



Flood Risk Assessment for Planning

Prepared for:

O A Falusi Ltd.

Location:

23 Epstein Road
Thamesmead
London
SE28 8DQ

January 20224

Our reference:

93686-OFArch-EpsteinRd



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Project: Flood Risk Assessment for Planning

Client: O A Falusi Ltd.

Application: Change of use from residential dwelling (use Class C3) to supported living accommodation for adult with learning disability (use Class C2)

Location: 23 Epstein Road, Thamesmead, London, SE28 8DQ

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1. Key Facts

1.1 Flood Risk Posed:

- EA Flood Zone 3 (High Risk).
- Predominantly tidal flood risk originating from the River Thames (Estuary) which is located approximately 837m to the north of the site. Additionally, an unnamed drain, which is a tributary to the Thames and is defined as a main river by the EA, is located approximately 100m east of the site.
- Site defended to at least the 1:1000 year standard
- Modelled flood levels and extents have been requested from the Environment Agency for use within this report. In channel flood levels for the tidal River Thames have been provided from the Thames Estuary 2100 study completed by HR Wallingford in 2008.
- Comparison of modelled flood levels with topographic site levels (1.30mAOD to 1.47mAOD) shows that the site is below the present day modelled flood level, and below the future modelled extreme flood levels.
- The site is shown to be entirely within the 1:200 year and 1:1000 year modelled breach extents for 2005 and 2115.
- Historical Flooding occurred at the site and the surrounding area in Jan/Feb 1953 from the operational failure/ breach of defences from the main river. There are no records to suggest flooding at the site since this event.
- Risk of pluvial flooding would appear to be "Very Low" at the site.
- Additionally, the risk of flooding posed to the site by groundwater, sewer surcharge and reservoir flooding would appear to be low.

1.2 Flood Risk Mitigation:

- The application is for the change of use from residential dwelling (use Class C3) to supported living accommodation for adult with learning disability (use Class C2).
- The layout of the property will remain the same as the existing post development and no additional external building works are proposed as part of the application.
- There will be no increase in built footprint.
- No bedrooms are proposed on the ground floor;
- Internal access will be maintained from ground floor to the first floor level.
- Flood proofing of the development will be incorporated as appropriate.
- Safe escape will be provided by a formal flood warning and evacuation plan which will be prepared in liaison with the Council's Emergency Planners and tied in with local emergency plans for the area.

- The applicant will register with the Environment Agency Floodline Alert/Warnings 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 O A Falusi Ltd. (hereinafter referred to as “the applicant”) to undertake a Flood Risk Assessment for the proposed development at 23 Epstein Road, Thamesmead, London, SE28 8DQ. (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 site appears to be located within Flood Zone 3 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 consists of an existing two-storey, 3 bedroom end of terrace dwelling.

Aerial imagery of the site and surrounding area is presented below in Figure 1, and the site location is shown in Figure 2.



Figure 1: Aerial photograph of site and surrounding area (Source: Google Earth)

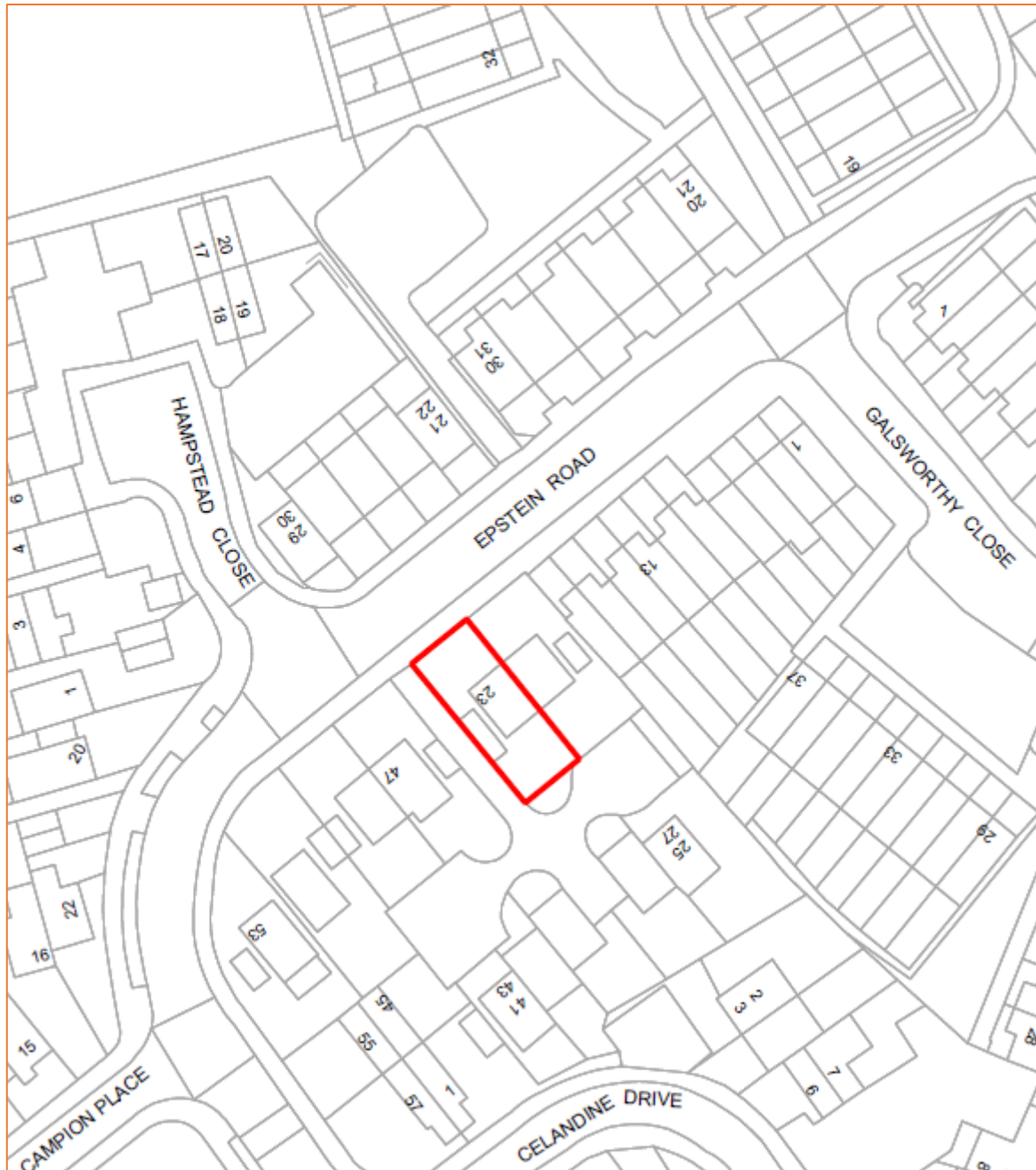


Figure 2: Site location plan (Source: O A Falusi Ltd.)

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 +0.15m every 1m. 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. 2.0m 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 the site ranges between approximately 1.30mAOD at the front of the site to 1.47mAOD at the rear of the site.

3.3 Geology and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site is Thanet Formation – Sand, with superficial deposits of Alluvium - Clay, Silt, Sand and Peat.

The soil type taken from the UK Soil Observatory website is relatively deep soils from Fluvial Clays, Silts Sands and Gravels soil parent material. It has a peaty clay soil texture.

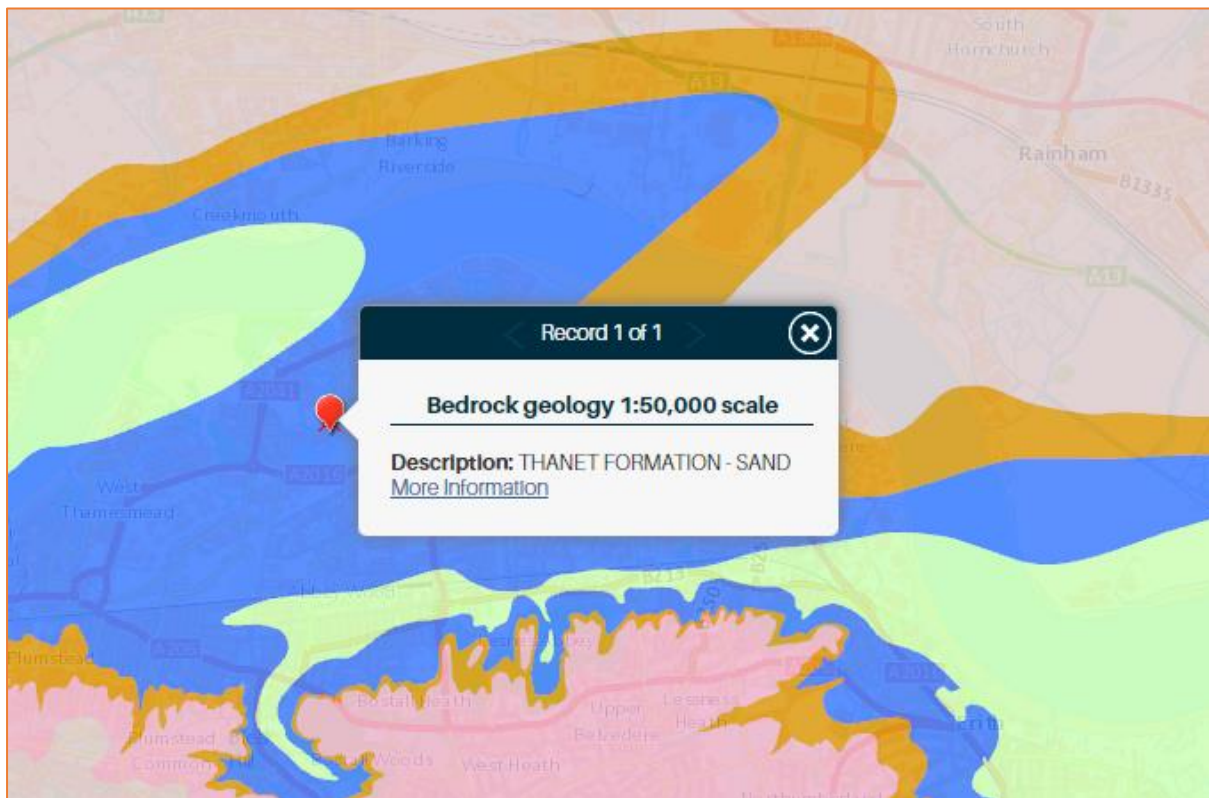


Figure 3: Local bedrock geology (Source: BGS)

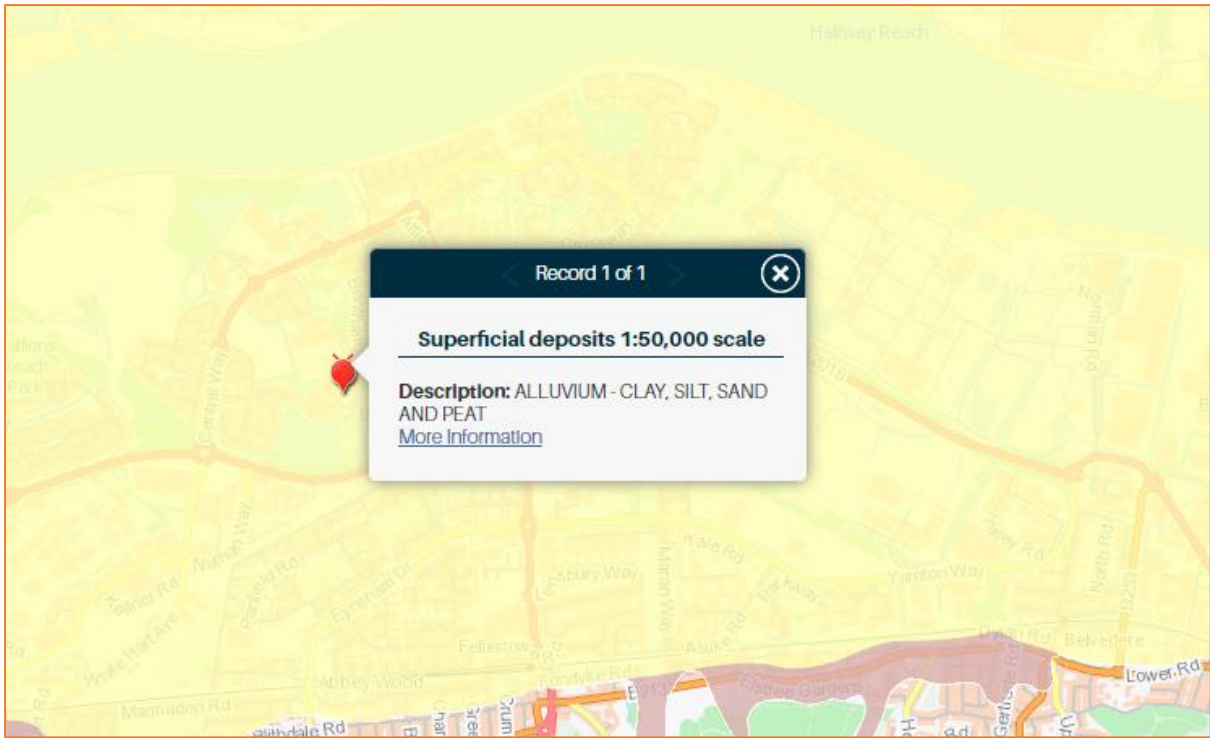


Figure 4: Local superficial deposits (Source: BGS)

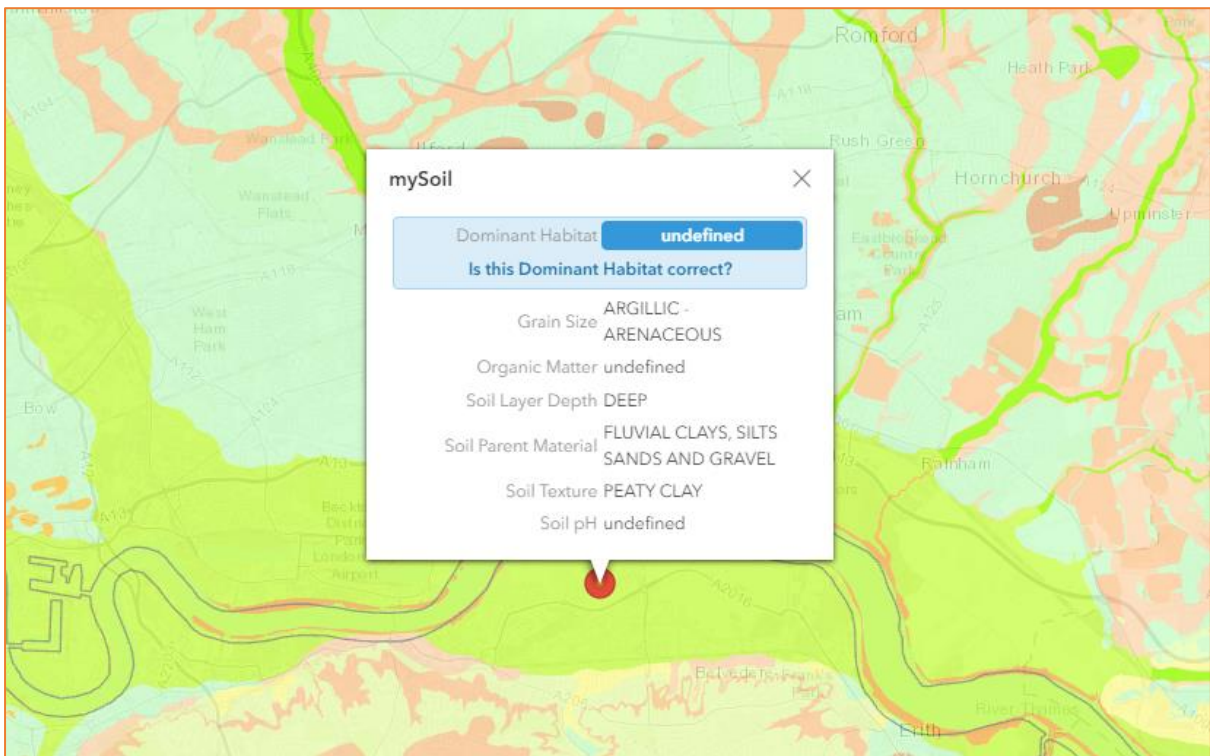


Figure 5: Local soil types (Source: UKSO)

4. Development Proposal

The proposed application is for the change of use from residential dwelling (use Class C3) to supported living accommodation for adult with learning disability (use Class C2).

The proposed supported living accommodation for adult with learning difficulties would specialise in supporting adult with mental health and learning disabilities and would be occupied by two adults and this will be 2 adults and one each in the two rooms. A total of two support workers will be on duty during the day and two during the night. There will be a manager of the assessment Centre who will be at the property during the day from 8am to 5-6pm.

Proposed plans are provided in the report Appendix.

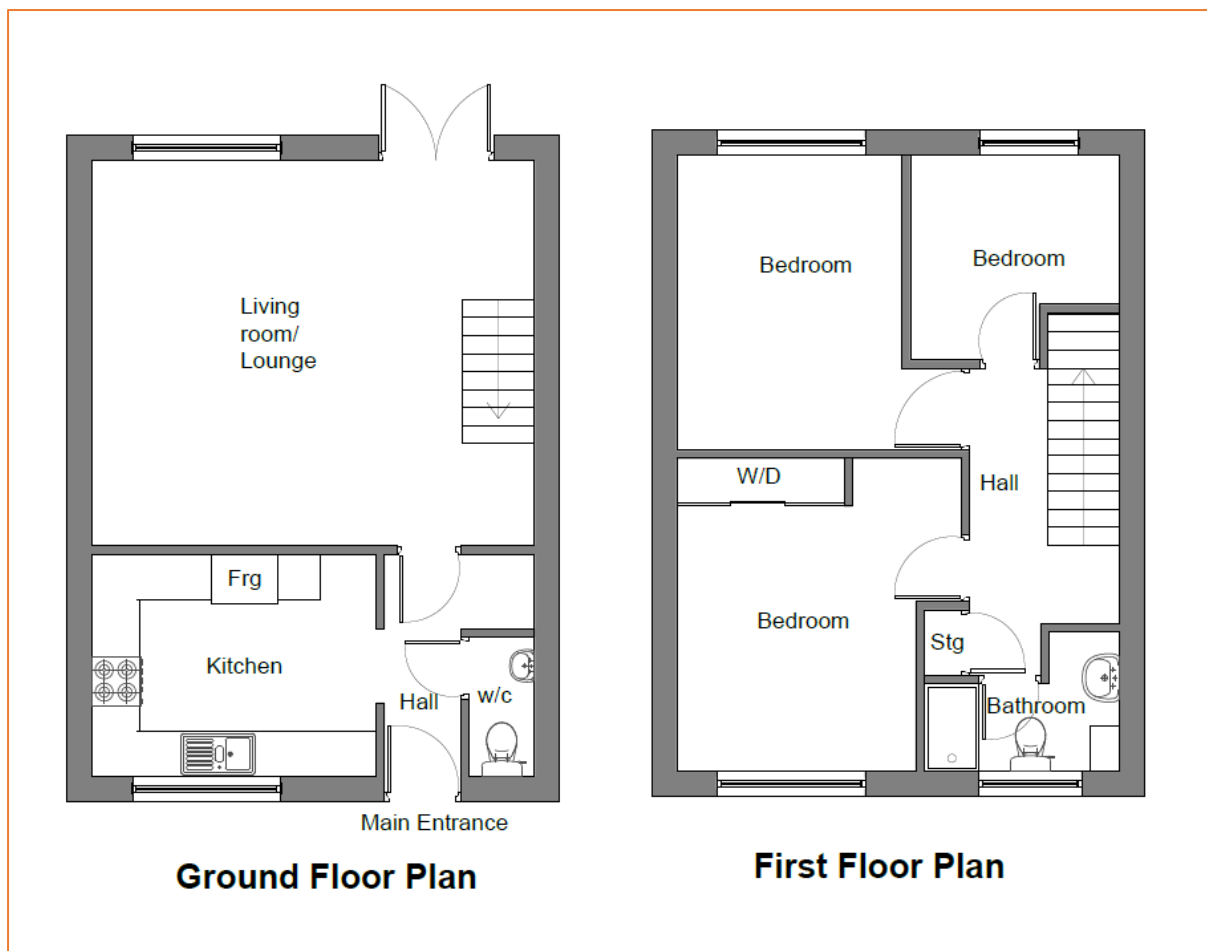


Figure 6: Existing and proposed ground and first floor plans (Source: O A Falusi Ltd.)

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.

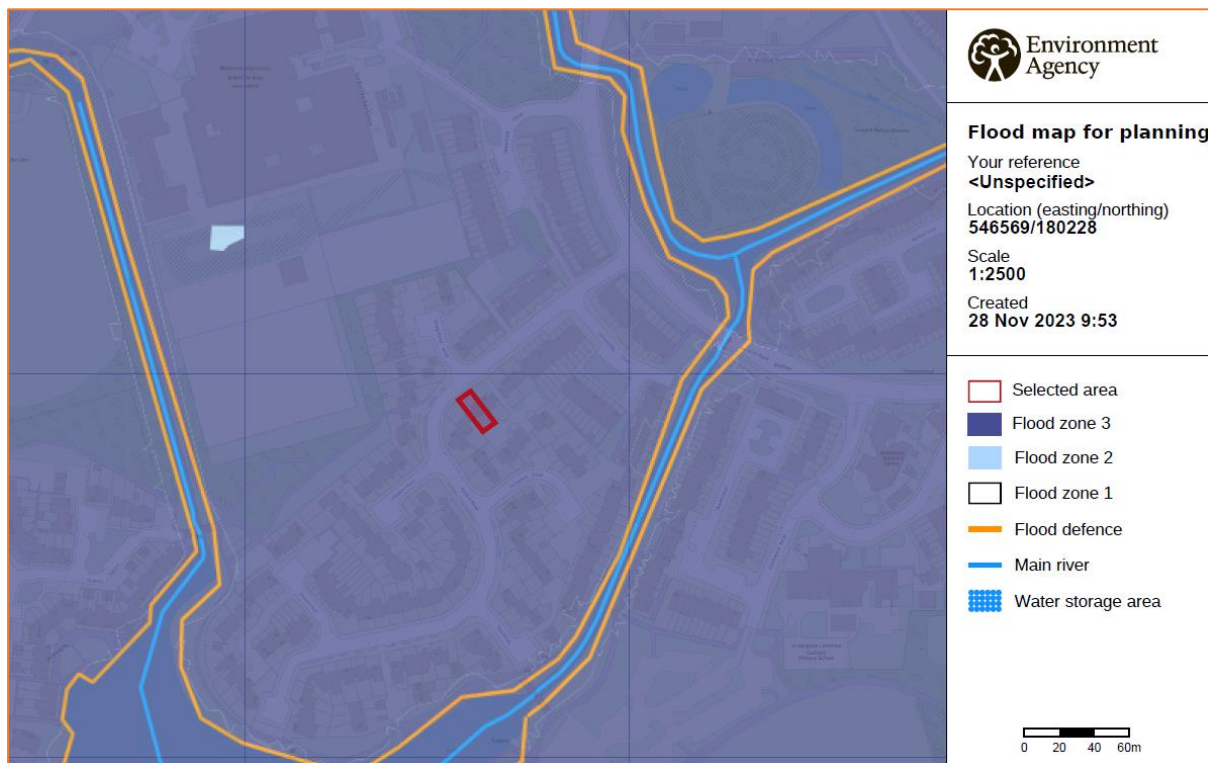


Figure 7: Environment Agency Flood Map for Planning (Rivers and Sea) (Source: EA)

The site is located within Flood Zone 3 (High Probability), which means it is defined as land having a 1 in 100 or greater annual probability of fluvial flooding; or having a 1 in 200 or greater annual probability of tidal flooding.

The risk would appear to be predominantly tidal and originate from the River Thames (Estuary) which is located approximately 837m to the north of the site.

Additionally, an unnamed drain, which is a tributary to the Thames and is defined as a main river by the EA, is located approximately 100m east of the site.

5.2 Tidal (River Thames Estuary):

The River Thames is a river that flows through southern England. It is the longest river entirely in England and the second longest in the United Kingdom, after the River Severn. While it is best known for flowing through London, the river also flows alongside other towns and cities, including Oxford, Reading, Henley-on-Thames, and Windsor.

The usually quoted source of the Thames is at Thames Head. This is about 1.2km north of Kemble parish church in southern Gloucestershire, near the town of Cirencester, in the Cotswolds. Seven Springs near Cheltenham, where the river Churn rises, is also sometimes quoted as the Thames' source, as this location is furthest from the mouth, and adds 23km to the length.

Brooks, canals and rivers, within an area of 9,950km², combine to form 38 main tributaries feeding the Thames between its source and Teddington Lock. This is the usual tidal limit; however, high spring tides can raise the head water level in the reach above Teddington and can occasionally reverse the river flow for a short time. In these circumstances, tidal effects can be observed upstream to the next lock beside Molesey weir. Before Teddington Lock was built in 1810–12, the river was tidal at peak spring tides as far as Staines upon Thames.

Below Teddington Lock (89km upstream of the Thames Estuary), the river is subject to tidal activity from the North Sea. Before the lock was installed, the river was tidal as far as Staines, 26km upstream.

5.2.1 Modelled flood levels and extents:

Modelled flood levels and extents have been requested from the Environment Agency for use within this report. In channel flood levels for the tidal River Thames have been provided from the Thames Estuary 2100 study completed by HR Wallingford in 2008.

The following maximum extreme flood levels relevant to the site have been provided by the EA:

Node / Event	Present day	2100
3.6	6.01mAOD	6.75mAOD

Table 2: TE2100 modelled in-channel flood levels

The closest node to the site is node 3.6. An extreme water level of 6.01mAOD has been provided for the present day, rising to 6.75mAOD in 2100.

Comparison of these modelled flood levels with topographic site levels (1.30m AOD to 1.47m AOD) shows that the site is below the present day modelled flood level, and below the future modelled extreme flood levels. The River Thames is however defended to the 1:1000 year standard.

5.2.2 Flood Defences:

The design standard of protection of the flood defences in this area of the Thames is 0.1% AEP; they are designed to defend London up to a 1 in 1000 year tidal flood event. The defences are all raised, man-made and privately owned. It is the riparian owners' responsibility to ensure that they are maintained to the Statutory Flood Defence Level in this reach of the Thames.

The EA inspect them twice a year to ensure that they remain fit for purpose. The current condition grade for defences in the area is 3 (fair), on a scale of 1 (very good) to 5 (very poor).

This site is within an area benefiting from flood defences. Areas benefiting from flood defences are defined as those areas which benefit from formal flood defences specifically in the event of flooding from rivers with a 1% (1 in 100) chance in any given year, or flooding from the sea with a 0.5% (1 in 200) chance in any given year.

If the defences were not there, these areas would be flooded. An area of land may benefit from the presence of a flood defence even if the defence has overtopped, if the presence of the defence means that the flood water does not extend as far as it would if the defence were not there.

Additionally, according to the EA, natural high ground maintained by the local authority with a standard of protection of between 1:20yr and 1:50yr flanks either side of the unnamed drain located within the vicinity of the site.

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.

The EA has provided data from the Thames Barrier Downriver Breach Inundation Modelling Study 2018 completed by Atkins Ltd. in May 2018.

The EA have developed a modelling approach where all downriver breach locations along the Thames are equitably modelled, to ensure a consistent approach across London. This modelling simulates continuous tidal breaches along the entire extent of the Thames between the Thames Barrier and east of Gravesend on the south bank and east of Tilbury on the north bank. For hard and composite defences breaches are set at 20 m wide; for soft defences, breaches are 50 m wide. In both cases, the defence breach scour distance was assumed to extend into the floodplain by the same distance as the breach width.

Based on the 2008 TE2100 in-channel levels, the 0.5% (1 in 200 year) and 0.1% (1 in 1000 year) annual probability of exceedance tidal events were modelled for all breach locations downriver of the Thames Barrier. These were modelled for the current year epoch, as well as 2115 epoch which include allowances for climate change.

The site is shown to be entirely within the 1:200 year and 1:1000 year modelled breach extents for 2005 and 2115.

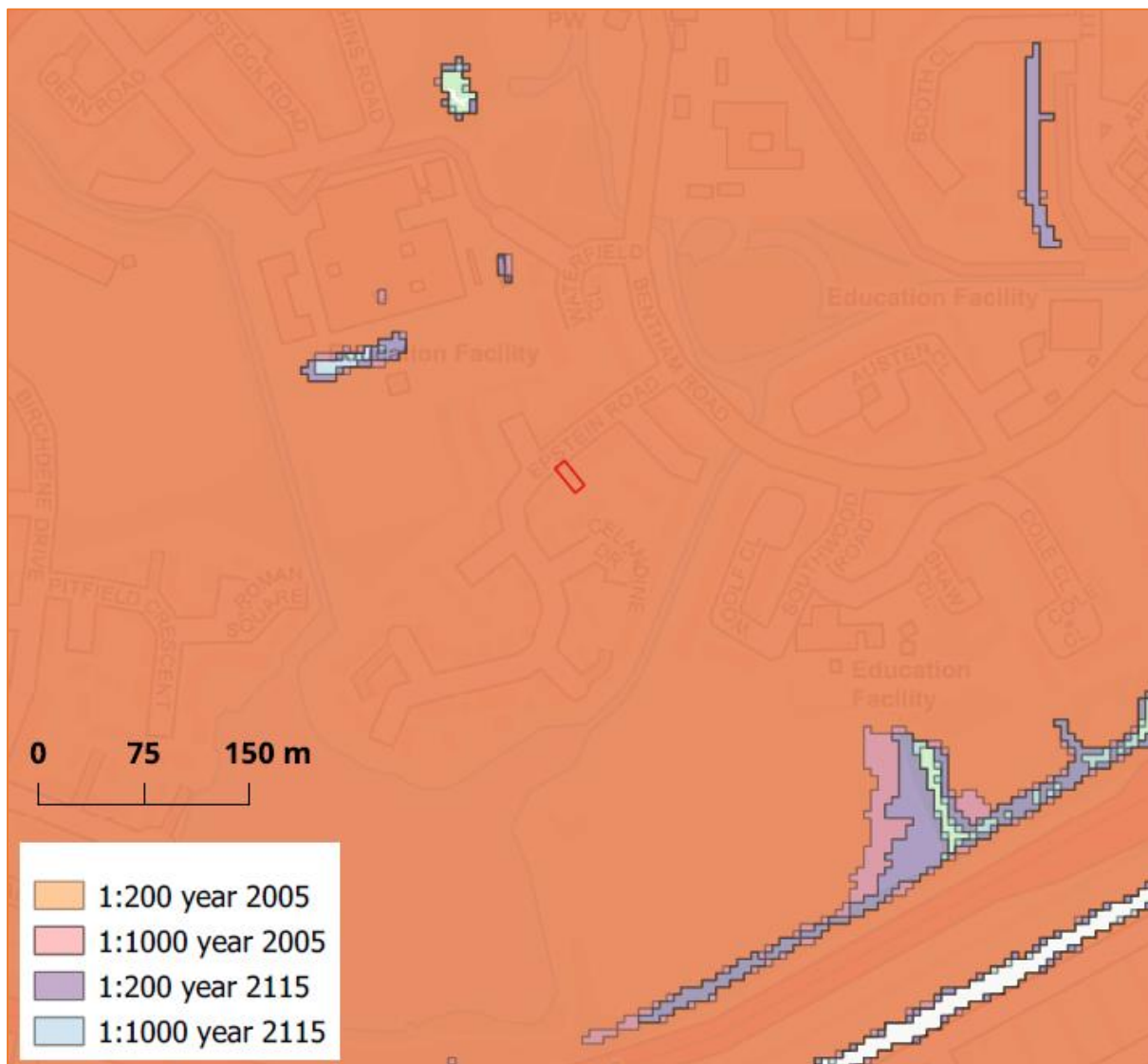


Figure 8: Environment Agency maximum breach flood extents from Downriver Breach Inundation Modelling Study. Site boundary shown in red. (Source: EA, OS)

The 1:200 year and 1:1000 year breach flood levels in 2115 for the site are 4.56mAOD and 4.86mAOD, respectively. Comparison of this modelled breach flood level with topographic site levels (1.30mAOD) shows that the site is below the breach flood level.



Figure 9: Selected on-site nodes for breach flood level data extraction (Source: O A Falusi Ltd, Unda)

ID#	Location (x y)	1:200yr 2005	1:1000yr 2005	1:200yr 2115	1:1000yr 2115
1	546582 180251	3.54mAOD	3.74mAOD	4.56mAOD	4.86mAOD
2	546585 180242	3.54mAOD	3.74mAOD	4.56mAOD	4.86mAOD
3	546589 180233	3.53mAOD	3.74mAOD	4m56mAOD	4.86mAOD

Table 3: Selected on-site nodes for 1:200 year and 1:1000 year 2005 and 1:200 year and 1:1000 2115 breach flood levels (Source: EA)

5.2.6 Historical flood events:

According to EA records, historical flooding has occurred at the site and the surrounding area in Jan/Feb 1953 from the operational failure/ breach of defences from the main river.

There are no records to suggest flooding at the site since this event.

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):

- High: Greater than or equal to 3.3% (1 in 30) chance in any given year (3.3%)
- 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

Please note that the EA do 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 in an area of “Low” to “Very Low” risk from surface water flooding.

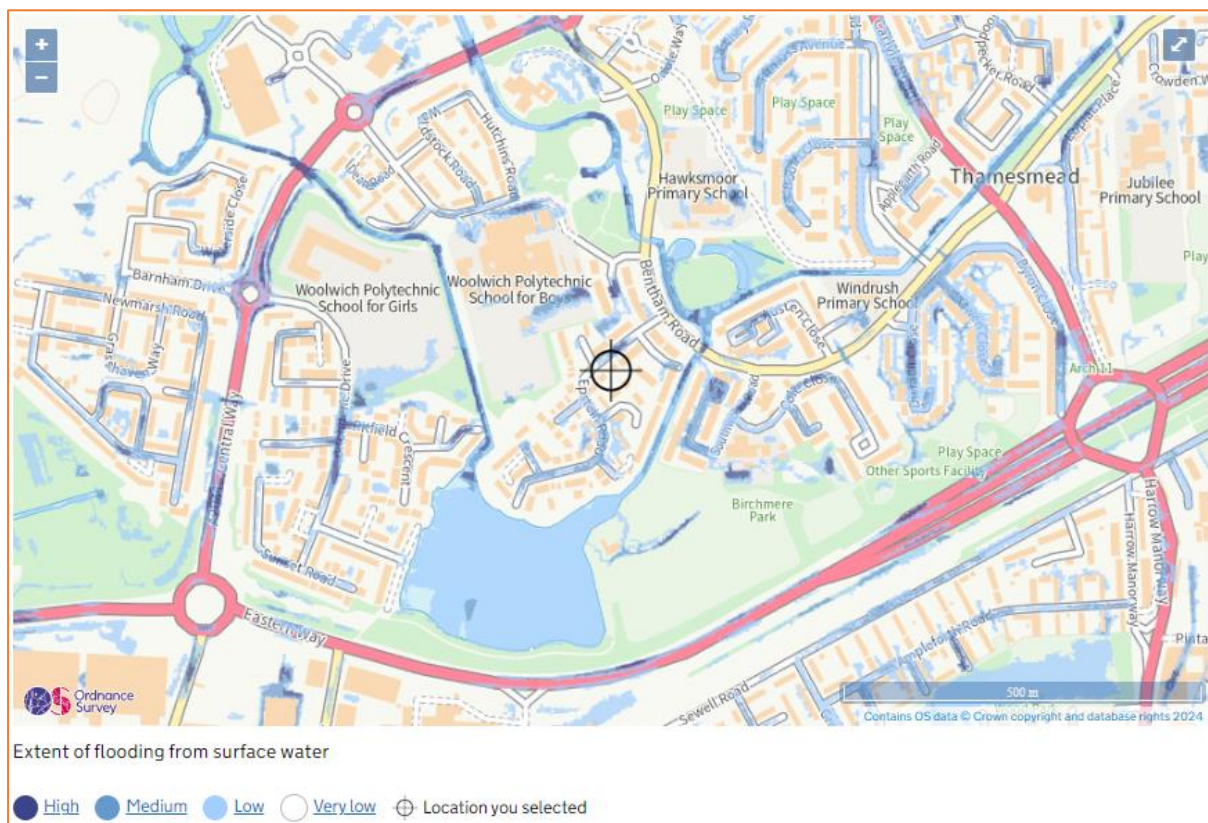


Figure 10: Extract from Environment Agency Surface Water Flood Map (Source: EA)

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 further records have been provided to suggest that the site has been affected by groundwater flooding 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 information has been provided to suggest that the site is susceptible to sewer surcharge flooding.

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 is outside 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.

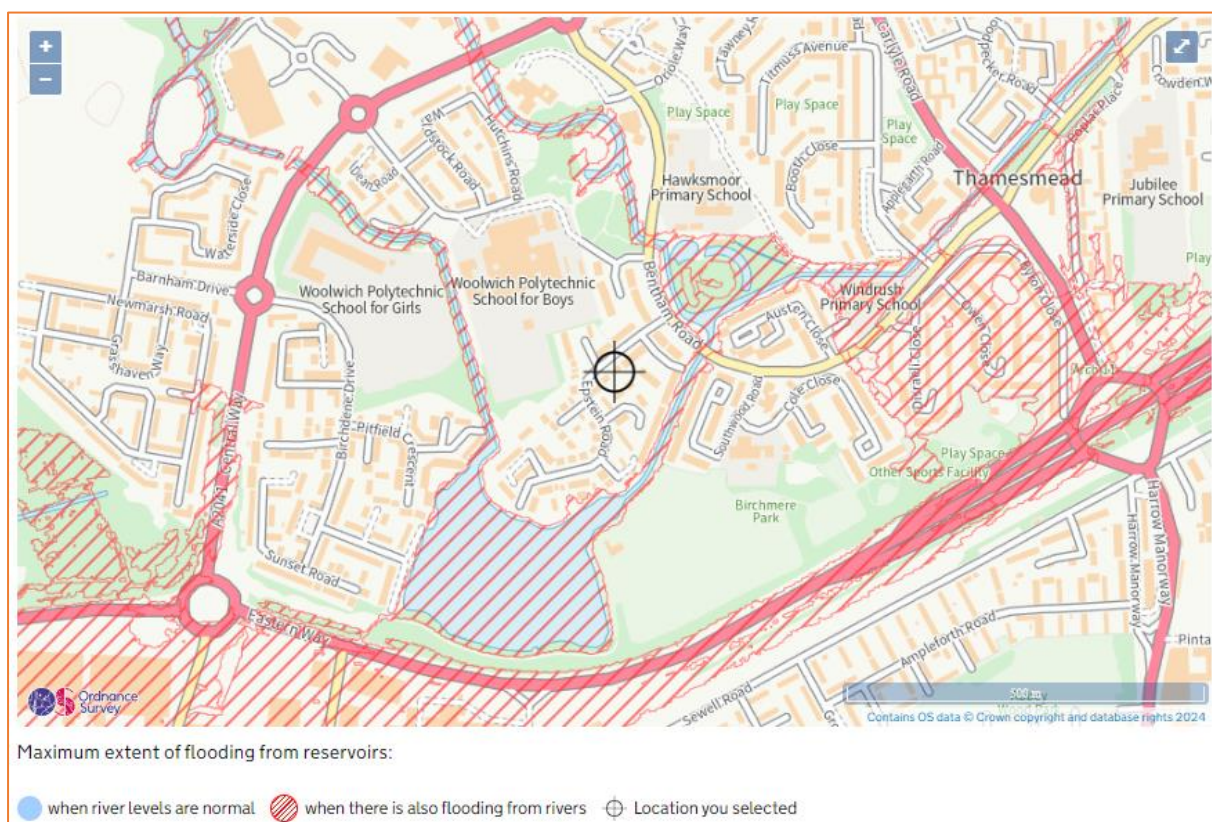


Figure 11: Maximum extent of flooding from reservoirs (Source: EA)

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 the change of use from residential dwelling (use Class C3) to supported living accommodation for adult with learning disability (use Class C2).

Accordingly, it is considered that the vulnerability of the site will not increase 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.

The application is for the change of use from residential dwelling (use Class C3) to supported living accommodation for adult with learning disability (use Class C2).

6.3 Physical Design Measures:

The NPPF requires new residential floor levels be set at least 300mm above suitable modelled 1:100 year plus allowance for climate change flood levels. Given that the proposed application is for the change of use of the existing property, it is not feasible to raise floor levels. The layout of the property will remain the same as the existing post development and no additional external building works are proposed as part of the application.

Based on the plans provided, no sleeping accommodation will be located on the ground floor, and internal access will be maintained from the ground floor to the first floor of the property.

To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the new development, in consultation with the Local Authority building control department. These measures may include the following:

- 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;
- Anti-syphon fitted to all toilets;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level;
- Stairs of solid hardwood construction with wood faces treated to resist water penetration.

It is recommended that flood proof doors should be installed for all external ground floor level doors, or 600mm demountable flood defence barriers to defend external doors if flood proof doors are not practical or other planning constraints prevent it.

6.3 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.

However, it should be noted that the proposed application is for the change of use from residential dwelling (use Class C3) to supported living accommodation for adult with learning disability (use Class C2).

The flood defences in place act to defend the site from direct inundation, however a residual risk is posed to the site via inundation and failure of the flood defences in place. The site is shown to be within the maximum breach flood extent for the 1:200 year and 1:1000 year events in 2115.

Safe escape will be provided by a flood warning and evacuation plan that will be prepared in liaison with the Council's Emergency Planners and tied in with the existing emergency plans for the area.

It should be noted however that in the case of an extreme flood event without warning, occupants and users should seek refuge on the first floor of the building. The applicant has agreed that a permanent means of internal access be provided to the upper floor of the building, thus providing safe refuge.

Based on the plans provided, internal access will be provided from ground floor to the first floor of the proposed house. No sleeping accommodation will be located at ground floor level.

Owners, occupants and tenants should follow the warning and evacuation procedure detailed in the following section.

6.4 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 the Tidal Thames from Thamesmead to Woolwich Arsenal (quickdial: 174332) Environment Agency Flood Warning Area.

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 4: EA Flood Warning Service

6.5 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.

6.6 Off-Site Impacts:**6.6.1 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 in Flood Zone 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea). The application is for the change of use of the existing property, and therefore

there will be no increase in built footprint. The application is within an area of predominantly tidal flood risk, accordingly there will be no unacceptable loss of floodplain storage.

6.6.2 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;

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.

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 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 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea), within an area of 'low to 'very low' risk of flooding from surface water.

Post development, the site will remain "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	X	Exception Test required	✓	✓
Zone 3b	Exception Test required	X	X	X	✓

Table 5: Flood risk vulnerability and flood zone 'compatibility'

Using the table above, the proposed application is considered to be suitable within Flood Zone 3. The Sequential and Exception Tests do not need to be applied to minor developments and changes of use (this application is for a change of use).

8. Discussion and Conclusions

Unda Consulting Limited have been appointed by O A Falusi Ltd. undertake a Flood Risk Assessment for the proposed development at 23 Epstein Road, Thamesmead, London, SE28 8DQ. The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

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 the change of use from residential dwelling (use Class C3) to supported living accommodation for adult with learning disability (use Class C2).

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

The site is located within Flood Zone 3 (High Probability), which means it is defined as land having a 1 in 100 or greater annual probability of fluvial flooding; or having a 1 in 200 or greater annual probability of tidal flooding.

The risk would appear to be predominantly tidal and originate from the River Thames (Estuary) which is located approximately 837m to the north of the site.

Additionally, an unnamed drain, which is a tributary to the Thames and is defined as a main river by the EA, is located approximately 100m east of the site.

Modelled flood levels and extents have been requested from the Environment Agency for use within this report. In channel flood levels for the tidal River Thames have been provided from the Thames Estuary 2100 study completed by HR Wallingford in 2008.

The closest node to the site is node 3.6. An extreme water level of 6.01mAOD has been provided for the present day, rising to 6.75mAOD in 2100.

Comparison of these modelled flood levels with topographic site levels (1.30mAOD to 1.47mAOD) shows that the site is below the present day modelled flood level, and below the future modelled extreme flood levels. The River Thames is however defended to the 1:1000 year standard.

This site is within an area benefiting from flood defences. Areas benefiting from flood defences are defined as those areas which benefit from formal flood defences specifically in the event of flooding from rivers with a 1% (1 in 100) chance in any given year, or flooding from the sea with a 0.5% (1 in 200) chance in any given year.

Additionally, according to the EA, natural high ground maintained by the local authority with a standard of protection of between 1:20yr and 1:50yr flanks either side of the unnamed drain located within the vicinity of the site.

The site is shown to be entirely within the 1:200 year and 1:1000 year modelled breach extents for 2005 and 2115.

The 1:200 year and 1:1000 year breach flood levels in 2115 for the site are 4.56mAOD and 4.86mAOD, respectively. Comparison of this modelled breach flood level with topographic site levels (1.30mAOD) shows that the site is below the breach flood level.

According to EA records, historical flooding has occurred at the site and the surrounding area in Jan/Feb 1953 from the operational failure/ breach of defences from the main river. There are no records to suggest flooding at the site since this event.

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

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

Given that the proposed application is for the change of use of the existing property, it is not feasible to raise floor levels. The layout of the property will remain the same as the existing post development and no additional external building works are proposed as part of the application.

Based on the plans provided, no sleeping accommodation will be located on the ground floor, and internal access will be maintained from the ground floor to the first floor of the property.

Safe escape will be provided by a flood warning and evacuation plan that will be prepared in liaison with the Council’s Emergency Planners and tied in with the existing emergency plans for the area.

The application is for the change of use of the existing property, and therefore there will be no increase in built footprint. The application is within an area of predominantly tidal flood risk, accordingly there will be no unacceptable loss of floodplain storage.

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 application is for the change of use from residential dwelling (use Class C3) to supported living accommodation for adult with learning disability (use Class C2);
- The layout of the property will remain the same as the existing post development and no additional external building works are proposed as part of the application;
- There will be no increase in built footprint;
- No bedrooms are proposed on the ground floor;
- Internal access will be maintained from ground floor to the first floor level;
- Flood proofing of the development will be incorporated as appropriate;
- Safe escape will be provided by a formal flood warning and evacuation plan which will be prepared in liaison with the Council’s Emergency Planners and tied in with local emergency plans for the area;
- The applicant will register with the Environment Agency Floodline Alert/Warnings 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

- Site location plan;
- Existing and proposed plans;
- EA Flood Map for Planning.



Location Plans
Scale 1:1250

O A Falusi Ltd.
Architectural Consultants
02037295571/07782645280
www.olajidefalusi.com
info@olajidefalusi.com

Client:

Project:
**23 Epstein Road,
Thamesmead
London,
SE28 8DQ.**

Title:
**Proposed change of use from C3
to Supported Living Accommodation For
Adult With Learning Disability C2**

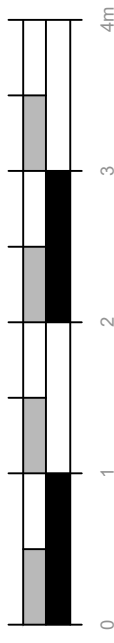
Location Plans.

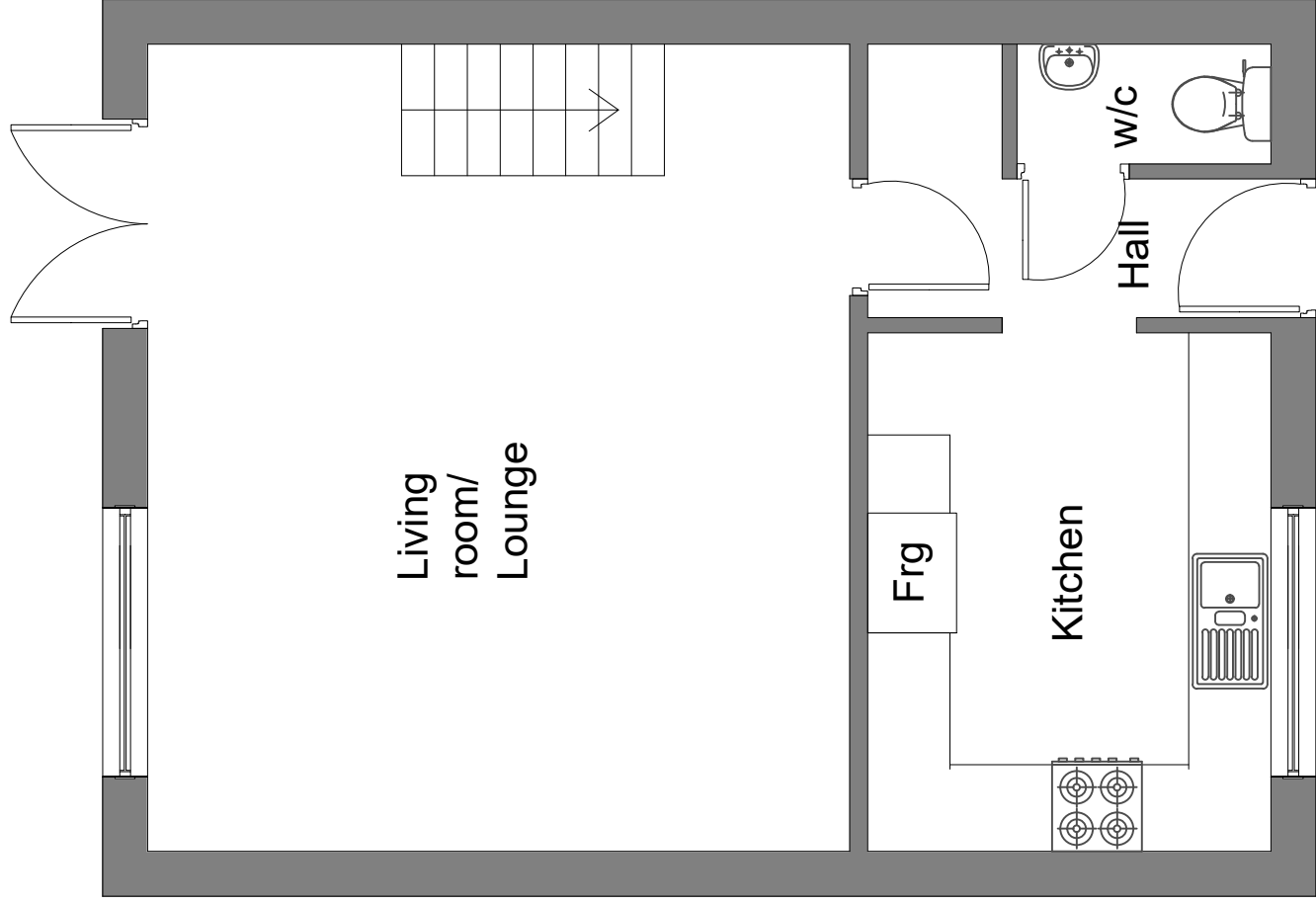
Drawing No. **April/40/02**

Scale : **1:1250 & A3**

Date : **April 2023**

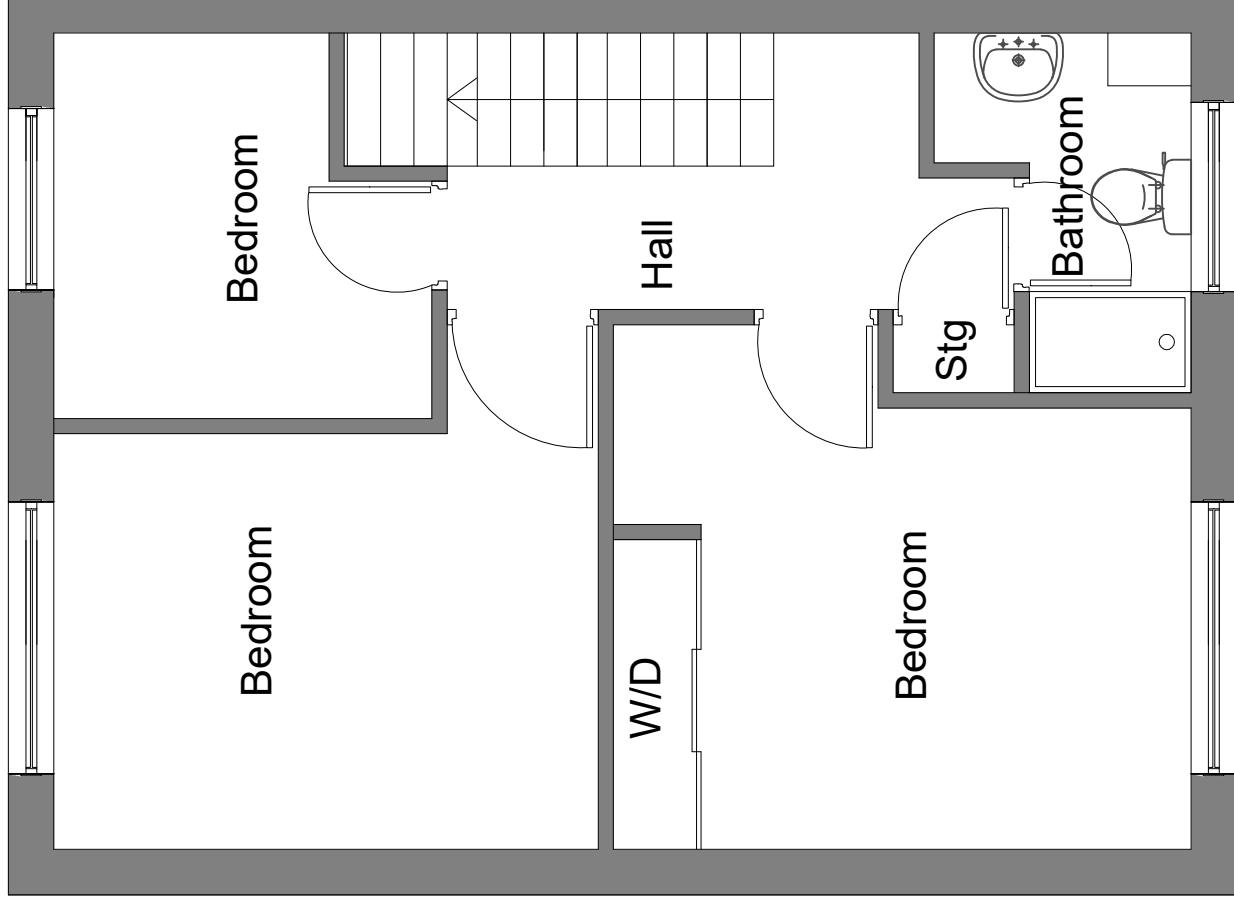
Scale Bar 1:100 0 1 2 3 4 5 6 7 8m





Main Entrance

Ground Floor Plan



First Floor Plan

O A Falusi Ltd.

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Client:

Project:

23 Epstein Road,
Thamesmead
London,
SE28 8DQ.

Title:

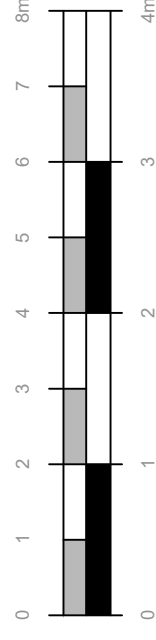
Proposed change of use from C3
to family assessment centre C2

Drawing No. April/40/01

Scale : 1:50 & A3

Date : April 2023

Scale Bar 1:100



Scale Bar 1:50



Flood map for planning

Your reference
93686

Location (easting/northing)
546586/180242

Created
16 Jan 2024 15:03

**Your selected location is in flood zone 3
– an area with a high probability of flooding.**

This means:

- you may need to complete a flood risk assessment for development in this area
- you should ask the Environment Agency about the level of flood protection at your location and request a Flood Defence Breach Hazard Map (You can email the Environment Agency at: enquiries@environment-agency.gov.uk)
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (find out more at 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/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>










Flood map for planning

Your reference
93686

Location (easting/northing)
546586/180242

Scale
1:2500

Created
16 Jan 2024 15:03

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

