flood Map for Surface Water. It is considered to represent a significant improvement on the previous surface water flood maps available, both in terms of method and representation of the risk of flooding. The modelling techniques and data used are considerably improved, and also incorporated locally produced mapping where this is available to represent features best modelled at a local scale.

The Flood Map for Surface Water assesses flooding scenarios as a result of rainfall with the following chance of occurring in any given year (annual probability of flooding is shown in brackets):

- 1:30 (3.3%)
- 1:100 (1%)
- 1:1000 (0.1%)

The mapping below shows the Risk of Flooding from Surface Water centred on the postcode. Please note that the EA to not consider this information suitable to be used to identify the risk to individual properties or sites. It is useful to raise awareness in areas which may be at risk and may require additional investigation.

The EA Risk of Flooding from Surface Water Map suggests that the site lies predominantly in an area of "Very Low" risk of flooding from surface water.

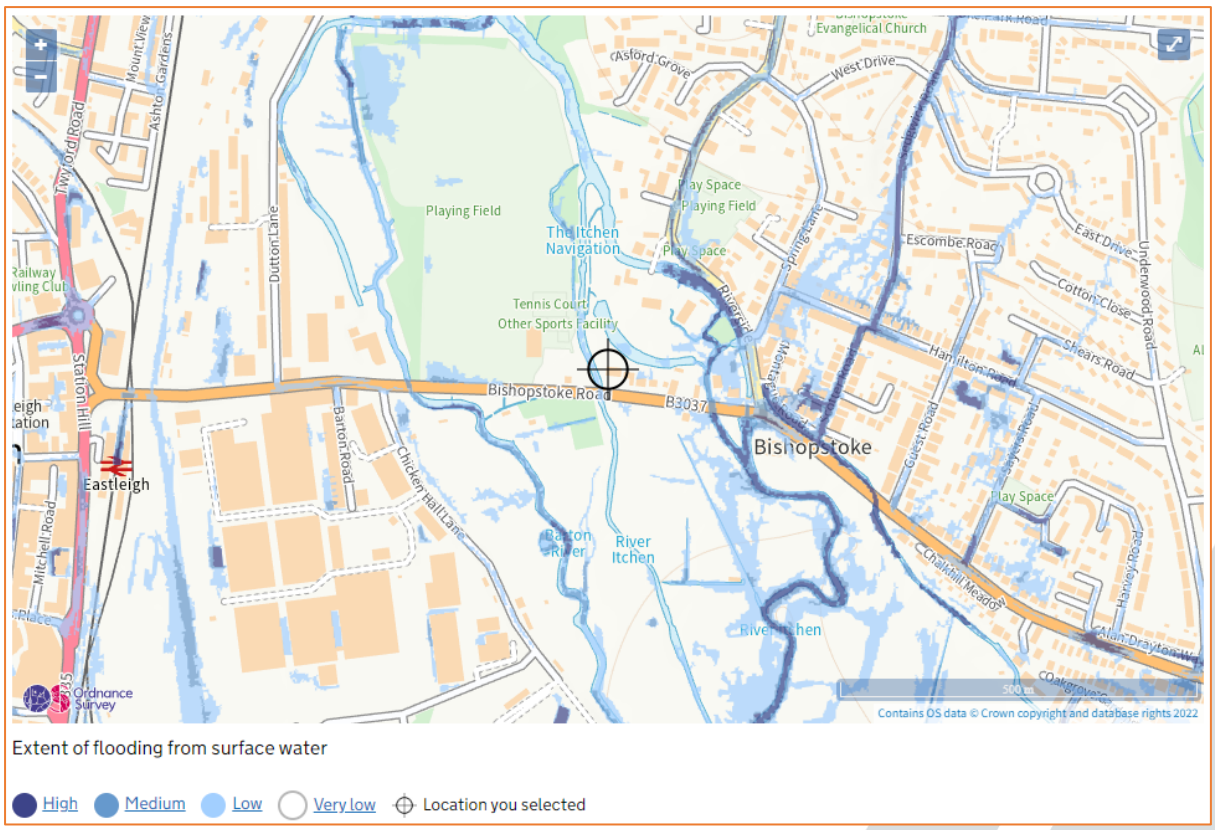

Figure 10: Extract from Environment Agency Surface Water Flood Map (Source: EA)

5.4 Groundwater:

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from abnormal springs. This tends to occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high, to areas where the ground level is low. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks. Groundwater flooding takes longer to dissipate because groundwater moves much more slowly than surface water and will take time to flow away underground.

No records have been provided to suggest that the site has flooded from groundwater sources previously.

5.5 Sewer Surcharge:

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding.

All Water Companies have a statutory obligation to maintain a register of properties/areas which have reported records of flooding from the public sewerage system, and this is shown on the DG5 Flood Register. This includes records of flooding from foul sewers, combined sewers and surface water sewers which are deemed to be public and therefore maintained by the Water Company. The DG5 register records of flood incidents resulting in both internal property flooding and external flooding incidents. Once a property is identified on the DG5 register, water companies can typically put funding in place to address the issues and hence enable the property to be removed from the register. It should be noted that flooding from land drainage, highway drainage, rivers/watercourses and private sewers is not recorded within the register.

No records of sewer flooding at the site previously have been provided.

5.6 Other Sources:

Reservoirs with an impounded volume in excess of 25,000 cubic metres (measured above natural ground level) are governed by the Reservoirs Act and are listed on a register held by the Environment Agency. The site lies outside of the maximum inundation extent on the EA Reservoir Inundation Map. The EA also advise on their website that reservoir flooding is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. All major reservoirs have to be inspected by specialist dam and reservoir Engineers. In accordance with the Reservoirs Act 1975 in England, these inspections are monitored and enforced by the EA themselves. The risk

to the site from reservoir flooding is therefore minimal and is far lower than that relating to the potential for fluvial / tidal flooding to occur. The Environment Agency Reservoir Flood Map illustrated below, illustrates the largest area that might be flooded if the storage area were to fail and release the water it is designed to hold during a flood event.

Records of flooding from reservoirs and canals are erratic as there is no requirement for the Environment Agency to provide information on historic flooding from canals and raised reservoirs on plans. In particular, the NPPF does not require flood risk from canals and raised reservoirs to be shown on the Environment Agency flood zones.

Overflows from canals can be common as they are often fed by land drainage, and often do not have controlled overflow spillways. Occasionally, major bank breaches also occur, leading to rapid and deep flooding of adjacent land.

No records of flooding of the site flooding previously from reservoir flooding have been provided.

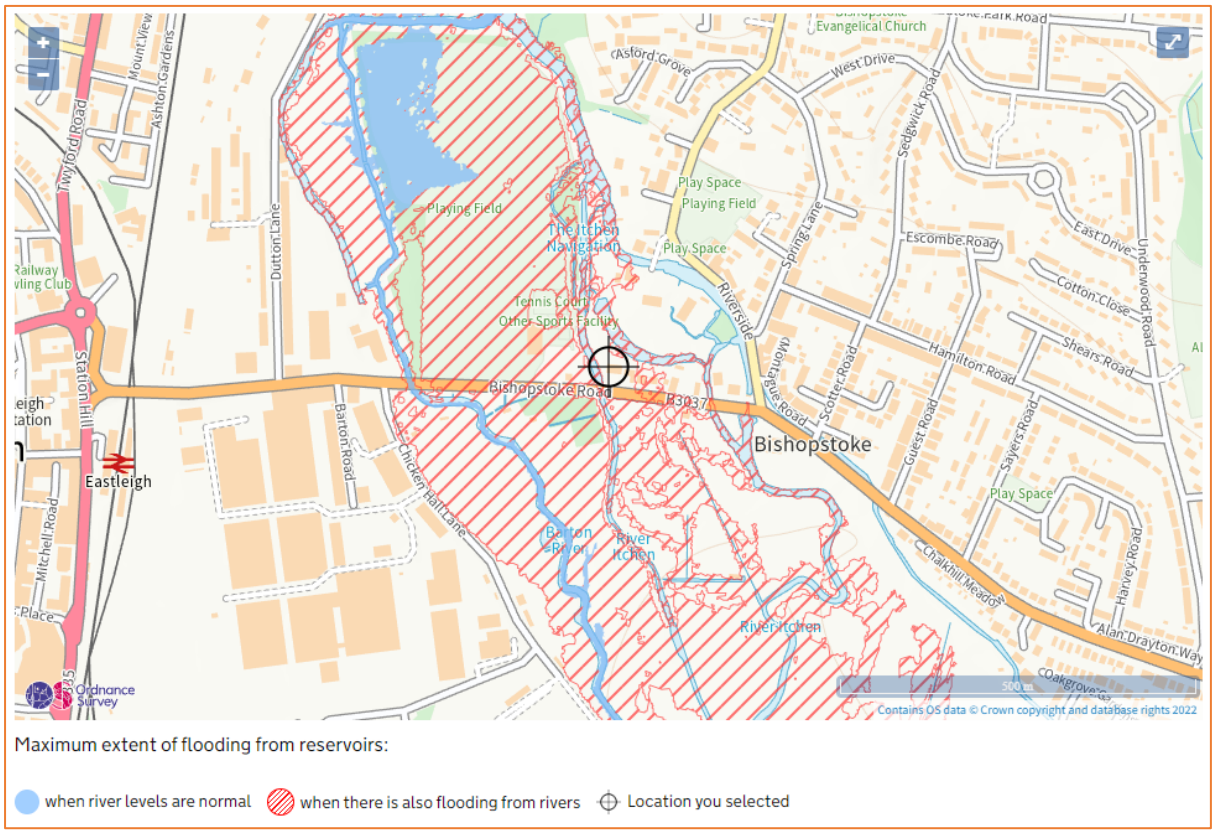

Figure 11: Extract from Environment Agency Reservoir Flood Map (Source: EA)

6. Flood Risk Management

6.1 Vulnerability to flooding:

The NPPF classifies property usage by vulnerability to flooding.

The existing site is a residential garden and garage.

Post development, the site will become "more vulnerable" (construction of a new residential dwelling).

Accordingly, it is considered that while the vulnerability of the site as a whole will be increased post development, (introduction of an additional residential unit).

6.3 Physical Design Measures:

The proposal is for the Construction of a single new dwelling. The NPPF requires the finished ground floor level to be raised to 300mm above the 1:100 year flood level plus 35% climate change allowance. As such, the finished ground floor level of the proposed house will be set at least 11.95mAOD.

To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the proposal, in consultation with the Local Authority building control department.

The design should be appropriately flood resistant and resilient by:

- using flood resistant materials that have low permeability to at least 600mm above the estimated flood level;
- making sure any doors, windows or other openings are flood resistant to at least 600mm above the estimated flood level;
- using flood resilient materials (for example lime plaster) to at least 600mm above the estimated flood level;
- by raising all sensitive electrical equipment, wiring and sockets to at least 600mm above the estimated flood level;
- making it easy for water to drain away after flooding such as installing a sump and a pump
- making sure there is access to all spaces to enable drying and cleaning;
- ensuring that soil pipes are protected from back-flow such as by using non-return valves.

As such, the following measures are recommended:

- Solid (concrete) ground floor;
- Closed-cell foam used in wall cavities;
- Waterproof ground floor internal render;
- Exterior ventilation outlets, utility points and air bricks fitted with removable waterproof covers;
- Ground floor electrical main ring run from 600mm above finished ground floor level;
- Electrical incomer and meter situated 600mm above finished ground floor level;

- Boilers, control and water storage / immersion installed 600mm above finished ground floor level;
- Gas meter installed at 600mm above finished ground floor level;
- Raised wiring and power outlets at least 600mm above finished ground floor level;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Manhole covers secured;
- Anti-syphon fitted to all toilets;
- Kitchen units of solid, water resistant material;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level;

It is also recommended that self-closing air bricks and demountable flood defence barriers to defend ground level doorways and low windows up to 600mm above finished ground floor level are installed.

6.4 Safe Escape and Flood Action Plan:

The NPPF requires a route of safe escape for all residents and users to be provided from new residential properties in Flood Zone 3. Safe escape is usually defined as being through slow moving flood water no deeper than 25cm.

The site is situated partially within Flood Zones 1, 2 and 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea).

The proposed escape route is to exit the site and travel east and along the B3037.

The EA has provided modelled Flood Hazard data for the 1:100 year +35% climate change flood event. The entire escape route is shown to be dry (outside the modelled flood extent).

As such, safe escape as per the specification in the NPPF can be provided.

Residents and users should follow the warning and evacuation procedure detailed in the following section.

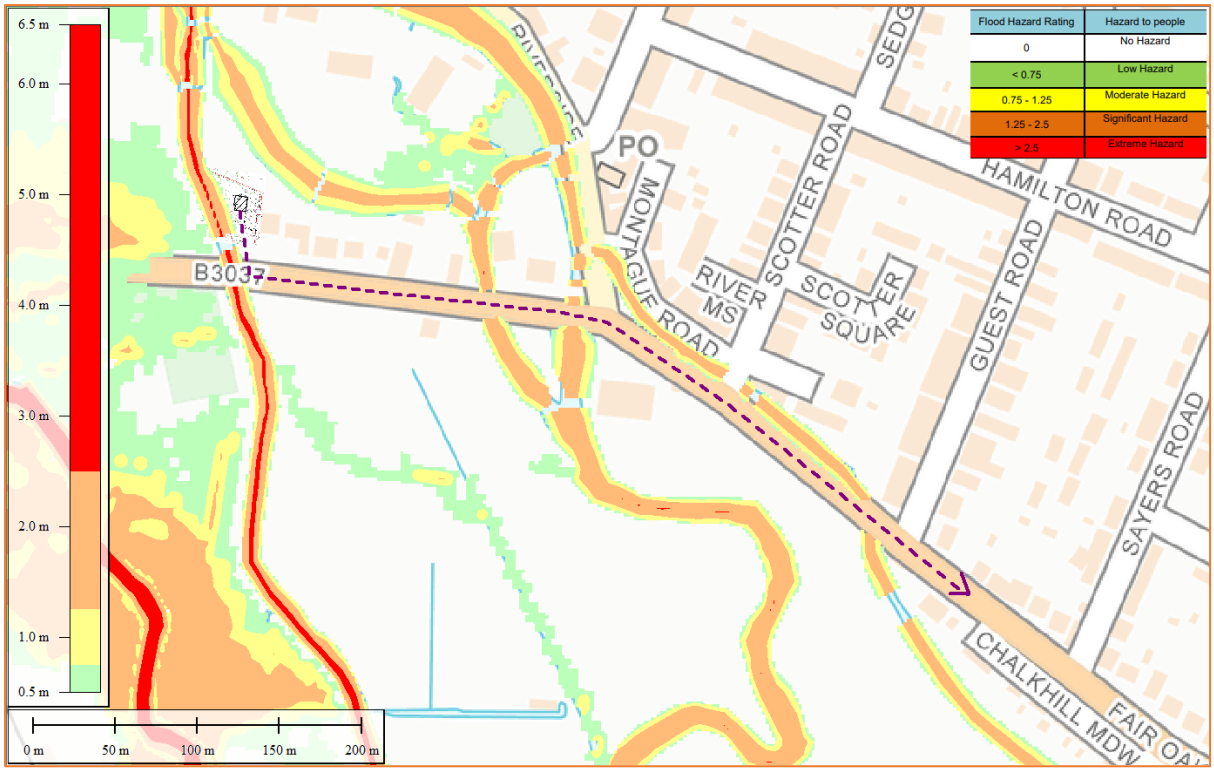

Figure 12: Proposed escape route shown by purple dashed line. Modelled 1:100 year +35% climate change flood hazards shown (Source: EA)

6.5 Flood Warning:

The EA is responsible for issuing flood warnings. Flood warnings are issued to the emergency services and local authorities. Both private individuals and organisations can sign-up to receive warnings via phone, text or email. This system of receiving warnings is currently voluntary.

Advice regarding severe flood warnings will generally be given during weather forecasts on local radio and TV. In the case of extreme events, warnings can also be disseminated via door to door visits by the police or locally appointed flood wardens.

The EA issue flood warnings/alerts to specific areas when flooding is expected. It is recommended that the applicant registers online with the free Environment Agency Floodline Warnings/Alert Direct service at www.gov.uk/sign-up-for-flood-warnings to receive flood warnings by phone, text or email.

The applicant has agreed to subscribe to the EA's flood warning service. The site lies within the Shawford to Bishopstoke on the River Itchen flood warning area (quickdial code 316083).

The flood warning service has three types of warnings that will help you prepare for flooding and take action:

Flood Warning	Flood Alert	Flood Warning	Severe Flood Warning
What it means?	Flooding is possible. Be prepared.	Flooding is expected. Immediate action required.	Severe flooding. Danger to life.
When it's used?	Two hours to two days in advance of flooding.	Half an hour to one day in advance of flooding.	When flooding poses a significant threat to life.
What to do?	Be prepared to act on your flood plan. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast on our website.	Move family, pets and valuables to a safe place. Turn off gas, electricity and water supplies if safe to do so. Put flood protection equipment in place.	Stay in a safe place with a means of escape. Be ready should you need to evacuate from your home. Co-operate with the emergency services. Call 999 if you are in immediate danger.

Table 3: EA Flood Warning Service

6.6 Flood Plan:

It is recommended that the applicant and future owners, occupiers and Landlords of the property prepare a flood plan to protect life and property during a flood event:

Before a flood:

- Prepare and keep a list of all your important contacts to hand or save them on your mobile phone.
- Think about what items you can move now and what you would want to move to safety during a flood.
- Know how to turn off electricity and water supplies to the site.
- Prepare a flood kit of essential items and keep it handy. It can include copies of important documents, a torch, a battery-powered or wind-up radio, blankets and warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication.

During a flood:

- Activate the evacuation plan and evacuate the site.
- Remove cars from the site if there is sufficient warning and the water levels are not rising rapidly.
- Switch off water and electricity for the site.
- Tune into your local radio station on a battery or wind-up radio.
- Listen to the advice of the emergency service and evacuate if told to do so.

- Avoid walking or driving through flood water. Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.

After a flood:

- If you have flooded, contact your insurance company as soon as possible.
- Take photographs and videos of your damaged property as a record for your insurance company.
- If you don't have insurance, contact your local authority for information on grants and charities that may help you.
- Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outerwear, including gloves, wellington boots and a face mask.
- Have your electrics and water checked by qualified engineers before switching them back on.

6.7 Off-Site Impacts:

6.7.1 Fluvial floodplain storage:

The NPPF requires that where development is proposed in undefended areas of floodplain, which lie outside of the functional floodplain, the implications of ground raising operations for flood risk elsewhere needs to be considered. Raising existing ground levels may reduce the capacity of the floodplain to accommodate floodwater and increase the risk of flooding by either increasing the depth of flooding to existing properties at risk or by extending the floodplain to cover properties normally outside of the floodplain. Flood storage capacity can be maintained by lowering ground levels either within the curtilage of the development or elsewhere in the floodplain, in order to maintain at least the same volume of flood storage capacity within the floodplain.

In undefended tidal areas, raising ground levels is unlikely to impact on maximum tidal levels so the provision of compensatory storage should not be necessary.

For development in a defended flood risk area, the impact on residual flood risk to other properties needs to be considered. New development behind flood defences can increase the residual risk of flooding if the flood defences are breached or overtopped by changing the conveyance of the flow paths or by displacing flood water elsewhere. If the potential impact on residual risk is unacceptable then mitigation should be provided.

The site is situated within Flood Zones 1, 2 and 3, when using the Environment Agency Flood Map for Planning (Rivers and Sea). The proposed new house is however located entirely within Flood Zone 1, and entirely outside of the modelled 1:100 year + 35 % climate change flood extent.

There will be no land raising within the 1:100 year +35% climate change flood extent. Any fencing construction within or around the site will be of hit-and-miss design to be permeable to flood waters.

As such, there will be no unacceptable loss of fluvial flood storage post development.

6.7.2 Surface Water Drainage:

The development will utilise Sustainable drainage systems (SuDS) design in accordance with the NPPF for Planning Applications and the drainage hierarchy as follows:

1. Store rainwater for later use;
2. Infiltration techniques;
3. Attenuate rainwater by storing in tanks for gradual release;
4. Discharge rainwater direct into watercourse;
5. Discharge rainwater into surface water sewer;
6. Discharge rainwater into a combined sewer;

All surface water runoff generated by the proposed development up to 1:100 year rainfall event (plus climate change) will be stored on site, prior to being discharged.

7. Sequential and Exception Test

The Sequential Test aims to ensure that development does not take place in areas at high risk of flooding when appropriate areas of lower risk are reasonably available.

The site is situated partially within Flood Zones 1, 2 and 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea).

Post development, the site will become "more vulnerable" (residential) throughout.

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	✗	Exception Test required	✓	✓
Zone 3b	Exception Test required	✗	✗	✗	✓

Table 4: Flood risk vulnerability and flood zone 'compatibility'

Using the table above, the proposed application is considered to be suitable within Flood Zones 1, 2 and 3, following the application of the Sequential Test. The proposed house is located entirely within Flood Zone 1.

8. Discussion and Conclusions

Unda Consulting Limited have been appointed by Jane Bray (hereinafter referred to as "the applicant") to undertake a Flood Risk Assessment for the proposed development Land adjacent to Braeside House, 49 Bishopstoke Road, Bishopstoke SO50 6BF. The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The purpose of the study is to support a planning application for the proposed development. The proposed application is for the Construction of a single new dwelling.

The existing site is occupied by residential gardens.

The site is situated partially within Flood Zones 1, 2 and 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea). The proposed house is however located entirely within Flood Zone 1.

The risk would appear to be predominantly fluvial. The proposed development site is located adjacent to the Itchen Navigation.

The EA has provided modelled flood data from the River Itchen Model 3 which was produced in 2019 by JBA.

The site is located partially within Flood Zones 1, 2 and 3, and is classified as "more vulnerable" (residential). The Flood Risk Assessments: climate change allowances guidance – updated May 2022, states that the Central climate change allowance should be applied. The site falls within the Test and Itchen Management Catchment, where the Central climate change allowance for the 2080's is a 35% increase in river flows. As such, the most suitable modelled flood data provided in the Itchen modelling is a 35% increase in flows, and as such this will be used for this assessment.

Comparison of the modelled flood levels provided with topographic site levels in the area of the proposed house (12.26mAOD and 12.37mAOD) shows that the site is entirely above all of the modelled flood levels provided.

The location of the proposed house is also shown to be entirely outside of the maximum modelled 1:100 year plus 35% climate change flood extent.

The EA has provided no records of historic flooding at the site previously.

The EA Risk of Flooding from Surface Water Map suggests that the site lies predominantly in an area of "Very Low" risk of flooding from surface water.

The NPPF requires the finished ground floor level to be raised to 300mm above the 1:100 year flood level plus 35% climate change allowance. As such, the finished ground floor level of the proposed house will be set at least 11.95mAOD.

The proposed escape route is to exit the site and travel east and along the B3037.

The EA has provided modelled Flood Hazard data for the 1:100 year +35% climate change flood event. The entire escape route is shown to be dry (outside the modelled flood extent).

As such, safe escape as per the specification in the NPPF can be provided.

The applicant has confirmed that:

- The NPPF requires the finished ground floor level to be raised to 300mm above the 1:100 year flood level plus 35% climate change allowance. As such, the finished ground floor level of the proposed house will be set at least 11.95mAOD.
- Flood proofing of the building will be incorporated as appropriate.
- A flood warning and evacuation plan will be implemented post development.
- The applicant will register with the free Environment Agency Floodline Alert Direct service.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

Appendix

- Topographical Survey.
- Existing and Proposed Plans.
- Environment Agency Flood Data Email.

KEY:

bt	British Telecom
cb	Control Box
cl	Cover Level
ctv	Cable Television
dk	Drop Kerb
el	Electric
ep	Electricity Pole
fh	Fire Hydrant
gu	Gully
gsv	Gas Stop Valve
ht	Height
ic	Inspection Cover
il	Invert Level
lp	Lamp Post
mkr	Marker
o/h	Overhead
pb	Post Box
pxg	Pram Crossing
np	Name Plate
rs	Road Sign
sv	Stop Valve
tb	Telephone Box
tl	Traffic Light
tt	Top of Tree
th	Threshold
tw	Top of Wall
utl	Unable to Lift
vp	Vent pipe
wm	Water Meter
wsv	Water Stop Valve

INDICATIVE

600dia beech
500dia beech
400dia beech
11.95 200dia syc
12.10
11.91
1.6m chain link fence
12.11
11.85
1.20
200dia hawthorn
12.14
11.91 100dia
200dia syc
tt 24.34 300dia syc
11.68
11.87
11.84
119225N
12.20
tt 29.66 12.01 700dia beech
12.25
12.20
12.21
grass
12.37
12.14
11.98
12.08
12.27
1.6m chain link fence
11.90
tt 33.73 12.32 1200dia chestnut
12.44
12.26
12.16
concrete
12.26
12.31
12.22
11.96
12.14 700dia dead
12.41
12.27 100dia
12.30
12.28
12.24
11.92
12.36
grass
12.36
12.26
12.29
12.31
11.09
12.27
12.29
12.30
grass
446446.186E 119212.381N 12.356
tt 26.23 500dia
12.33
12.37
12.28
12.26
12.23
12.24
rwdp
12.35
low wall
low wall
12.29
brick wall
11.77
12.26
th 12.45
12.33
12.26
tw14.35
stone
ridge 16.25
eaves 14.85
patio
12.36
planting
private garden – no access to survey
tt 28.19 12.32 800dia beech
grass
12.34
12.30
th 12.34
12.29
12.44
12.65
12.45
roof
th 15.20
12.77
eaves 17.80
12.40
12.49
12.26
12.38
rwdp
rwdp
12.42
500dia
400dia
12.30
12.19
11.81
11.01
top 21.90
roof 18.20
rwdp
12.27
tt 26.00 400dia
119200N
446432.407E 119198.692N 12.238
12.56
12.37
12.29
th 12.70
ridge 21.00
ridge 21.00
eaves 17.85
s/s
rwdp
12.49
ridge 21.17
11.58
11.00
2.11
stone
12.40
12.13
12.17
12.27
rwdp
eaves 17.80
ridge 19.80
12.25
12.29
12.29
planting
gu
12.35
12.36
meter
meter
meter
12.28
ridge 21.14
th 12.70
eaves 18.90
12.66
12.65
12.42
12.41
12.65
12.66
cl12.46
12.38
12.09 100dia
grass
12.02
11.85
12.15
12.17
12.29
cl12.40
utl
(sealed)
grass
s/s
th 12.77
ridge 21.35
top 22.13
12.42
fw
cl12.46
il11.41
100mm
12.43
rwdp
12.74
rwdp
rwdp
eaves 17.85
cl12.43
10.95
11.52
tt 31.50 11.78 400dia
stone
12.19
12.33
meter
12.49
12.49
12.42
rwdp
stn 446459.240E 119186.042N 12.434
1.8m wood panel fence
11.95 500dia
446434.984E 119136.409N 12.100
12.44
12.50
brick wall
12.54
12.50
12.48
12.44
12.40
12.37
cl12.40
11.85 400dia
12.51
12.35
stone
grass
12.42
12.41
o/h cables
12.33
o/h cables
o/h cables
12.27
1.8m wood panel fence
11.12
1.64
12.06
FLOW
brick wall
12.27
12.30
12.29
12.38
500dia
500dia
12.13
tt 28.97 12.22 800dia chestnut
12.31
12.44
stone
12.31
stn 446449.094E 119175.523N 12.444
12.44
12.10 700dia
12.36
12.40
grass
brick paving
12.43
12.42
12.01 300dia
11.79
10.95
12.11
brick wall
12.51
12.47
12.41
brick wall
bin store
12.45
12.45
12.45
brick wall
12.24
12.11
grass
12.51
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12.45
tw12.77
12.64
12.63
12.45
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12.50
12.48
12.35
12.34
wsv
12.35
12.30
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12.18
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12.33
12.31
12.20
footpath
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12.14
11.98
446425E
446450E
119175N

metres 0 1 2 3 4 5

NOTES:
LEVELS RELATE TO O.S. DATUM
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THE ARCHITECT SHOULD SATISFY HIMSELF THAT ALL TREES LIKELY TO AFFECT HIS DESIGN HAVE BEEN SHOWN
INTER CONNECTION OF MANHOLES SHOULD BE VERIFIED WHERE OF CRITICAL IMPORTANCE USING CCTV
PIPE SIZES & INVERTS DETERMINED WITHOUT ENTRY INTO MANHOLE
ALL DIMENSIONS & LEVELS SHOWN IN METRES
ON SITE DIMENSION ACCURACY IS TAKEN RELATIVE TO THE PRINTED SCALE AND SHOULD BE CHECKED ON SITE WHERE OF CRITICAL IMPORTANCE

P STUBBINGTON
LAND SURVEYS LTD

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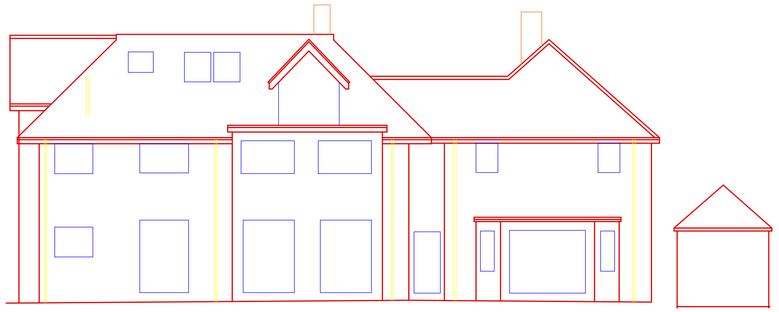
EMAIL: -
PAUL@PSLANDSURVEYS.COM

CLIENT: -	MRS BRAY
CONTRACT: -	49 BISHOPSTOKE ROAD BISHOPSTOKE EASTLEIGH
TITLE: -	TOPOGRAPHIC SURVEY
SCALE: -	1:100 @A1
DRAWING NO.	9901/01
DATE: -	JUNE 2022
SURVEYOR: -	PS



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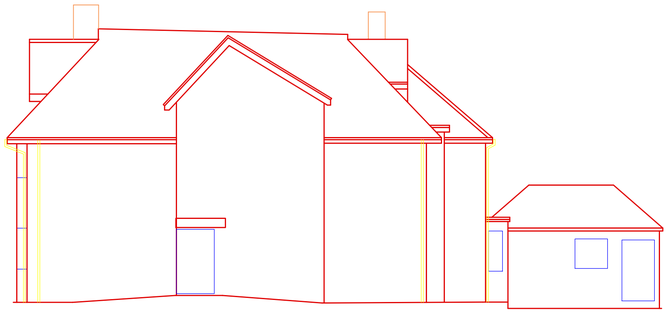

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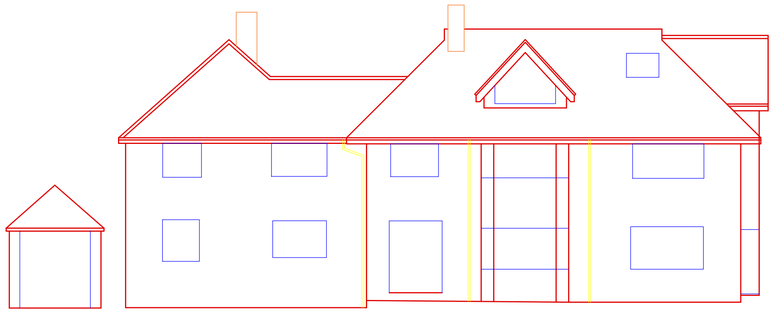

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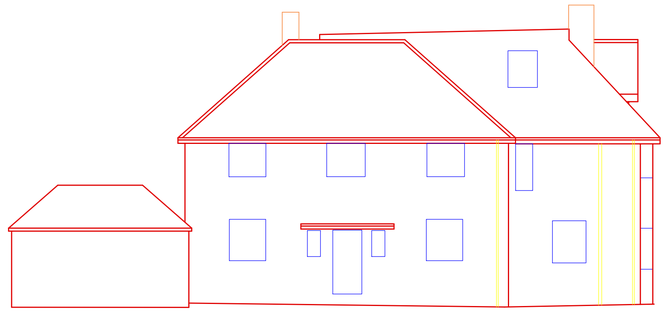

10.0m DATUM

WEST ELEVATION

NOTES:
LEVELS RELATE TO O.S. DATUM
ALL DIMENSIONS & LEVELS SHOWN IN METRES

ON SITE DIMENSION ACCURACY IS TAKEN RELATIVE TO THE PRINTED SCALE AND SHOULD BE CHECKED ON SITE WHERE OF CRITICAL IMPORTANCE

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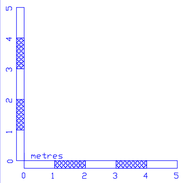
PAUL@PSLANDSURVEYS.COM

CLIENT: -	MRS BRAY
CONTRACT: -	49 BISHOPSTOKE ROAD BISHOPSTOKE EASTLEIGH
TITLE: -	ELEVATIONS
SCALE: -	1:100 @A1
DRAWING NO.	9901/02
DATE: -	JUNE 2022
SURVEYOR: -	PS



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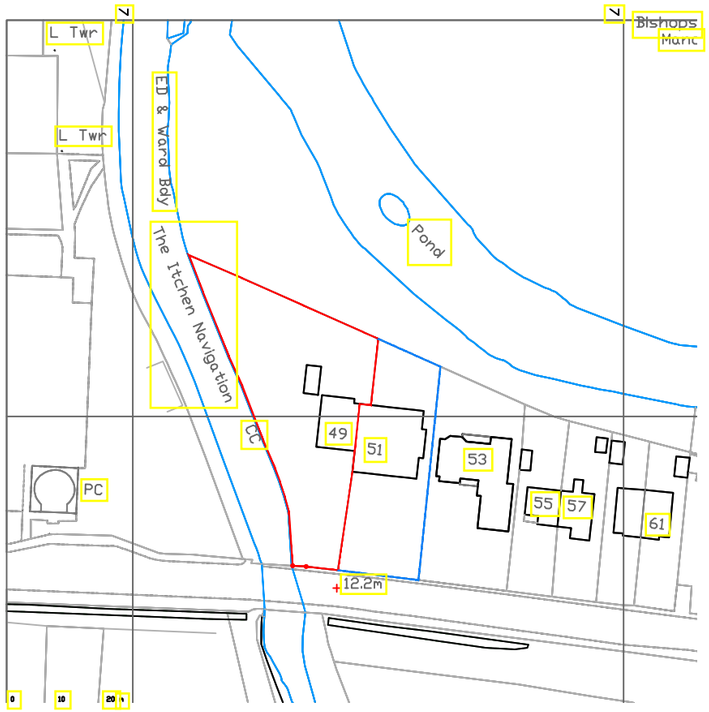

SITE LOCATION PLAN @ 1/250

Streetwise licence No. 100047474

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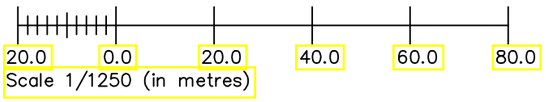
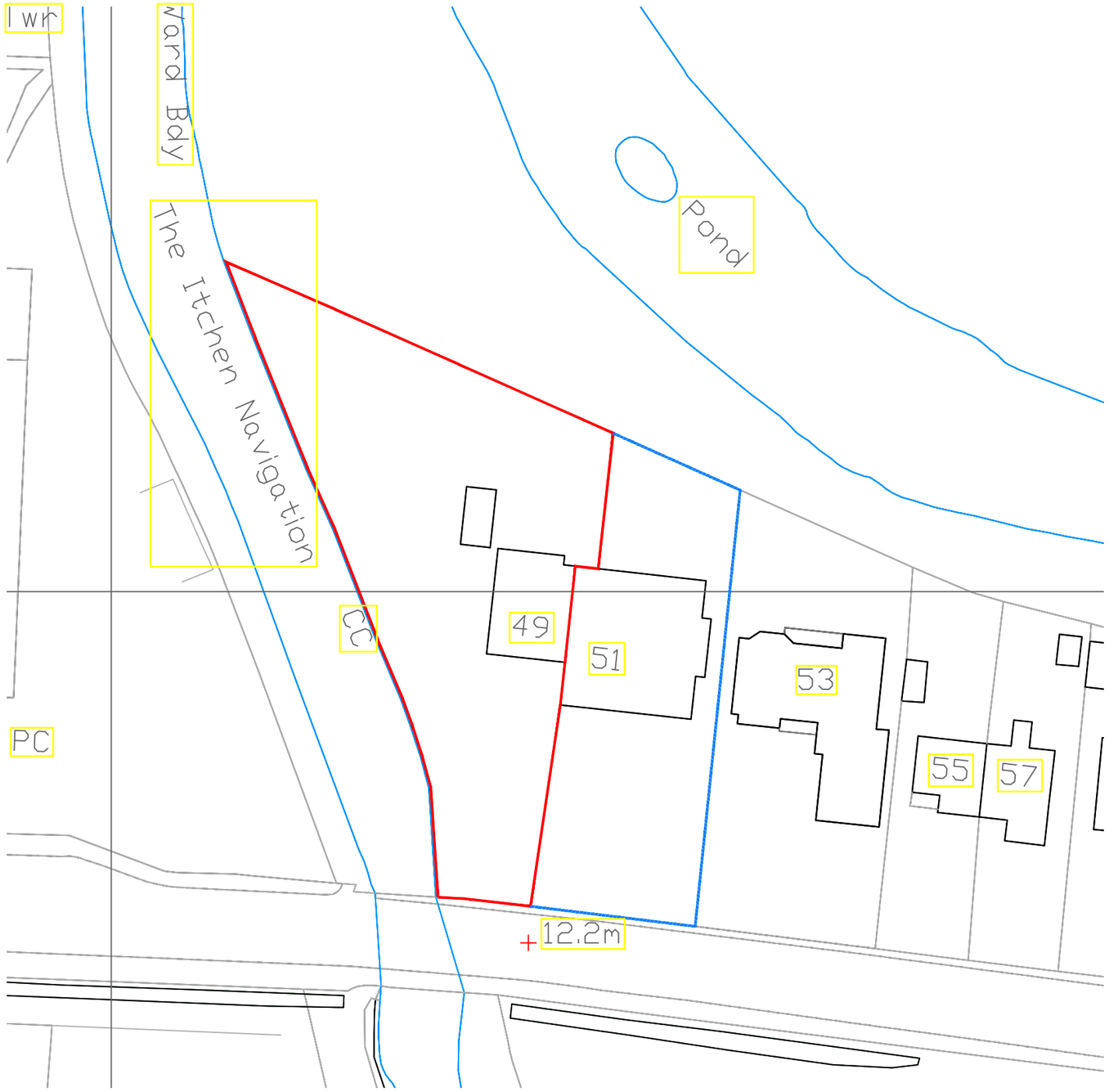
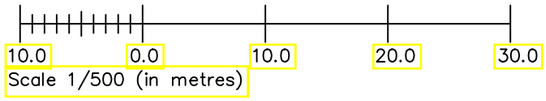




SITE BLOCK PLAN @ 1/500



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Date: May 2022		
Scale @ A3: 1/500 & 1/1250		
Drawing Status: Design	Drawn: dmm	Checked: mp

Project:
49, Bishopstoke Rd, SO50 6LA
Proposed House

Drawing Title:
Locality and Block Plan
As Existing

Client:
Mrs J Bray
49, Bishopstoke Road

Project:	Dwg No:	Rev:
2078	900	~

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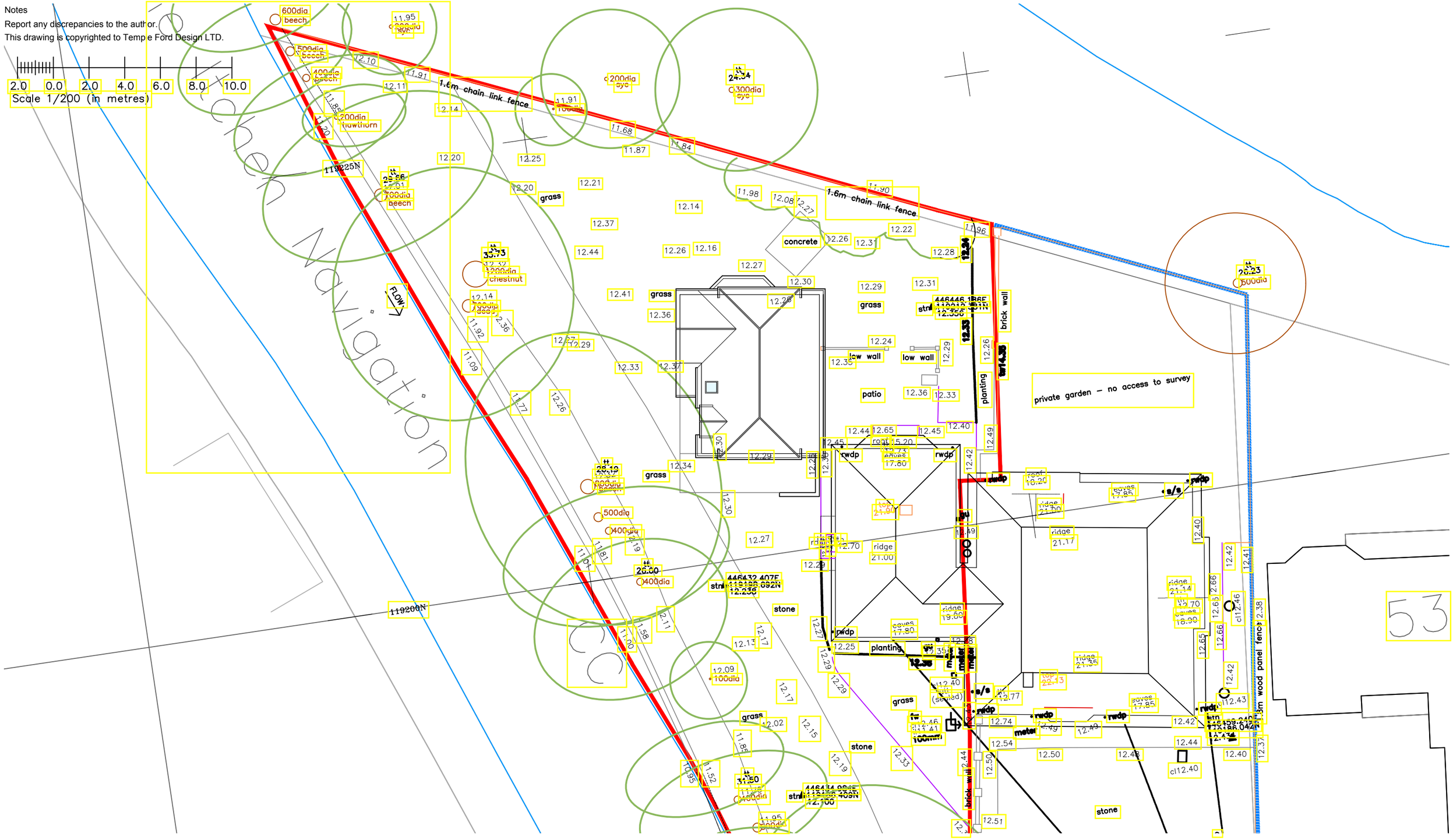

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Date:	May 2022
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Drawing Status:	Design
Drawn:	dmm
Checked:	mp

Project:
49, Bishopstoke Rd, SO50 6LA
Proposed House

Drawing Title:
Block Plan
As Proposed

Client:
Mrs J Bray
49, Bishopstoke Road

Project:	Dwg No:	Rev:
2078	SK01	~

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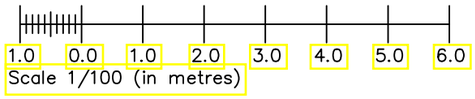
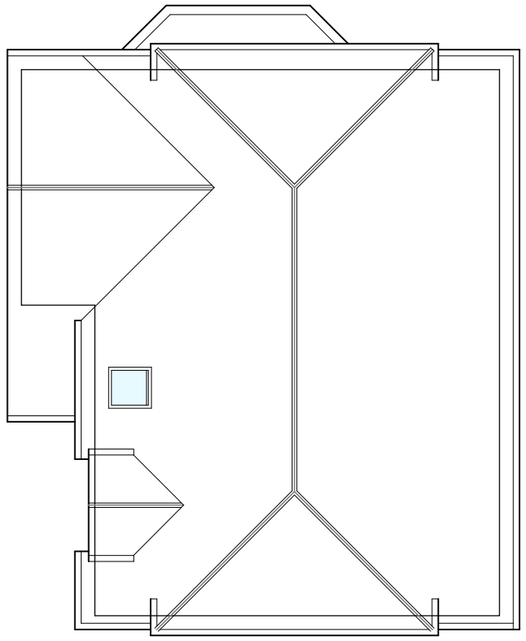
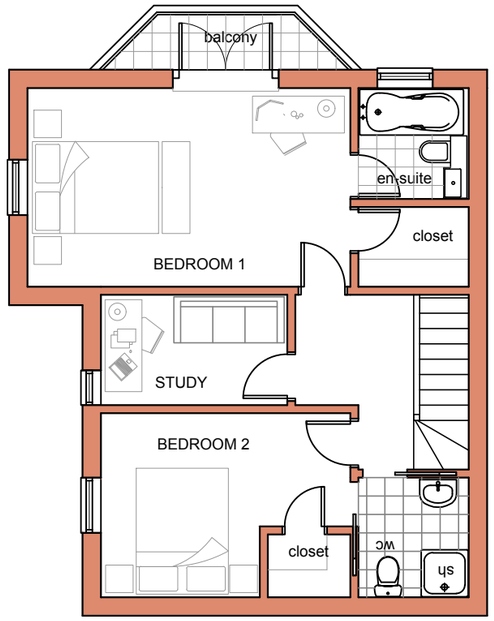
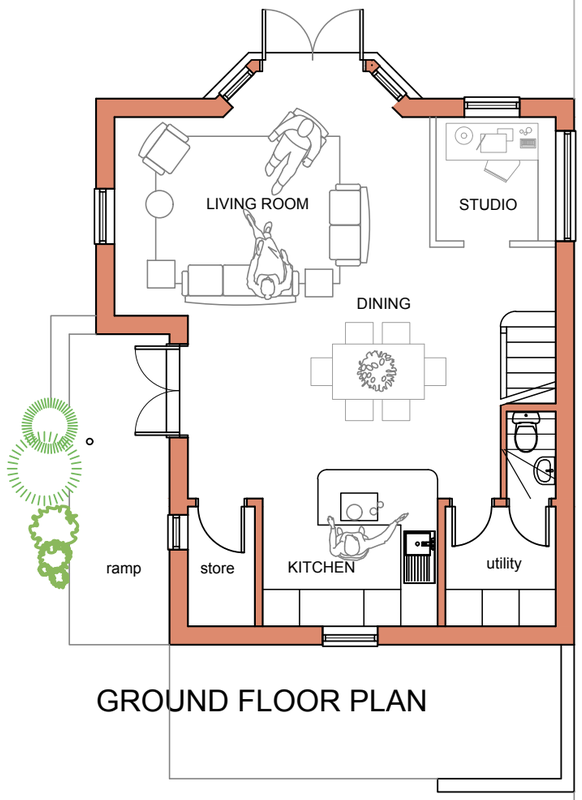






FIRST FLOOR PLAN



GROUND FLOOR PLAN

Revision Notes:		
Rev:	Date:	Description:
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Date: May 2022		
Scale @ A3: 1/100		
Drawing Status: Design	Drawn: dmm	Checked: mp

Project:
49, Bishopstoke Rd, SO50 6LA
Proposed House

Drawing Title:
Plans
As Proposed

Client:
Mrs J Bray
49, Bishopstoke Road

Project:	Dwg No:	Rev:
2078	SK02	~

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Emma Jeffery

From:	Partnership and Strategic Overview team, HIOW <psohiow@environment-agency.gov.uk>
Sent:	01 August 2022 16:25
To:	Jackie Stone
Cc:	SSD Enquiries
Subject:	Product 4, 5, 6 & 8 for Bishopstoke Road, SO50 6BF - Our ref: SSD/272819
Attachments:	Defence Map.pdf; Flood Map for Planning (Rivers and Sea).pdf; Levels Map.pdf; Risk of Flooding from Surface Water.pdf; Open Government Licence.pdf; Use of EA Information for FRAs.pdf

Dear Jackie,

Enquiry regarding Product 4, 5, 6 & 8 for 49 Bishopstoke Road, Bishopstoke SO50 6BF.

Thank you for your enquiry which was received on 16 June 2022.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004. The information is attached.

The site may be affected by an extreme flood. According to our published flood map, which provides a general estimate of the likelihood of flooding across England & Wales, the property is shown to be within Flood Zone 3 - an area which may have a 1% chance of flooding annually (1 in 100), **ignoring** the presence and effect of any flood defences.

The Environment Agency has no record of flooding to this property/area. Please note our records are not comprehensive and may not include all events. I recommend contacting the Lead Local Flooding Authority, "Hampshire County Council" or the Local Authority, "Eastleigh Borough Council" for a more comprehensive flood history check.

Defences – See attached map.

Flood Levels – Please see the attached map showing the flood levels for your site. These levels have been taken from River Itchen Model 3 which was produced in 2019 by JBA.

Product 5 & 6 can be downloaded here: https://ea.sharefile.com/d-s177f0413ad7040bea6621d6b0c41cc83

Product 8 - Unavailable

Name	Product 4
Description	Detailed Flood Risk Assessment Map for 49 Bishopstoke Road, Bishopstoke SO50 6BF
Licence	Open Government Licence
Information Warnings	The majority of our models will not have the new climate change allowances. +20% is not suitable for the majority of planning purposes and the new allowances to use should be checked here: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Information Warning - OS background mapping	*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 to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.*
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.

Name	Product 5
Description	*River Itchen Model 3*
Licence	Environment Agency Conditional Licence
Conditions	1.0 You may use the Information for your internal or personal purposes and may only sublicense others to use it if you do so under a written licence which includes the terms of these conditions and the agreement and in particular may not allow any period of use longer than the period licensed to you. 2.0 Notwithstanding the fact that the standard wording of the Environment Agency Conditional Licence indicates that it is perpetual, this Licence has a limited duration of 5 years at the end of which it will terminate automatically without notice. 3.0 We have restricted use of the Information as a result of legal restrictions placed upon us to protect the rights or confidentialities of others. In this instance it is because of third party data. If you contact us in writing (this includes email) we will, as far as confidentiality rules allow, provide you with details including, if available, how you might seek permission from a third party to extend your use rights. 4.1 The Information may contain some data that we believe is within the definition of “personal data” under the Data Protection Act 1998 but we consider that we will not be in breach of the Act if we disclose it to you with conditions set out in this condition and the conditions above. This personal data comprises names of individuals or commentary relating to property that may be owned by an individual or commentary relating to the activities of an individual. 4.2 Under the Act a person who holds and uses or passes to others personal data is responsible for any compliance with the Act and so we have no option but to warn you that this means

	you have responsibility to check that you are compliant with the Act in respect of this personal data. 5.0 The location of public water supply abstraction sources must not be published to a resolution more detailed than 1km2. Information about the operation of flood assets should not be published. 6.1 Where we have supplied model data which may include model inputs or outputs you agree to supply to the Environment Agency copies of any assessments/studies and related outputs, modifications or derivatives created pursuant to the supply to you of the Information, all of which are hereinafter referred to as “the Data”. 6.2 You agree, in the public interest to grant to the Environment Agency a perpetual royalty free non-exclusive licence to use the Data or any part thereof for its internal purposes or to use it in any way as part of Environment Agency derivative products which it supplies free of charge to others such as incorporation into the Environment Agency's Open Data mapping products.
Information Warnings	The majority of our models will not have the new climate change allowances. +20% is not suitable for the majority of planning purposes and the new allowances to use should be checked here: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. May contain Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.

Name	Product 6
Description	Model Output Data *for River Itchen Model 3*
Licence	Environment Agency Conditional Licence
Conditions	1.0 You may use the Information for your internal or personal purposes and may only sublicense others to use it if you do so under a written licence which includes the terms of these conditions and the agreement and in particular may not allow any period of use longer than the period licensed to you. 2.0 Notwithstanding the fact that the standard wording of the Environment Agency Conditional Licence indicates that it is perpetual, this Licence has a limited duration of 5 years at the end of which it will terminate automatically without notice. 3.0 We have restricted use of the Information as a result of legal restrictions placed upon us to protect the rights or confidentialities of others. In this instance it is because of third party data. If you contact us in writing (this includes email) we will, as far as confidentiality rules allow, provide you with

	details including, if available, how you might seek permission from a third party to extend your use rights. 4.1 The Information may contain some data that we believe is within the definition of “personal data” under the Data Protection Act 1998 but we consider that we will not be in breach of the Act if we disclose it to you with conditions set out in this condition and the conditions above. This personal data comprises names of individuals or commentary relating to property that may be owned by an individual or commentary relating to the activities of an individual. 4.2 Under the Act a person who holds and uses or passes to others personal data is responsible for any compliance with the Act and so we have no option but to warn you that this means you have responsibility to check that you are compliant with the Act in respect of this personal data. 5.0 The location of public water supply abstraction sources must not be published to a resolution more detailed than 1km2. Information about the operation of flood assets should not be published.. 6.1 Where we have supplied model data which may include model inputs or outputs you agree to supply to the Environment Agency copies of any assessments/studies and related outputs, modifications or derivatives created pursuant to the supply to you of the Information, all of which are hereinafter referred to as “the Data”. 6.2 You agree, in the public interest to grant to the Environment Agency a perpetual royalty free non-exclusive licence to use the Data or any part thereof for its internal purposes or to use it in any way as part of Environment Agency derivative products which it supplies free of charge to others such as incorporation into the Environment Agency's Open Data mapping products.
Information Warnings	Please be aware that model data is not raw, factual or measured but comprises of estimations or modelled results based on the data available to us. The majority of our models will not have the new climate change allowances. +20% is not suitable for the majority of planning purposes and the new allowances to use should be checked here: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
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Data Available Online

Many of our flood datasets are available online:

- Flood Map For Planning (Flood Zone 2, Flood Zone 3 ,Flood Storage Areas, Flood Defences, Areas Benefiting from Defences, ,)
- Risk of Flooding from Rivers and Sea
- Historic Flood Map
- Current Flood Warnings

Does Your Proposal Have Environmental Issues or Opportunities? Speak To Us Early!

If you are planning a new project or development, we want to work with you to make the process as smooth as possible. Early engagement can improve subsequent planning applications to you and your clients' benefit and deliver environmental outcomes. For a cost recovery fee of £100 per hour plus VAT we will provide you with a project manager who will coordinate all meetings and reviews in order to give you detailed specialist advice with guaranteed delivery dates. More information can be found on our website here.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely

Callum Robins
Partnership and Strategic Overview team, Hampshire and Isle of Wight Environment Agency

Email psohiow@environment-agency.gov.uk

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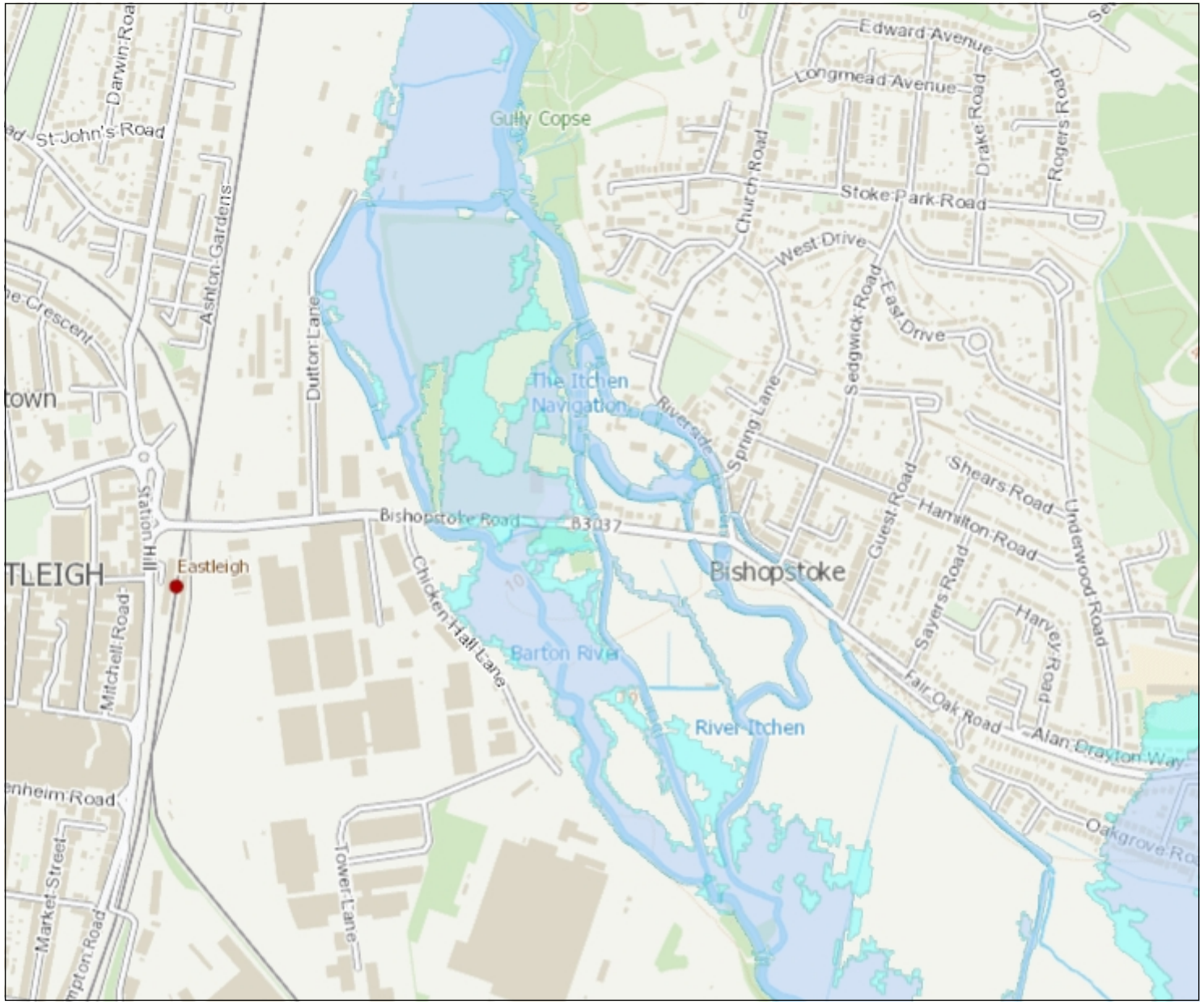
Flood Map for Planning (Rivers and Sea) - Centred on Bishopstoke Road, SO50 6BF - Created 1 August 2022



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1: 10,000

0 Metres 250

N W E S

Flood Map for Planning (Rivers & Sea)

- Defences
- Flood Storage Areas
- Areas benefiting from flood defences
- Flood Zone 3
- Flood Zone 2

Flood Map Areas (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occuring each year.

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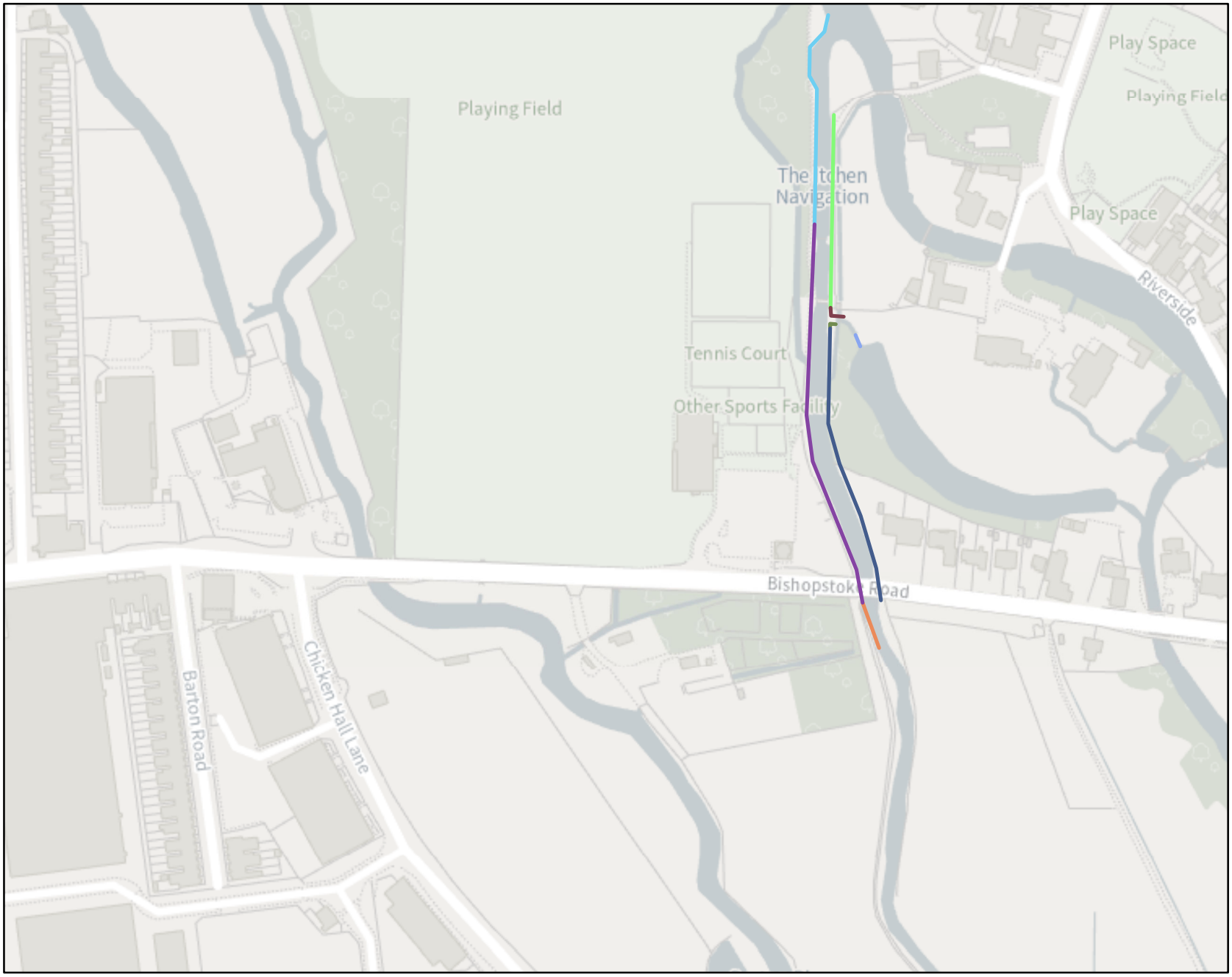
Defence Map Centred on Bishopstoke Road - Created 1 August 2022



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Legend

asset_id

- 150379

asset_id

- 148966
- 149754
- 149938
- 150378
- 165172
- 47666
- 49951

1:3,000 *

*when printed at A4.

N

0 50 100

Metres

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Asset ID	Asset sub-type	Length	Maintainer	Current condition	Design Standard of Protection (Year)	Date of last inspection
148966	Natural High Ground	5.40	Private individual, Company or Charity	No Data	25	22/04/2022
149754	Natural High Ground	103.94	Private individual, Company or Charity	No Data	25	22/04/2022
149938	Natural High Ground	117.05	Private individual, Company or Charity	No Data	25	22/04/2022
150378	Natural High Ground	11.02	Private individual, Company or Charity	No Data	25	22/04/2022
165172	Embankment	25.93	Private individual, Company or Charity	No Data	25	18/12/2019
47666	Natural High Ground	209.08	Private individual, Company or Charity	No Data	25	22/04/2022
49951	Natural High Ground	151.16	Private individual, Company or Charity	No Data	25	22/04/2022
150379	Simple Culvert	6.48	Private individual, Company or Charity	No Data	25	22/04/2022

Risk of flooding from Surface Water - Centred on Bishopstoke Road, SO50 6BF - Created 1 August 2022

Environment Agency

1: 10,000

0 Metres 250

N W E S

Likelihood of flooding from Surface Water

- High (>=3.3%)
- Medium (3.3% - 1%)
- Low (1% - 01%)
- Very Low

Likelihood of flooding from Surface Water

High:	Greater than or equal to 3.3% (1 in 30) chance in any given year
Medium:	Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
Low:	Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
Very Low:	Less than 0.1% (1 in 1,000) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on GOV.UK.

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