



Flood Risk Assessment for Planning

Prepared for:

Showgatul & Sadika Chowdhury

March 2022

Our reference:

91385-FloccSt-SandbachAv

Location:

26 Sandbach Avenue

Manchester

M14 7EG



Document Issue Record

Project: Flood Risk Assessment for Planning

Client: Showgatul & Sadika Chowdhury

Application: Erection of a part single/part two storey rear extension, single storey front porch to form additional living accommodation

Location: 26 Sandbach Avenue, Manchester, M14 7EG

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Version: v1.0 220322

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Contents

1.	Key Facts	4
1.1	Flood Risk Posed:	4
1.2	Flood Risk Mitigation:	4
2.	Introduction.....	5
3.	Existing Situation	6
3.1	Site Usage:	6
3.2	Topography:.....	6
3.3	Geology and Soil:.....	7
4.	Development Proposal	9
5.	Assessment of Flood Risk	11
5.1	Flood Zones:	11
5.2	Fluvial (Chorlton Platt Gore):.....	12
5.2.1	Modelled flood levels and extents:	12
5.2.2	Flood Storage Areas:	12
5.2.3	Functional Floodplain:.....	12
5.2.4	Flood Defences:	13
5.2.5	Residual risk (breach or overtopping of flood defences):	14
5.2.6	Historical flood events:	14
5.3	Pluvial (Surface Water):	14
5.4	Groundwater:	16
5.5	Sewer Surcharge:	17
5.6	Other Sources:.....	18
6.	Flood Risk Management	19
6.1	Vulnerability to flooding:.....	19
6.2	EA Standing Advice:	19
6.3	Physical Design Measures:.....	19
6.4	Safe Escape and Flood Action Plan:	20
6.5	Flood Warning:	21
6.6	Flood Plan:	21
6.7	Off-Site Impacts:.....	22
6.7.1	Fluvial floodplain storage:	22
6.7.2	Surface Water Drainage:.....	23
7.	Sequential and Exception Test.....	24
8.	Discussion and Conclusions	25
	Appendix.....	27

1. Key Facts

1.1 Flood Risk Posed:

- Site within Flood Zone 2 (Medium Risk).
- Fluvial flood risk from the from the from the Chorlton Platt Gore 152m south of the site.
- Site currently defended to 1 in 100 year standard.
- Comparison of the EA modelled flood levels for the 1:100 year plus allowance for climate change (35%) of 31.76m AOD with the topography site levels (31.4m AOD - 30.6m AOD) shows that the site could be inundated with up to 1.16m of floodwater during this future flood event.
- There no Flood Storage Areas located in close proximity to the site.
- The site is not located within a functional floodplain.
- No records of historical flooding at the site or surrounding area.
- No formal flood defences owned or maintained by the Environment Agency in the area.
- Risk of pluvial flooding would appear to be "Very Low" to "Low".
- Risk of groundwater, sewer flooding and reservoir flooding would appear to be very low.

1.2 Flood Risk Mitigation:

- The proposed development fits within EA standing advice for domestic extensions.
- No additional residential units will be created as part of the development;
- The additional footprint created by the development will not exceed 250m².
- Floor levels within the extension will be set no lower than existing floor levels;
- Flood proofing of the development will be incorporated as appropriate.
- The applicant will register with the Environment Agency Floodline Alert/Warnings Direct service.
- Due to the scale of the 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 Showgatul & Sadika Chowdhury (hereinafter referred to as “the applicant”) to undertake a Flood Risk Assessment for the proposed development at 26 Sandbach Avenue, Manchester, M14 7EG. (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 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 consists of an existing residential dwelling. The site is understood to have lawful planning permission for residential use.

A site location plan is provided in the report Appendix.

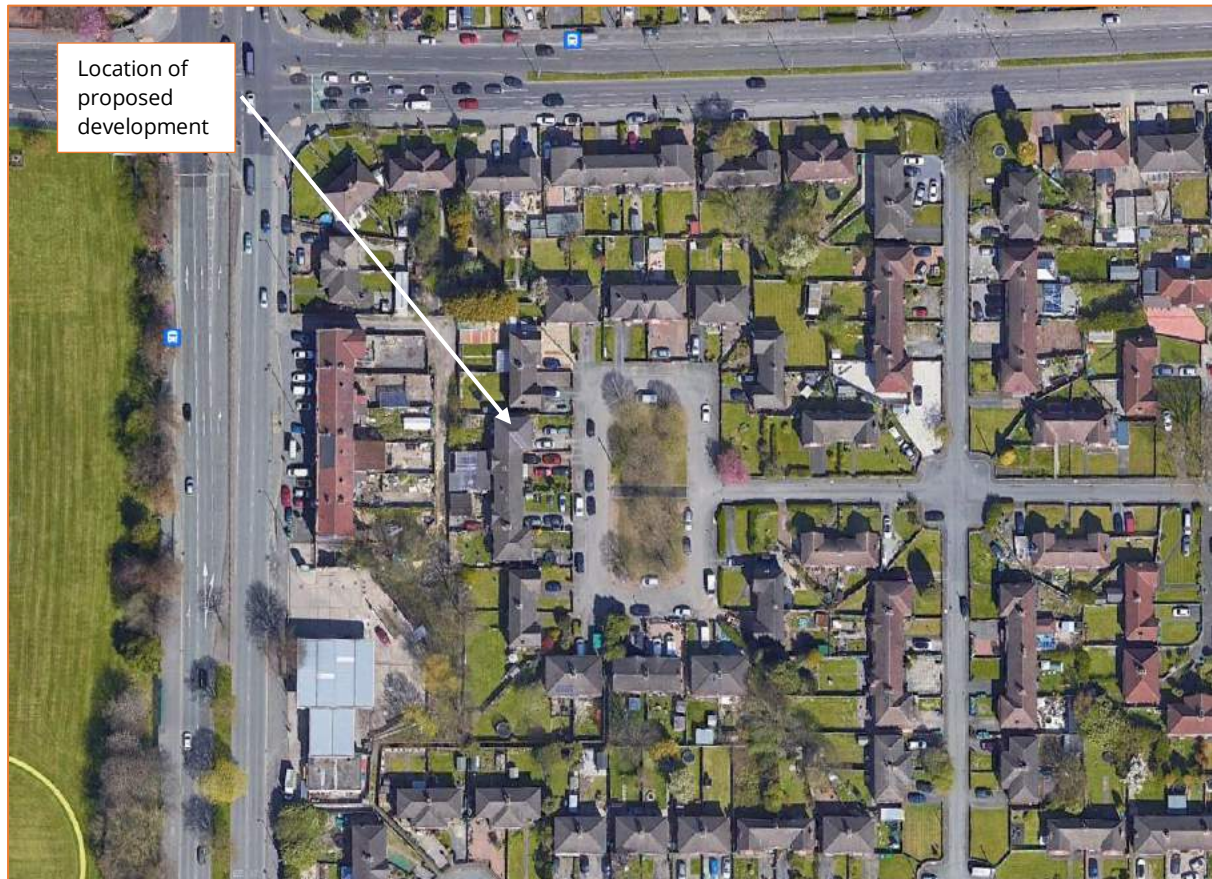


Figure 1: Aerial photograph of site and surrounding area (Source: Google Earth)

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 $\pm 0.15\text{m}$ 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 31.4m AOD at the front of the property to 30.6m AOD at rear of the property.

3.3 Geology and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site is Wilmslow Sandstone Formation - Sandstone. Sedimentary Bedrock formed approximately 247 to 252 million years ago in the Triassic Period.

The British Geological Survey (BGS) Map indicates that the superficial deposits underlying the site is Till, Devensian - Diamicton. Superficial Deposits formed up to 2 million years ago in the Quaternary Period.

The soil type taken from the UK Soil Observatory website is relatively deep soils from Deep Glacial Till soil parent material with a Loam to Clayey Loam soil texture.

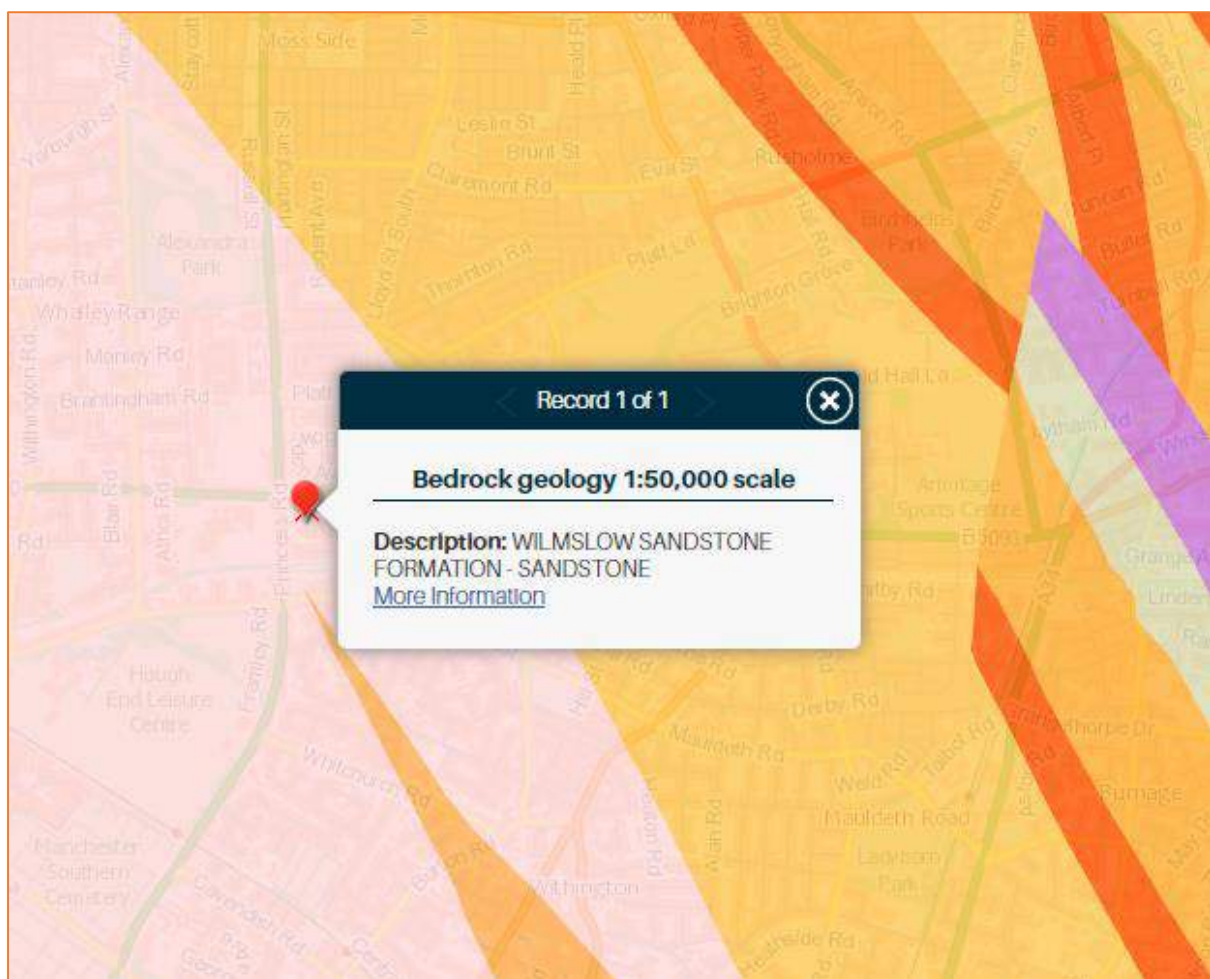


Figure 2: Local bedrock geology (Source: BGS)



Figure 3: Local superficial deposits (Source: BGS)

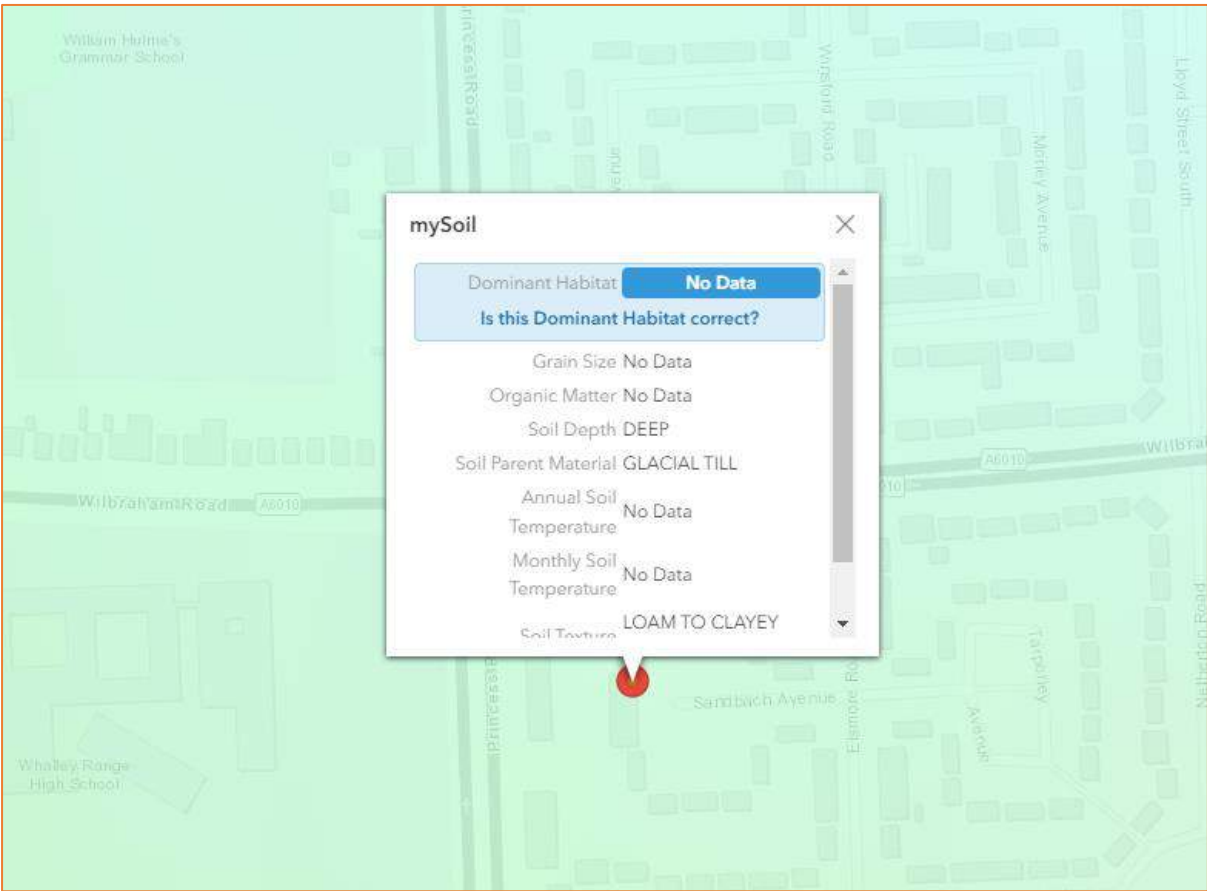


Figure 4: Local soil types (Source: UKSO)

4. Development Proposal

The proposed application is for the erection of a part single/part two storey rear extension, single storey front porch to form additional living accommodation

Proposed plans are provided in the report Appendix.

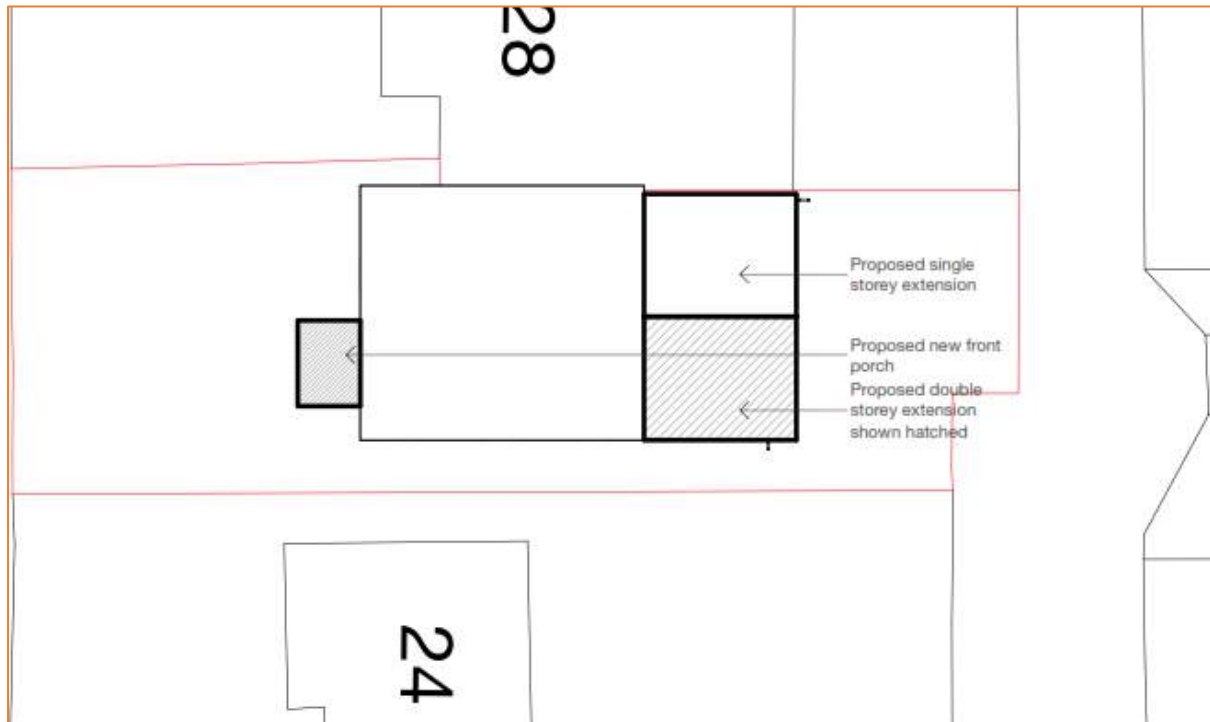


Figure 5: Proposed site plan (Source: Flocc)

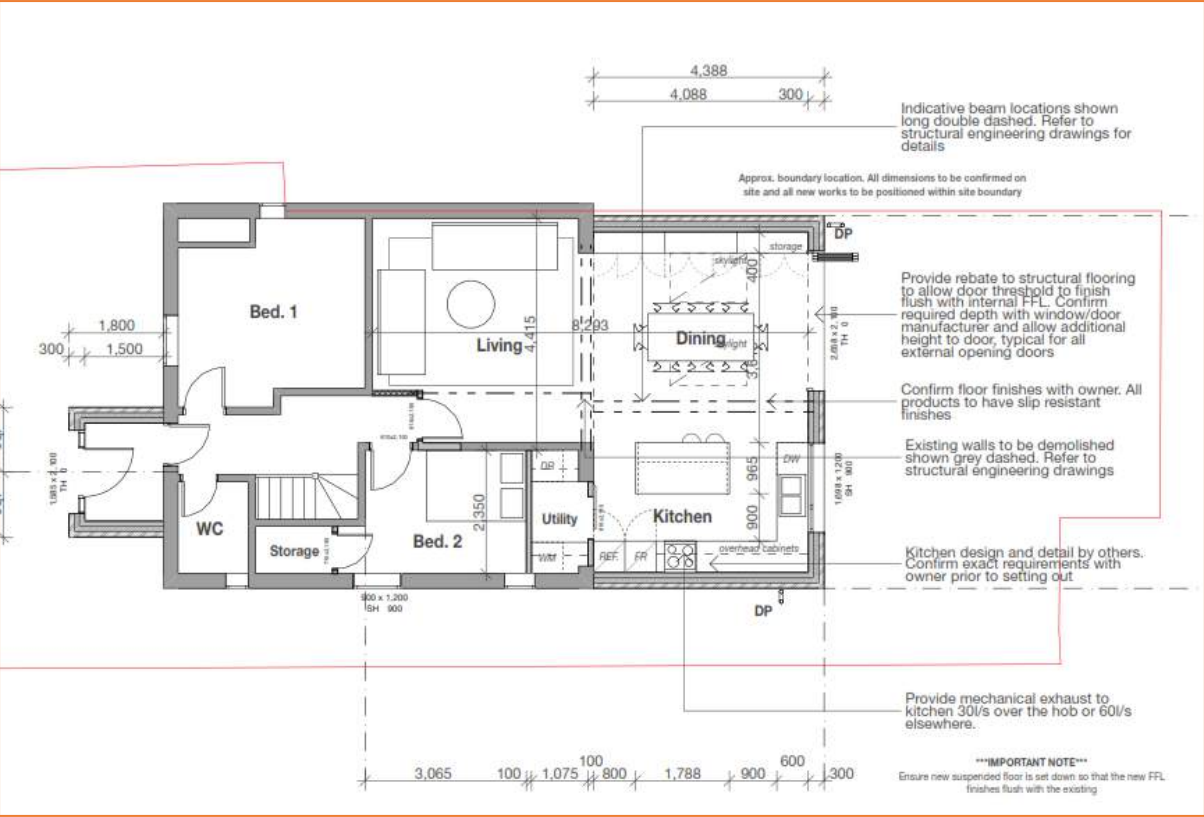


Figure 6: Proposed ground floor plan (Source:Flocc)



Figure 7: Proposed rear perspective (Source: Flocc)

5. Assessment of Flood Risk

5.1 Flood Zones:

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

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

Table 1: Flood Zones

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

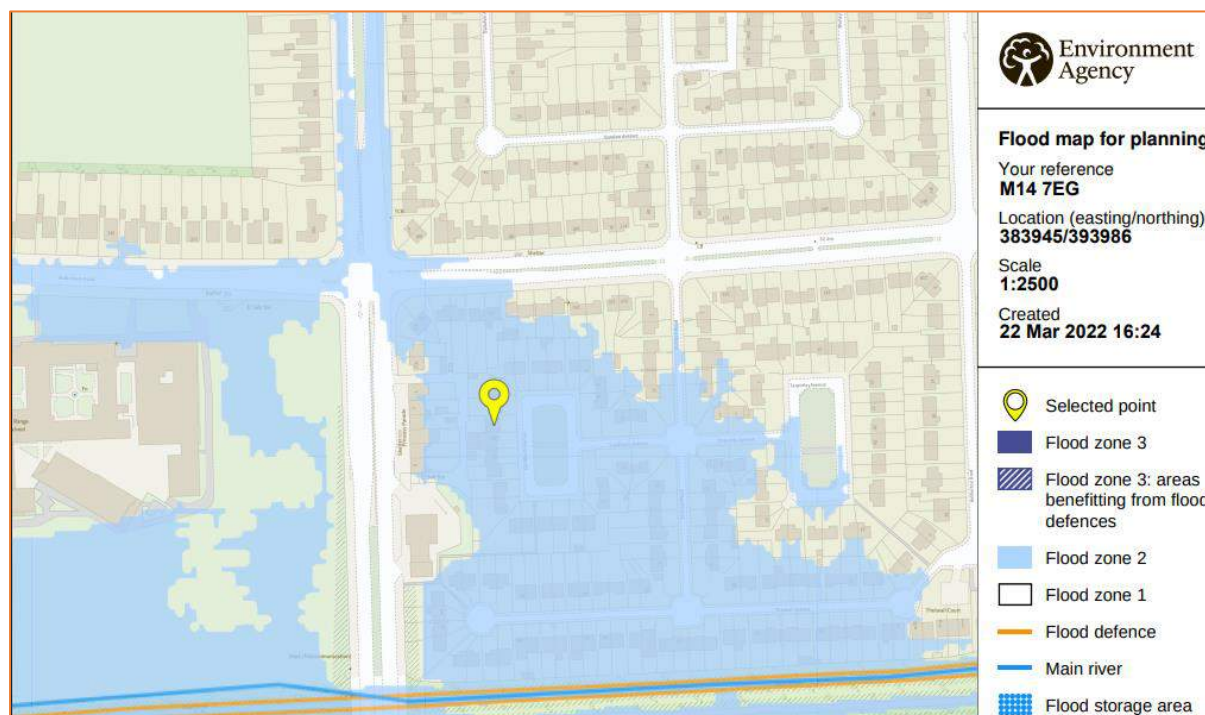


Figure 8: Environment Agency Flood Map for Planning (Rivers and Sea) (Source: EA)

The site is located within Flood Zone 2 (Medium Probability); defined as land having between a 1 in 100 and 1 in 1000 annual probability of fluvial flooding. However, the site is currently defended to the 1 in 100 year standard.

The risk would appear to be fluvial and originate from the Chorlton Platt Gore 152m south of the site.

5.2 Fluvial (Chorlton Platt Gore):

The Chorlton Platt Gore is 4.79km in length and covers a catchment area of 11.64km². It is heavily modified along its length and is designated as a Main River by the Environment Agency. It forms part of the Upper Mersey catchment and flows in a westerly direction in an open channel in the location of the site.

5.2.1 Modelled flood levels and extents:

Product 4 modelled flood levels and extents have been obtained from the Environment Agency for use within this report. The EA flood data is provided within the report Appendix.

The site is located within Flood Zone 2, and is classified as “more vulnerable”. The Flood Risk Assessments: climate change allowances guidance –updated October 2021, states that the Central climate change allowance should be applied. The site falls within the Upper Mersey Management Catchment, where the Central climate change allowance for the 2080's is a 41% increase in river flows.

As such, the most suitable modelled flood data provided in the Model data taken from Chorlton Platt Gore 2012 Study is a 35% increase in flows, and as such this will be used for this assessment.

Node 2 is the closest in channel node upstream of the site. Of importance is the 1:100 year plus allowance for climate change (35%) of 31.76m AOD.

5.2.2 Flood Storage Areas:

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

There are no flood storage areas in the location of the site.

5.2.3 Functional Floodplain:

This zone comprises land where water is required to flow or be stored in times of flood. The functional floodplain designation encompasses land which would flood with an annual probability of 1 in 20 (5%) or greater in any year; and includes areas of land required for water conveyance routes.

The site is not located within a functional floodplain.

5.2.4 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 Environment Agency, 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.

According to EA data, high ground embankments and a wall flank the banks of the Chorlton Platt Gore in the location of the site which are maintained by the EA. The upstream actual crest levels range from 32.82m AOD to a downstream actual crest level of 30.25m AOD. The site is currently protected to the 1 in 100 year standard. It is unclear when the defences were last inspected by the EA or their current condition.

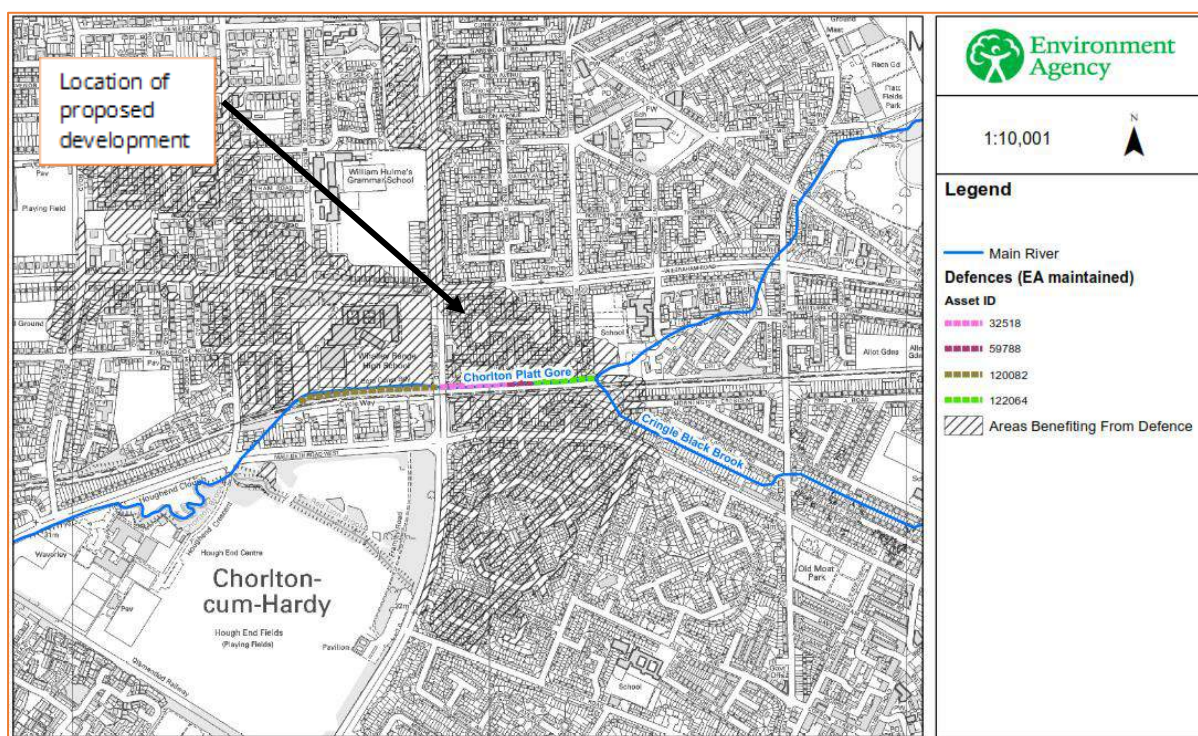


Figure 9: Flood Defence Map (Source: EA)

Start Date	Asset Type	Asset ID	Standard of Protection	Upstream Actual Crest Level (m aod)	Downstream Actual Crest Level (m aod)
01/01/1996	Wall	32518	100	31.84	31.48
01/01/1996	Embankment	59788	100	32.82	31.81
01/01/1996	Embankment	120082	100	31.38	30.25
01/01/1996	Wall	122064	100	31.90	31.84

Table 2: Flood Defences

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.

There remains a residual risk in the incidence of failure. Overtopping or breach are the principal mechanisms of flooding.

5.2.6 Historical flood events:

The EA have no records of historical flooding having affected the site.

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 “Very Low” to “Low” risk from surface water.

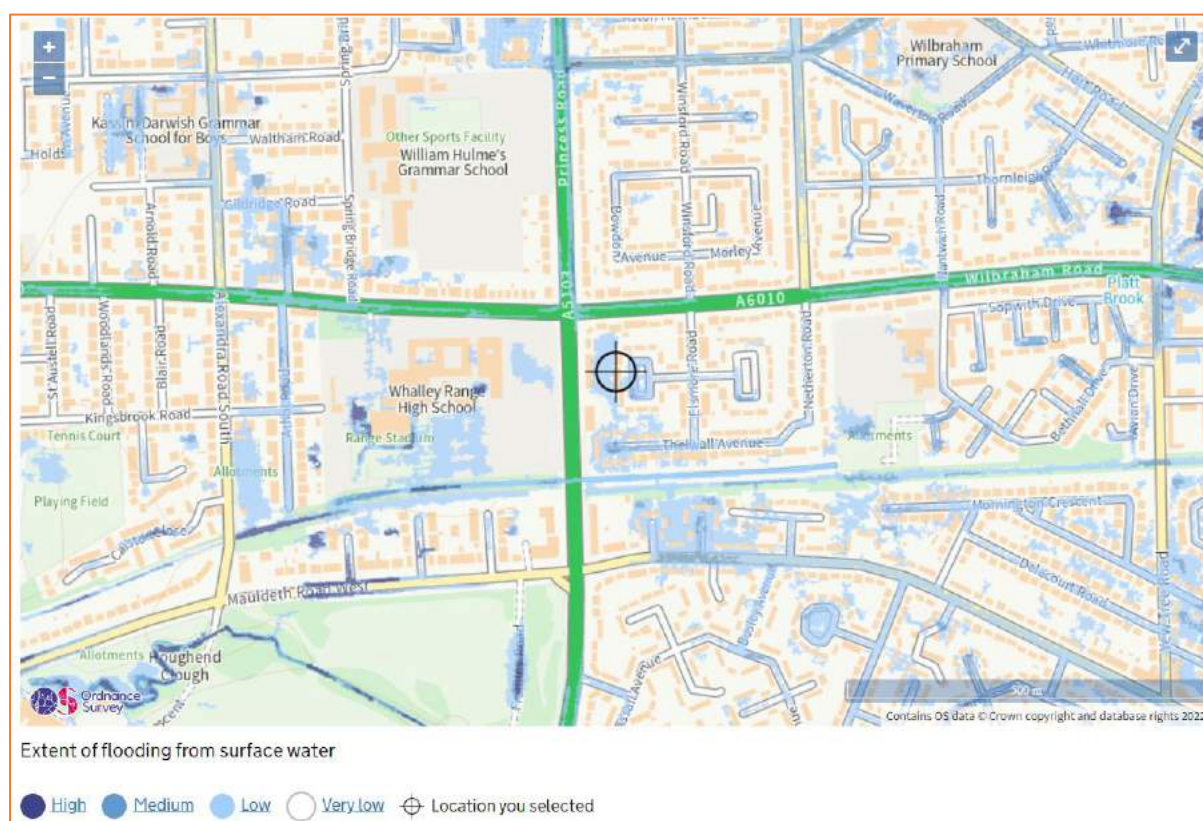


Figure 10: Extract from Environment Agency Surface Water Flood Map (Source: EA)

The Lead Local Flood Authority (LLFA) responsible for managing the flood risk from surface water in the area is Manchester council.

In addition, according to the Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA May 2010 the site is not located within a Critical Drainage Area.

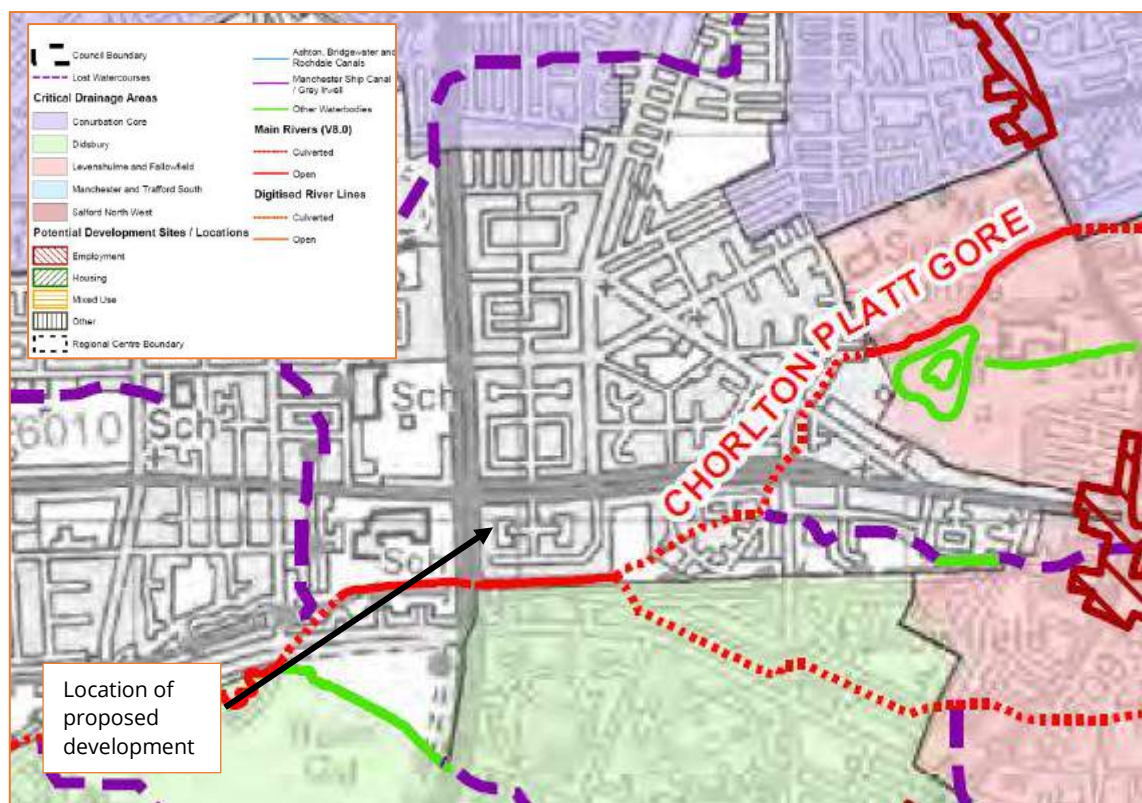


Figure 11: Critical Drainage Areas (Source: Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA May 2010)

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 Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA May 2010 the site is not located within an area at risk from groundwater flooding.

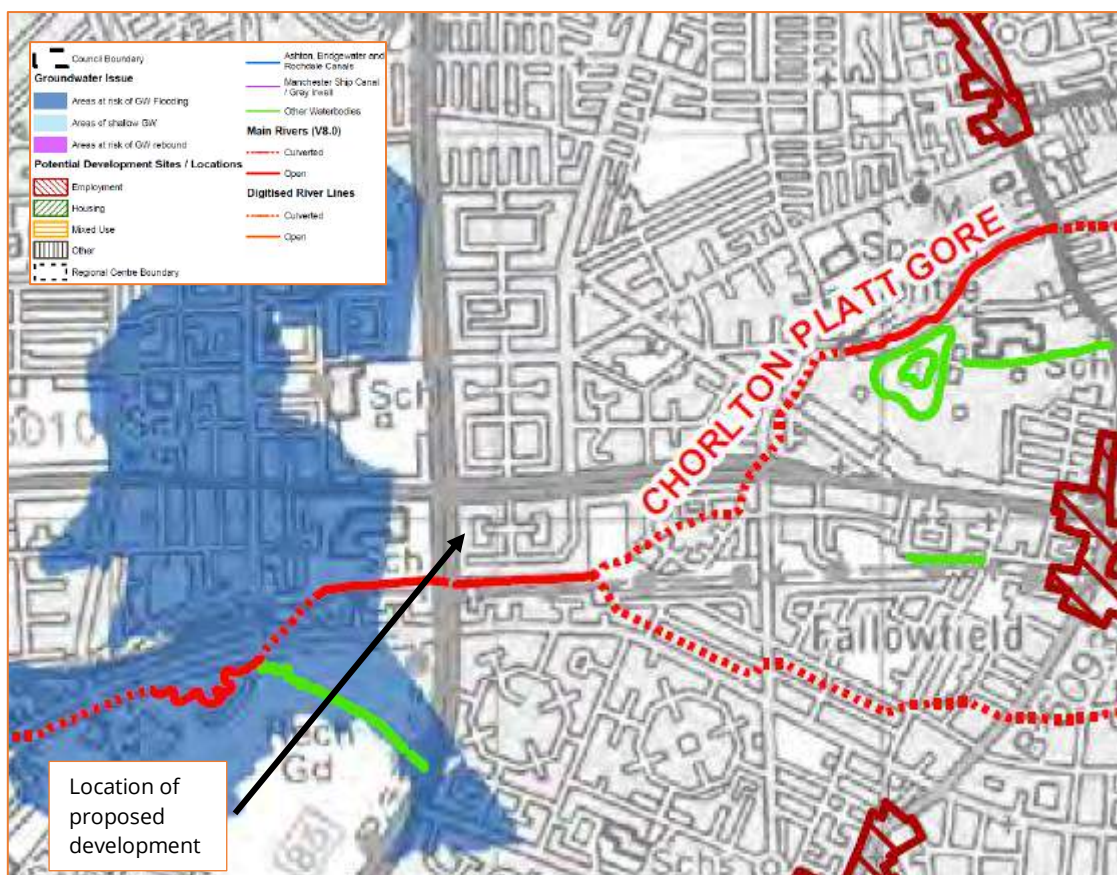


Figure 12: Groundwater flooding (Source: Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA May 2010)

In addition, 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 inside 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 13: 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 a residential extension.

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

There will be no introduction of additional units or dwellings.

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 proposed planning application is for the construction of a residential extension which does not exceed 250m².

As per the EA Standing Advice, floor levels in the extension will be set no lower than existing adjacent floor levels (the new FFL finishes flush with the existing), and flood proofing of the development will be incorporated as appropriate.

No additional residential units will be created as part of the development.

The proposed development is considered to fit within the EA's standing advice for domestic extensions.

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 an 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.

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

- Electrical main ring run from ceiling level;

- Electrical incomer and meter situated at a high level;
- Boilers, control and water storage / immersion installed at a high level;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Manhole covers secured;
- Anti-syphon fitted to all toilets.
- 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;
- Kitchen units of solid, water resistant material;
- 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.
- The external ground floor doors and windows will be flood proof.

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.

However, it should be noted that the proposed application is for the construction of a residential extension. No additional or new units or dwellings will be created as part of the development. Safe escape is not a requirement under the EA Standing Advice guidance is for domestic extensions.

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/ Alert 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 3: EA Flood Warning Service

6.6 Flood Plan:

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

Before a flood:

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

During a flood:

- Activate the evacuation plan and evacuate the site.
- Remove cars from the site if there is sufficient warning and the water levels are not rising rapidly.
- Switch off water and electricity for the site.
- Tune into your local radio station on a battery or wind-up radio.
- Listen to the advice of the emergency service and evacuate if told to do so.
- Avoid walking or driving through flood water. Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.

After a flood:

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

6.7 Off-Site Impacts:**6.7.1 Fluvial floodplain storage:**

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

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

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

The site is situated in Flood Zone 2 when using the Environment Agency 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.

6.7.2 Surface Water Drainage:

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

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

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 site is situated within Flood Zone 2 when using the Environment Agency Flood Map for Planning (Rivers and Sea). Post development, the site will remain “more vulnerable”, as the application is for the construction of a residential extension.

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).

8. Discussion and Conclusions

Unda Consulting Limited have been appointed by Showgatul & Sadika Chowdhury to undertake a Flood Risk Assessment for the proposed development at 26 Sandbach Avenue, Manchester, M14 7EG. The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The proposed application is for the construction of a residential extension. Post development, the site will be “more vulnerable”, as the application is for the construction of a residential extension. 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 units or dwellings.

The site is located within Flood Zone 2 (Medium Probability); defined as land having between a 1 in 100 and 1 in 1000 annual probability of fluvial flooding.

The risk would appear to be fluvial and originate from the Chorlton Platt Gore 152m south of the site.

The site is currently defended to the 1 in 100 year standard.

Product 4 modelled flood levels and extents have been obtained from the Environment Agency for use within this report.

The site is located within Flood Zone 2, and is classified as “more vulnerable”. The Flood Risk Assessments: climate change allowances guidance –updated October 2021, states that the Central climate change allowance should be applied. The site falls within the Upper Mersey Management Catchment, where the Central climate change allowance for the 2080's is a 41% increase in river flows.

As such, the most suitable modelled flood data provided in the Model data taken from Chorlton Platt Gore 2012 Study is a 35% increase in flows, and as such this will be used for this assessment.

Comparison of the EA modelled flood levels for the 1:100 year plus allowance for climate change (35%) of 31.76m AOD with the topography site levels (31.4m AOD - 30.6m AOD) shows that the site could be inundated with up to 1.16m of floodwater during this future flood event.

There no Flood Storage Areas located in close proximity to the site.

The site is not located within a functional floodplain.

No records of historical flooding at the site or surrounding area.

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

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 an 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 (the new FFL finishes flush with the existing) , and internal access will be maintained from the ground floor to the first floor of the property.

Safe escape is not a requirement under the EA Standing Advice guidance is for domestic extensions.

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.

The applicant has confirmed that:

- The proposed development fits within EA standing advice for domestic extensions
- No additional residential units will be created as part of the development
- The additional footprint created by the development will not exceed 250m²
- Floor levels within the extension will be set no lower than existing floor levels
- Flood proofing of the development will be incorporated as appropriate
- The applicant will register with the Environment Agency Floodline Alert/Warnings Direct service
- Due to the scale of the 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
- EA flood data

Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings.

[illegible]

**FOR PLANNING/
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26 Sandbach Ave, Manchester

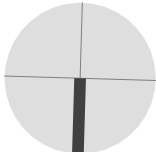
Drawing Number	Scale
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The site plan shows the layout of 28 Sandbach Avenue and its neighbors. The property is bounded by Sandbach Avenue to the north and a residential street to the south. The plan includes the following details:

- Property 28:** The central property, outlined in red, showing the proposed extensions and new front porch.
- Proposed Extensions:**
 - Proposed single storey extension:** Indicated by a hatched area on the right side of the property.
 - Proposed double storey extension shown hatched:** Indicated by a hatched area on the left side of the property.
 - Proposed new front porch:** Indicated by a hatched area on the front of the property.
- Neighbors:**
 - 27:** Property to the north of 28.
 - 24:** Property to the west of 28.
 - 22:** Property to the east of 28.
- Other Features:**
 - Sandbach Avenue:** The street to the north of the property.
 - Residential Street:** The street to the south of the property.
 - Other Properties:** Various other properties are shown in the surrounding area, including a large property to the west and a property to the east.

Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings.

These drawings are for the purpose of achieving planning and building regulations approval only and subject to final review/approval by building control. All drawings must be read in conjunction with structural engineers design drawings and calculations. All products to be installed in accordance with manufacturers recommendation and details.

[illegible]

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**FOR PLANNING/
BUILDING CONTROL
APPROVAL**

Client

Showgatul & Sadika Chowdhury

26 Sandbach Ave, Manchester

Project Number **SAN026**

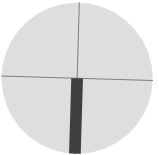
Drawing Title

Site Plan - Proposed

Drawing Number	Scale
WD2.2	1:200 @ A

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[illegible]

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BUILDING CONTROL
APPROVAL**

Client

Showgatul & Sadika Chowdhury

Project Description

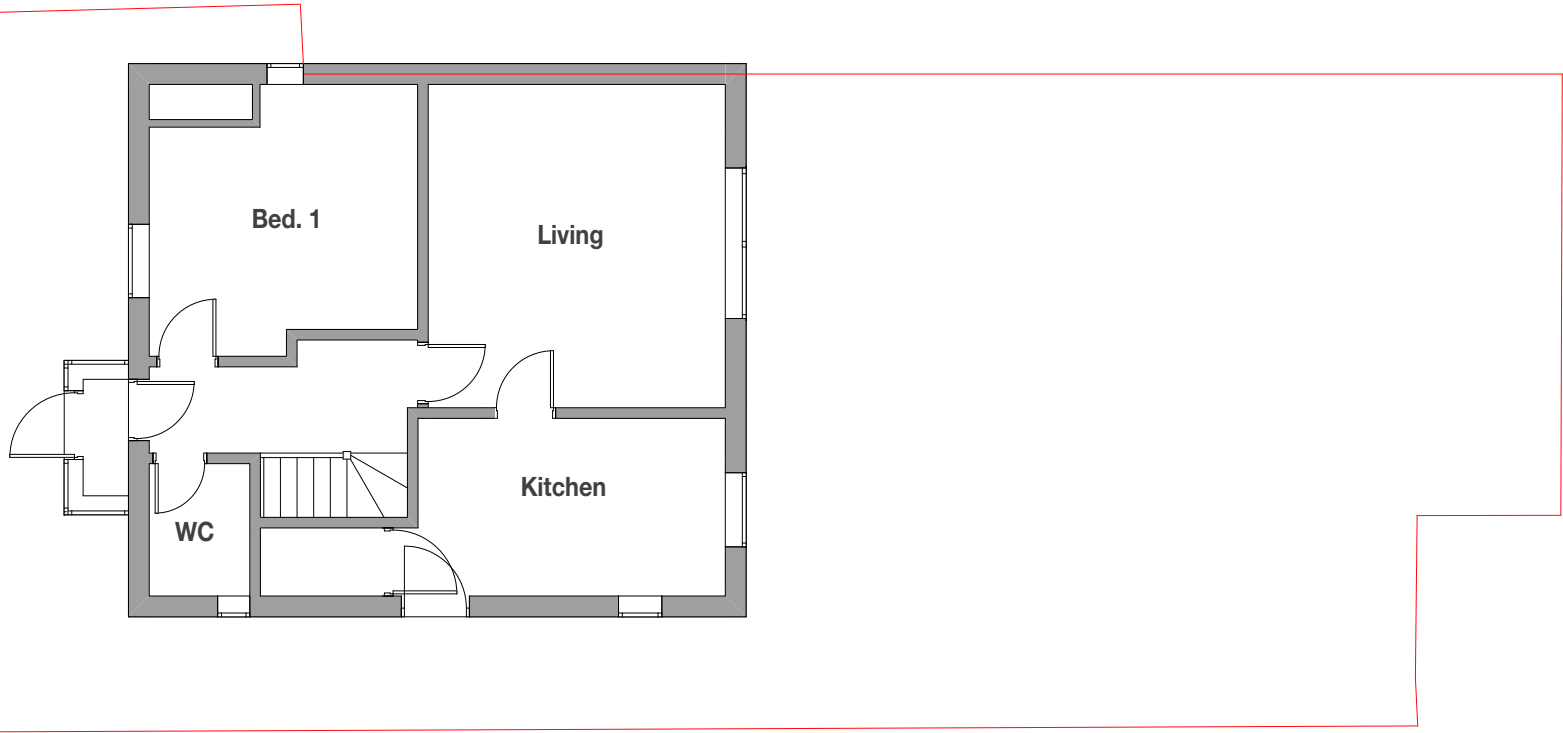
26 Sandbach Ave, Manchester

Project Number **SAN026**

Drawing Title

Plans - Existing

Drawing Number	Scale
WD3.1	1:100 @ A



Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings.

Issue/ Rev	Description	Date
#	Initial Issue	27.10.21

[illegible]

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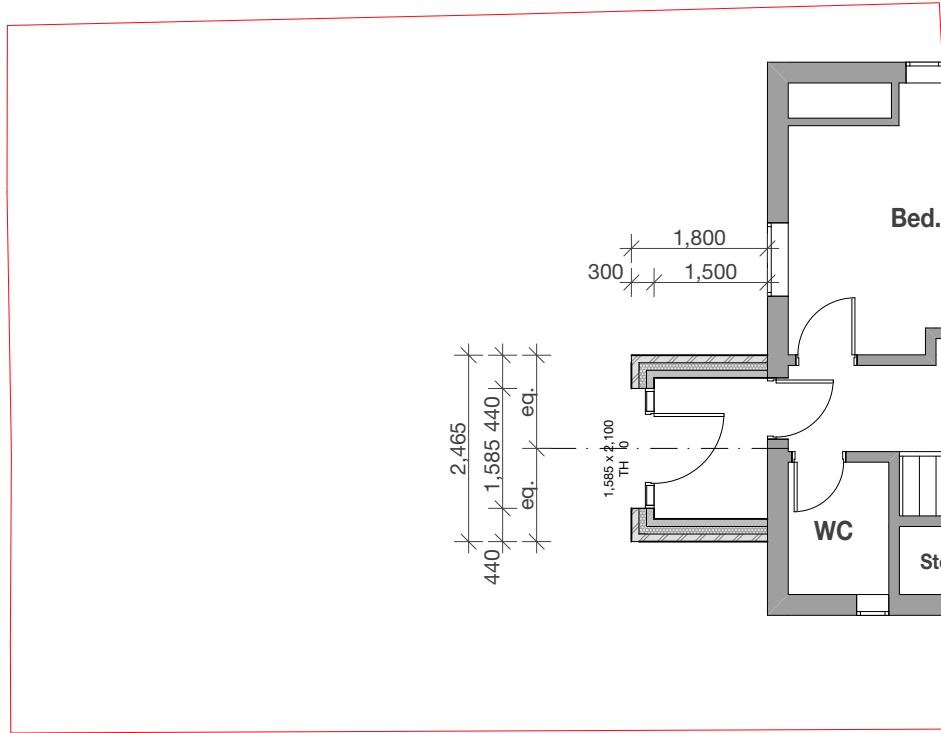
Project Description

Project Number **SAN026**

Drawing Title

Drawing Number	Scale
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WD3.2 1:100 @ /



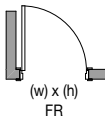
Refer to General Notes For Details

All structure shown as graphic representation: please refer to structural engineering package for exact details of footings, concrete slab, timber framed floors, wall & roof framing

- Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings
- All new windows and doors sizes indicated are to structural openings and to be site measured. Window style, detailing and opening sash locations to be confirmed and approved by owner prior to fabrication. All new windows require means of escape with an unobstructed openable area of 0.33sq.m. and at least 450mm high and 450mm wide. The bottom of the openable area should not be more than 1100mm above floor level. All windows to achieve the minimum U values specified in the British Standards.
- **All floors (suspended or on ground) walls and roofs are to be insulated and achieve at least the minimum U values listed under Approved Document Part L of the British Regulations.**
- Confirm all finishes and materials with owner.

*****All works to be constructed in accordance with accredited construction details*****

All opening sizes are to structural openings
FR = Fire rated door where required



windpost and restraint
requirements for piers less than
665mm wide to be confirmed by
structural engineer

The diagram shows a cross-section of a pier. It is a rectangular structure with a width indicated by a dimension line at the top labeled "<665". The pier is divided into three horizontal layers: a top layer with diagonal hatching, a middle solid layer, and a bottom layer with cross-hatching. The pier is shown between two vertical lines representing walls or other structures.

- Provide DPC min. 150mm above natural ground level
- Provide weep holes at 900mm centers above all openings



Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings.

[illegible]

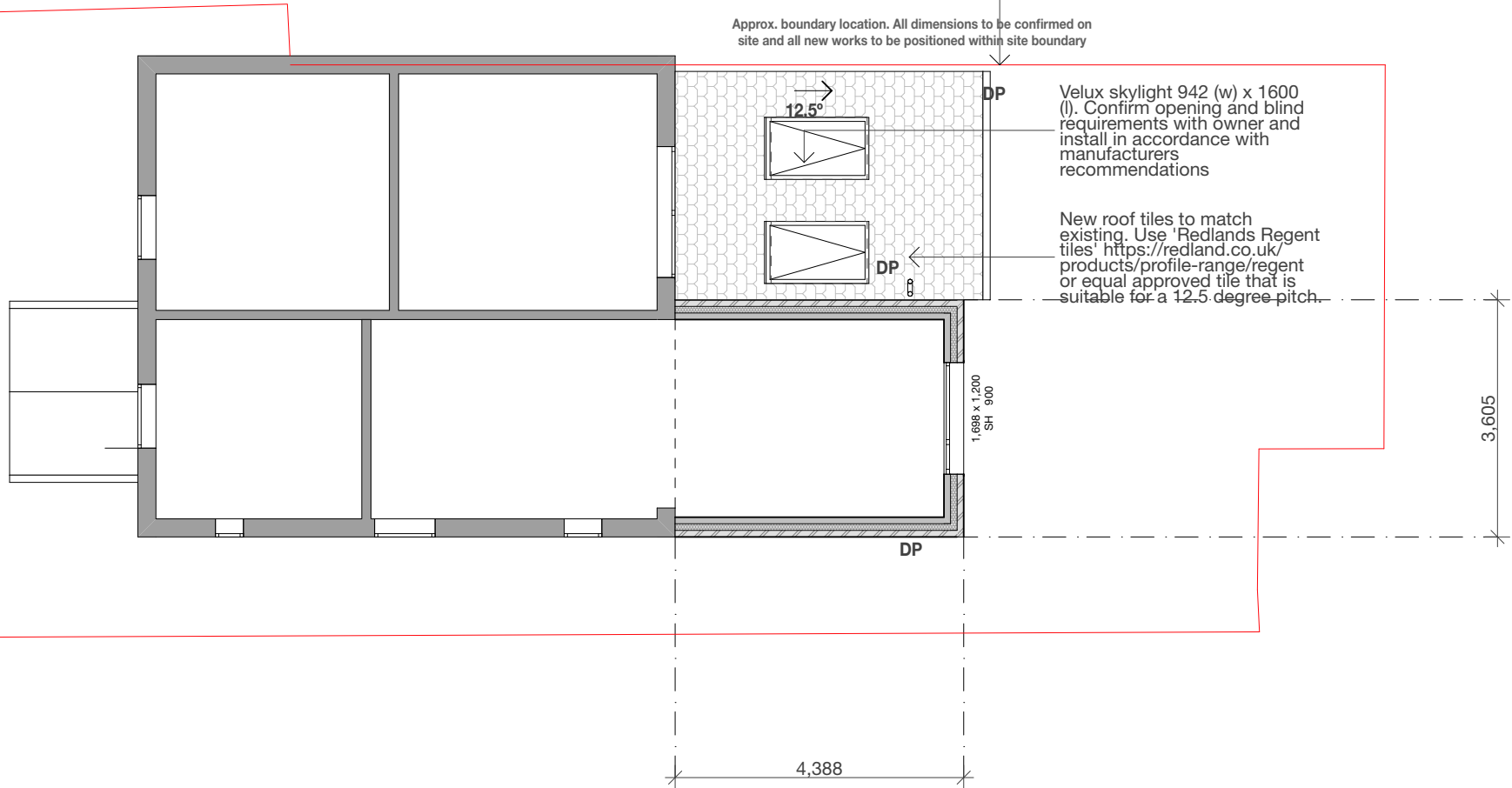
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Project Description

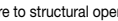
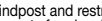
26 Sandbach Ave, Manchester

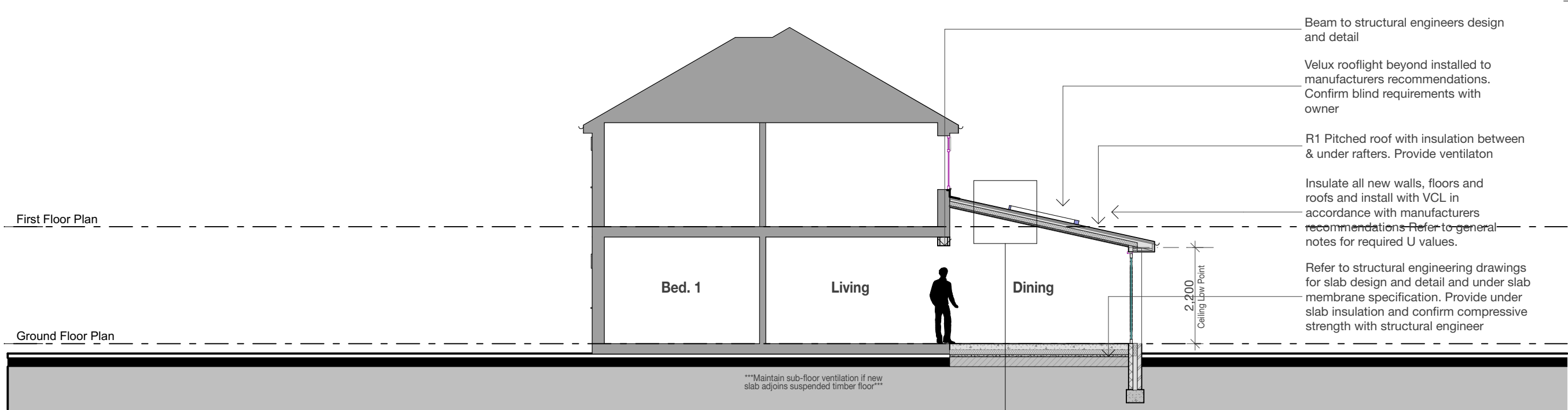
Plans - Proposed First Floor

WD3.3 **1:100 @ A**



Legend						
ref.	refrigerator	B	boiler	OP	overflow	Refer to General Notes For Details ***All structure shown as graphic representation: please refer to structural engineering package for exact details of footings, concrete slab, timber framed floors, wall & roof framing***
wo.	wall oven	W1	wall type 1	HOP	hopper	
dw	dishwasher	W2	wall type 2	FG	floor gully	
shr.	shower	R1	roof type 1			
st	store	PS	plumbing stack			
wir	walk in wardrobe	R1	roof type 1			
pdr.	powder room	DP	downpipe			

Notes - Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings - All new windows and doors sizes indicated are to structural openings and to be site measured. Window style/detailing and opening sash locations to be confirmed and approved by owner prior to fabrication. All new windows require means of escape with an unobstructed openable area of 0.33sq.m. and at least 450mm high and 450mm wide. The bottom of the openable area should not be more than 1100mm above floor level. All windows to achieve the minimum U values specified in the British Standards. - All floors (suspended or on ground) walls and roofs are to be insulated and achieve at least the minimum U values listed under Approved Document Part L of the British Regulations. - Confirm all finishes and materials with owner. ***All works to be constructed in accordance with accredited construction details***	Notes on setting out ***All opening sizes are to structural openings*** FR = Fire rated door where required   Brickwork windpost and restraint requirements for piers less than 665mm wide to be confirmed by structural engineer  - Provide DPC min. 150mm above natural ground level - Provide weep holes at 900mm centers above all openings
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Beam to structural engineers design and detail

Velux rooflight beyond installed to manufacturers recommendations. Confirm blind requirements with owner

R1 Pitched roof with insulation between & under rafters. Provide ventilaton

Insulate all new walls, floors and roofs and install with VCL in accordance with manufacturers recommendations Refer to general notes for required U values.

Refer to structural engineering drawings for slab design and detail and under slab membrane specification. Provide under slab insulation and confirm compressive strength with structural engineer

NOTES

Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings.

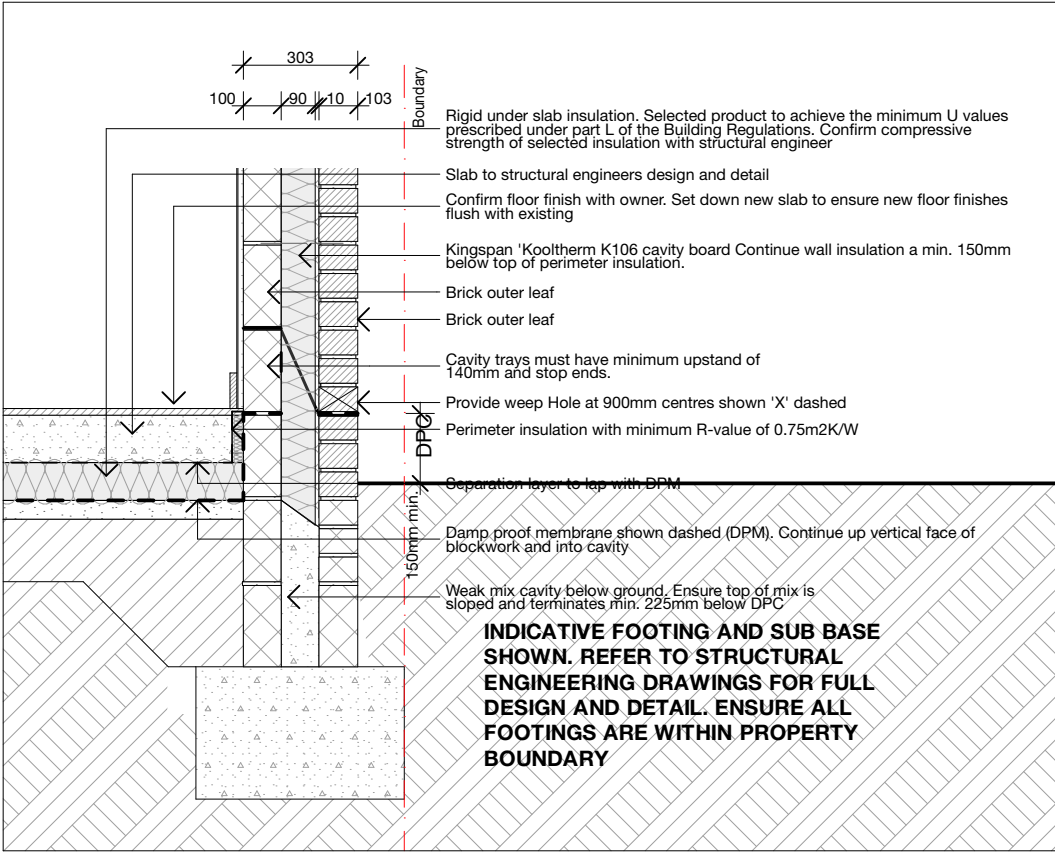
These drawings are for the purpose of achieving planning and building regulations approval only and subject to final review/ approval by building control. All drawings must be read in conjunction with structural engineers design drawings and calculations. All products to be installed in accordance with manufacturers recommendation and details.

Issue/ Rev	Description	Date
#	Initial Issue	27.10.21

First Floor Plan

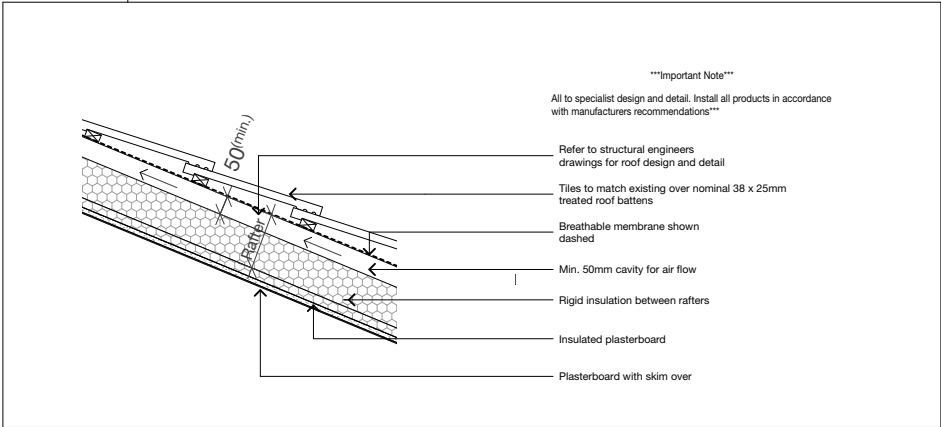
Ground Floor Plan

Maintain sub-floor ventilation if new slab adjoins suspended timber floor



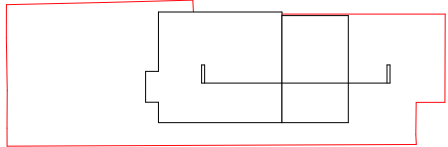
INDICATIVE FOOTING AND SUB BASE SHOWN. REFER TO STRUCTURAL ENGINEERING DRAWINGS FOR FULL DESIGN AND DETAIL. ENSURE ALL FOOTINGS ARE WITHIN PROPERTY BOUNDARY

Typical Wall Detail
(Scale 1:20)



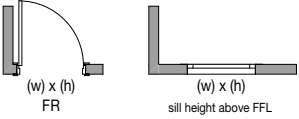
Typical Ventilated Tiled Roof Detail
(Scale 1:20)

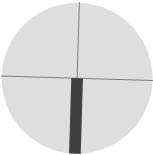
ALL DETAILS ARE SUBJECT TO APPROVAL BY APPOINTED BUILDING INSPECTOR



key plan
scale 1:500

Legend						Refer to General Notes For Details
ref.	refrigerator	B	boiler	OP	overflow	
wo.	wall oven	W1	wall type 1	HOP	hopper	***All structure shown as graphic representation: please refer to structural engineering package for exact details of footings, concrete slab, timber framed floors, wall & roof framing***
dw	dishwasher	W2	wall type 2	FG	floor gully	
shr.	shower	R1	roof type 1			
st	store	PS	plumbing stack			
wir	walk in wardrobe	R1	roof type 1			
pdr.	powder room	DP	downpipe			

Notes	Notes on setting out	Brickwork
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FOR PLANNING/
BUILDING CONTROL
APPROVAL

Client

Showgatul & Sadika Chowdhury

Project Description

26 Sandbach Ave, Manchester

Project Number SAN026

Drawing Title

Section A - A

Drawing Number Scale

WD4.1 1:100 @ A3

Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings.

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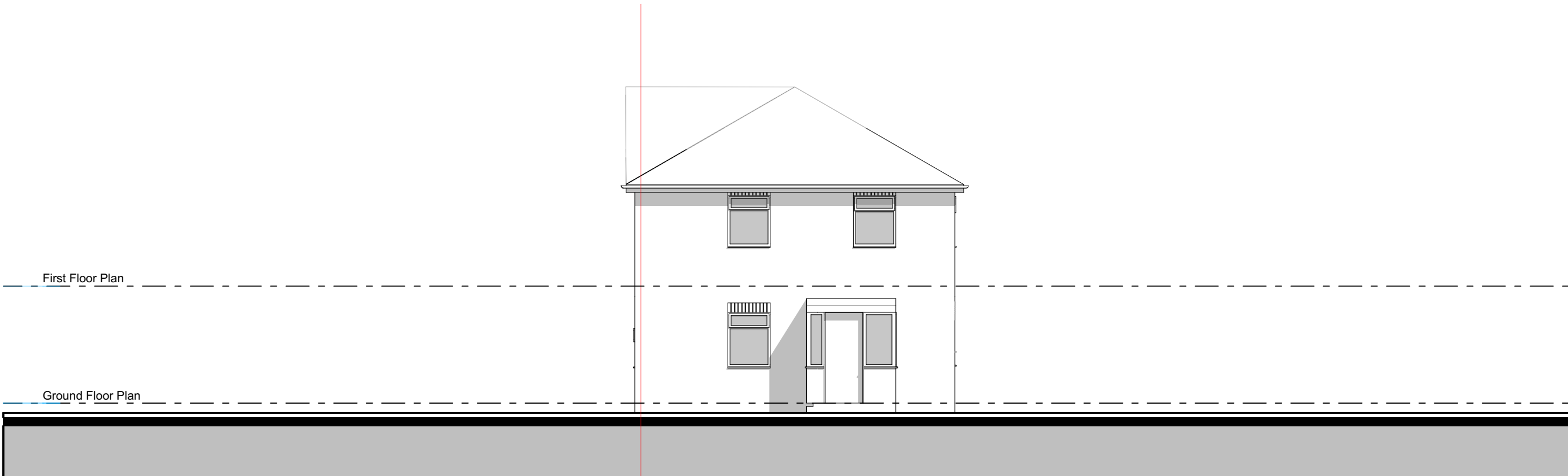
Elevations - Existing

Drawing Number	Scale
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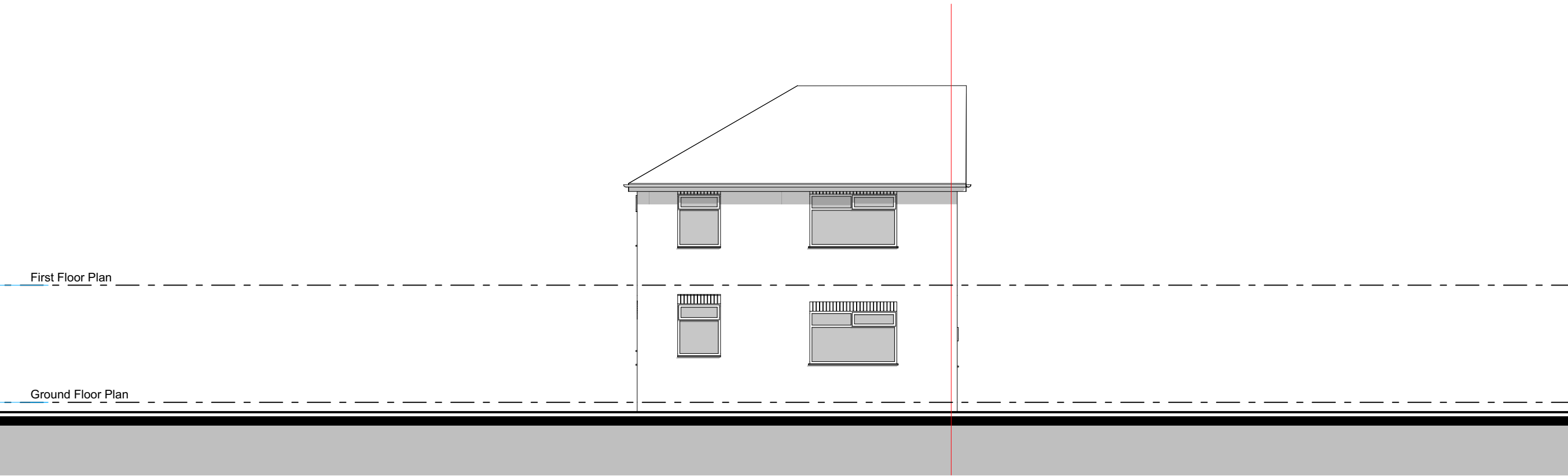
WD5.1 1:100 @ A

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[illegible]

Existing East Elevation



Existing West Elevation

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Project Description

26 Sandbach Ave, Manchester

Project Number **SAN026**

Drawing Title

Elevations - Existing

Drawing Number	Scale
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WD5.2 1:100 @ A

1:100 @ A3

All new materials shown hatched for clarity

Do not scale this drawing. All dimensions are to be verified on site and any discrepancies reported before commencement of any work or shop drawings.

Issue/ Rev	Description	Date
#	Initial Issue	27.10.21



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Showgatul & Sadika Chowdhury

26 Sandbach Ave, Manchester

Project Number **SAN026**

Drawing Title

Elevations - Proposed

Drawing Number	Scale
----------------	-------

WD5 3 1:100 ©

WD5.3 1:100 @ A3

Legend						
ref.	refrigerator	B	boiler	OP	overflow	Refer to General Notes For Details ***All structure shown as graphic representation: please refer to structural engineering package for exact details of footings, concrete slab, timber framed floors, wall & roof framing***
wo.	wall oven	W1	wall type 1	HOP	hopper	
dw	dishwasher	W2	wall type 2	FG	floor gully	
shr.	shower	R1	roof type 1			
st	store	PS	plumbing stack			
wir	walk in wardrobe	R1	roof type 1			
pdr.	powder room	DP	downpipe			

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---	---

All new materials shown hatched for clarity

First Floor Plan

Ground Floor Plan

(W1) Brickwork to match existing

Proposed East Elevation

First Floor Plan

Ground Floor Plan

Ensure ridge terminates min.
150mm below window sill.
Provide lead flashing into
brickwork

(R1) New roof tiles to match existing. Use 'Redlands Regent tiles' <https://redland.co.uk/products/profile-range/regent> or equal approved tile that is suitable for a 12.5 degree pitch.

DP

(W1) Brickwork to match existing

Proposed West Elevation

ref.	refrigerator	B	boiler	OP	overflow
wo.	wall oven	W1	wall type 1	HOP	hopper
dw	dishwasher	W2	wall type 2	FG	floor gully
shr.	shower	R1	roof type 1		
st	store	PS	plumbing stack		
wir	walk in wardrobe	R1	roof type 1		
pdr.	powder room	DP	downpipe		

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- Confirm all finishes and materials with owner.

*****All works to be constructed in accordance with accredited construction details*****

All opening sizes are to structural openings
FR = Fire rated door where required

(w) x (h)
FR

(w) x (h)
sill height above FFL

windpost and restraint requirements for piers less than 665mm wide to be confirmed by structural engineer

- Provide DPC min. 150mm above natural ground level

- Provide weep holes at 900mm centers above all openings

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[illegible]

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Client

Showgatul & Sadika Chowdhury

Project Description

26 Sandbach Ave, Manchester

Project Number **SAN026**

Drawing Title

Elevations - Proposed

Drawing Number	Scale
----------------	-------

Drawing Number	Scale
----------------	-------

WD5.4 1:10

1:100 @ A3

WD5.4

Flood map for planning

Your reference
M14 7EG

Location (easting/northing)
383947/393976

Created
11 Jan 2022 15:01

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)

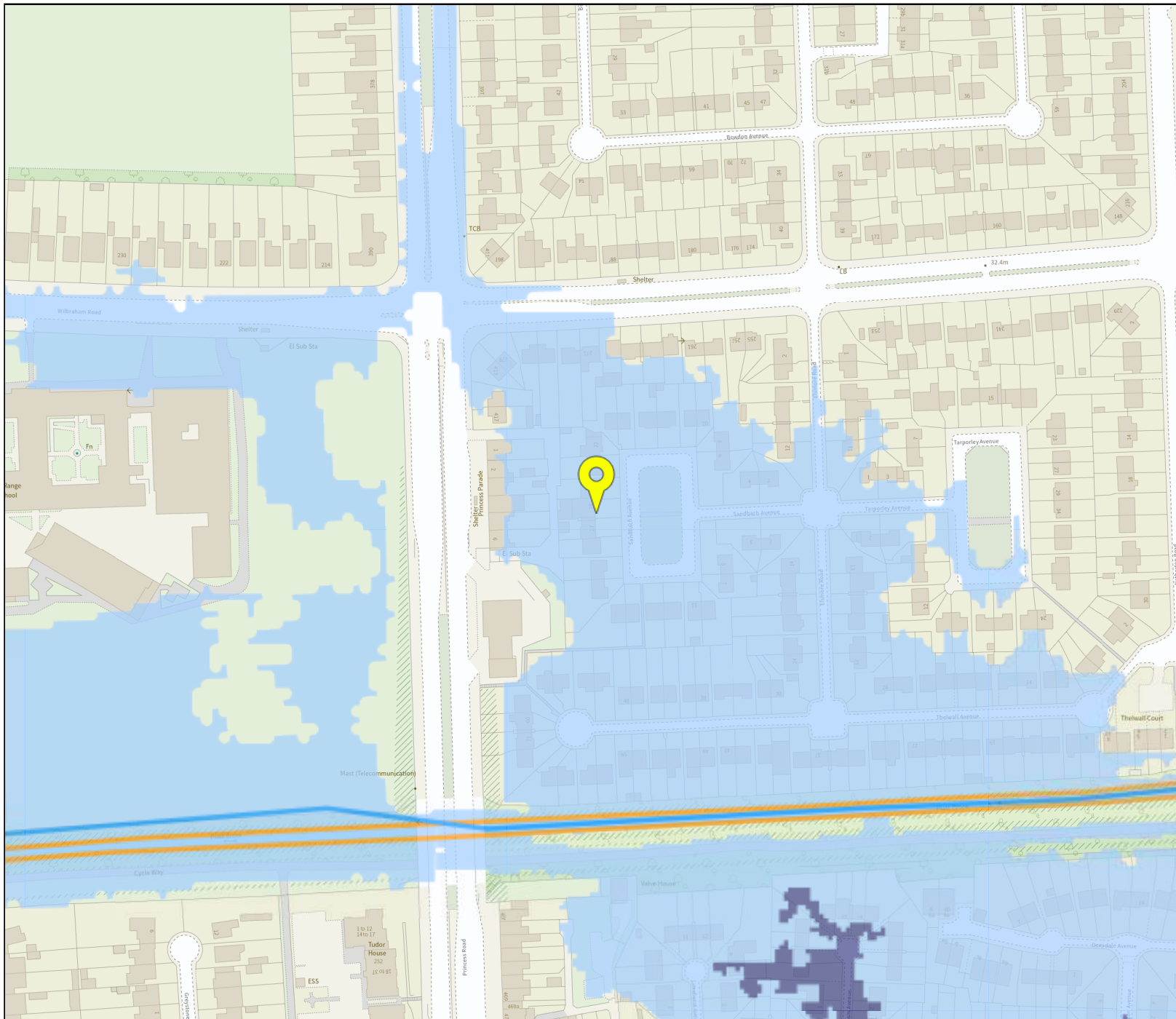
Notes

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/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

M14 7EG

Location (easting/northing)

383947/393976

Scale

1:2500

Created

11 Jan 2022 15:01

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area


0 20 40 60m

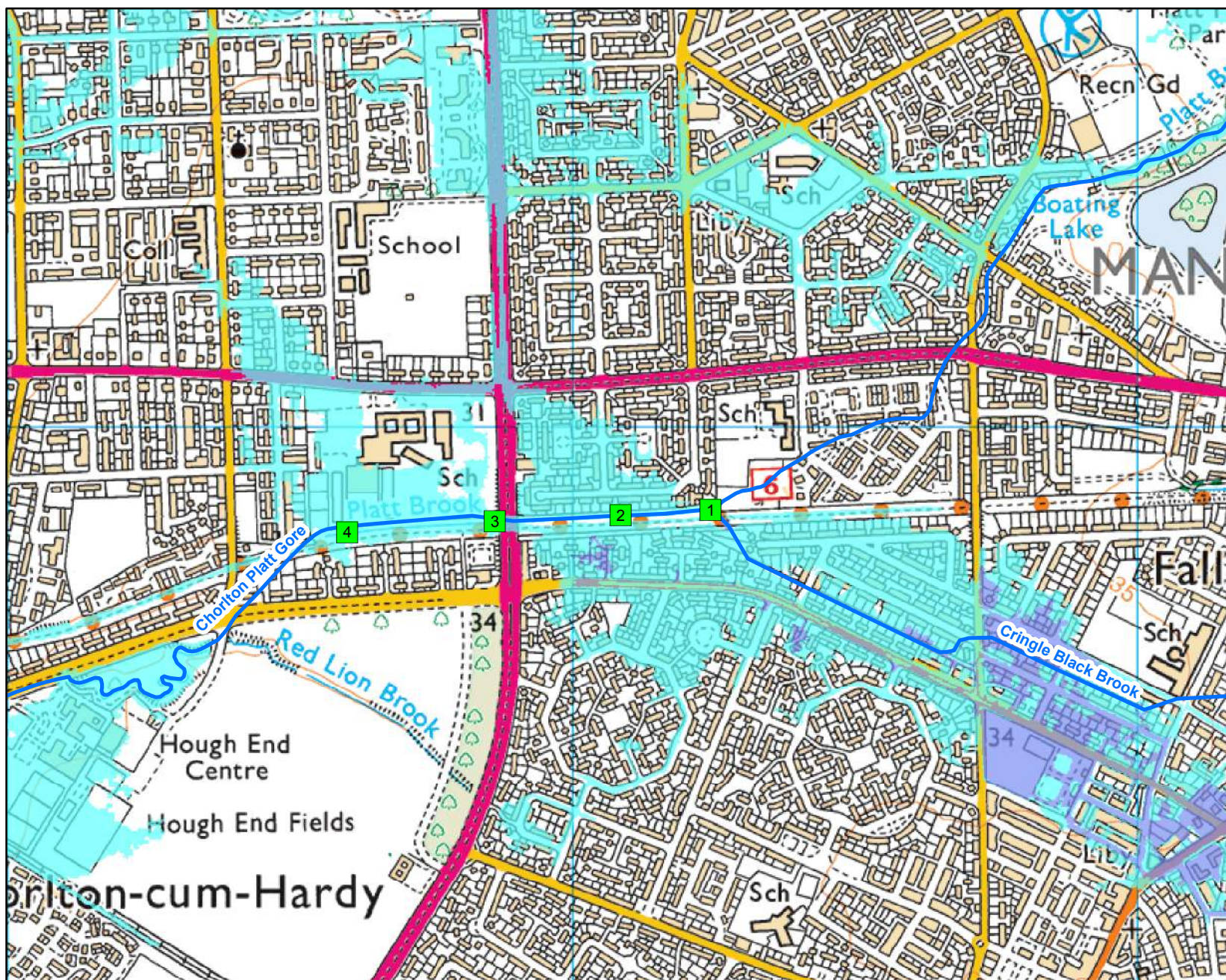
Map Reference	Model Node Reference	Easting	Northing	Data	Undeferred								Deferred								
					10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)	50 % AEP (1 in 2 year)	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)
1	ea013_0171_CHOP01_4770d	384248	393854	Modelled Water Level (m aodN)	31.39	31.61	31.81	31.84	31.99	32.01	32.11	32.13	30.97	31.39	31.61	31.81	31.85	32.02	32.04	32.18	32.20
				Modelled Flow (cumecs)	10.14	13.52	16.85	17.59	21.07	21.54	24.00	24.07		10.14	13.55	16.87	17.63	20.98	21.44	24.12	24.19
2	ea013_0171_CHOP01_4605	384086	393848	Modelled Water Level (m aodN)	31.14	31.37	31.57	31.61	31.76	31.76	31.89	31.90	30.72	31.14	31.37	31.57	31.61	31.79	31.82	31.99	32.00
				Modelled Flow (cumecs)	10.25	13.64	17.00	17.73	21.21	21.68	24.17	24.45		10.25	13.67	17.03	17.77	21.12	21.57	24.25	24.56
3	ea013_0171_CHOP01_4382d	383863	393829	Modelled Water Level (m aodN)	30.74	30.93	31.10	31.13	31.24	31.26	31.43	31.46	30.27	30.74	30.94	31.10	31.13	31.28	31.31	31.50	31.51
				Modelled Flow (cumecs)	10.25	13.64	17.00	17.71	20.23	20.44	23.09	23.19		10.25	13.67	17.03	17.75	21.11	21.54	24.23	24.14
4	ea013_0171_CHOP01_4120u	383604	393813	Modelled Water Level (m aodN)	28.47	28.68	28.97	29.15	30.37	30.55	30.91	30.97	28.14	28.47	28.68	28.97	29.15	30.53	30.63	31.01	31.03
				Modelled Flow (cumecs)	10.25	13.64	16.99	17.70	20.10	20.30	22.77	22.93		10.25	13.66	17.02	17.74	20.93	21.42	24.44	24.66

Map Reference	Model Node Reference	Easting	Northing	Data	Undeferred			
					1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)
5	2D Level	384074	393908	Modelled Water Level (m aodN)	31.49	31.55	31.80	31.82
6		384058	393895	Modelled Water Level (m aodN)	31.49	31.55	31.80	31.82

Model data taken from Chorlton Platt Gore 2012 Study
AEP - Annual Exceedence Probability
m aodN - metres above ordnance datum Newlyn
cumecs - cubic metres per second

Notes: *Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

Flood Defences					
Start Date	Asset Type	Asset ID	Standard of Protection	Upstream Actual Crest Level (m aod)	Downstream Actual Crest Level (m aod)
01/01/1996	Wall	32513	100	31.84	31.48
01/01/1996	Embankment	59788	100	32.82	31.81
01/01/1996	Embankment	120082	100	31.38	30.25
01/01/1996	Wall	122064	100	31.90	31.84



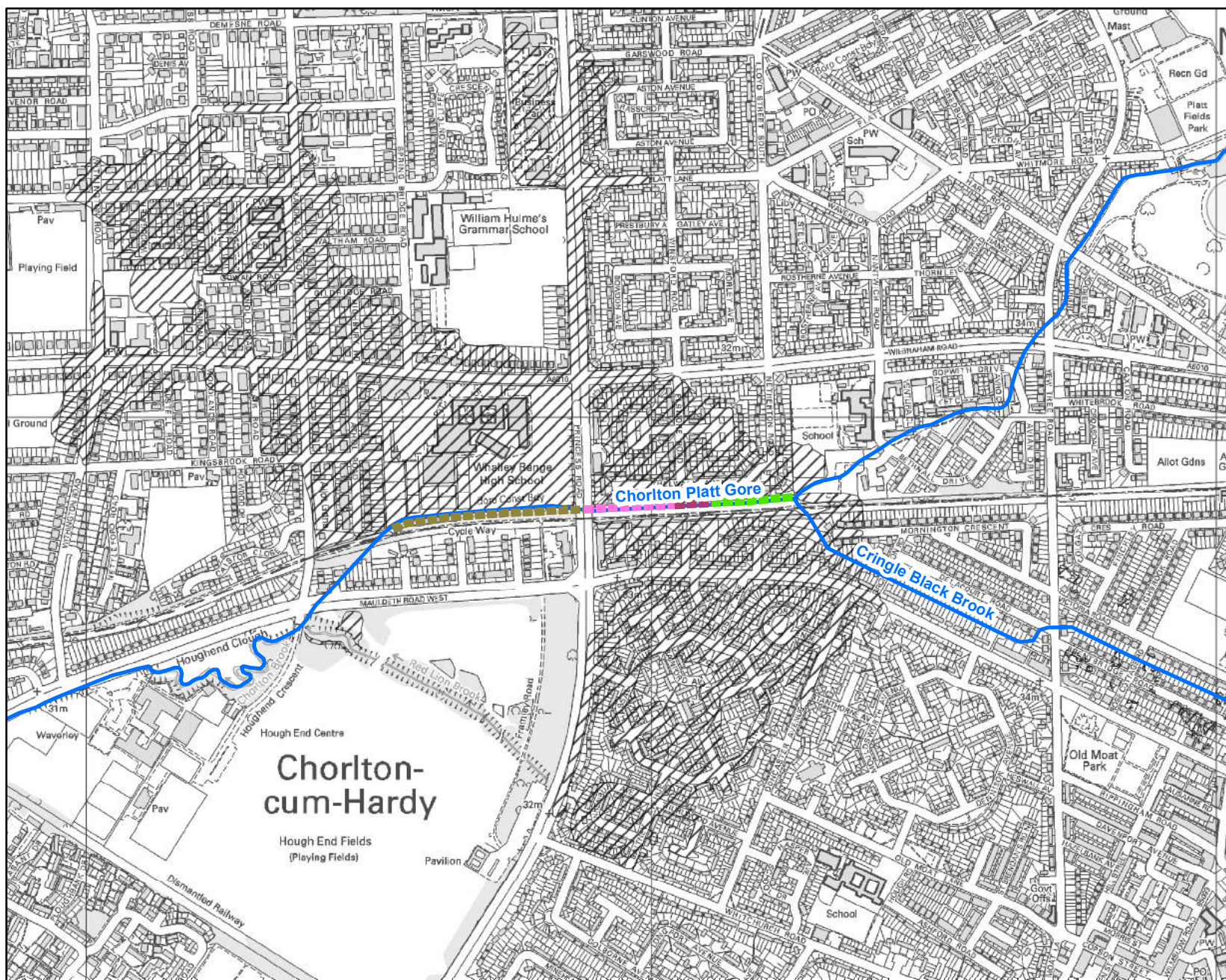
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Legend

- Site Location
- Model Measurements
- 2D Level
- Main River
- Flood Zone 3
- Flood Zone 2

Chorton Platt Gore



1:10,001



Legend

— Main River

Defences (EA maintained)

Asset ID

32518

59788

120082

122064

Areas Benefiting From Defence