



Flood Risk Assessment for Planning

Prepared for:

Amy Chalker

February 2025

Our reference:

94779-Wyatt-WytheCottages

Location:

1 Wythe Cottages

Muddlers Lane

Twyford

RG10 9PR



Document Issue Record

Project: Flood Risk Assessment for Planning
Client: Amy Chalker
Location: 1 Wythe Cottages, Muddlers Lane, Twyford, RG10 9PR
Application: Erection of a two storey side extension to existing dwelling.
Our reference: 94779-Wyatt-WytheCottages
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Lead Consultant: Miss Ellen Webb; Miss Jesy Ferry
Authorisation: Mr Edward Bouët

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1. Key Facts

1.1 Flood Risk Posed:

- The site is located within EA Flood Zone 2 (Medium Risk).
- The risk would appear to be predominantly fluvial and originate from the River Loddon approximately 112m to the west of the site.
- The EA hold records of historical flooding having affected the site.
- The site is shown to be partially within the 1 in 100 year and entirely within the 1 in 1000 year and the 1 in 100 year plus 40% climate change surface water flooding extents presented in the 2023 Woking Borough Council SFRA modelled surface water flooding extent scenarios.
- The 2023 Woking Borough Council SFRA shows the site to be in an area with a $\geq 75\%$ susceptibility to groundwater flooding and within an area with groundwater between 0.025m – 0.5m below the surface. According to the EA, flooding from groundwater is unlikely in this area.
- Using the 2023 Woking Borough Council and Thames Water data, the site is located within the postcode area of “RG10 9” where 94 sewer flood incidents have occurred during 2000 – 2019. Between 2019 – 2022, this postcode area experienced 14 sewer flood incidents. No records of previous sewer flooding at the site have been provided.
- Additionally, the risk of flooding posed to the site by reservoir flooding would appear to be low.

1.2 Flood Risk Mitigation:

- The proposed planning application is for a ‘minor development’ – a residential extension.
- The additional footprint created by the development will not exceed 250m².
- There will be no introduction of additional or separate units, no sub-division, and no intensification of usage.
- No new basements or ground floor bedrooms are proposed.
- The proposed development fits within EA standing advice for domestic extensions.
- Finished floor levels will be set no lower than existing floor levels.
- Internal access will be maintained from ground floor to the first-floor level.
- Flood proofing of the house will be incorporated as appropriate.
- The applicant will register with the free Environment Agency Floodline Warning Direct service.
- Due to the small scale of development, a full Surface Water Drainage Strategy is not required at this stage of planning.

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 Amy Chalker (hereinafter referred to as “the applicant”) to undertake a Flood Risk Assessment for the proposed development at 1 Wythe Cottages, Muddlers Lane, Twyford, RG10 9PR (hereinafter referred to as “the site”). The purpose of the study is to support a planning application for the proposed development.

This report presents our findings based on the readily available information and data relating to the site and surrounding drainage area.

The site appears to be located within Flood Zone 2 as defined by the Environment Agency (EA) on their Flood Map for Planning. 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 site is an existing residential property (semi-detached house). The site is understood to have lawful planning permission for residential use.

The surrounding area is characterised by residential dwellings and agricultural land.

The site location plan and existing plans are provided in the report Appendix.



Figure 1: Aerial View of the Site (Source: Google Earth)

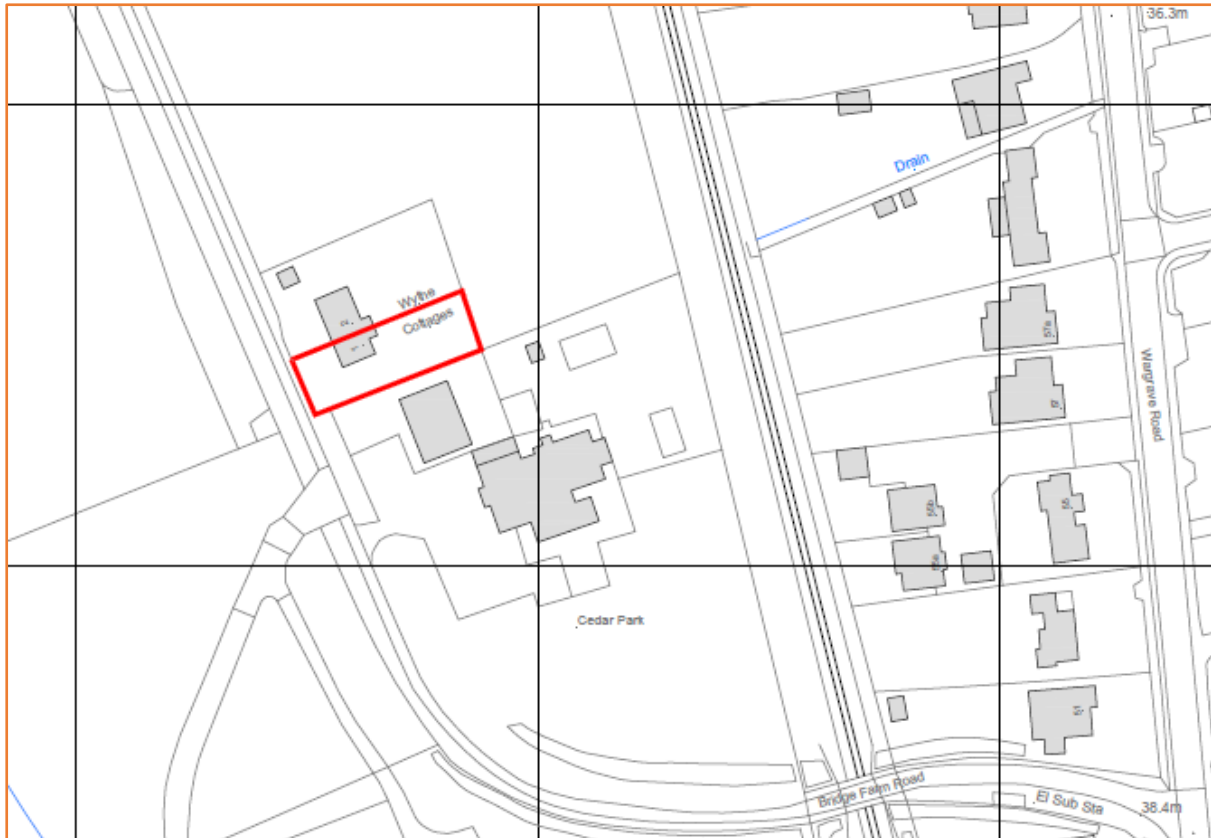


Figure 2: Site Location Plan (Source: Wyatt Architects)

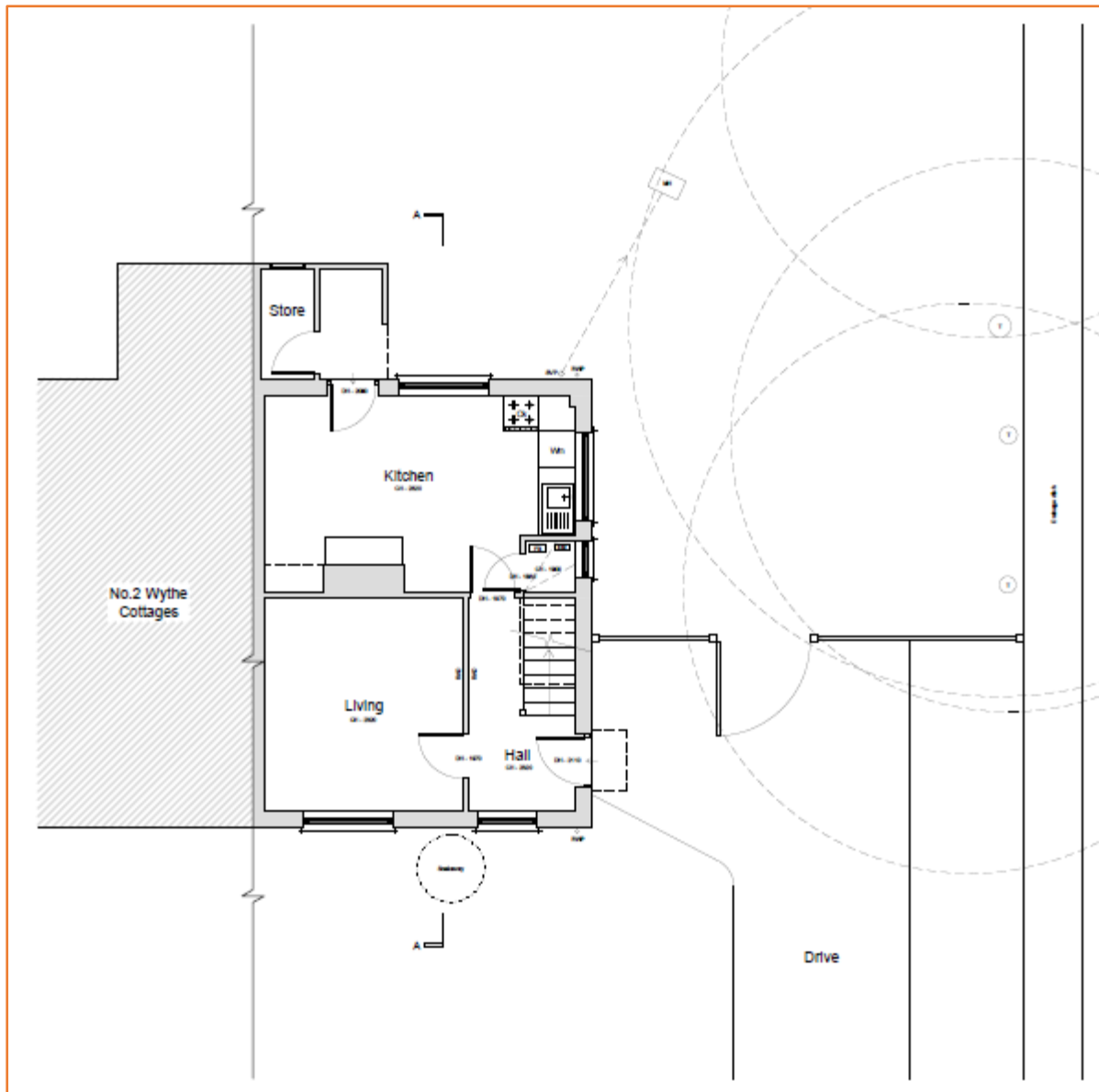


Figure 3: Existing ground floor plan (Source: Wyatt Architects)

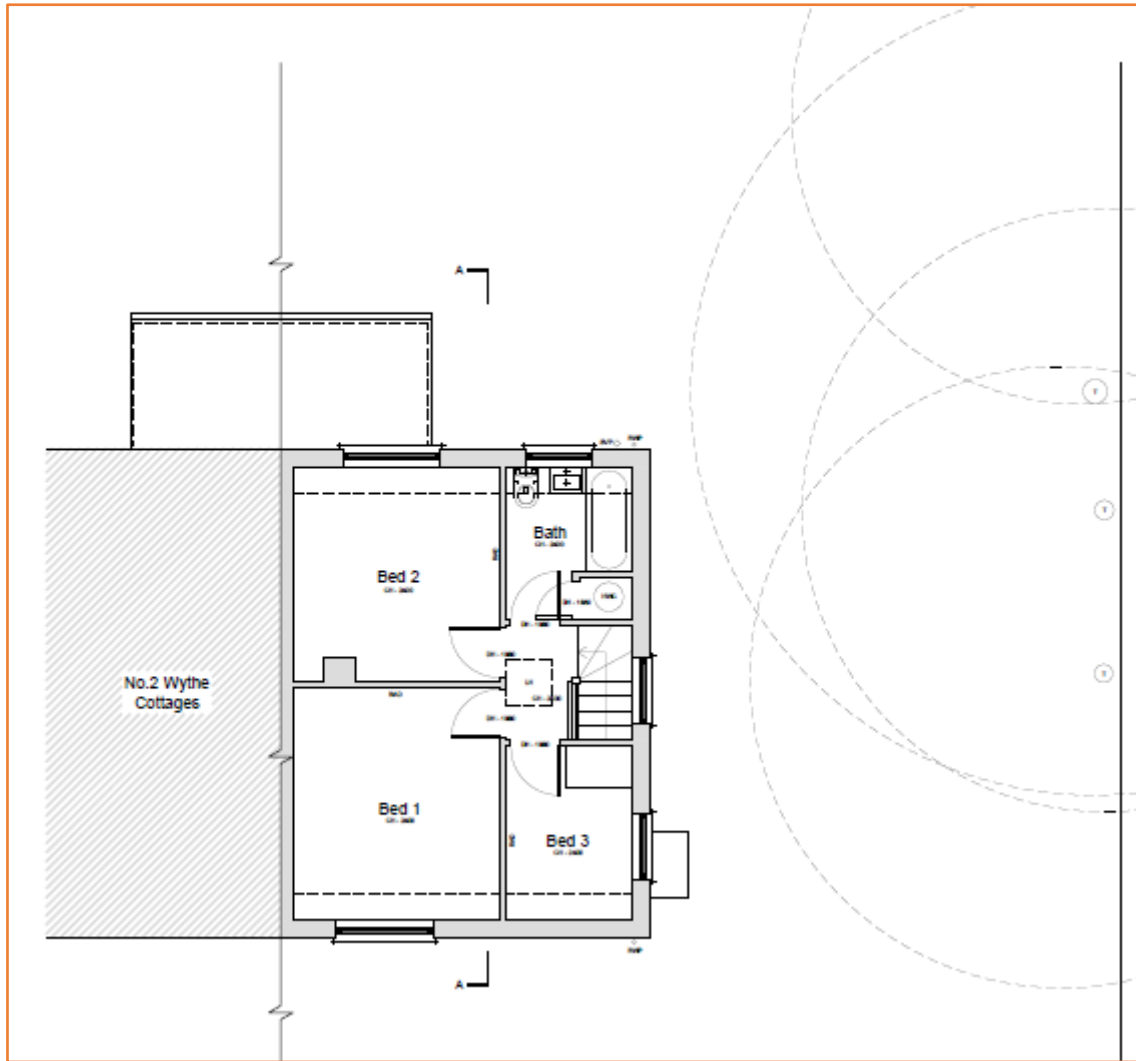


Figure 4: Existing first floor plan (Source: Wyatt Architects)

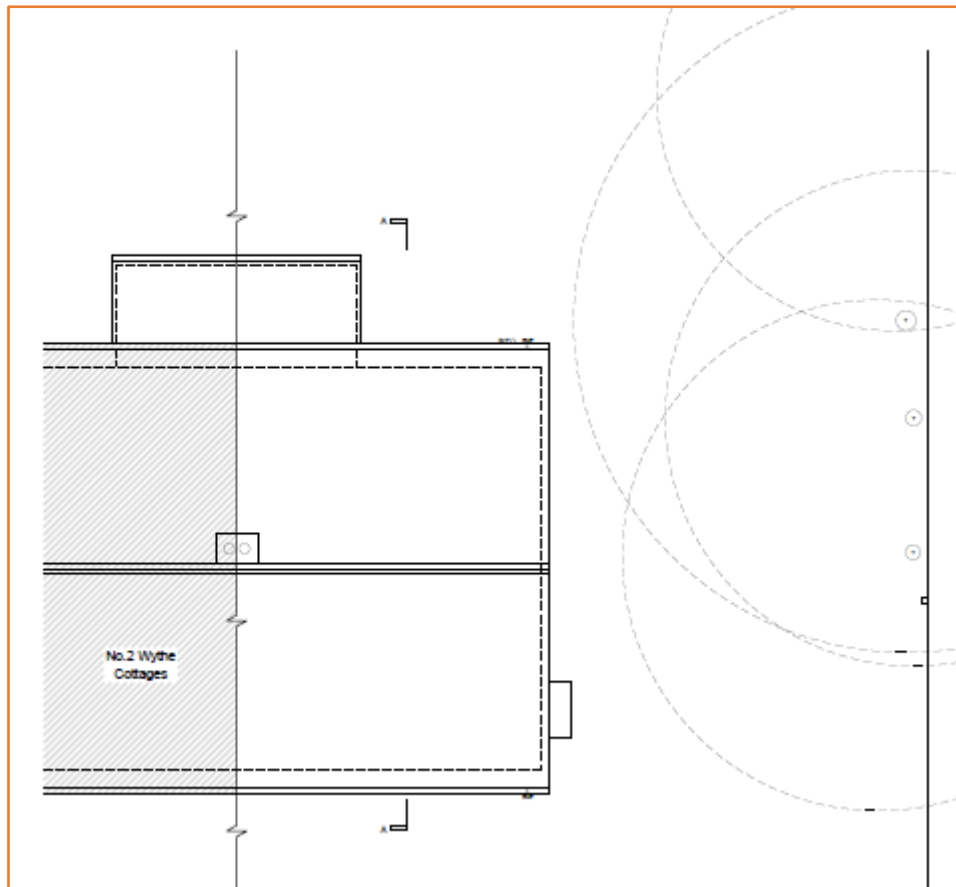


Figure 5: Existing roof plan (Source: Wyatt Architects)

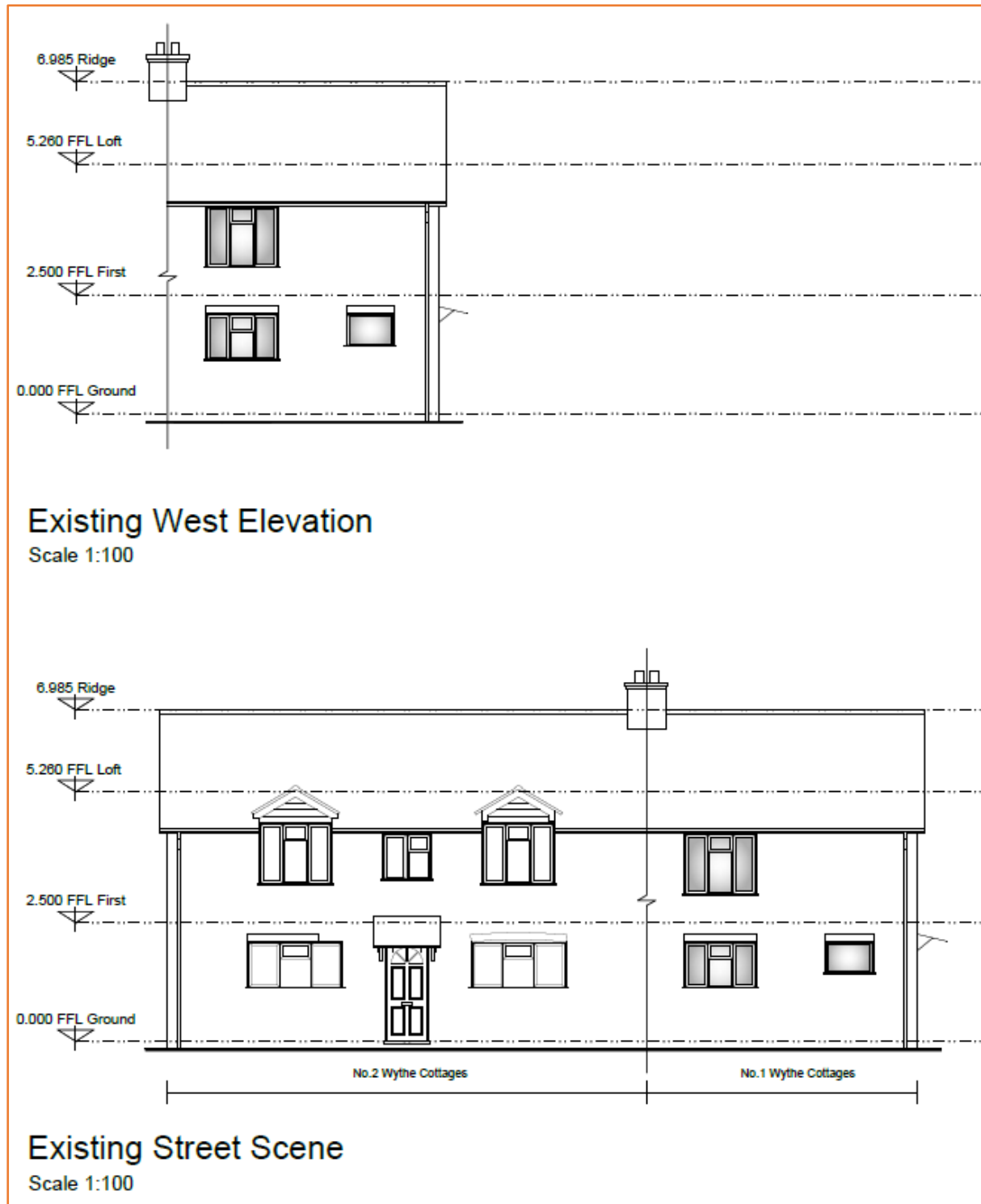


Figure 6: Existing elevations (Source: Wyatt Architects)

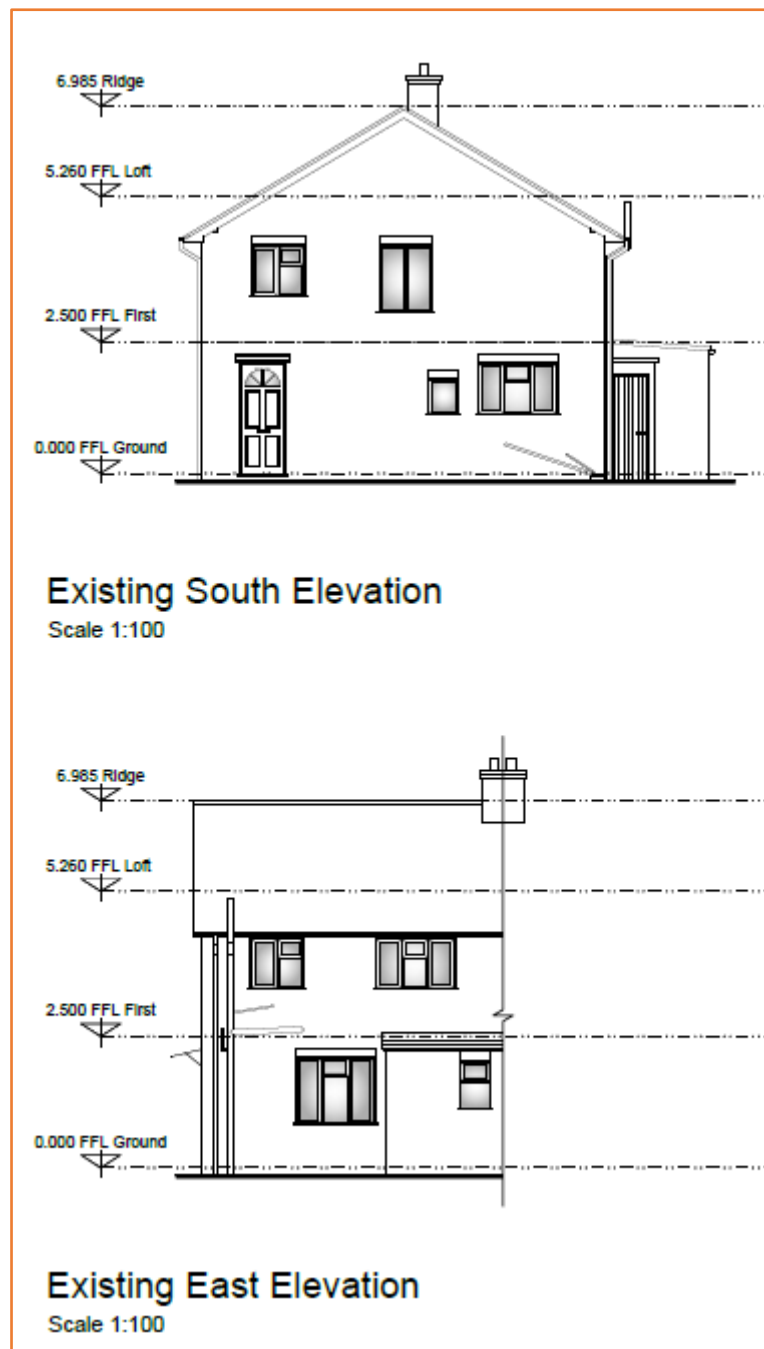


Figure 7: Existing elevations (Source: Wyatt Architects)

3.2 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 +/-5cm to 15cm with spatial resolutions ranging from 25cm to 2 metres. This dataset is derived from a combination of our 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.

LiDAR remotely sensed digital elevation data suggests that the ground topography on site ranges between 34.81mAOD to 34.99mAOD.

3.3 Geology and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site is Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated) – Chalk, with superficial deposits of Kempton Park Gravel Member – Sand and Gravel.

The soil type in the area taken from the UKSO Website is relatively deep soils of River Terrace Sand / Gravel soil parent material, with a sand to sandy loam soil texture.

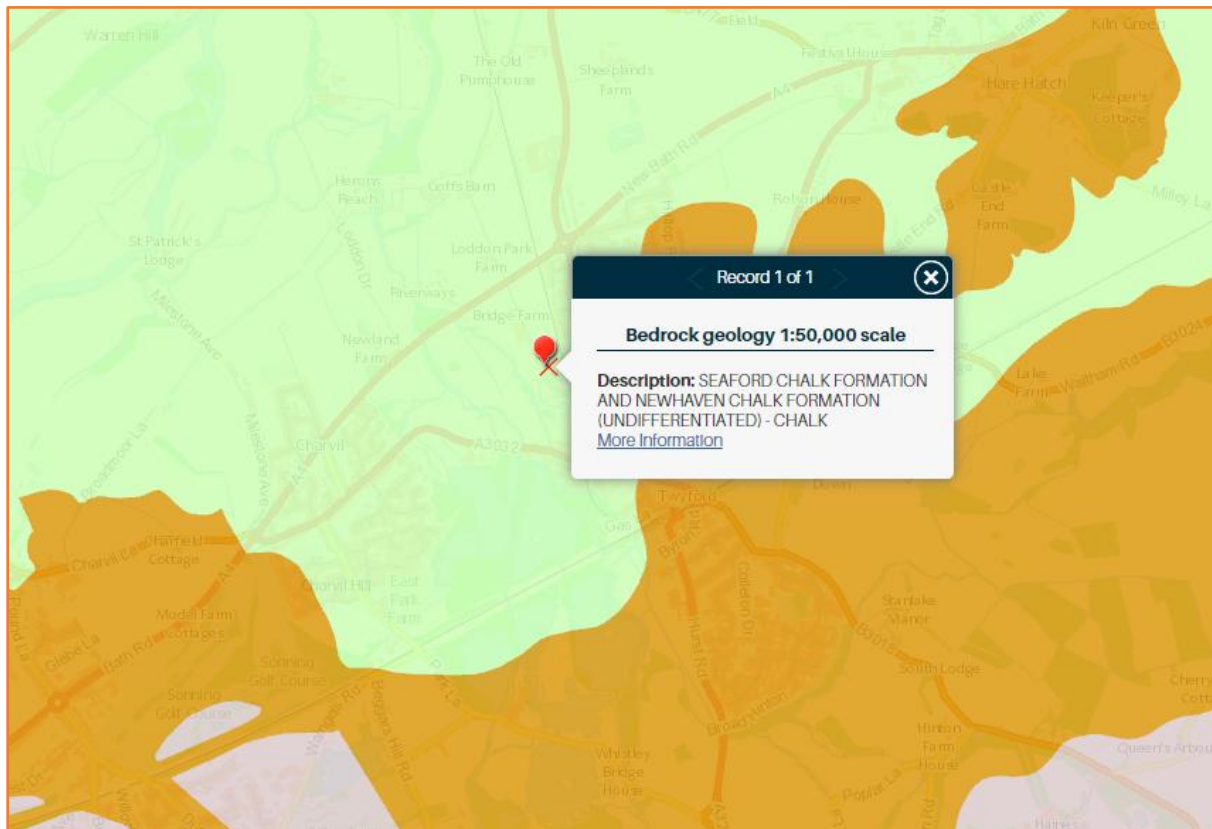


Figure 8: Bedrock Geology (Source: BGS)

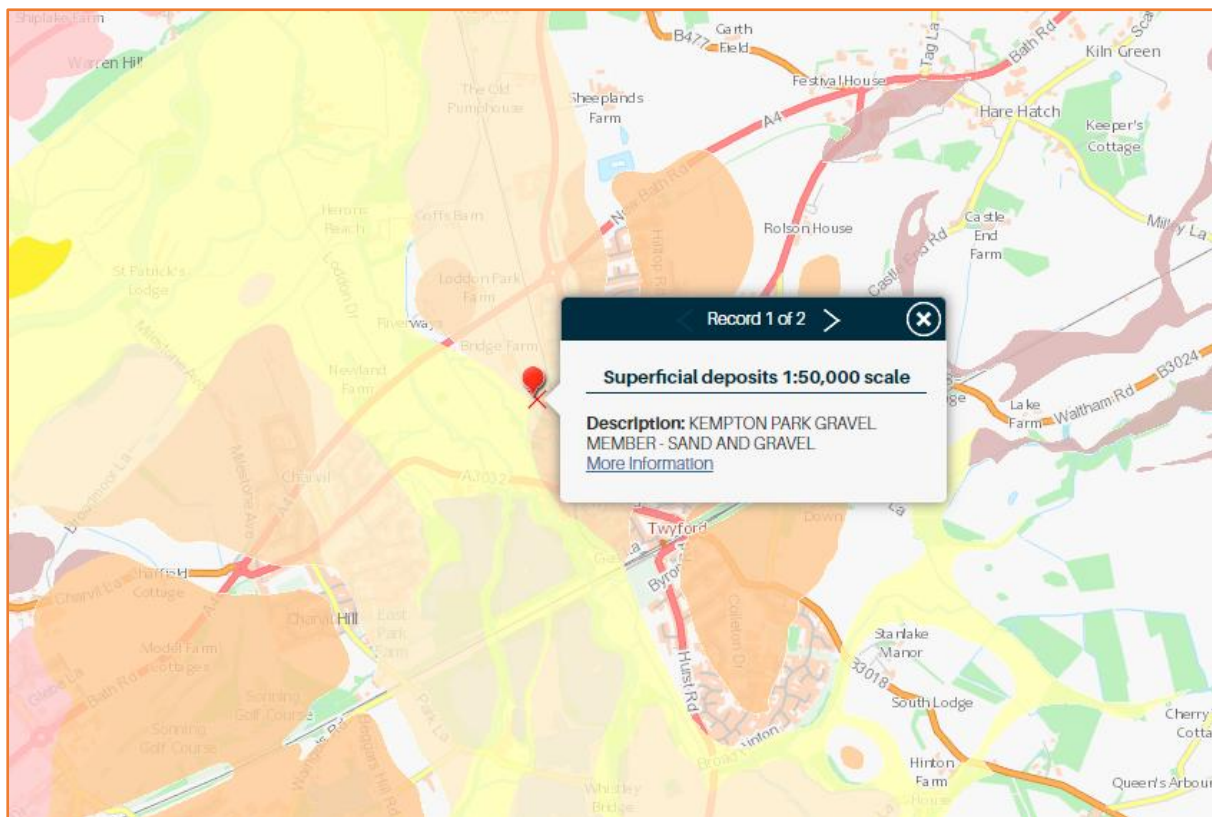


Figure 9: Superficial Deposits (Source: BGS)

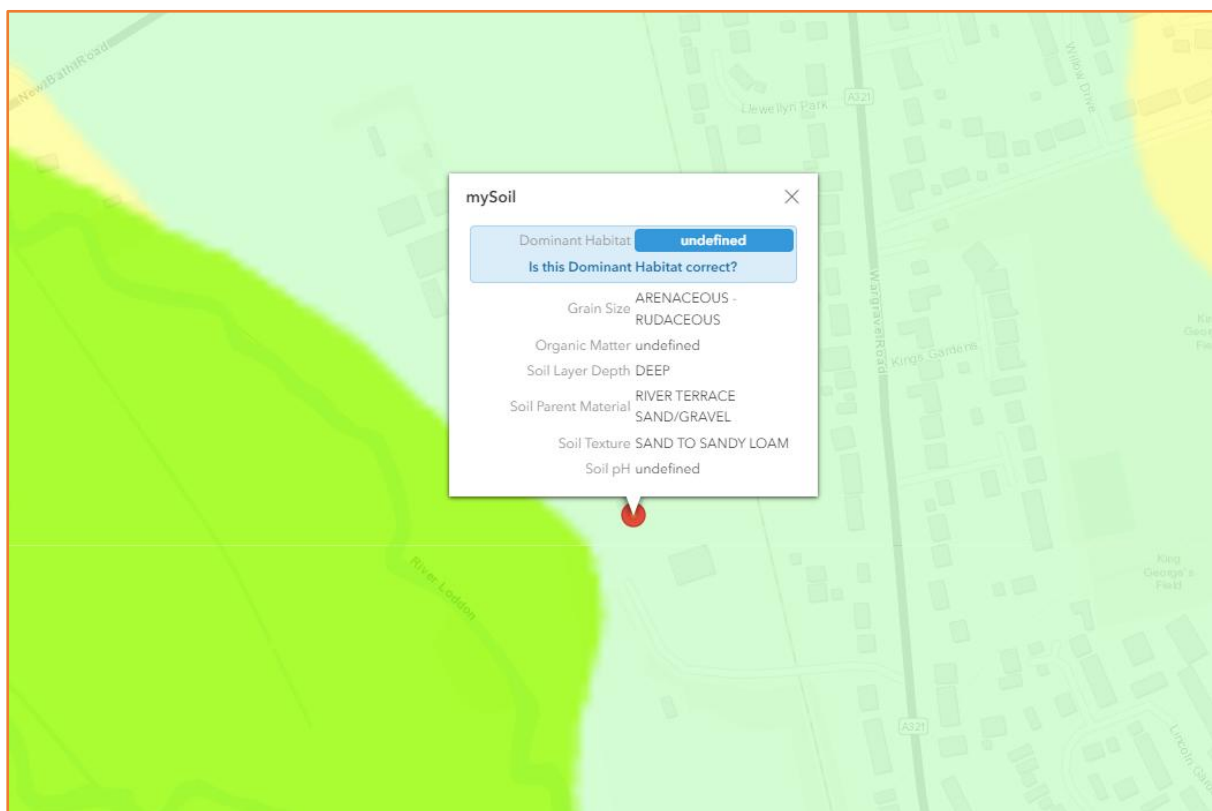


Figure 10: Soil type (Source: UK Soils)

3.4 Hydrology:

The nearest watercourses to the site are the River Loddon approximately 112m to the west of the site.

4. Development Proposal

The proposed planning application is for erection of two storey residential side extension.

There will be no introduction of additional or separate units, no sub-division, and no intensification of usage. The property will remain a single dwelling. Internal access will be maintained from the ground floor to upper floors of the building. No new basements or bedrooms on the ground floor are proposed as part of the development.

The proposed plans are provided in the report Appendix.

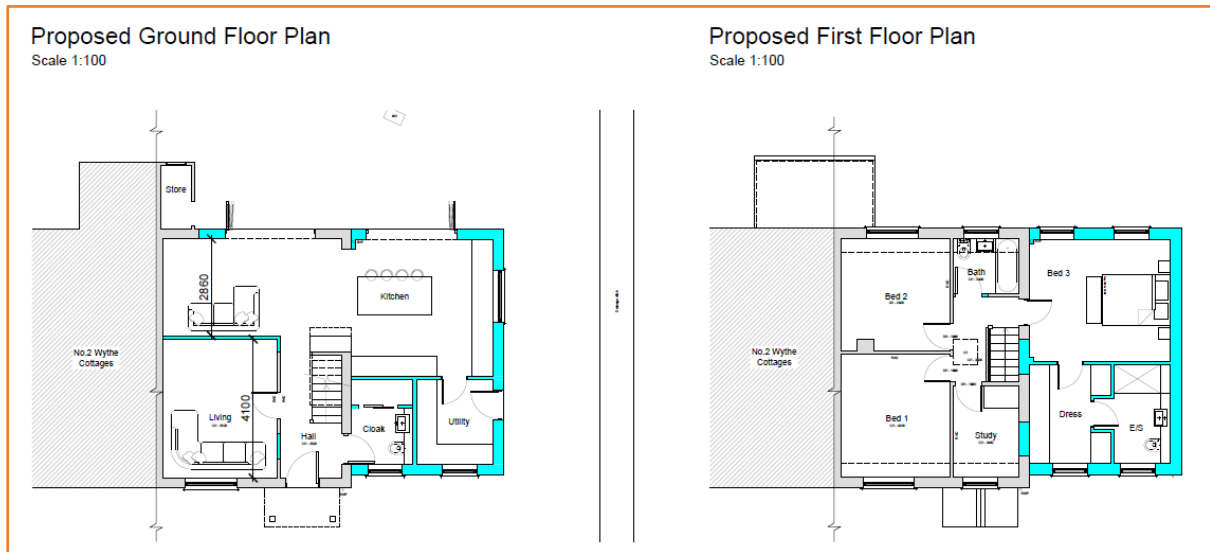


Figure 11: Proposed ground and first floor plan (Source: Wyatt Architects)

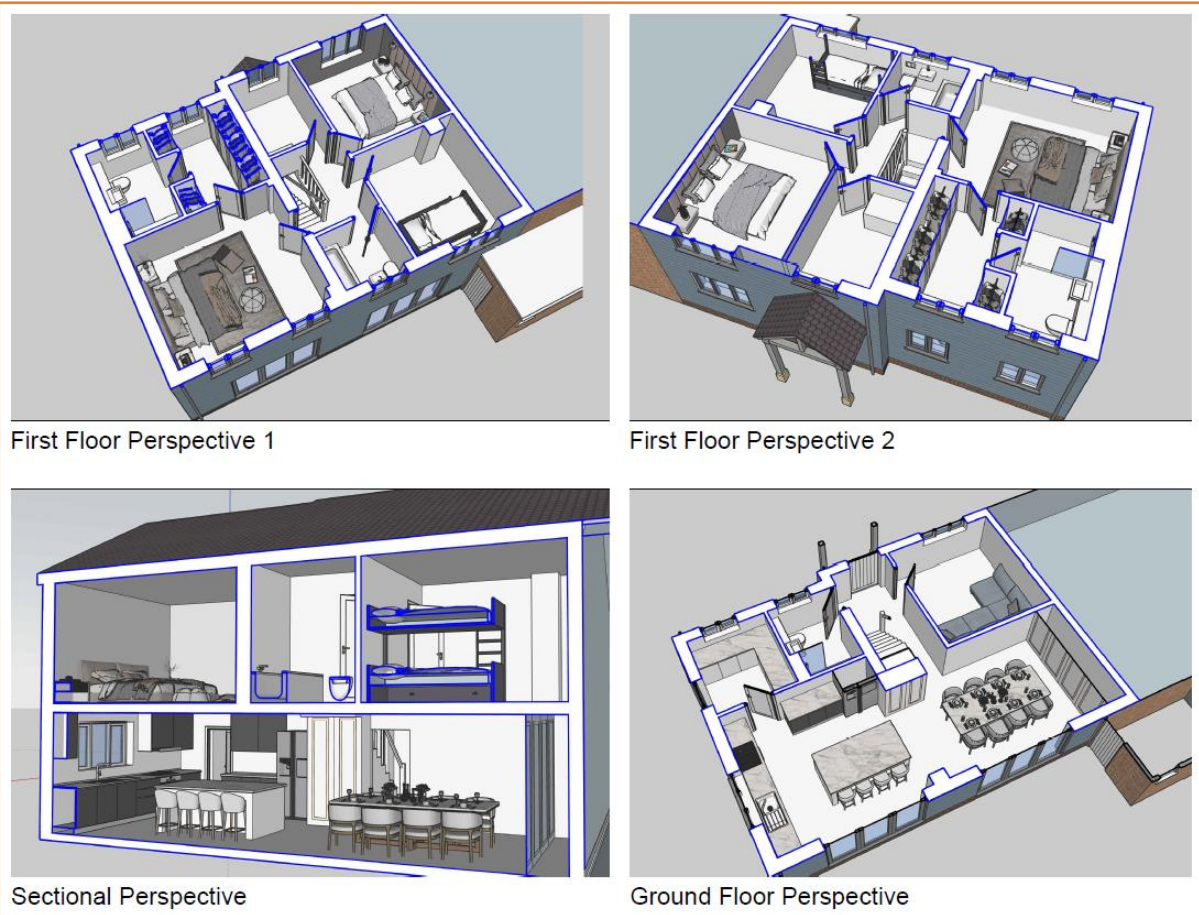


Figure 12: Proposed floor plan perspectives (Source: Wyatt Architects)

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.

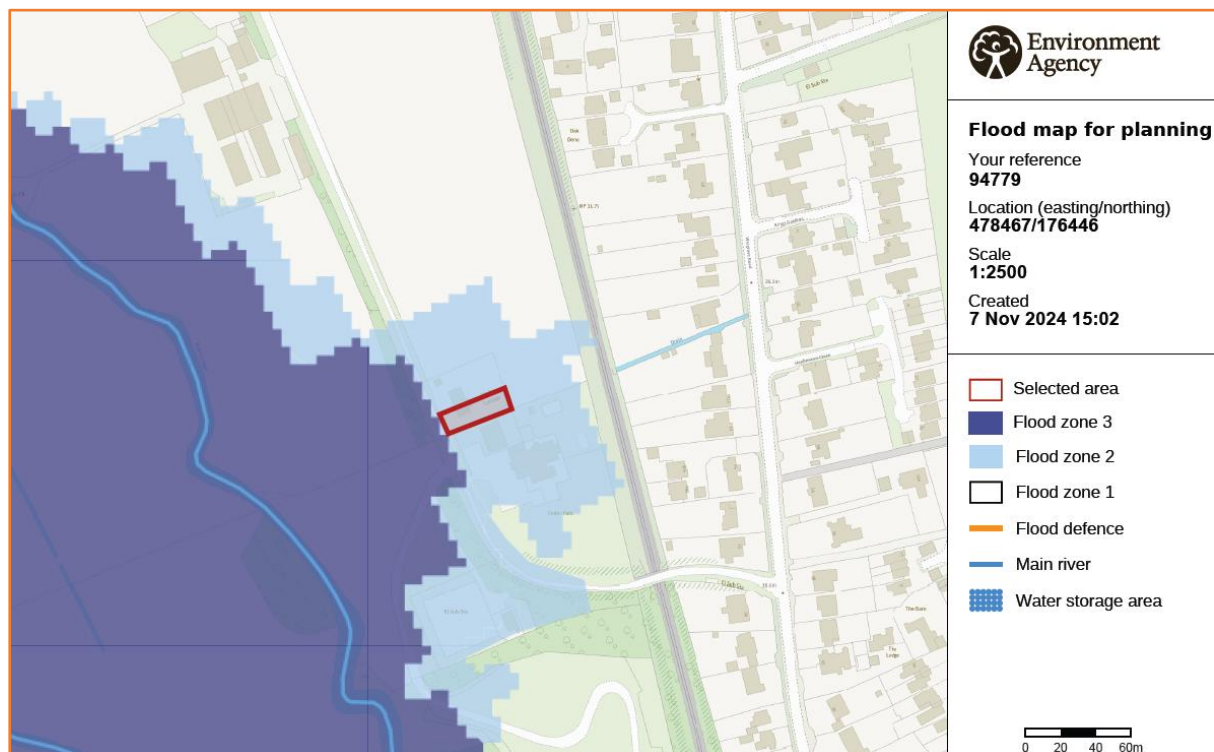


Figure 13: Environment Agency Flood Map for Planning (Rivers and Sea) (Source: EA)

The site is located within Flood Zone 2 (Medium Probability), which means it is defined as land with between a 1 in 100 and 1 in 1,000 annual probability of river flooding.

The risk would appear to be predominantly fluvial and originate from the River Loddon approximately 112m to the west of the site.

5.2 Fluvial

5.2.1 River Loddon:

The River Loddon rises in Basingstoke, Hampshire, flowing north for a length of 45km to its confluence with the River Thames at Wargrave, Berkshire.

The River Loddon is designated by the EA as a main river.

5.2.2 Detailed Flood Modelling:

Modelled flood extents have been provided by the EA as part of the Product 4, 5 and 6 data request.

The EA provided the Lower Loddon Flood Map study, completed in 2009 by the Environment Agency.

The site is shown to be outside of the 1 in 5 year, 1 in 20 year, 1 in 50 year and 1 in 100 year flood event.

The site is shown to be within the 1 in 1000 year flood event.

The development is classified as “More Vulnerable” and is located within Flood Zone 2. The Flood Risk Assessments: climate change allowances guidance states that for “More Vulnerable” development in Flood Zone 2, the central allowance should be used. The site falls within the Loddon and tributaries Management Catchment, where Central allowance is a 14% increase in flows.

The data provided by the EA includes climate change allowances of 20%. This is the most suitable allowance and therefore will be used for this assessment.

The site is shown to be outside of the 1 in 100 year plus 20% climate change flood event.

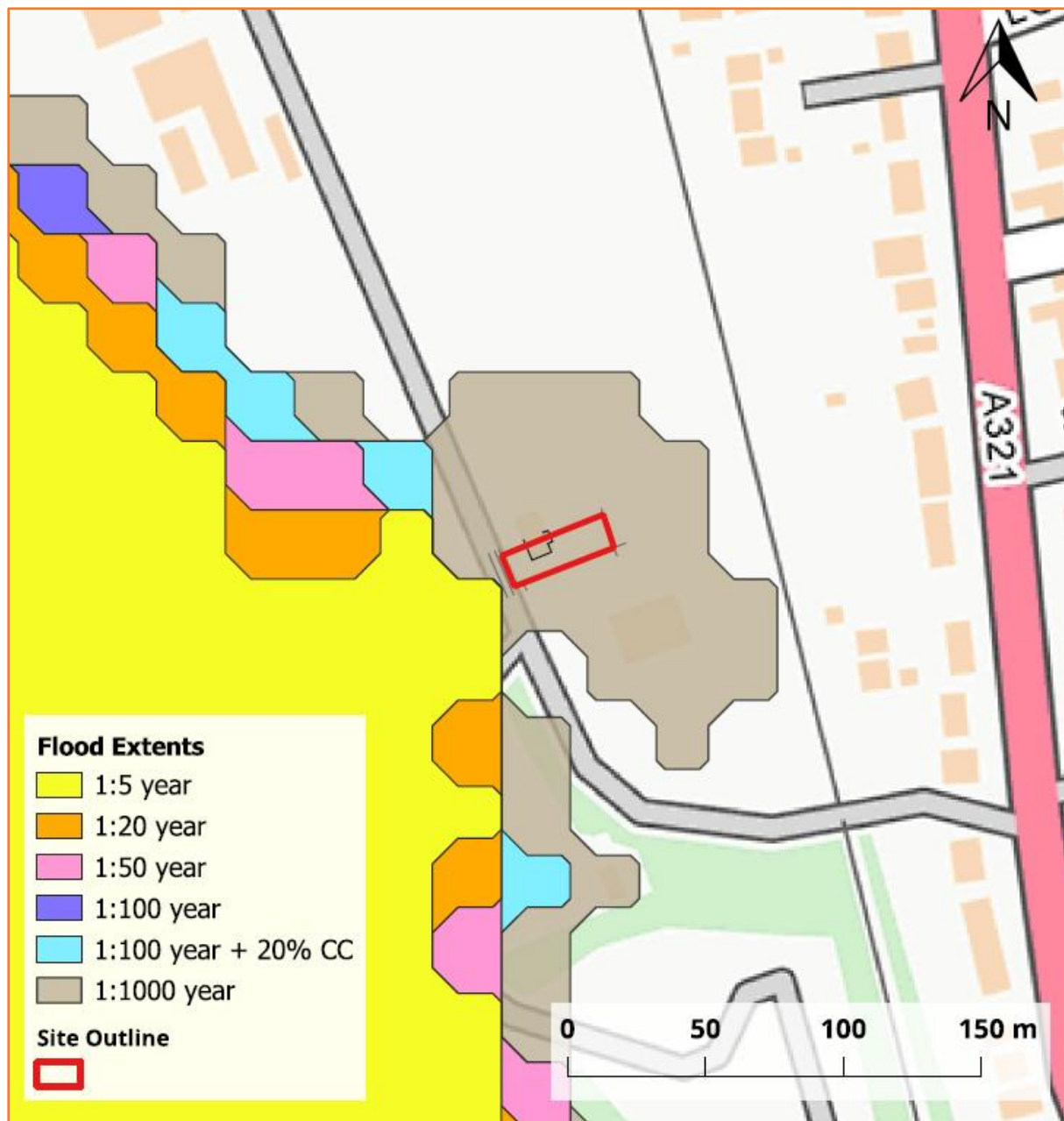


Figure 14: River Ludden modelled flood extents (Source: EA)

5.2.3 Flood Defences:

Flood defences are typically raised structures that alter natural flow patterns and prevent floodwater from entering property in times of flooding. They are generally categorised as either 'formal' or 'informal' defences. A 'formal' flood defence is a structure that was built specifically for the purpose of flood defence, and is maintained by its respective owner, which could be the EA, Local Authority, or an individual. An 'informal' flood defence is a structure that has not been specifically built to retain floodwater, and is not maintained for this specific purpose, but may afford some protection against flooding.

Asset inspections are undertaken on average every six months, although some critical assets are assessed on a more regular basis. It is possible that adjacent assets are inspected on different dates, which may result in two assets of a similar state of repair having different condition ratings. It is unclear when both assets were last inspected.

Condition ratings of assets may also be affected by the time of year the surveys are conducted, as vegetation may obscure the asset in the summer months, or accessibility may be an issue during winter months. These factors would not usually affect the recorded condition rating of an asset unless the asset is on a borderline between two ratings.

There are no EA owned flood defences directly defending the site.

5.2.4 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.

The site is not shown to be defended by formal flood defences.

5.2.5 Historical Flood Events:

The EA hold records of historic flood events from rivers and the sea. The EA map flooding to land, not individual properties. Their historic flood event record outlines are an indication of the geographical extent of an observed flood event. Their historic flood event outlines do not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.

EA hold records which correspond with the 2023 Wokingham Borough Council Strategic Flood Risk Assessment (SFRA). The EA historical flood records show that the site's western boundary is within the December 2002 – January 2003 flood event. The site is also within close proximity to the November 1974 flood event, however was not affected by this event. Both of these flood events were attributed to the channel capacity exceedance (no raised defences).

The EA historical flood records are not comprehensive, and they advise that further enquiries locally are made with specific reference to flooding at the location.

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.

The 2023 Wokingham Borough Council SFRA has produced scenarios the following 1 in 30 year, 1 in 100 year, 1 in 1000 year and 1 in 100 year plus 40% climate change surface water flooding extents. However, no depths have been provided to accompany these extents.

Using this data, the site is shown to be outside of the 1 in 30 year surface water flooding extent.

The site is shown to be partially within the 1 in 100 year surface water flooding extent.

The site is shown to be entirely within the 1 in 1000 year and the 1 in 100 year plus 40% climate change surface water flooding extents.

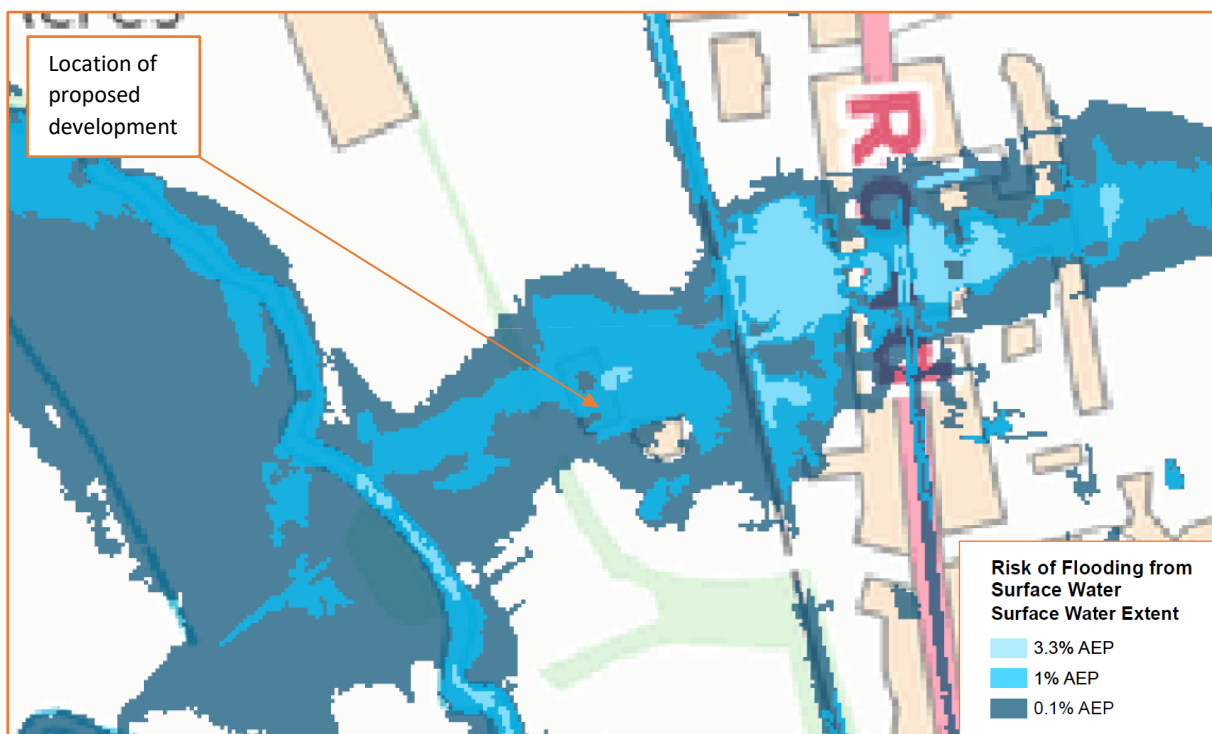


Figure 15: Surface water flooding extents (Source: 2023 Wokingham Borough Council SFRA)

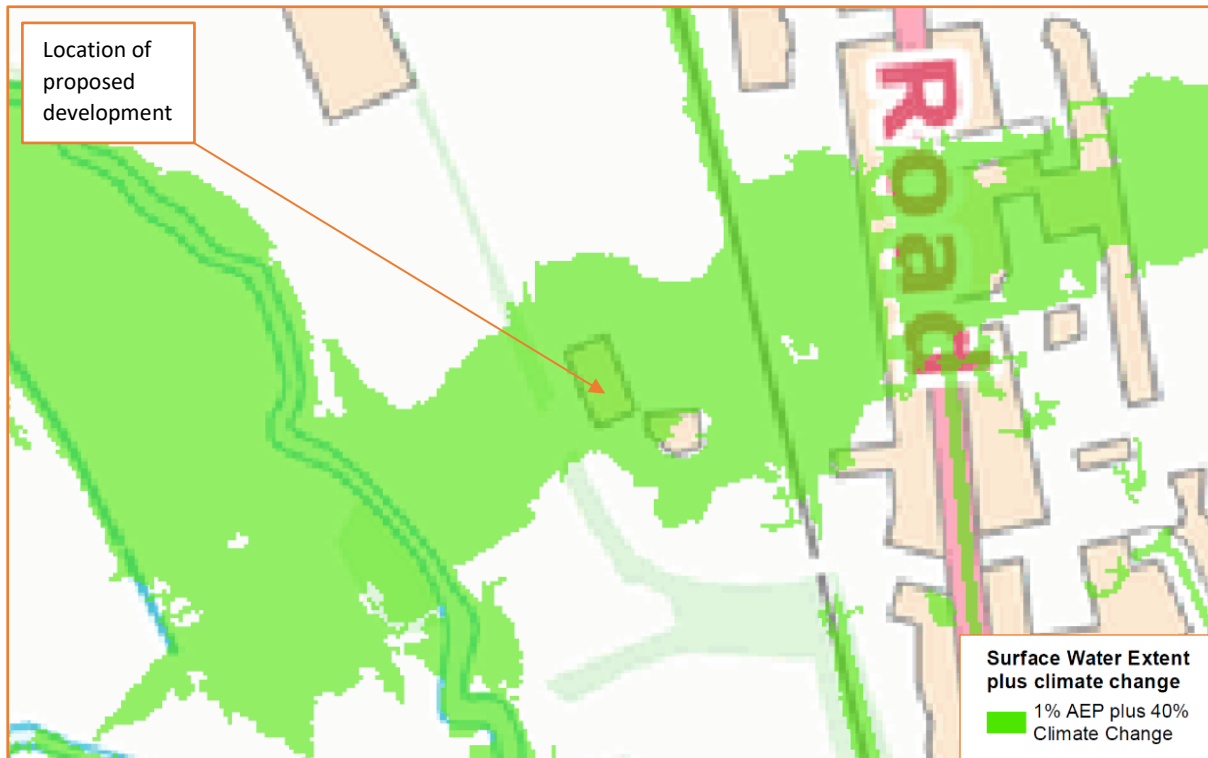


Figure 16: 1 in 100 year plus 40% climate change surface water flood extent (Source: 2023 Wokingham Borough Council SFRA)

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.

According to the EA, flooding from groundwater is unlikely in this area.

The 2023 Woking Borough Council SFRA shows the site to be in an area with a $\geq 75\%$ susceptibility to groundwater flooding and within an area with groundwater between 0.025m – 0.5m below the surface.

No records of historic groundwater flooding in the vicinity of the site have been provided.

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.

Using the 2023 Woking Borough Council and Thames Water data, the site is located within the postcode area of "RG10 9" where 94 sewer flood incidents have occurred during 2000 – 2019. Between 2019 – 2022, this postcode area experienced 14 sewer flood incidents.

No records of previous sewer flooding at the site 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 within the maximum inundation extent on the EA Reservoir Inundation Map when there is also flooding from rivers. 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 further information has been provided to suggest the site is susceptible to from the failure of reservoirs, canals or other artificial infrastructure from the risk of flooding.

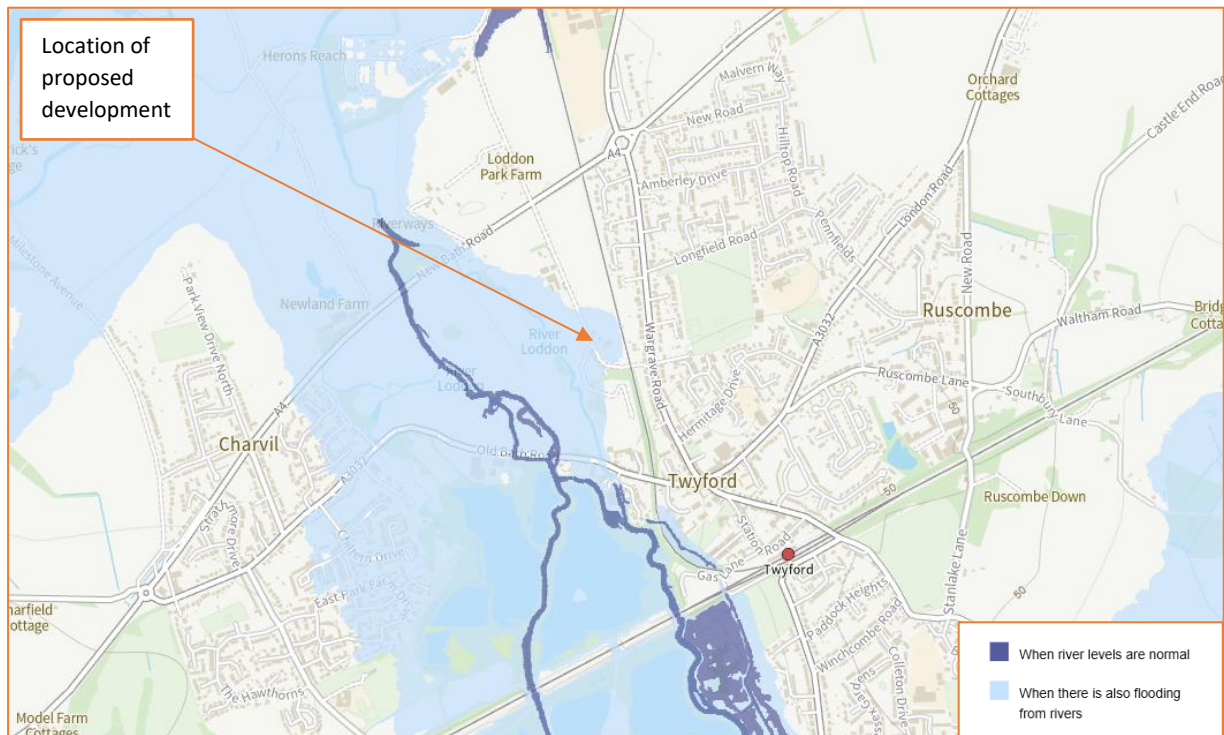


Figure 17: Extract from Environment Agency Risk of Flooding from Reservoirs Map (Source: EA)

6. Flood Risk Management

6.1 Vulnerability to flooding:

The NPPF classifies property usage by vulnerability to flooding.

The existing site usage is classified as "more vulnerable" throughout, as it is a residential property. Post development, the site will remain "more vulnerable", as the application is for a two storey side extension to the existing residential property.

Accordingly, it is considered that the vulnerability of the site as a whole will not increase post development.

There will be no introduction of additional or separate units or dwelling, or increase in flood risk vulnerability post development.

6.2 EA Standing Advice:

The EA Standing Advice guidance is for domestic extensions and non-domestic extensions where the additional footprint created by the development does not exceed 250m². It should not be applied if an additional dwelling is being created, e.g. a self-contained annexe or additional commercial unit.

No additional residential units will be created as part of the development. The proposed application is for the construction of an extension which does not exceed 250m². As such, the development as a whole is considered to fit within EA standing advice for domestic extensions.

6.3 Physical Design Measures:

Given that the proposed application is for a two storey side extension to the existing property (and will not introduce any additional or separate residential units), finished floor levels will be set no lower than existing floor levels, and internal access will be maintained from the ground floor to the first floor of the property.

In addition, no new basements or bedrooms on the ground floor are proposed as part of the development.

To help protect against flooding during extreme events, the applicant has agreed to implement adequate flood protection measures which will be instated to the extension to ensure adequate protection from flooding. These measures could include the following:

- Solid (concrete) ground floor;
- Closed-cell foam used in wall cavities;
- Waterproof ground floor internal render;
- External walls rendered resistant to flooding to first floor level;
- Exterior ventilation outlets, utility points and air bricks fitted with removable waterproof covers;

- Ground floor electrical main ring run from first floor level; and on separately switched circuit from first floor;
- Electrical incomer and meter situated at first floor level or above;
- Boilers, control and water storage / immersion installed at first floor level or above;
- Gas meter installed at first floor level or above;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Manhole covers secured;
- Kitchen units of solid, water resistant material;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level.

The applicant will also consider the use of demountable flood defence barriers to defend ground level doorways and low windows.

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 during the 1:100 year fluvial plus allowance for climate change flood event.

However, it should be noted that the proposed application is for a two storey side extension to the existing dwelling. No new units or additional dwellings will be created as part of the development.

In case of an extreme flood event without warning, users should seek refuge on the upper floors of the building. The applicant has confirmed that permanent means of internal access will be provided to the upper floors of the building, thus providing safe refuge.

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

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 site lies within an Environment Agency Flood Warning Area of the River Loddon at Twyford, Charvil and Wargrave (qdiat 315022).

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 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 2: EA Flood Warning Service

The applicant has prepared the following flood plan to protect life and property during a flood event:

Before a flood:

- Find out if you are at risk of flooding.
- Find out if you can receive flood warnings.
- 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 such as pets, cars, furniture, and electrical equipment.
- Know how to turn off gas, electricity and water supplies.
- 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.
- Consider buying flood protection products such as flood boards and airbrick covers to help reduce flood water getting into your property.

During a flood:

- Tune into your local radio station on a battery or wind-up radio.
- Fill jugs and saucepans with water.
- Grab your flood kit - if you have prepared one.
- Collect blankets, torch, first aid kit, medication and food.
- Move important documents, personal items, valuables, and lightweight belongings upstairs or to high shelves.
- Raise large items of furniture, or put them in large bags if you have them.
- Move people, outdoor belongings, cars and pets to higher ground.
- Switch off water, gas and electricity at mains when water is about to enter your home. Do not touch sources of electricity when standing in water.
- Fit flood protection products, if you have them, for example flood boards, airbrick covers, sandbags.
- Put plugs in sinks and baths. Weigh them down with a pillowcase or plastic bag filled with soil.
- If you do not have non-return valves fitted, plug water inlet pipes with towels or cloths.
- Move your family and pets upstairs or to a high place with a means of escape.
- 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, central heating and water checked by qualified engineers before switching them back on.

6.5 Off-Site Impacts:**6.5.1 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 Zone 2 when using the EA Flood Map for Planning (Rivers and Sea). The application is for a residential extension of less than 250m², and therefore there will be no unacceptable loss of floodplain storage.

6.5.2 Surface Water Drainage:

The development will utilise Sustainable Urban Drainage (SuDs) design in accordance with the NPPF for Planning Applications 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;
7. Attenuation of rainwater in ponds or open water features with controlled discharge into the local watercourse.

Due to the small scale of the development, a full Surface Water Drainage Strategy is not required at this stage of planning. However, SuDS features will be incorporated into the development where practically possible or will utilise the existing arrangement on site. As such, any change in surface water runoff from the site will likely be negligible.

8. 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 Sequential Test is applied to developments in areas identified as being at risk of any source of flooding now or in the future. The Sequential Test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of flooding, taking all sources of flood risk and climate change into account.

The sequential approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding. Other forms of flooding need to be treated consistently with river and tidal flooding in mapping probability and assessing vulnerability, so that the sequential approach can be applied across all areas of flood risk.

The site is situated within Flood Zone 2 when using the Environment Agency Flood Map for Planning (Rivers and Sea). It is also partially within the 1 in 100 year and entirely within the 1 in 1000 year and the 1 in 100 year plus 40% climate change surface water flooding extents presented in the 2023 Woking Borough Council SFRA modelled surface water flooding extent scenarios.

Post development, the site will remain “more vulnerable”, as the application is for a two storey side extension to the existing residential property.

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 3: Flood risk vulnerability and flood zone ‘compatibility’

Using the table above, the proposed application is considered to be suitable within Flood Zone 2.

The Sequential and Exception Tests do not need to be applied to minor developments and changes of use (this application is for ‘minor development’ – a residential extension).

9. Discussion and Conclusions

Unda Consulting Limited have been appointed by Amy Chalker to undertake a Flood Risk Assessment for the proposed development at 1 Wythe Cottages, Muddlers Lane, Twyford, RG10 9PR. The purpose of the study is to support a planning application for the proposed development. The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The proposed planning application is for erection of two storey residential side extension.

There will be no introduction of additional or separate units, no sub-division, and no intensification of usage. The property will remain a single dwelling. Internal access will be maintained from the ground floor to upper floors of the building. No new basements or bedrooms on the ground floor are proposed as part of the development.

The existing site usage is classified as "more vulnerable" throughout, as it is a residential property. Post development, the site will remain "more vulnerable", as the application is for a two storey side extension to the existing residential property. Accordingly, it is considered that the vulnerability of the site as a whole will not increase post development. There will be no introduction of additional or separate units or dwelling, or increase in flood risk vulnerability post development.

The site is located within Flood Zone 2 (Medium Probability), which means it is defined as land with between a 1 in 100 and 1 in 1,000 annual probability of river flooding. The risk would appear to be predominantly fluvial and originate from the River Loddon approximately 112m to the west of the site.

The EA provided the Lower Loddon Flood Map study, completed in 2009 by the Environment Agency.

The site is shown to be outside of the 1 in 5 year, 1 in 20 year, 1 in 50 year and 1 in 100 year flood event.

The site is shown to be within the 1 in 1000 year flood event.

The development is classified as "More Vulnerable" and is located within Flood Zone 2. The Flood Risk Assessments: climate change allowances guidance states that for "More Vulnerable" development in Flood Zone 2, the central allowance should be used. The site falls within the Loddon and tributaries Management Catchment, where Central allowance is a 14% increase in flows.

The data provided by the EA includes climate change allowances of 20%. This is the most suitable allowance and therefore will be used for this assessment.

The site is shown to be outside of the 1 in 100 year plus 20% climate change flood event.

There are no EA owned flood defences directly defending the site.

EA hold records which correspond with the 2023 Wokingham Borough Council Strategic Flood Risk Assessment (SFRA). The EA historical flood records show that the site's western boundary is within the December 2002 – January 2003 flood event. The site is also within close proximity to the

November 1974 flood event, however was not affected by this event. Both of these flood events were attributed to the channel capacity exceedance (no raised defences).

The 2023 Wokingham Borough Council SFRA has produced scenarios the following 1 in 30 year, 1 in 100 year, 1 in 1000 year and 1 in 100 year plus 40% climate change surface water flooding extents. However, no depths have been provided to accompany these extents.

Using this data, the site is shown to be outside of the 1 in 30 year surface water flooding extent.

The site is shown to be partially within the 1 in 100 year surface water flooding extent.

The site is shown to be entirely within the 1 in 1000 year and the 1 in 100 year plus 40% climate change surface water flooding extents.

The 2023 Woking Borough Council SFRA shows the site to be in an area with a $\geq 75\%$ susceptibility to groundwater flooding and within an area with groundwater between 0.025m – 0.5m below the surface.

According to the EA, flooding from groundwater is unlikely in this area.

No records of historic groundwater flooding in the vicinity of the site have been provided.

Using the 2023 Woking Borough Council and Thames Water data, the site is located within the postcode area of "RG10 9" where 94 sewer flood incidents have occurred during 2000 – 2019. Between 2019 – 2022, this postcode area experienced 14 sewer flood incidents.

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

Additionally, the risk of flooding posed to the site by reservoir flooding would appear to be low.

Given that the proposed application is for a two storey side extension to the existing property (and will not introduce any additional or separate residential units), finished floor levels will be set no lower than existing floor levels, and internal access will be maintained from the ground floor to the first floor of the property. In addition, no new basements or bedrooms on the ground floor are proposed as part of the development.

Due to the small scale of the development, a full Surface Water Drainage Strategy is not required at this stage of planning. However, SuDS features will be incorporated into the development where practically possible or will utilise the existing arrangement on site. As such, any change in surface water runoff from the site will likely be negligible.

The applicant has confirmed that:

- The proposed planning application is for a 'minor development' – a residential extension.
- The additional footprint created by the development will not exceed 250m².
- There will be no introduction of additional or separate units, no sub-division, and no intensification of usage.
- No new basements or ground floor bedrooms are proposed.
- The proposed development fits within EA standing advice for domestic extensions.
- Finished floor levels will be set no lower than existing floor levels.

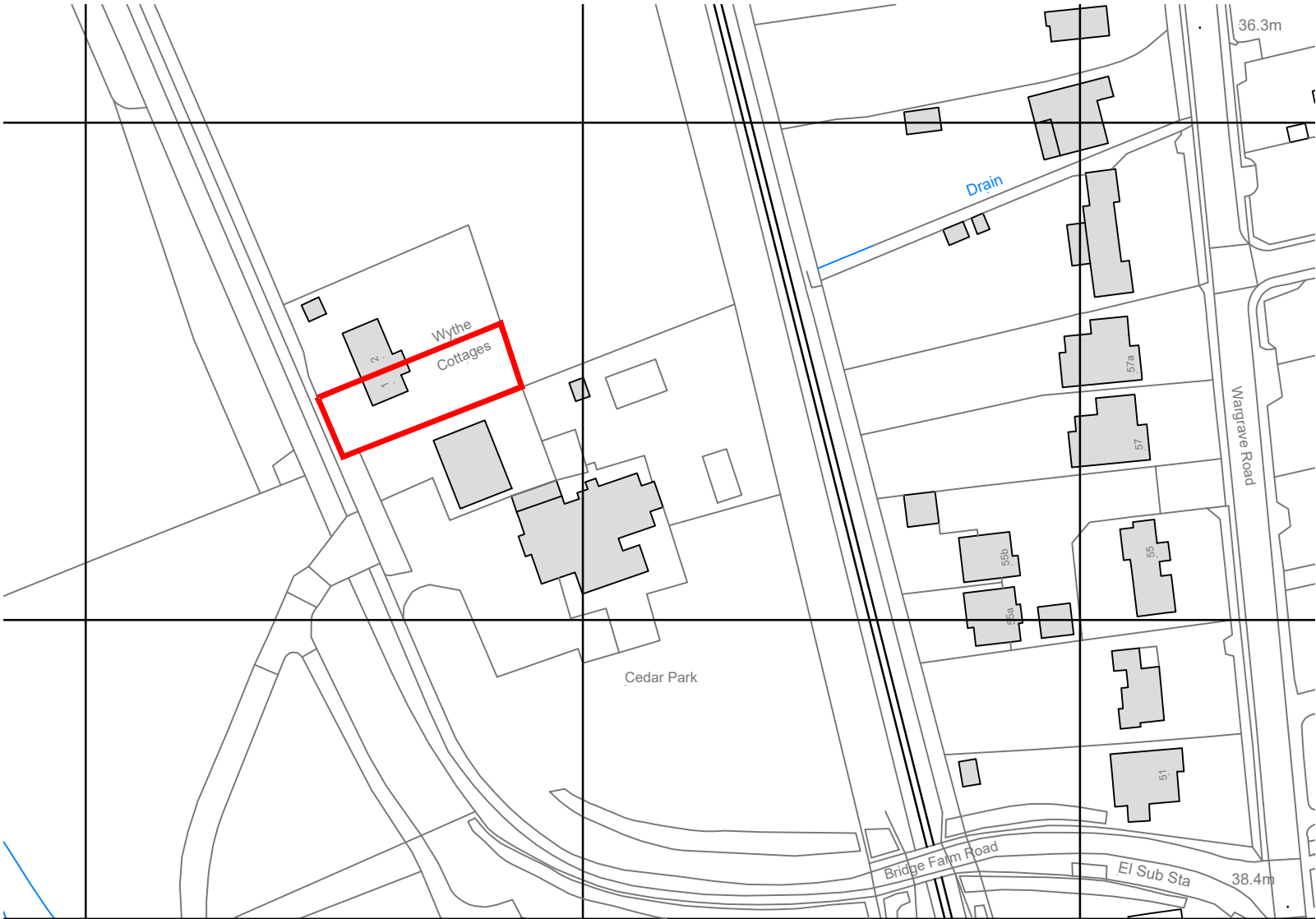
- Internal access will be maintained from ground floor to the first-floor level.
- Flood proofing of the house will be incorporated as appropriate.
- The applicant will register with the free Environment Agency Floodline Warning Direct service.
- Due to the small scale of development, a full Surface Water Drainage Strategy is not required at this stage of planning.

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

Appendix

- Site Location, Existing and Proposed Plans;
- EA Flood Map for Planning.

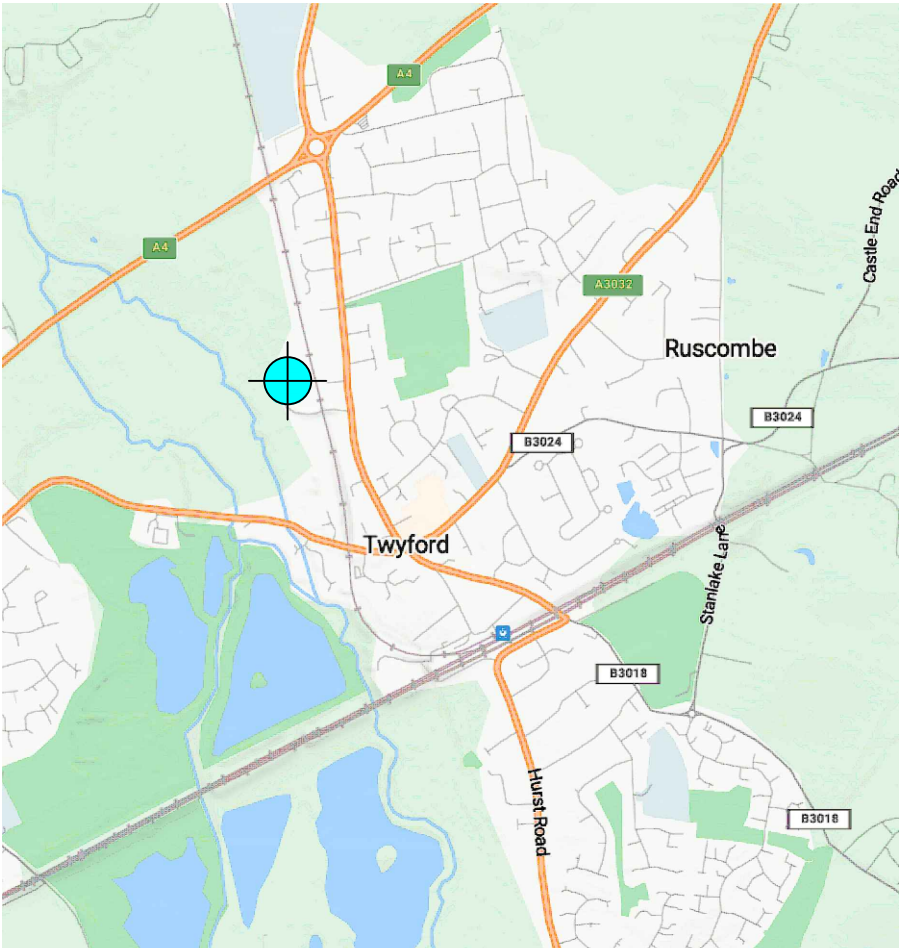
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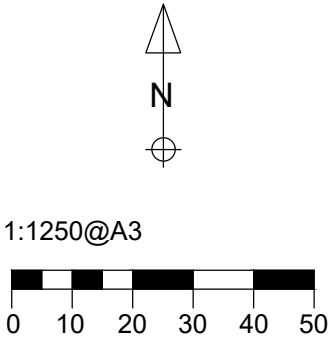
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Orientation Plan

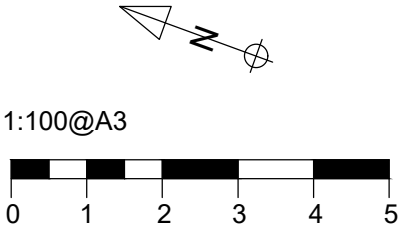
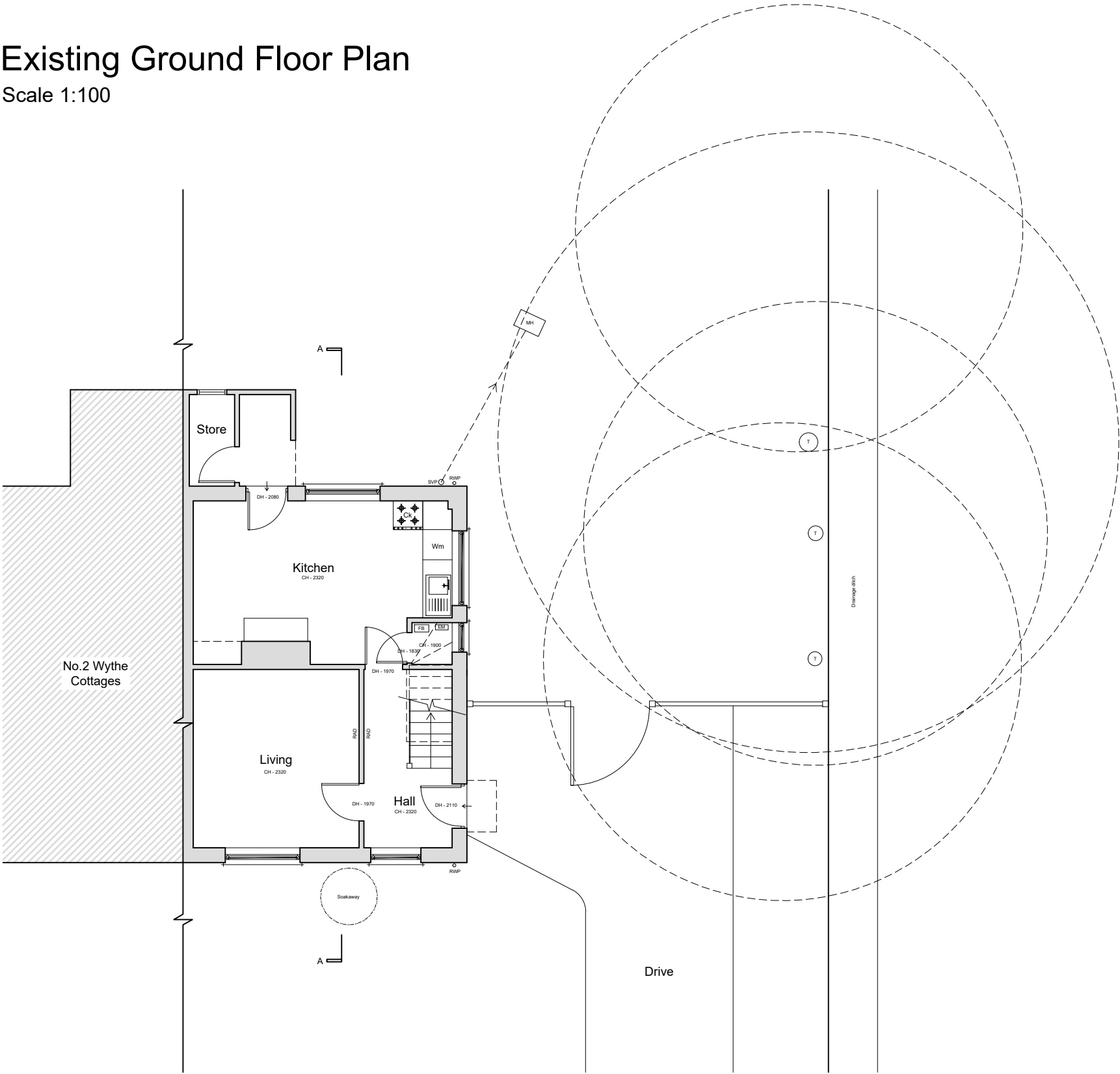
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Drawing No.: 1 S01		Revision: A

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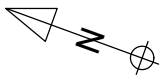
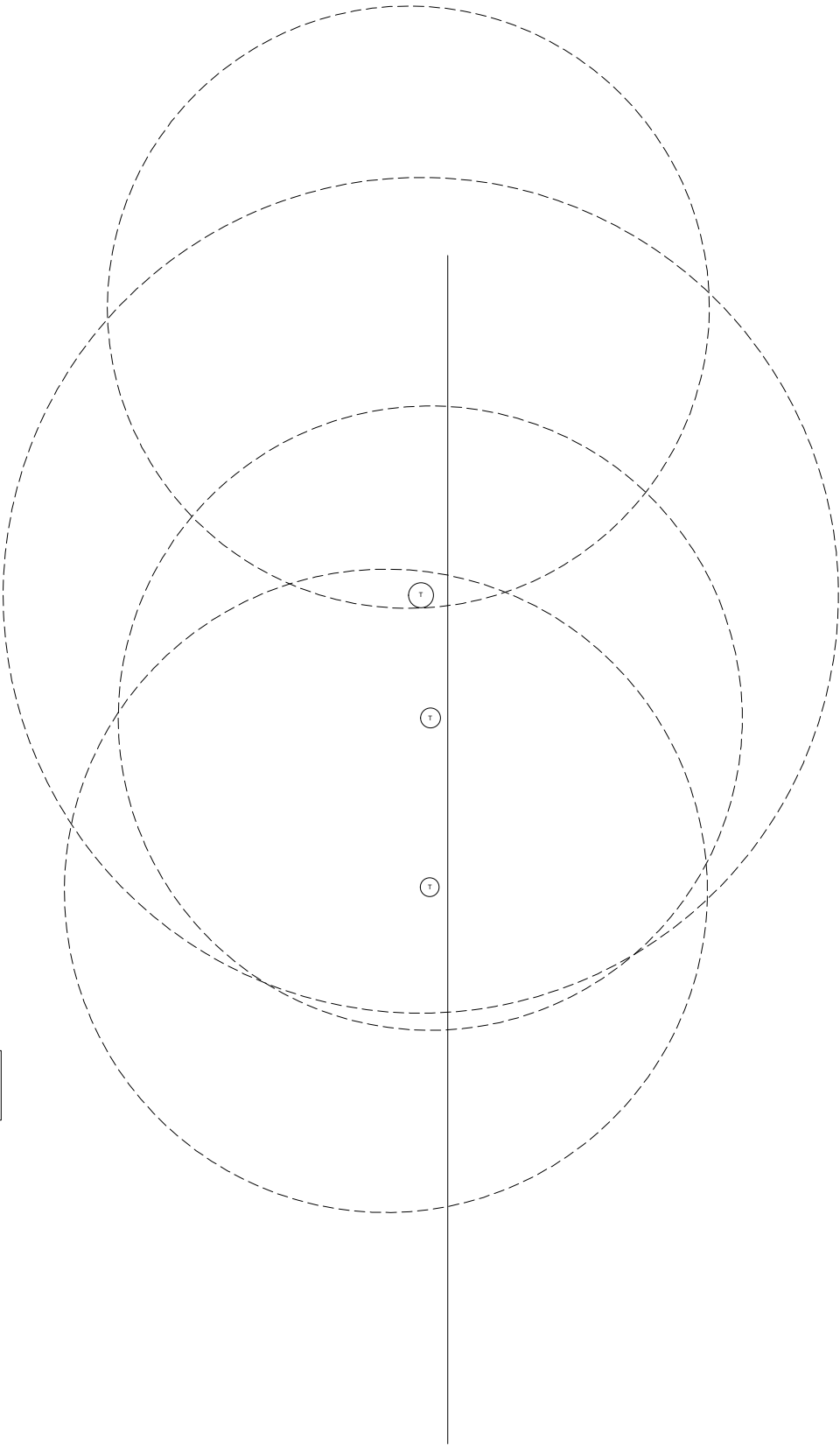
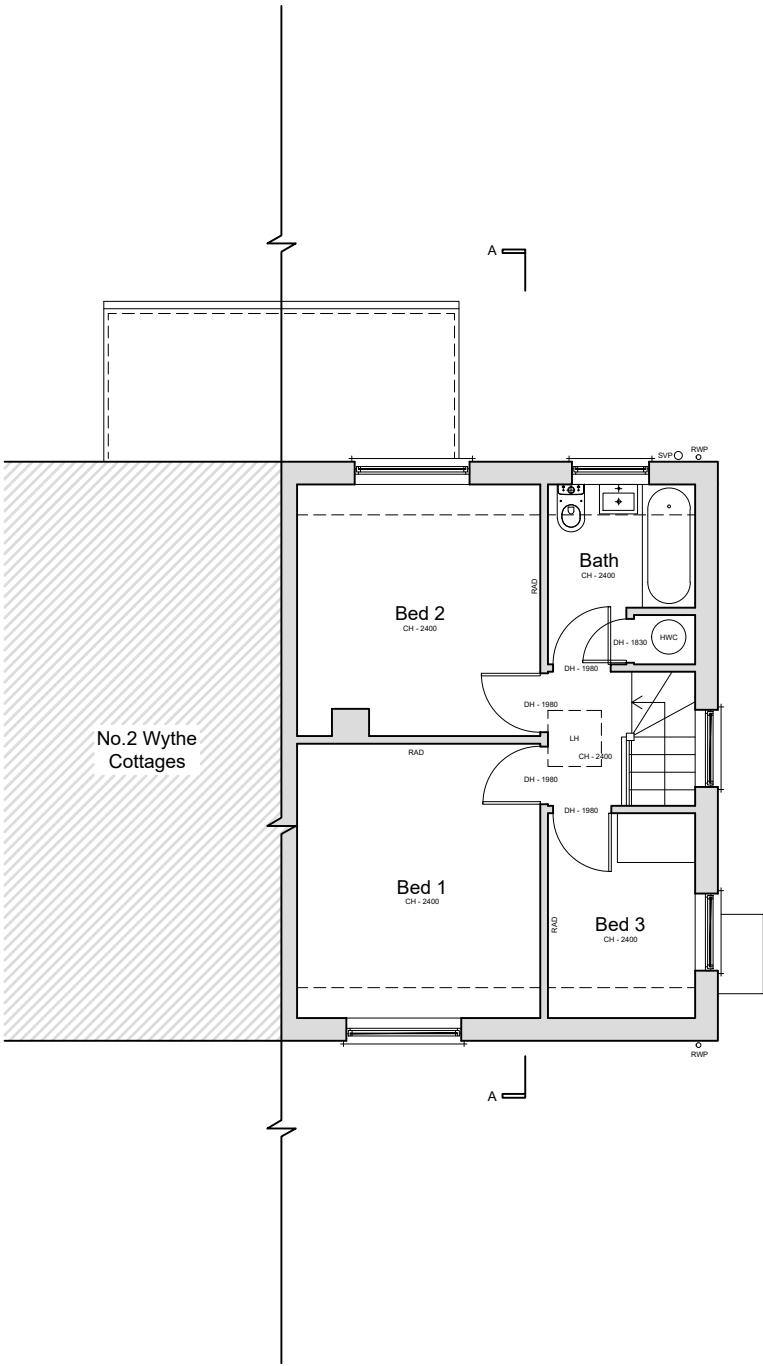
Existing Ground Floor Plan
Scale 1:100



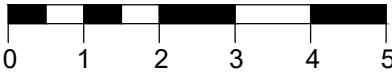
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Drawing No.: 1 S02	Revision:	A

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Existing First Floor Plan
Scale 1:100



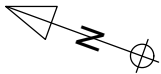
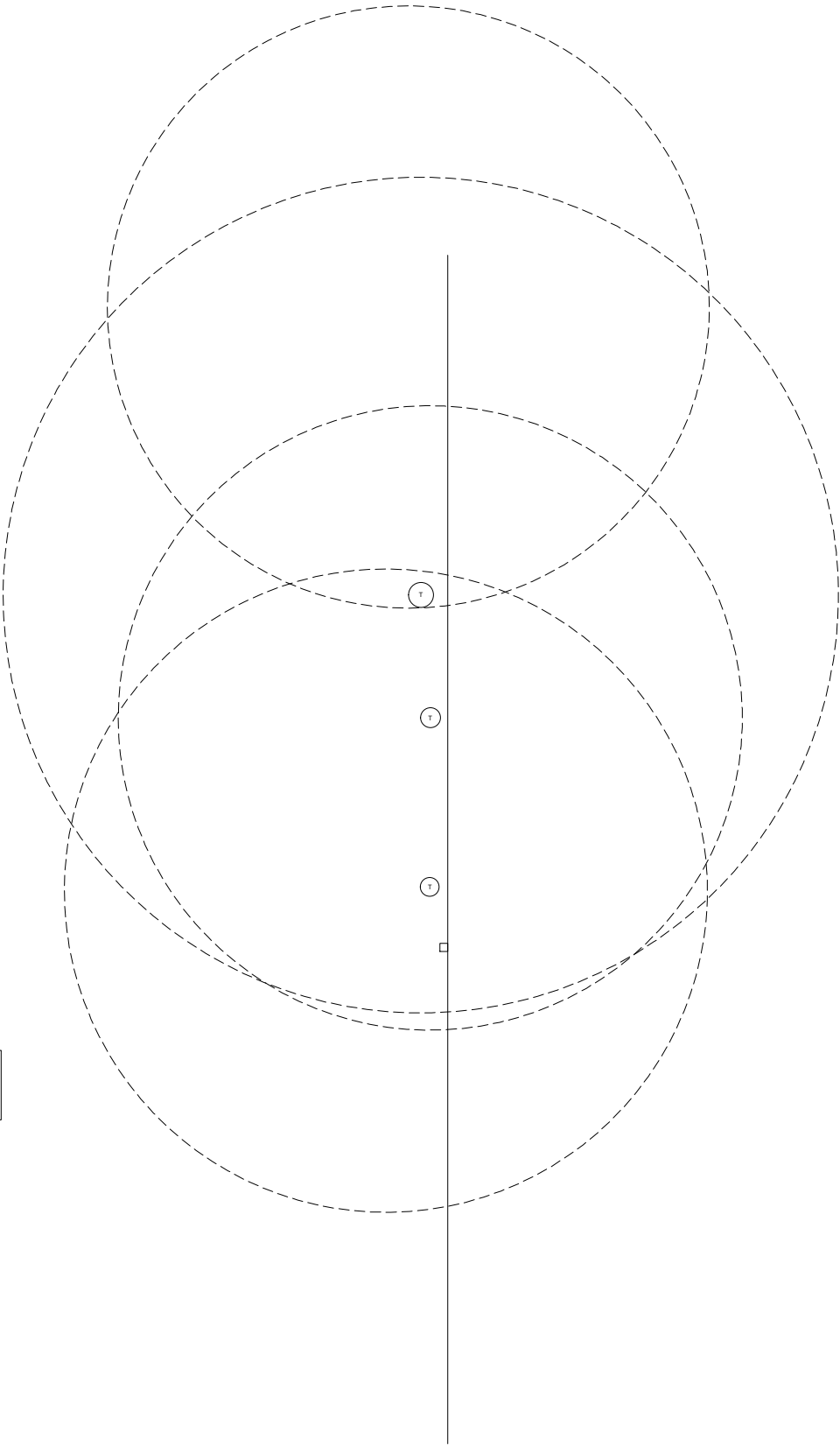
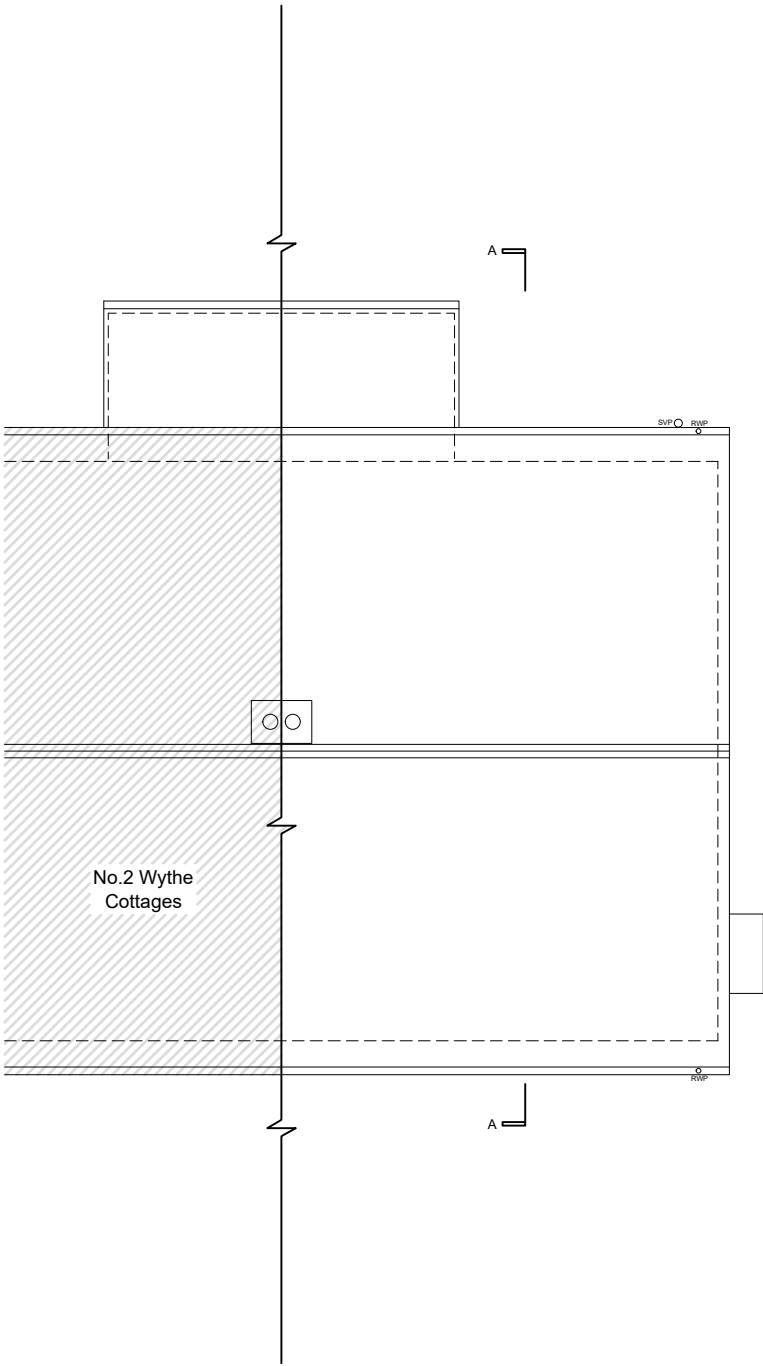
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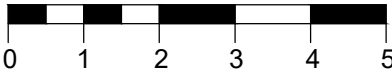
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Drawing No.: 1 S03	Revision:	A

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Existing Roof Plan
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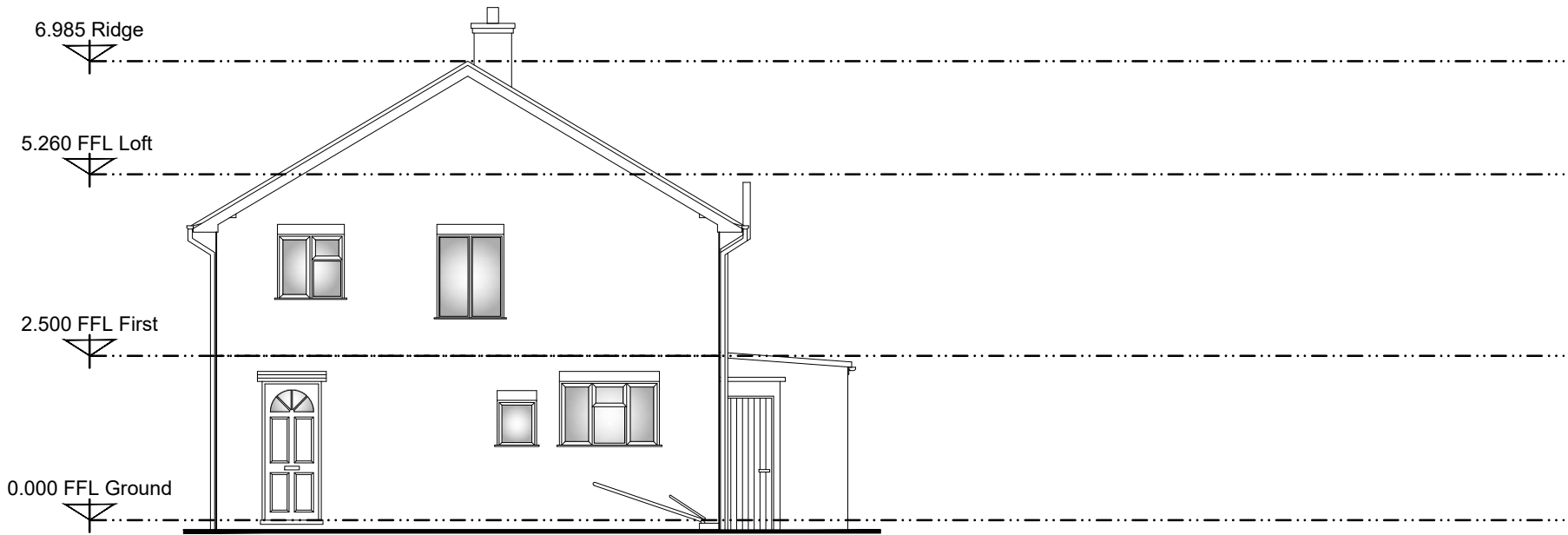


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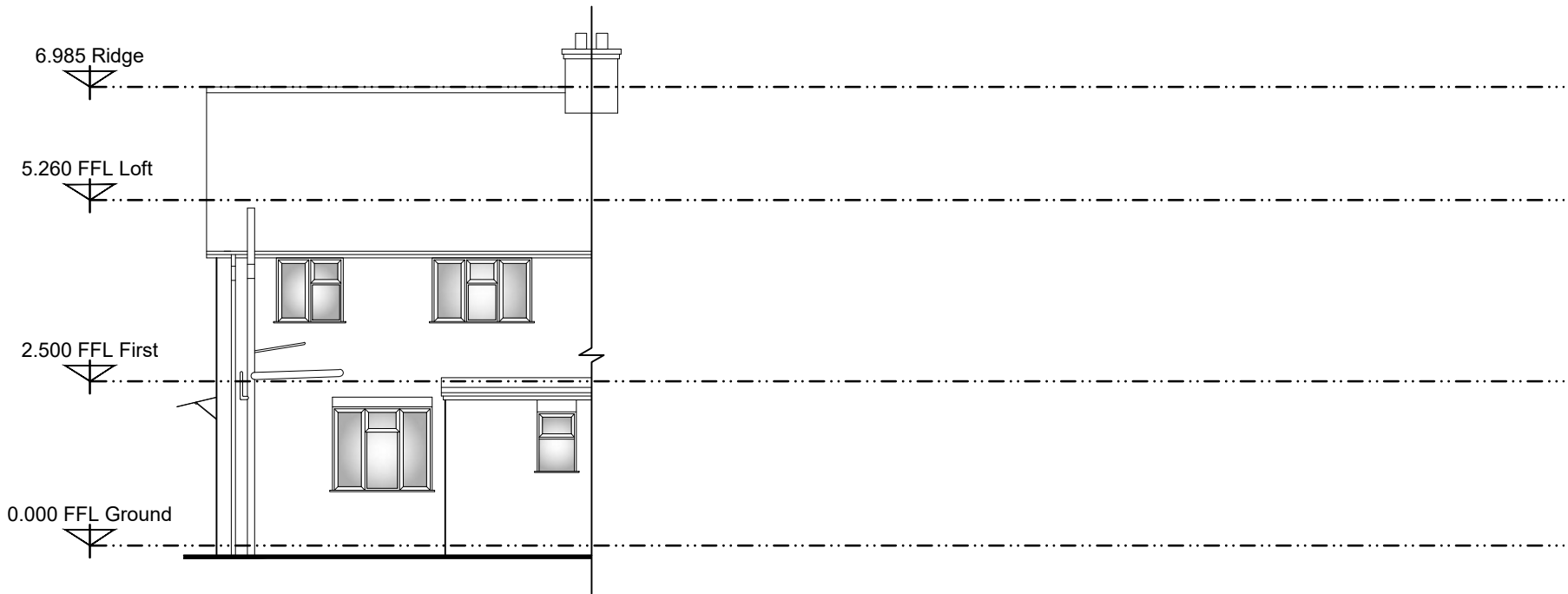


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Drawing No.: 1 S04	Revision:	A

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Scale 1:100



Existing East Elevation
Scale 1:100

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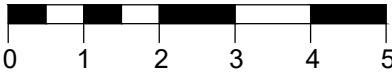
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ROOFS:
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DOORS/WINDOWS:
White uPVC

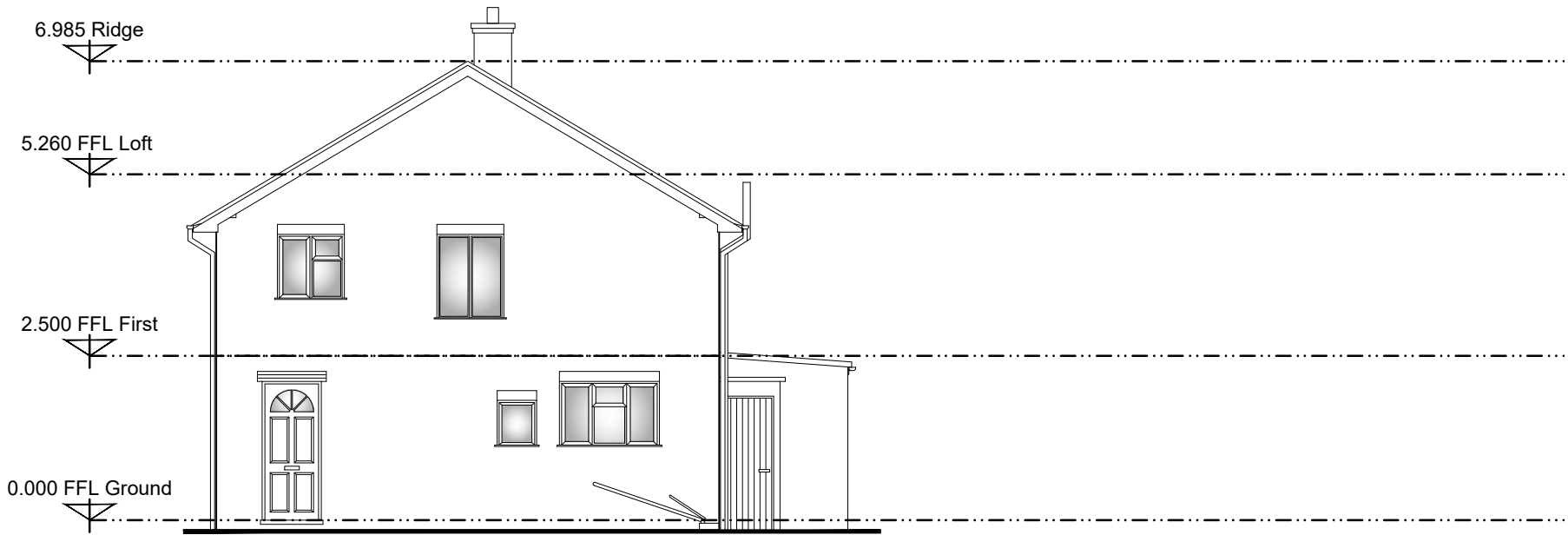
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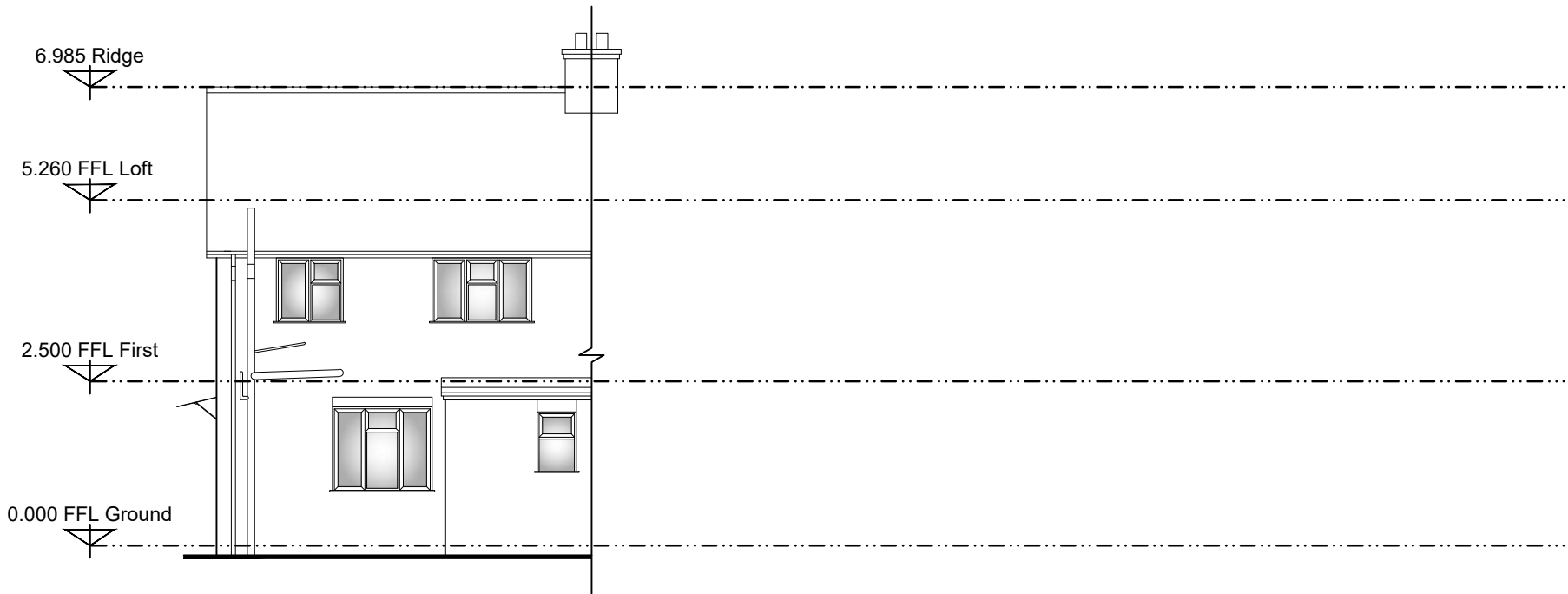


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Ms A Chalker		
Drawing Title:		
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		Date:
		Sept 24
Drawing No.:		Revision:
1 S06		A

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Existing South Elevation
Scale 1:100



Existing East Elevation
Scale 1:100

SCHEDULE OF MATERIALS:

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Facebrick stretcher bond

ROOFS:
Interlocking concrete tile

DOORS/WINDOWS:
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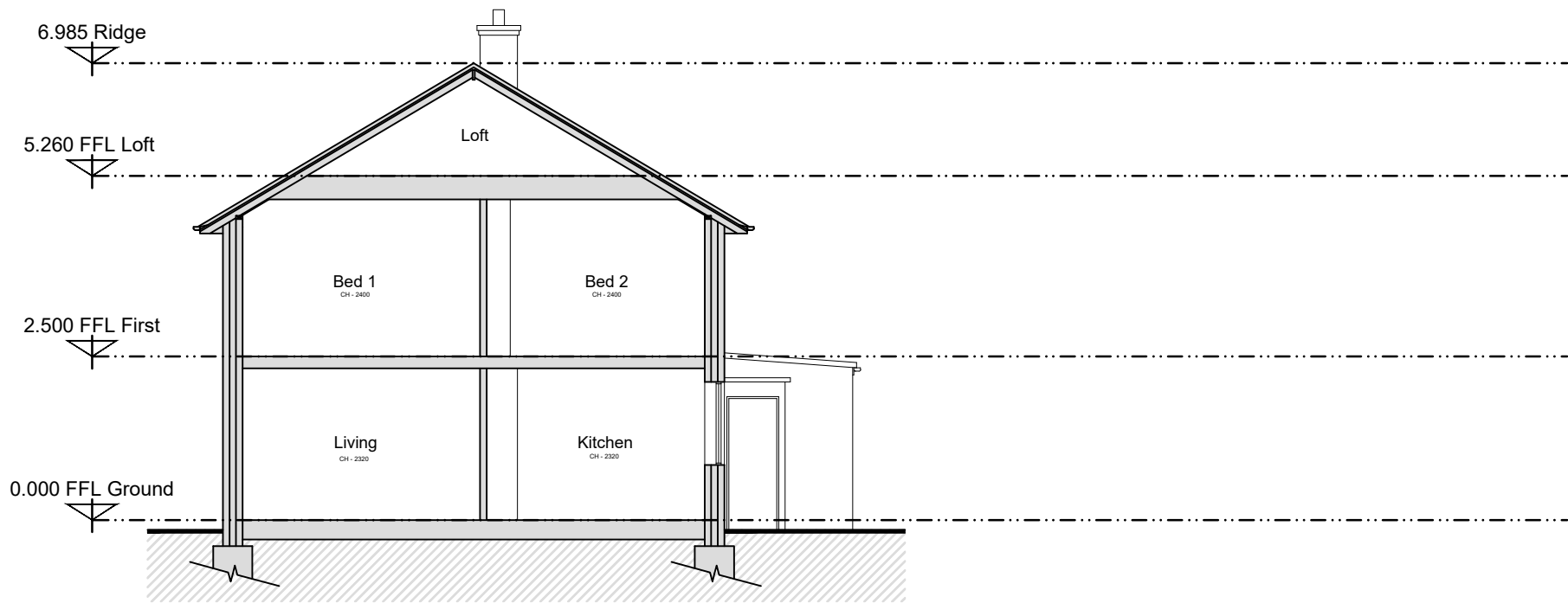
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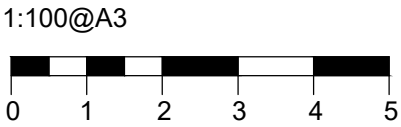


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Drawing No.: 1 S06		Revision: A

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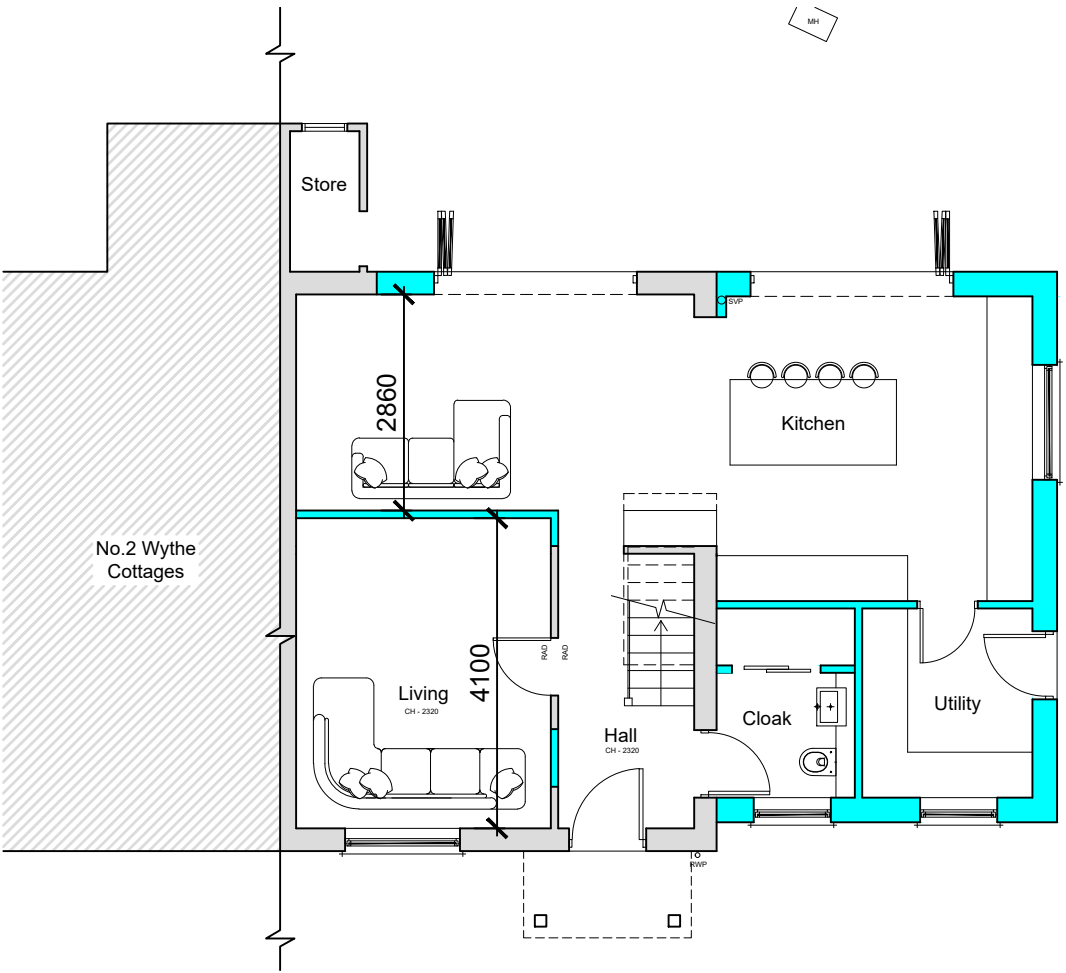


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Drawing Title: Existing Section AA		
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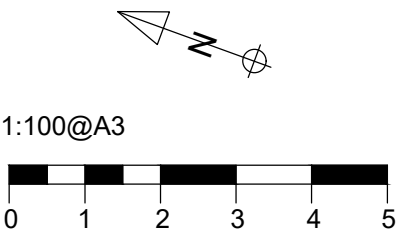
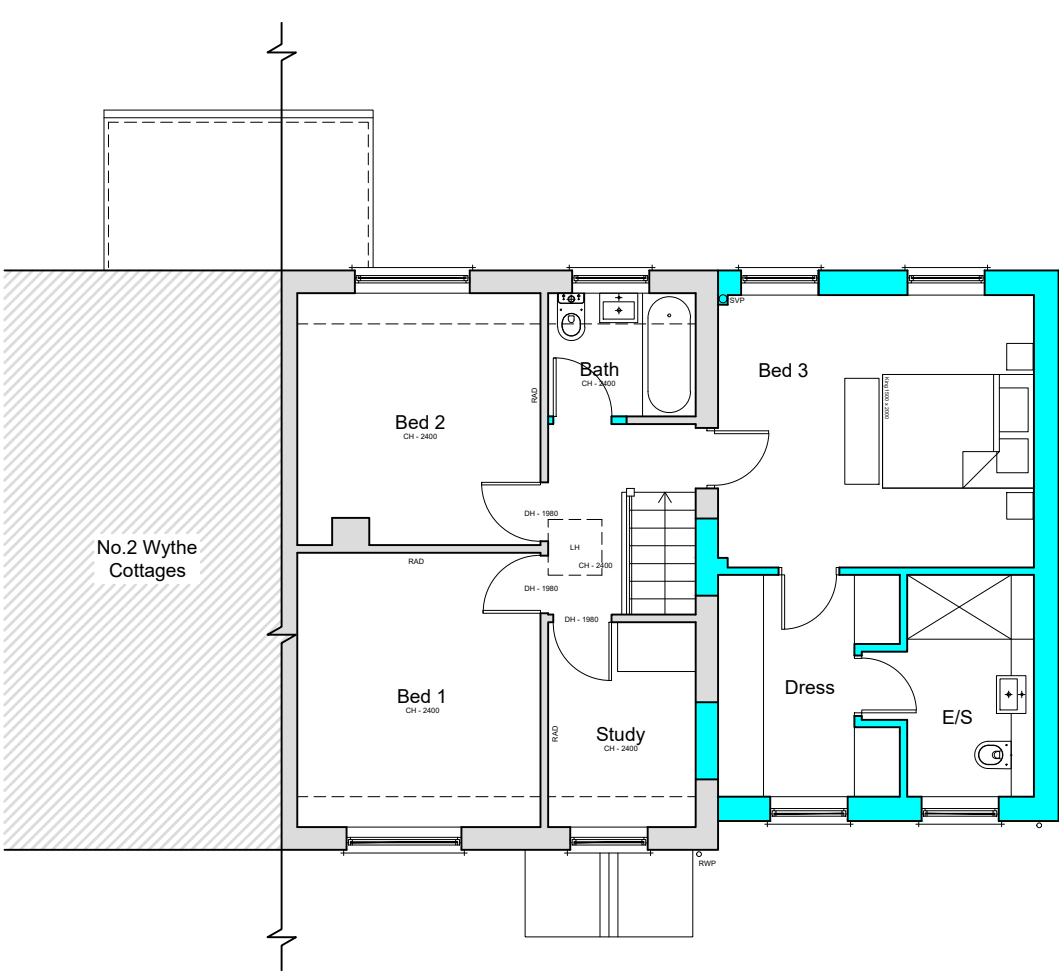
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Drawing Title: Proposed Ground & First Floor Plan		
Project: 1 Wythe Cottages, Muddlers Lane Twyford RG10 9PR	Scale:	1:100@A3
	Date:	Nov 24
Drawing No.:	Revision:	B
	1 D07	

Proposed Ground Floor Plan
Scale 1:100

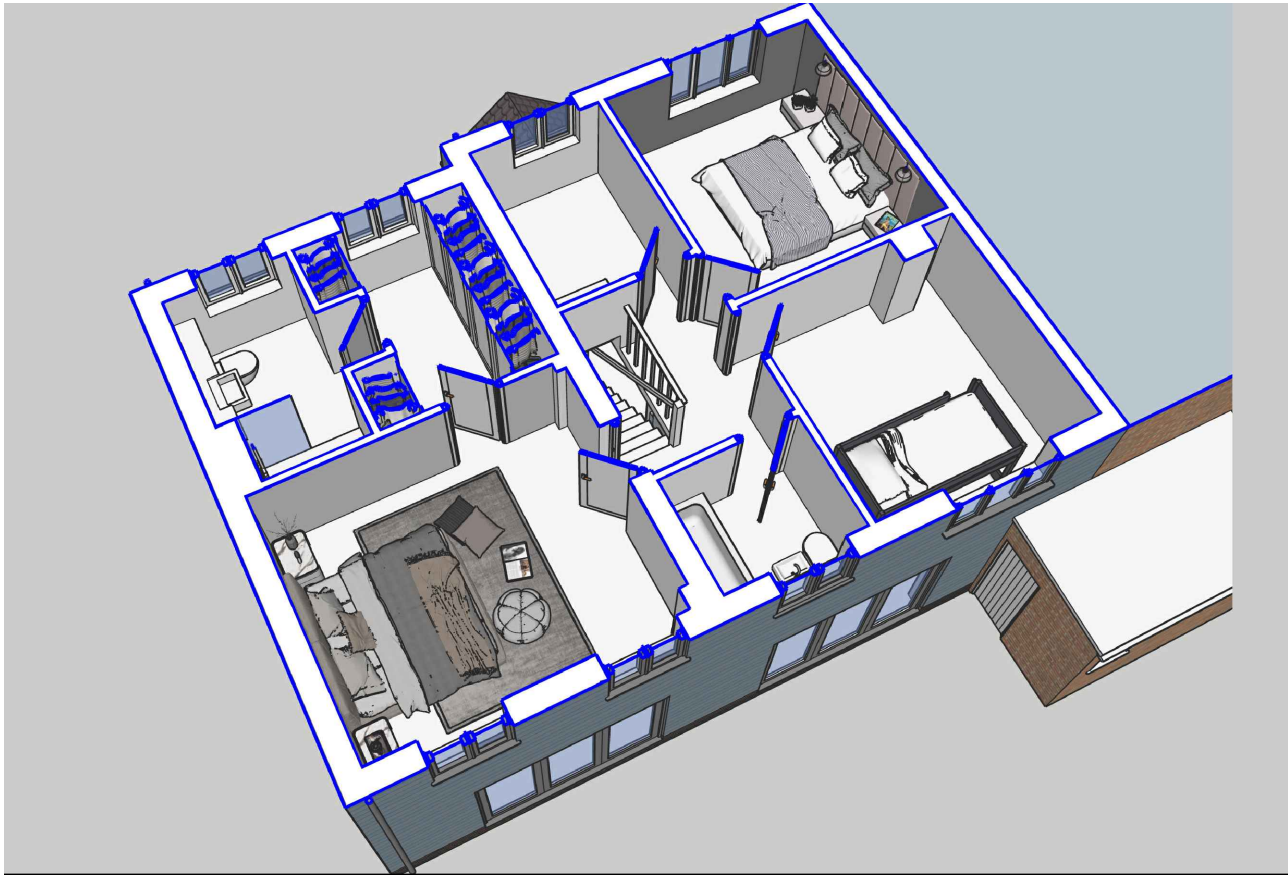


Proposed First Floor Plan
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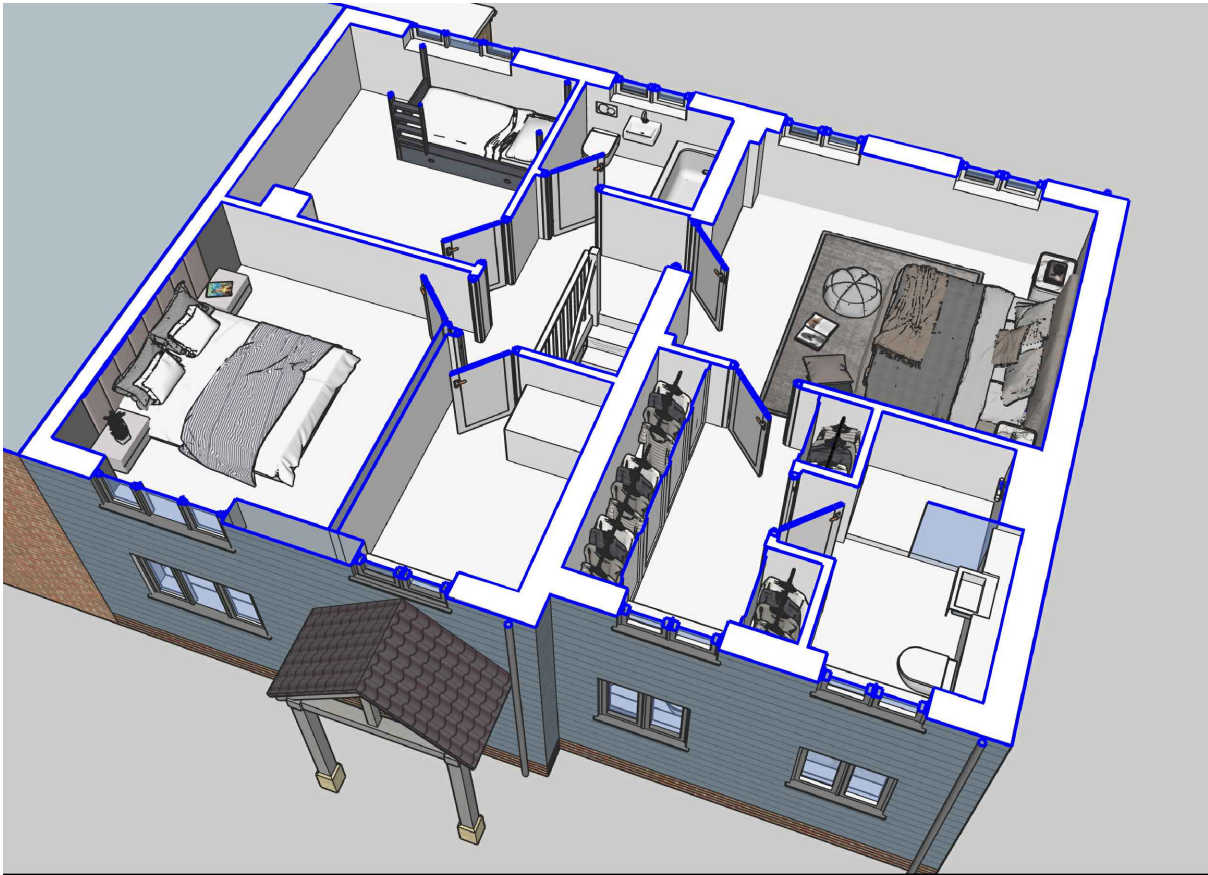


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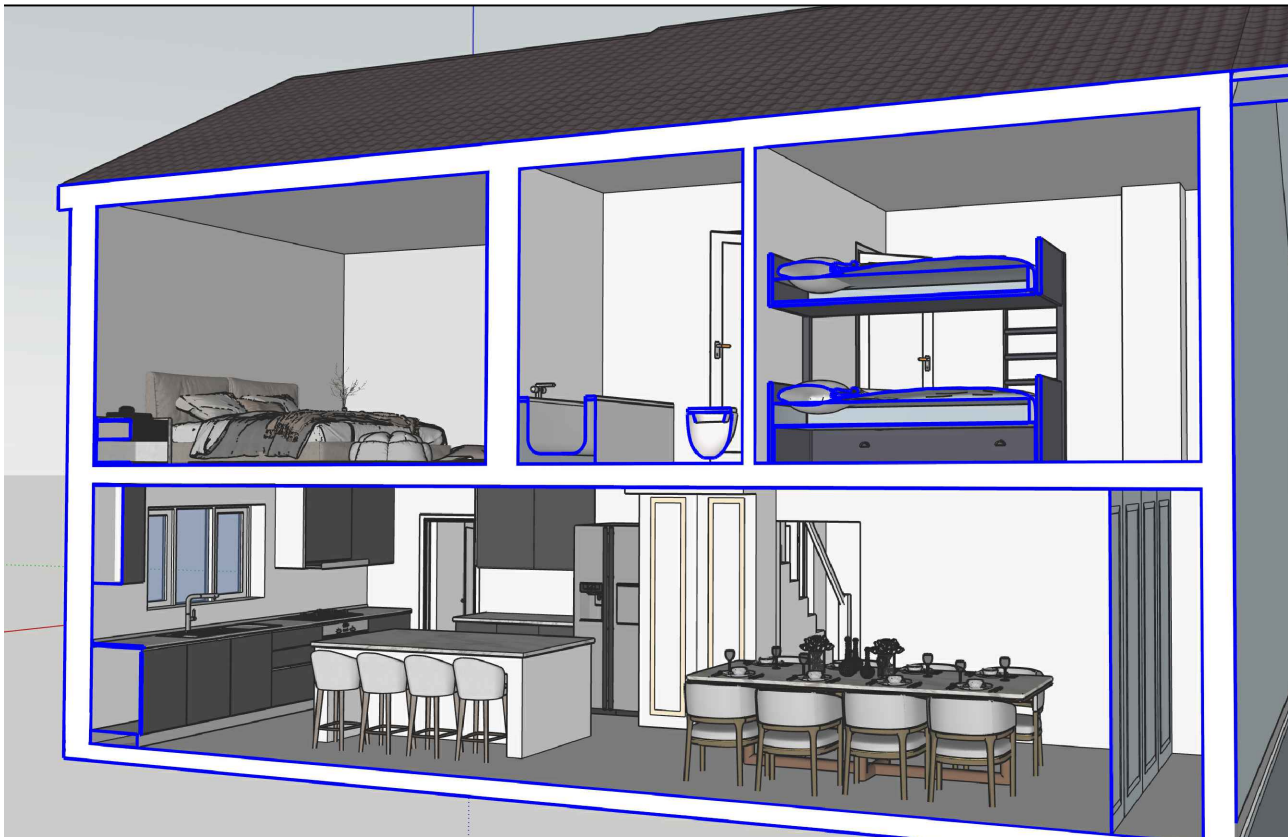
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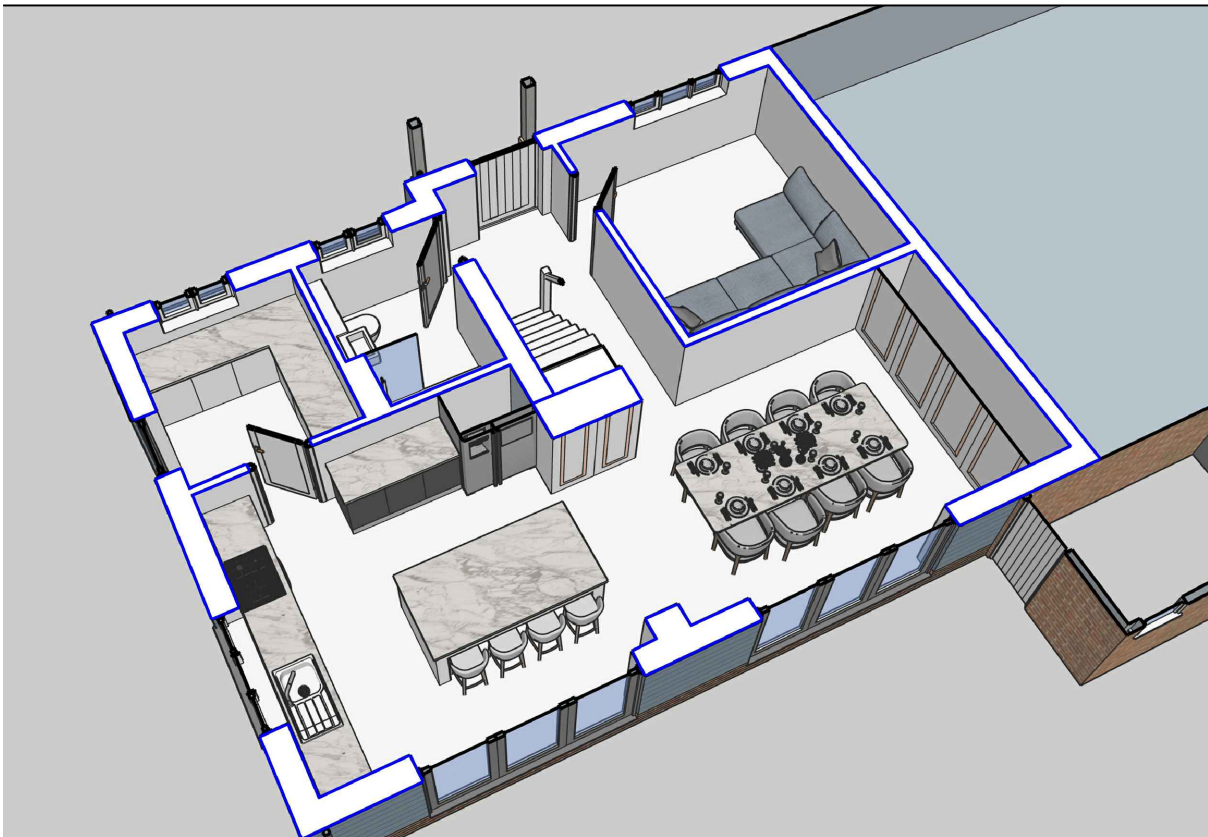
First Floor Perspective 1



First Floor Perspective 2



Sectional Perspective



Ground Floor Perspective

Flood map for planning

Your reference
94779

Location (easting/northing)
478467/176446

Created
7 Nov 2024 15:02

Your selected location is in flood zone 2, an area with a medium probability of flooding.

This means:

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

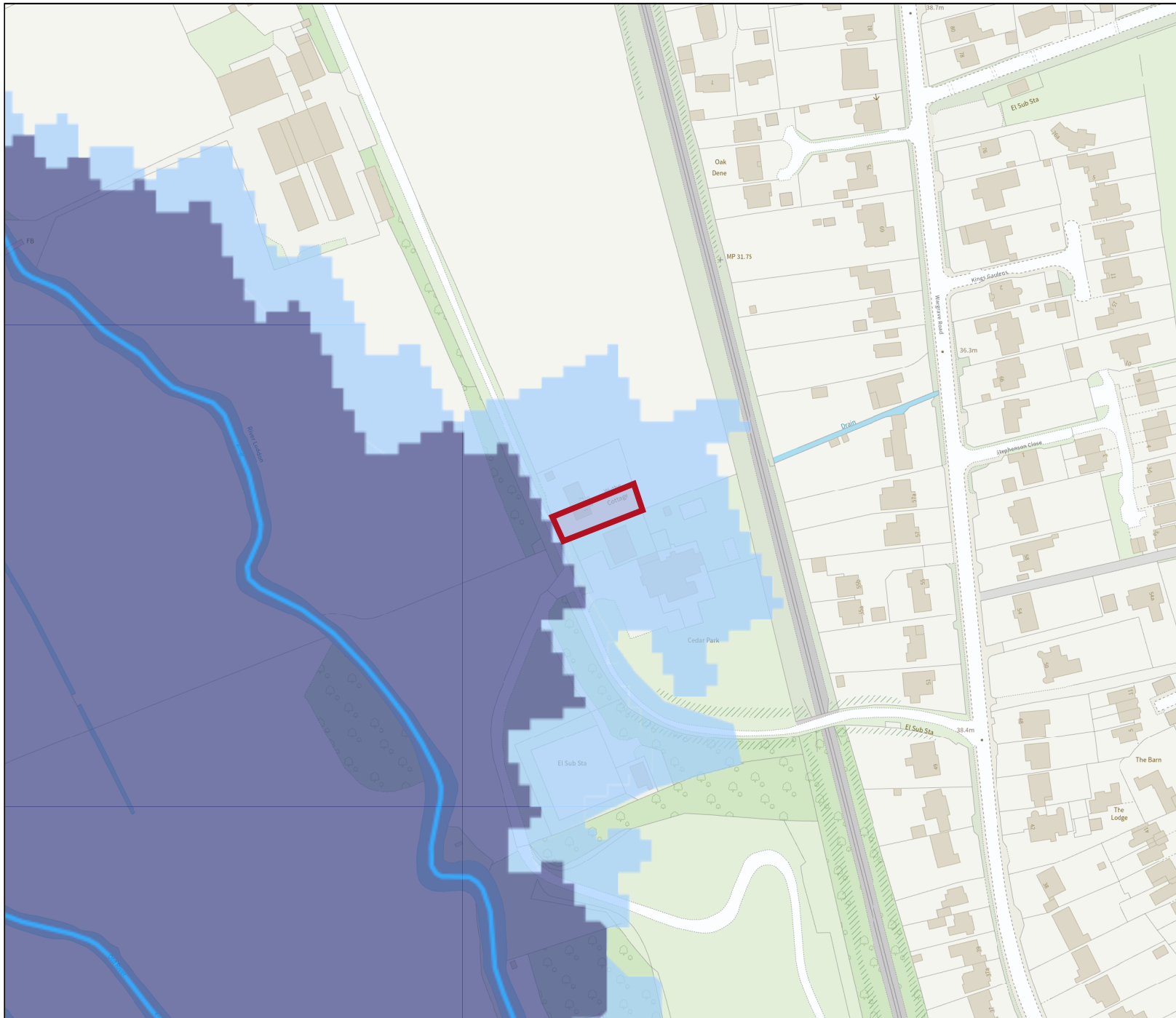
Notes

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

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

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

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Flood map for planning

Your reference

94779

Location (easting/northing)

478467/176446

Scale

1:2500

Created

7 Nov 2024 15:02

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


0 20 40 60m