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Flood Risk Assessment for 50 Bury New Road, Cheetham Hill, Manchester, M8 8EL



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1.0 Introduction

1.1 Background

Peak Associates Environmental Consultants Limited (Peak Associates) was commissioned by David Ormesher to conduct a Flood Risk Assessment (FRA) to support the planning application (Ref: 138698/FO/2023) for 50 Bury New Road, Cheetham Hill, Manchester, M8 8EL.

This report is based upon observations made on site during a walkover undertaken on the 4th of June 2024 and upon data driven research. This FRA includes the analysis of historical maps, geological, hydrogeological, and hydrological data, and other relevant Third-Party environmental information, including Environment Agency's (EA) Product 4 Data. Product 4 data includes detailed FRA maps which show: flood zones, defences and storage areas, areas benefiting from defences, statutory main river designations, historic flood event outlines and more detailed information from the EA's river models. Product 4 data is freely available and can be requested from GOV.UK.

Peak Associates can accept no liability for any inaccuracies contained within the Third-Party information referenced. It should be noted that where screenshots of online mapping tools have been used, these contain public sector information licensed under the Open Government Licence v3.0.

1.2 Existing Site and Proposed Development

The proposed development at 50 Bury New Road is a change of use of upper floor offices into four self-contained flats, and including an extension of the ground, first and second floors.

Based on Lidar data, and estimated flood depths provided by the Product 4 data, the property resides between 27.25 mAOD to 27.58 mAOD (see Appendix 2 and 3). With the shop on the ground floor and all domestic use properties being located on the first floor and above, there will be no changes in elevation regarding the proposed development. It is worth noting that finished floor levels will be required.

The property is accessed via Bury New Road off Trinity Way, Manchester. The River Irwell is located approximately 430 m south - southwest of the property (Appendix 2), and feeds into the Manchester Ship Canal, in a highly urbanised catchment. It is worth noting that the site also contains a basement, in which meter readings for the property are taken.

1.3 Geology

The geology of the area was investigated using the Geology of Britain Viewer from the British Geological Survey (Ref 1) and Soilscales (Ref 2). The bedrock geology of the site is composed of Chester Formation Sandstone. This sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period.

In terms of superficial geology, the site is underlain by Alluvium. This superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period, and consists of clay, silt, sand and gravel.

According to Soilscales (Ref 2), the soil found in the area is a loamy and clayey floodplain soil, with a naturally high level of groundwater.

1.4 River Catchment and Climate Change Allowances

River Irwell, which is located approximately 430m south - southwest of the site is a watercourse that flows from Bacup in Lancashire to Manchester before joining the Manchester Ship Canal. Since the year 2000 one significant flood event that has been mapped has occurred on this section of the River Irwell (Appendix 3), which caused properties up to 100m from the proposed development to flood. Since 1866, four major flood events have been recorded, with both the November 1866 and September 1946 flood events reaching the site boundary.

The River Irwell is part of the Irwell catchment area and the Croal Irwell Operational Catchment, with the Irwell catchment area totalling over 777 km² (Ref 3). The climate change allowances (CCA) for the Mersey Lower are presented in Table 1. Given the residential dwelling resides in Flood Zone 3, the higher allowances are to be used in this strategic flood risk assessment (Ref 4).

Because the Irwell is heavily urbanised in terms of its catchment, consideration of how to adequately manage flood risk and/or prepare for increased incidents and severity of flooding due to climate change is a matter local residents and the Lead Local Flood Authority (LLFA) need to pay some attention to.

Table 1: Irwell Management Catchment peak river flow allowances (Ref 5).

1% annual exceedance event			
Timeframe	Central	Higher	Upper
2020s	12%	15%	24%
2050s	19%	26%	43%
2080s	35%	46%	75%

1.5 Data Limitations

Product 4 Data was created by the EA's automated system on 26/04/2024 (see Appendix 3). The Product 4 data contains model data taken from the Lower Irwell 2017 model. The Product 4 data includes the 1 in 100-year flood events across defended and undefended scenarios, alongside a 30%, 35% and 70% increase in flow as a result of climate change.

It is important to note that flooding records are often incomplete and the EA's Product 4 data only supplies flood risk data relating to flooding from rivers and/or the sea, not other sources of flood risk.

Light Detection and Ranging (LiDAR) was used in order to determine the topography of the area surrounding the proposed development. This technique is less accurate than a topographic survey, however reduces time spent in the field and therefore expenses.

2.0 Sources of Flooding

2.1 General Overview

Flooding can occur from a variety of sources, including fluvial, surface water (pluvial), groundwater, and reservoirs. The site is located in Flood Zone 3 (see Figure 1) and as such, has a Medium - High (between 1% and greater than 3.3% chance) probability of fluvial flooding. Table 2 summarises the potential sources of flood risk at the site.

Table 2 - Sources of potential flood risk to the proposed development

Flood Source	Potential Risk					Description
	High	Medium	Low	Very Low	None	
Surface Water		X				There is a Medium (between 1% and 3.3% chance) risk of pluvial flooding at the site.
Fluvial	X	X				The site has a Medium (between 1% and 3.3% chance) to High (greater than 3% chance) risk of fluvial flooding.
Groundwater		X	X			The site has a Medium-Low vulnerability to groundwater flooding. The site is located in an area with naturally wet soil and a high-water table according to Soilscales (Ref 2)
Reservoirs			X			Heaton Park reservoir is located approximately 5 km to the north of the site. However, with proper reservoir maintenance, the risk of reservoir flooding is reduced.

Tidal					X	There is no risk of tidal flooding at the site.
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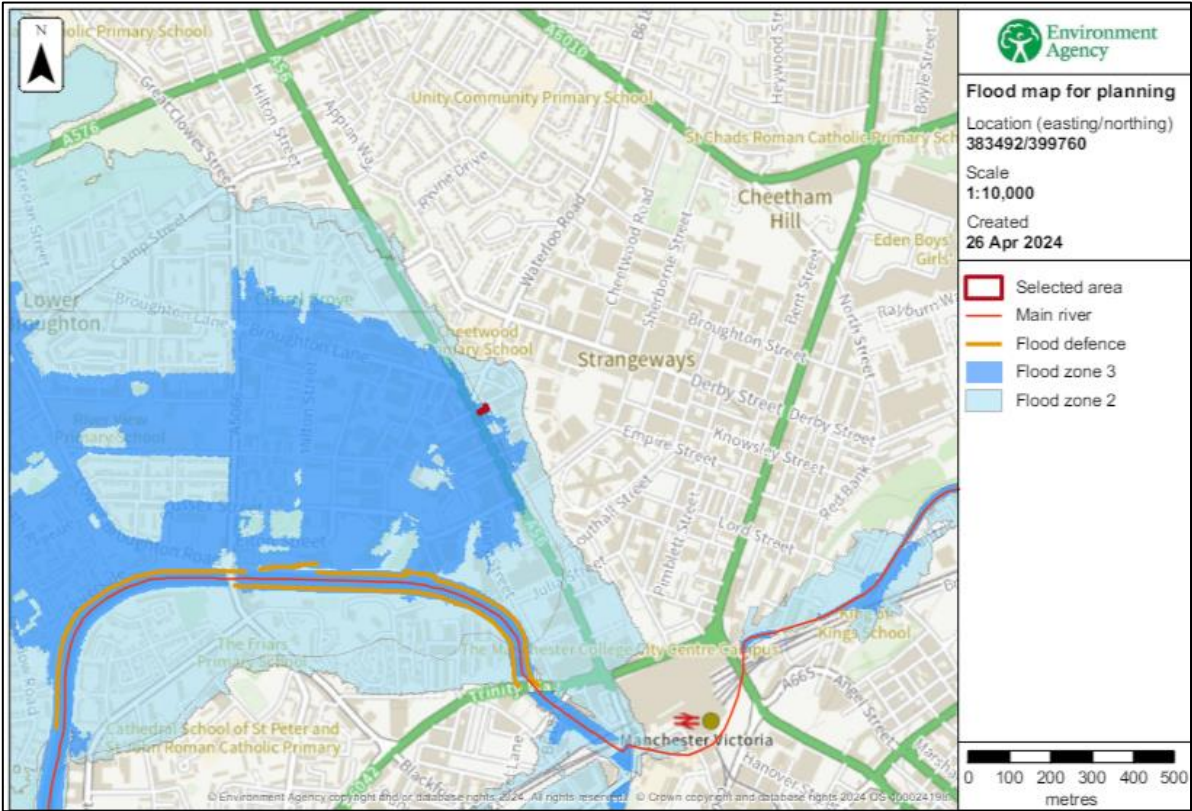


Figure 1 – Flood Zone Map for Site (Ref 6)

2.2 Fluvial

Fluvial flooding occurs when the flow capacity of a watercourse is reached, causing water to flood nearby areas. As previously mentioned, the area south of the site operates as the functional floodplain, with the site itself is located in Flood Zone 3.

The fluvial flood risk is variable across the site. The site has between a Low (between 0.1% and 1% chance) at the rear of the property and a Medium (between 1% and 3.3% chance) risk of fluvial flooding at its frontage. The area north of the site has a Low (between 0.1% and 1% chance) risk of fluvial flooding (see Figure 2).

The main source of fluvial flood risk to the site is from River Irwell, which is located approximately 430m south - southwest of the site. The site is protected from fluvial flooding to some degree due to the presence of embankments, engineered high ground, and flood walls along the river (EA assets 01313IRWE01) (Ref 7).

In the EA's Product 4 data (see Appendix 3) the site is located closest to node points 8 and 9, located approximately 435 m away. The frontage to the development is shown as being at a

current risk of flooding in around a 1 in 100-year flood event. This becomes more pronounced when climate change is taken into account and becomes similar to the current 1 in 1000-year flood scenarios in both the defended and undefended models.

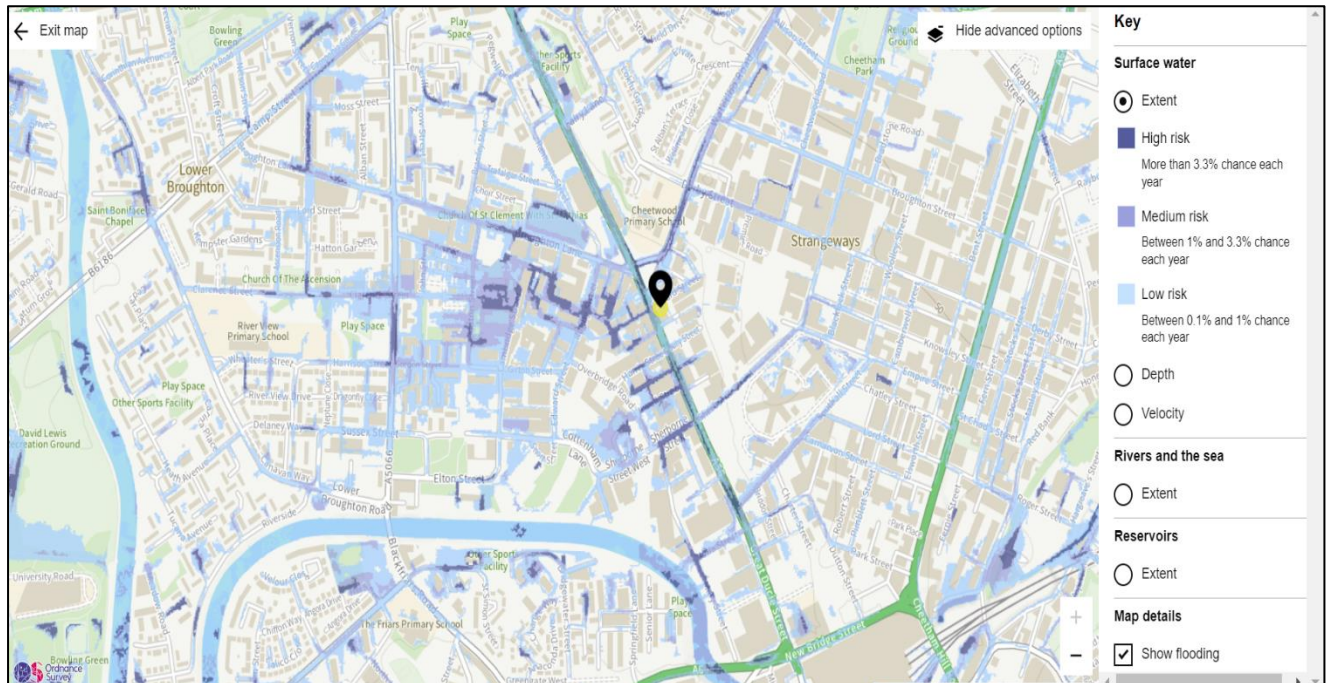


Figure 2: Fluvial flood risk map (Ref 8).

Table 3: Estimated Water Depths from fluvial flooding at the proposed development site.

Note: Elevations highlighted **red** are above the assumed FFLs of the property, those in **orange** are dubious (within 100 mm of estimated FFLs).

Flood Scenario	Water Depth (mAOD)			
	Node Point 8		Node Point 9	
	Defended	Undefended	Defended	Undefended
1 in 50-year	26.48	26.28	26.46	26.46
1 in 100-year	26.68	26.83	26.66	26.8
1 in 200-year	26.98	27.35	26.96	27.32
1 in 1000-year	30.24	30.6	30.24	30.59
1 in 100-year + 30%	27.52	28.18	27.5	28.16
1 in 100-year + 35%	27.69	28.44	27.66	28.42
1 in 100-year + 70%	29.53	29.95	29.52	29.95

Due to the estimated ground level acquired from the LiDAR topographic survey being 27.25 mAOD, and the steps into the shop on the ground floor constituting a raise in elevation of approximately 0.25 m, the current estimate of ground floor level is 27.5 mAOD.

However, given the only change of use of the development is the first floor and above, which resides approximately 3.5 m above ground level according to the developer, approximately 31 mAOD, and thus remains greater than 600 mm above the estimated 1 in 100-year plus 70% increase in flow flood level. However, due to the modelled elevations reaching 29.95 mAOD in the 1 in 100-year plus 70% increase in flow scenario, and the ground floor of the development located at approximately 27.5 mAOD, it is likely that the majority of the ground floor, which is expected to remain as a commercial shop, could become submerged at a depth of up to 2.45 m and thus pose a risk for residents.

In order to account for the majority of the ground floor likely being submerged in extreme flood scenarios, it would be beneficial to provide an external egress route around the rear of the building. This could come in the form of a fire escape. However, this could also interfere with the current plans, with bike storage proposed to be located in this area.

Due to the recency of the model, being created in 2017, this flood level can be considered reliable and thus justifies a minimum 300 mm distance between the residential usage and the flood scenario.

2.3 Surface Water

Surface water flooding arises during heavy rainfall events where water accumulates on the surface in low lying or obstructed areas. The risk of surface water flooding increases with the amount of urban area drained to a brook and the creation of impermeable hard surfaces. According to the Greater Manchester SFRA (Ref 9), Strangeways, where the development is located, is not listed as an area with a secondary risk of surface water flooding.

The Greater Manchester SFRA also identifies the associated risk of 'Lost Watercourses' within the area. An example of this is seen approximately 180 m from the site, where a historic route of the River Irwell is located underneath Irwell Street, according to 'Hidden Manchester', (Ref 10).

The site has a 'Medium' risk of flooding from surface water, which means the area has a chance of flooding of between 1% and 3.3% each year (see Figure 4). In both the Low-risk scenario (Figure 6) and High-risk scenario (Figure 8), there is no estimated surface water flood depth at the site.

Figure 4 shows surface water accumulates on Bury New Road, and on roads to the west of the site. The EA's flood maps (based on levels taken from LiDAR data), have identified low-lying points where surface water is most likely to accumulate. As previously mentioned, the site resides between 27.25 mAOD and 27.58 mAOD with the residential usage being located 3.5 m above ground level at between 30.75 mAOD and 31.18 mAOD. Hence, surface water flooding accumulates on Bury New Road and on the roads west of the site where the topography of the land continues to descend.

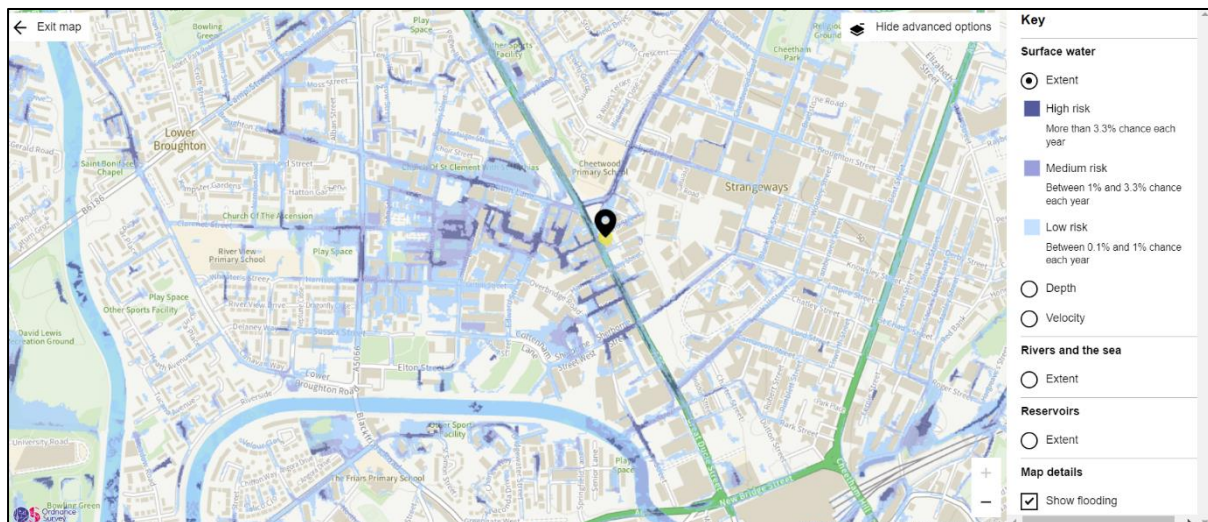


Figure 4 – Extent of Surface Water Flooding (Ref 8)

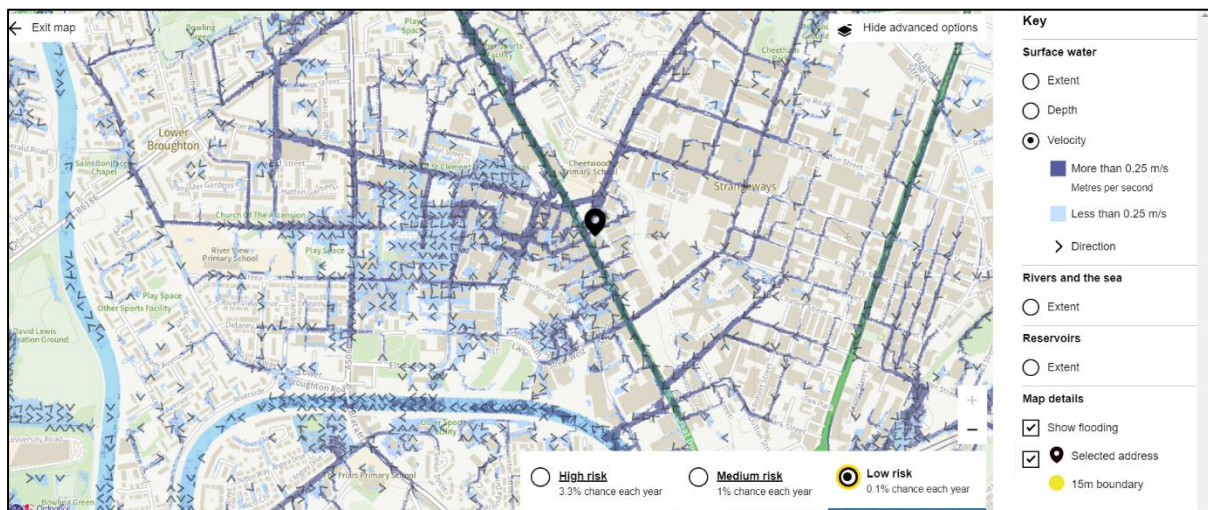


Figure 5 – Low Risk Surface Water Velocity Map (Ref 8)

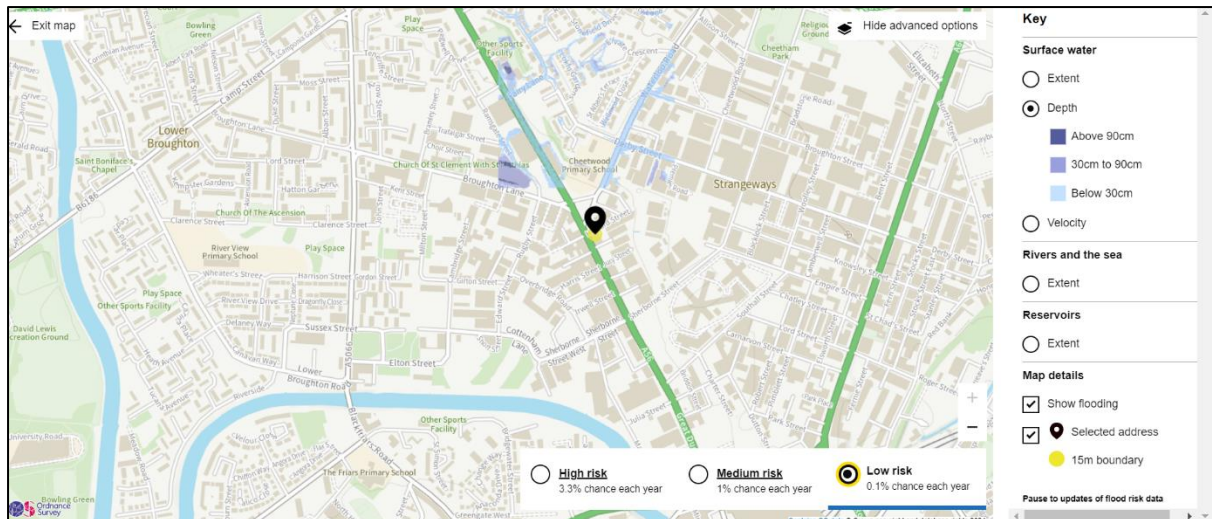


Figure 6 – Low Risk Surface Water Depth Map (Ref 7)

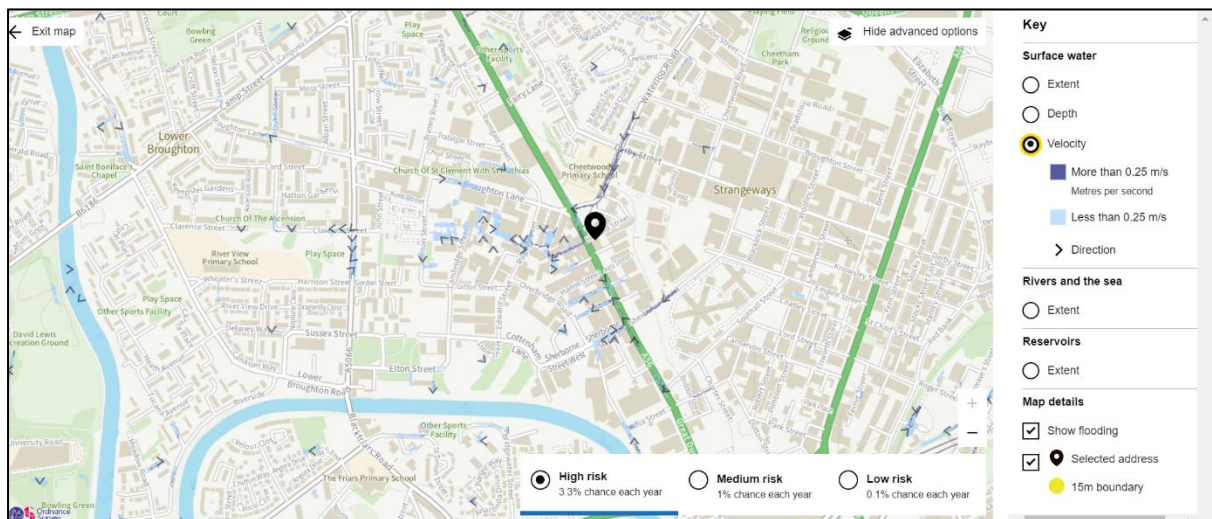


Figure 7 – High Risk Surface Water Velocity Map (Ref 8)

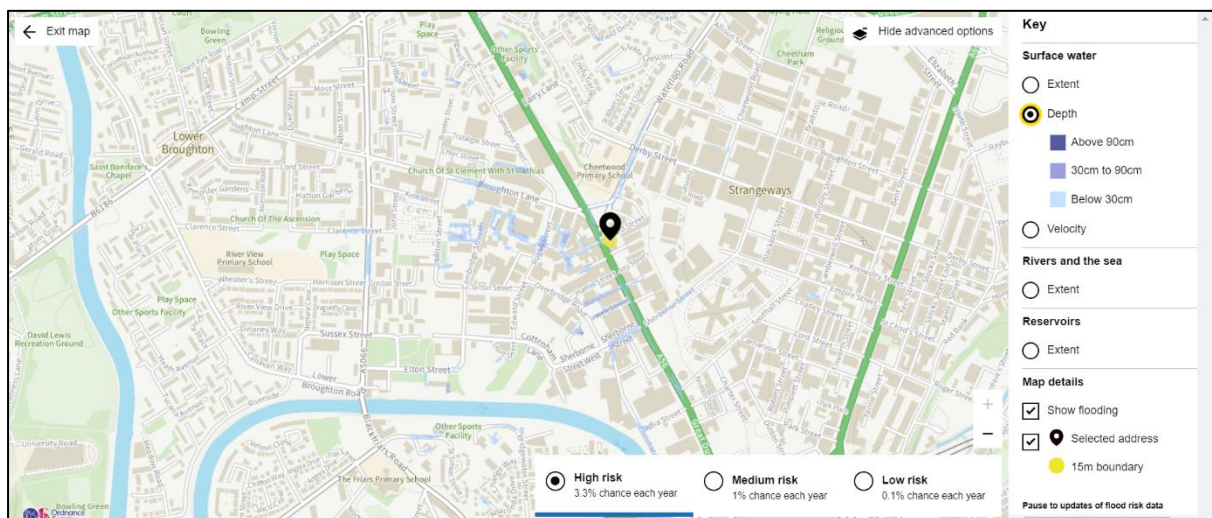


Figure 8 – High Risk Surface Water Depth Map (Ref 8)

2.4 Groundwater

Groundwater flooding occurs when water stored beneath ground level rises to breach the surface. According to the Greater Manchester SFRA (Ref 9), there is a particular risk with hidden, historic watercourses in Manchester. According to the website 'Hidden Manchester', there is an abandoned section of the River Irwell located approximately 150m from the proposed development, as mentioned in sub-section 2.3, which may contribute to groundwater flooding within the area.

The site has been designated a Medium-Low risk of groundwater flooding, as DEFRA's groundwater vulnerability map shows (Figure 3). This is likely due to the historic course of the River Irwell nearby to the site maintaining high groundwater levels and creating naturally wet soil.

As mentioned in sub-section 1.3, the site resides on a bedrock composed of sandstone, which should easily drain groundwater. However, due to the high water table and naturally wet soil, it is unlikely to have an impact in the draining of groundwater. With the residential usage usage set at a minimum of 30.75 mAOD, the residents should be protected from groundwater flooding.

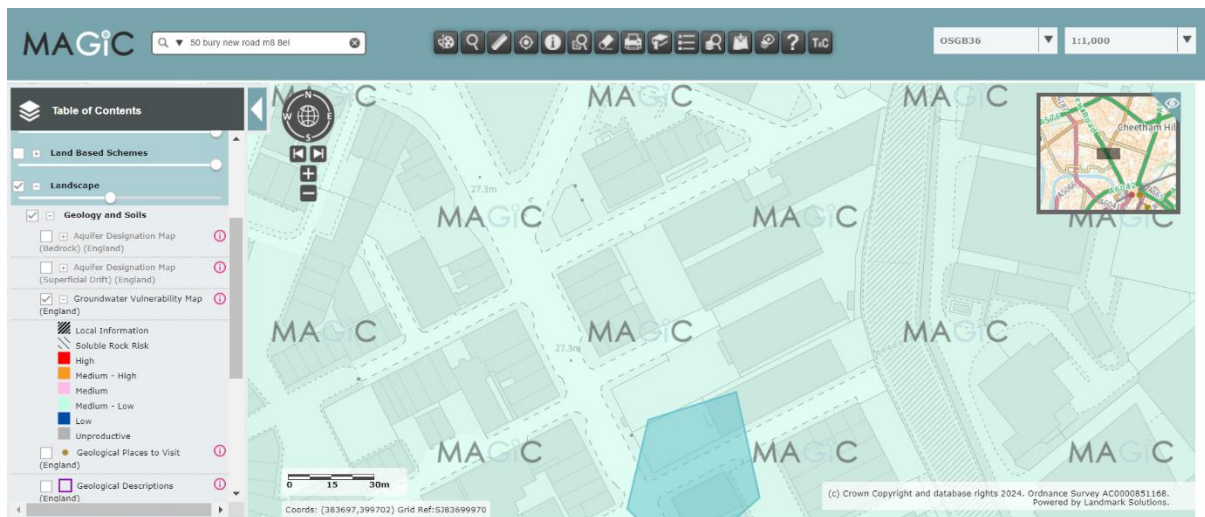


Figure 9: DEFRA's Groundwater vulnerability map a Medium-Low risk of groundwater flooding (Ref 11)

2.5 Reservoirs

The EA's 'Long-Term Flood Risk Map' (Ref 8) identifies the site as at risk of flooding from reservoirs (see Figure 9). Heaton Park reservoir is located approximately 5 km to the north of the site.

Flooding from reservoirs may come from overtopping due to greater inflows than outflows, or from full or partial failure of the dam walls. The site's relative proximity to reservoirs means there is a risk of reservoir flooding from dam failure or overtopping of the reservoir. The reservoir undertaker is responsible for providing emergency flood and evacuation plans to the relevant persons interested in the reservoir. Furthermore, inspections are to be undertaken by an independent qualified civil engineer, and a report is completed, including any maintenance works required, the time of the next inspection, and any safety measures that must be completed in a designated timeframe.

Hence, the risk of flooding from reservoirs is low. Reservoirs are regularly inspected by engineers and are typically safe in the UK. For this reason, this FRA has classified the risk of reservoir flooding as Low, although it is important to note that the EA's flood maps do not categorise reservoir flooding in terms of High to Low risk.

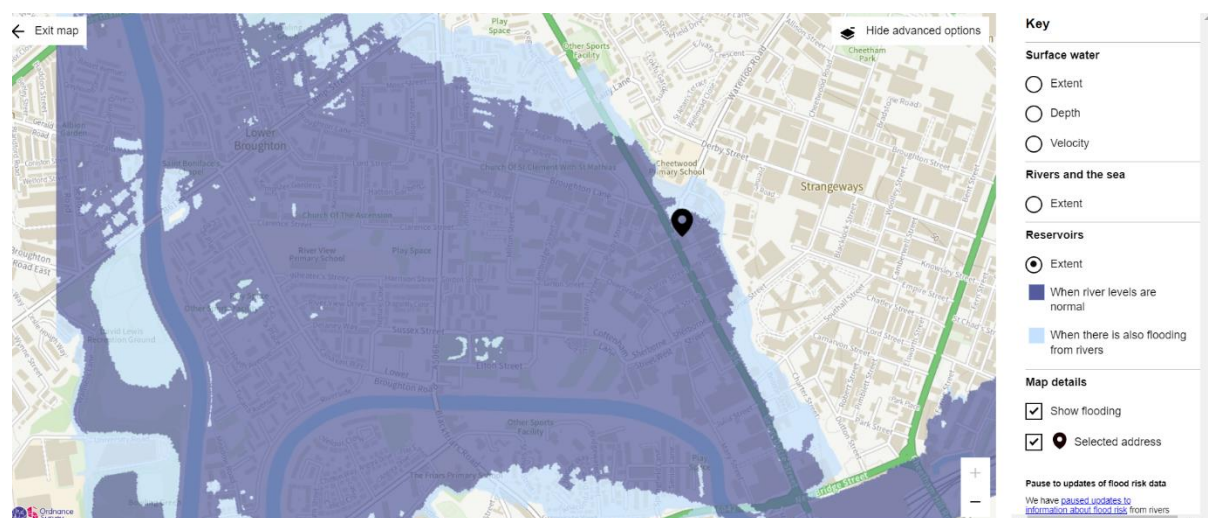


Figure 9 – Extent of Flood Risk from Reservoirs (Ref 8)

2.6 Tidal

There is no risk of tidal flooding at the site.

3.0 Accounting for Flooding Within the Proposed Development

The NPPF classifies the property as a 'More Vulnerable' development (Ref 12) given the change of use from commercial to residential.

'More vulnerable' developments located in Flood Zone 3 require the sequential test. However, the site is located on the edge of Flood Zone 3 and 2 and flood risks at the site can be adequately managed through emergency planning. Furthermore, the development poses the fundamental question of the future of developments in urban areas. Whilst the residents on the first floor and above are protected from the extreme flood scenarios, there is likely to be flooding of approximately 2 m of depth on Bury New Road, submerging the ground floor of the property. However, if developments such as this are not approved, given the housing needs of the country, there will eventually become a need for the usage of greenfield sites rather than brownfield. For these reasons, it is the view of this FRA that the sequential test for the site is not necessary.

As outlined in Section 2.5, the site has a Medium (between 1% and 3.3% chance) risk of surface water flooding each year. Surface water does accumulate on the road adjacent to the site and to roads to the west (Ref 8).

Surface water gathers at the lowest lying points on Bury New Road, and is at additional risk due to the presence of an abandoned route of the River Irwell on Irwell Road, approximately 180 m southeast of the site. To protect the properties from surface water flooding and sewer overflows, it is imperative that the Council and/or United Utilities keep the roadside drains clear and well maintained.

The proposed conversion to residential dwellings at 50 Bury New Road will likely not increase the number of impermeable surfaces in the area and surface water runoff.

In terms of fluvial flood risk, the proposed development is located in Flood Zone 3. As such, the site has between a 'Medium' (between 1% and 3.3% chance) and 'High' (greater than 3.3% chance) probability of flooding (Ref 8).

The residential dwellings on the first floor and above are protected against all predicted scenarios of fluvial flooding, with the undefended 1 in 100-year with a 70% increase in flow due to climate change scenarios reaching an elevation of 29.95 mAOD, approximately 0.8 m below the elevation of the first floor. However, with the site located at an elevation of 27.25-27.58 mAOD, it is likely that the entire ground floor will be submerged during these extreme flood events, with depths of over 2 m.

Due to this additional risk, this FRA recommends further protecting the residents occupying the property through the utilisation of external escape routes located on the rear of the building with access provided to the car parks located there which would act as an egress

route in a flood emergency. It is also recommended, if a fire escape like external exit is not possible due to the restrictions on available space, that all residents are advised to maintain a flood emergency kit, which will allow residents to remain within the flats with supplies, until the event has subsided, or rescue is available.

It is also worth noting that, in the event of a flood warning being issued, residents and site occupiers should not enter the basement. Meter readings taken from the basement should only occur after site occupants have checked for flood alerts.

The development must be protected to a climate change factor of 46% increase in flow. However, due to the lack of data, the elevations this would reach is not possible to determine. Due to this, this FRA recommends protecting the site to that of a 70% increase in flow, as seen in the Product 4 data provided by the EA (Appendix 3).

Heaton Park reservoir is located approximately 5 km to the north of the site. Due to the site's proximity to reservoirs, the EA's maps have identified the site as being at risk of reservoir flooding. That being said, it is important to note that reservoir failure is unlikely given engineers should be regularly working on and monitoring the UK's reservoirs. Hence, this FRA has classified the risk of reservoir flooding the property as Low.

As previously mentioned, the site is located within an area with a high water table. With all residential usage being located on the first floor and above, the risk of groundwater flooding impacting residents is minimised. Furthermore, due to the raised elevation of the entrance to the shop on the ground floor, the potential impact of groundwater flooding on the property as a whole is reduced.

It is the view of this FRA that it is appropriate for the proposed development to proceed as planned, providing the planned dwellings have external evacuation or rescue routes through the rear of the building, which is at a reduced risk of flooding (being located in Flood Zone 2) alongside residents being advised to maintain a flood emergency kit.

This report demonstrates that the site can manage against extreme forms of flooding and, the site does not increase the risk of flooding elsewhere. Furthermore, with the current site being a brownfield site, the provision of housing would provide a benefit to the community. Therefore, it can be said that this site passes the exception test.

Nonetheless, due to the likelihood of fluvial flooding on Bury New Road, it would be appropriate for the site's occupiers to monitor the flood warnings of the nearby area. Similarly, the site's occupiers and other residents in the local area should be encouraged to monitor the River Irwell and report any debris and obstructions to the EA. A residents' flood

forum in the area could be a method of liaising with the LLFA and EA if, for example, siltation or debris build up started to cause an increase in flooding in the area.

4.0 Conclusions and Recommendations

The NPPF classifies the site as 'Highly Vulnerable' due to the use being a residential dwelling. The frontage to the site resides in Flood Zone 3.

Surface water flooding accumulates on Bury New Road and to the west of the site. There is further risk posed by an abandoned stretch of the River Irwell located under Irwell Road, approximately 180 m from the site. Due to the raised steps entering the ground floor of the property, there is further protection from surface water flood risk. Furthermore, due to the first floor, the location of the residential usage of the property, being approximately 3.5 m above ground level, residents will be protected from surface water flooding.

In all scenarios, the residential usage of the property resides above the estimated levels of fluvial-related flooding, with the standing advice being FFLs being located at an elevation 600 mm (Ref 13) above the modelled flood levels. However, in the 1 in 100-year with a 70% increase in flow due to climate change scenario, the development, which is located at 27.25 mAOD to 27.58 mAOD, would be 2 m below the predicted flood levels of 29.95 mAOD, posing significant concerns regarding the safe evacuation and egress of residents.

Given these concerns, it is recommended that evacuation is accommodated through the rear of the building, with access from the first floor. This may be utilised in the form of a fire escape, or other potential methods which, in the instance evacuation is not possible, enables safe rescue of residents. Furthermore, all residents should be advised to maintain a flood emergency kit, with provisions and other necessities in the instance evacuation and/or rescue is not possible.

Whilst the site may be at risk of groundwater flooding due to the high water table, given residents are located at an elevation of 30.75 mAOD – 31.18 mAOD, over 600 mm above estimated flood levels, alongside the raised steps entering the ground floor of the property, this would aid in minimising any associated risk. The site's risk of reservoir flooding is directly related to reservoir maintenance and upkeep. It is the responsibility of reservoir engineers to ensure that reservoir safety is maintained at all times.

There is no risk of Tidal flooding associated with the development.

This development poses the fundamental question to planning authorities on the future of residential development in urban areas. Whilst the flood risk associated with the site is substantial, residents on the first floor and above are likely protected by emergency planning and implementation of safety procedures. Given the inherent need throughout the country for further residential availability, and the opposition to the utilisation of greenfield sites for

such development, it is the view of this FRA that this development is appropriate and as such should be approved.

To summarise, this FRA makes the following recommendations to mitigate flood risks at the property:

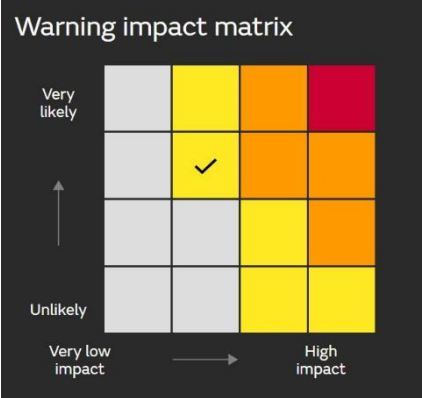
1. The site should implement rigorous flood emergency planning procedures, such as through the use of rear external access and egress for residents in the first floor, also providing availability for safe rescue operations, alongside the recommendation for flood emergency provisions for all residents in the instance rescue or evacuation is not possible, allowing for any inhabitants to remain in the proposed flats until the flood event has subsided.
2. Access to the rear car park should be provided in order to facilitate this evacuation route to the areas at reduced risk of flooding.
3. Surface water drains on the property should be maintained by the property owners. It is the responsibility of the property owners to remove any drain blockages on their property. Working drains should prevent the accumulation of surface water on site.
4. The property owners should monitor roadside drains and inform the appropriate authorities in the event of a roadside drain blockage. It is the responsibility of the Council and/or United Utilities to maintain the roadside drains.
5. The site's occupiers should monitor flood alerts and warning systems for the wider area surrounding the River Irwell.
6. The site's occupiers and other residents in the local area might wish to monitor the River Irwell and report any debris and obstructions to the EA. A residents' flood forum in the area could be a method of liaising with the LLFA and EA if, for example, siltation or debris build up started to cause an increase in flooding in the area.
7. In the case of an extreme flood event, the occupiers should evacuate to higher ground, or remain within the property with adequate emergency supplies to either await rescue or until the flood event has subsided.

5.0 References

1. British Geological Survey (Geology of Britain). Available At: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>
2. Soilscales. Available at: <https://www.landis.org.uk>
3. Croal Irwell Operational Catchment. Accessed at: <https://environment.data.gov.uk/catchment-planning>
4. Government Website: Flood risk assessments: climate change allowances (Accessed: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#when-to-use-climate-change-allowances>)
5. Peak River Flow Allowances <https://environment.data.gov.uk/hydrology/climate-change-allowances/river-flow?mgmtcatid=3042EA> Asset Register. Available at: <https://environment.data.gov.uk>
6. Government website. *Flood Map for Planning*. Online at: <https://flood-map-for-planning.service.gov.uk/flood-zone-results?easting=385340&northing=389908&location=M20%205PB&fullName=%20&recipientemail=%20>
7. EA Asset Register. Accessed at: <https://environment.data.gov.uk/asset-management/index.html>
8. Government website. *Check the long term flood risk for an area in England*. Online at: <https://www.gov.uk/check-long-term-flood-risk>
9. Greater Manchester Level 2 SFRA (2011) (Accessed at: https://www.manchester.gov.uk/downloads/download/3871/strategic_flood_risk_assessment_sfra)
10. Hidden Manchester. (Accessed at: <https://hidden-manchester.org.uk/#/waterways>)
11. Magic Map: DEFRA's Groundwater Vulnerability Map (accessed at: <https://magic.defra.gov.uk/MagicMap.aspx>)
12. Government Website: National Planning Policy Framework - Annex 3: Flood risk vulnerability classification (accessed at: <https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification>)
13. Government Website: Preparing a flood risk assessment: standing advice (accessed at: <https://www.gov.uk/guidance/flood-risk-assessment-standing-advice#advice-for-minor-extensions>)

Flood Risk Assessment (FRA) Glossary

Abbreviation or Key Word	Definition/Description
Flood Zone 1 (Low Probability)	Land having less than a 1 in 1,000 annual probability of river or sea flooding. Shown as clear on a flood zone map.
Flood 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 1 in 200 and 1 in 1,000 sea flooding. Both shown as light blue on a flood zone map.
Flood 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. Shown in dark blue on the flood zone map.
Flood Zone 3b – The Functional Floodplain	This zone comprises land where water must flow or be stored in times of flooding. 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. This is not separately distinguished on a flood zone map and is also shown in dark blue.
Annual Probability of Surface water Flooding	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 shown in brackets). - 1:30 (3.3%) - 1:100 (1%) - 1:1000 (0.1%) -
Flood Warnings	As the UK's official weather service, the MET Office is responsible for issuing weather warnings, which warn of impacts caused by severe weather. The Met Office provide warnings up to seven days ahead of rain, thunderstorms, wind, snow, lightening, ice and fog. Met Office weather warnings are available in a number of ways, which make it easy to get the very latest information wherever you are. These include the Met Office App and website, social media, email alerts, TV, Radio and RSS. It is recommended that the site owner sign up to the national weather warning service. More information can be found here: https://www.metoffice.gov.uk/weather/guides/warnings

	The Met Office issues weather warnings, through the National Severe Weather Warning Service, when severe weather has the potential to bring impacts to the UK. These warnings are given a colour (yellow, amber or red) depending on a combination of both the impact the weather may have and the likelihood of those impacts occurring. 
Yellow Weather Warning	Yellow weather warnings can be issued for a range of weather situations. Many are issued when it is likely that the weather will cause some low level impacts, including some disruption to travel in a few places. Many people may be able to continue with their daily routine, but there will be some that will directly impact and so it is important to access if you could be affected. Other Yellow warnings are issued when the weather could bring much more severe impacts to the majority of people but the certainty of those impacts occurring is much lower. It is important to read the content of yellow warnings to determine which weather situation is being covered by the yellow warning.
Amber Weather Warning	There is an increased likelihood of impacts from severe weather, which could potentially disrupt your plans. This means there is the possibility of travel delays, road and rail closures, power cuts and the potential risk to life and property. You should think about changing your plans and taking action to protect yourself and your property. You may want to consider the impact of the weather on your family and your community and whether there is anything you need to do ahead of the severe weather to minimise the impact.
Red Weather Warning	Dangerous weather is expected and, if you haven't already don so, you should take action now to keep yourself and others safe from the impacts of the severe weather. It is very likely that there will be a risk to life, with substantial disruption to travel, energy supplies and possibly widespread damage to property and infrastructure. You should avoid travelling, where possible and follow the advice of the emergency services and local authorities.
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: - Find out if you are at risk of flooding. - Find out if you can receive flood warnings. - Prepared and keep a list of all your important contacts to hand or save them on your mobile phone. - Think about what items you can move now and what you would want to move to safety during a flood such as pets, cars furniture and electrical equipment. - Know how to turn off gas, electricity and water supplies. - Prepared a flood kit of essential items and keep it handy, It can include copies of important documents, a torch, a battery powered or windup radio, blankets an warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication. - Consider buying flood protection products such as flood boards and airbrick covers to help reduce flood water getting into your property. During a flood: - Tune into your local radio station on a battery or windup radio. - Fill jugs and saucepans with water. - Grab you flood kit – if you have one prepared. - Collect blankets, torch, first aid kit, medication and food. - Move important documents, personal items, valuables and lightweight belongings upstairs or to high shelves. - Raise large items of furniture or put them in large bags if you have them. - Move people, outdoor belongings, cars and pets to higher ground. - Switch off water, gas an electricity at the mains when water enters your home. Do not touch sources of electricity when standing in water. - Fit flood protection products if you have them for example flood boards, airbrick covers and sandbags. - Put plugs in sinks and baths. Weigh them down with a pillowcase or plastic bag filled with soil. - If you do not have non-return valves fitted plug water inlet pipes with towels or clothes. - Move your family and pets upstairs or to a high place with a means of escape. - Listen to the advice of the emergency service and evacuate if told to do so. - Avoid walking or driving through flood water. Six inches of fast flowing water can knock over an adult and two feet of water van 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 what may help you. - Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outerwear, including gloves, wellington boots and a face mask. - Have your electrics, central heating and water checked by a qualifies engineer before switching them back on.
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Plan 1: Proposed Development



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The representation of a road, track or path is no evidence of a right of way.

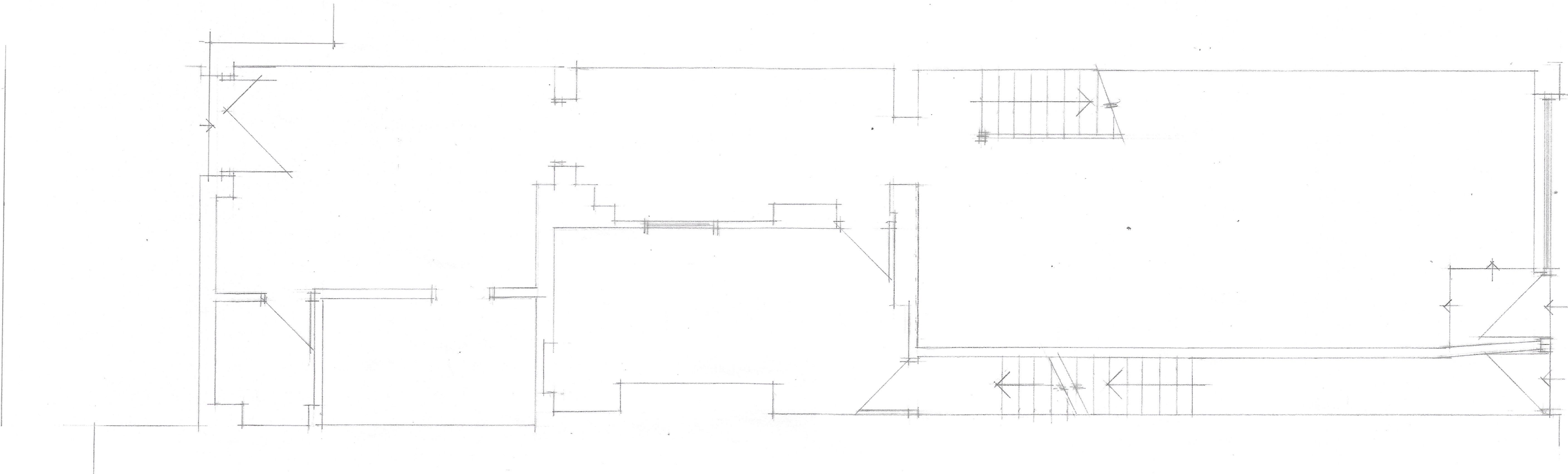
The representation of features as lines is no evidence



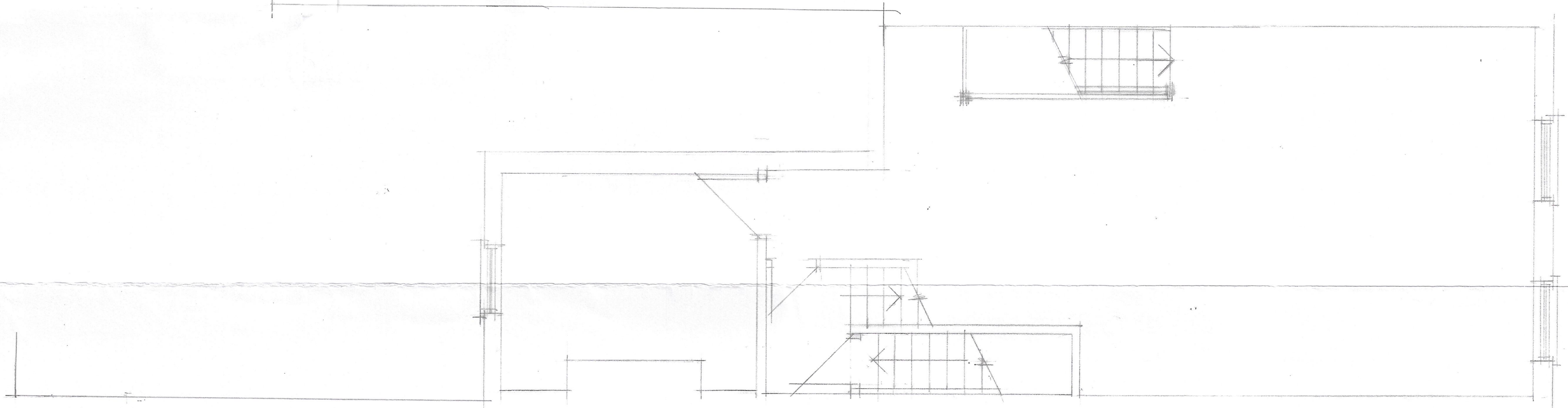
Scale 1:1250

Supplied by: **Outlet User**
Serial number: 00062800
Centre coordinates: 383445 399754

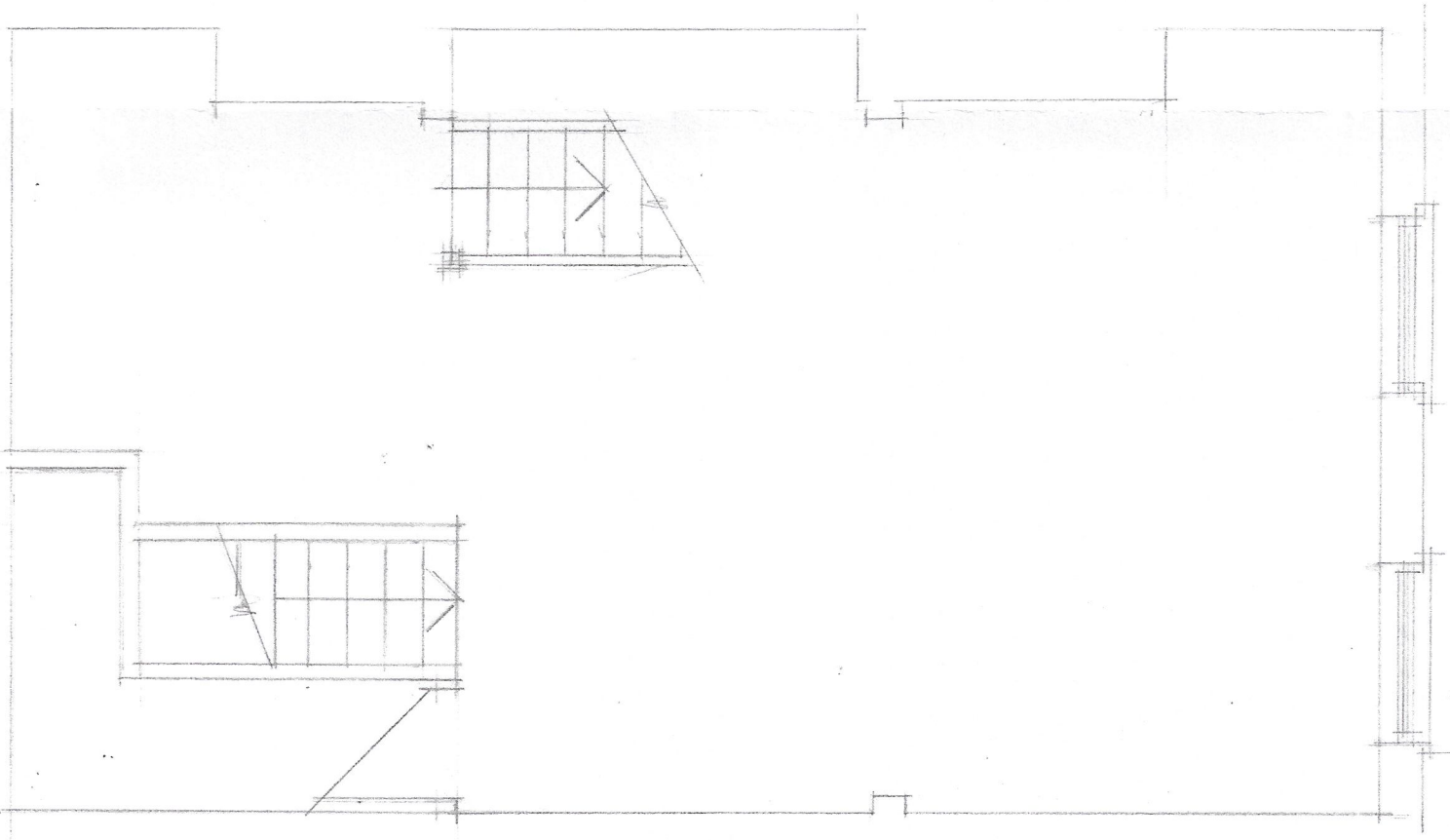
Further information can be found on the



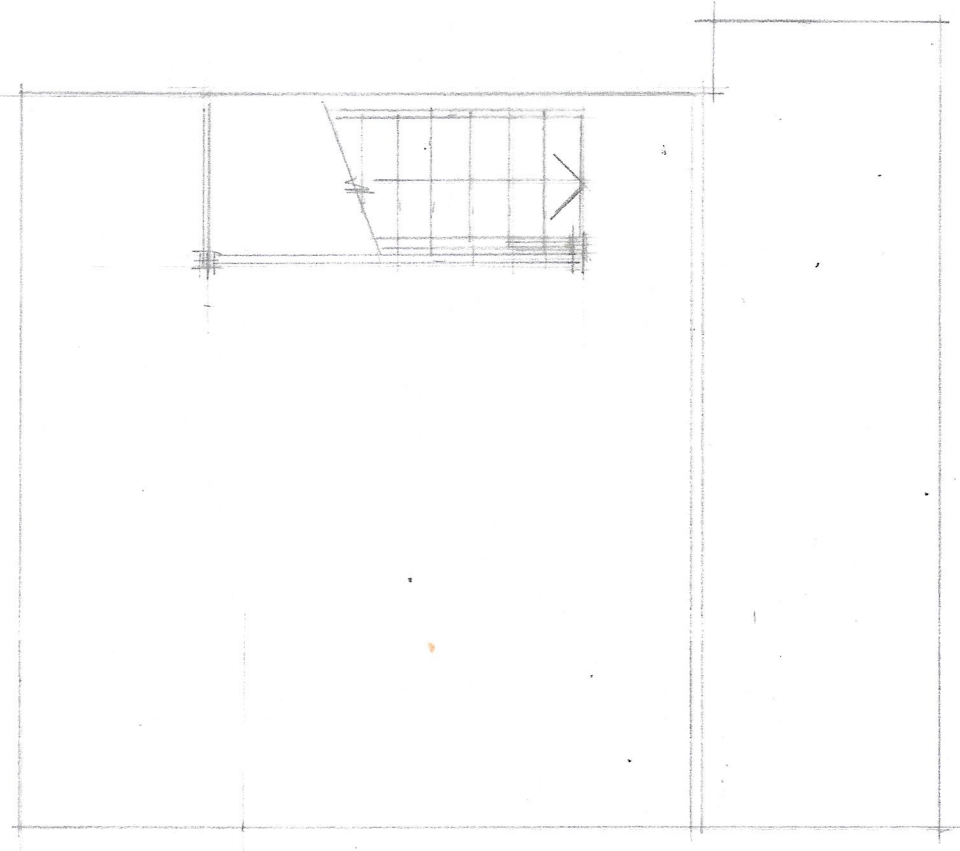
GROUND



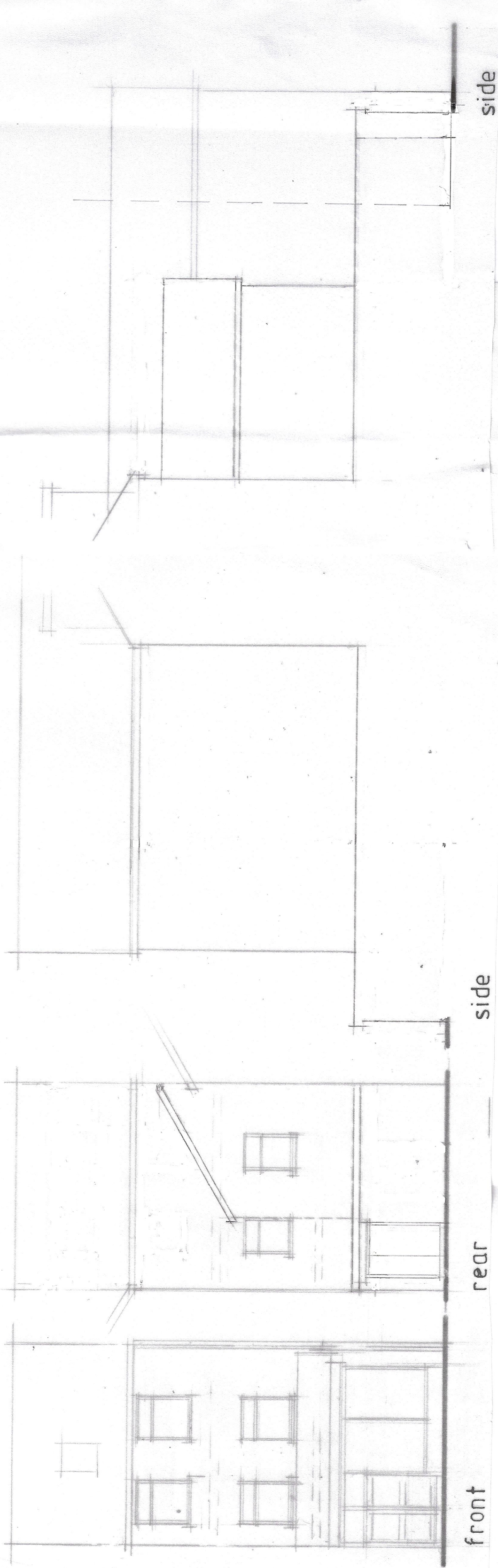
FIRST



SECOND



THIRD



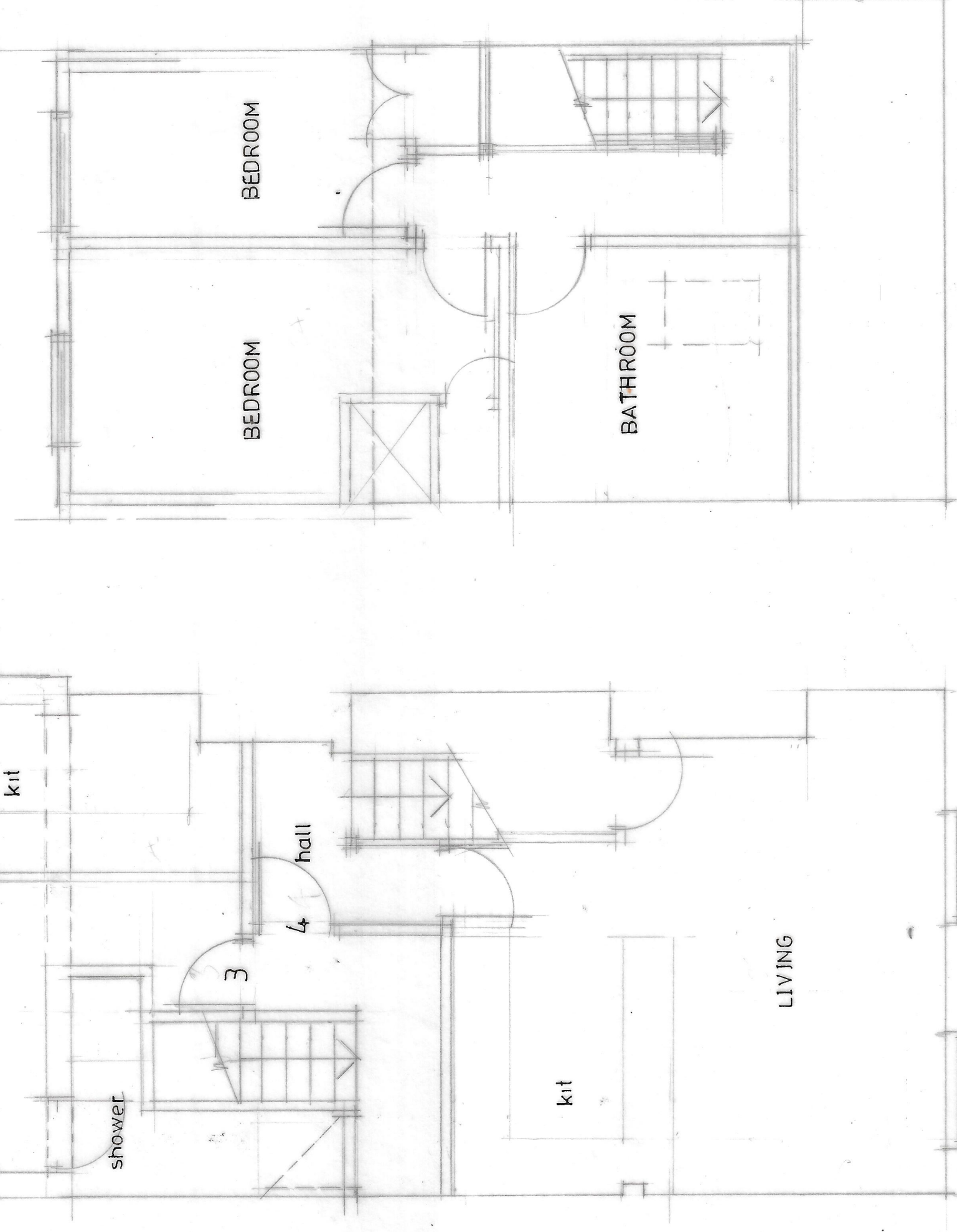
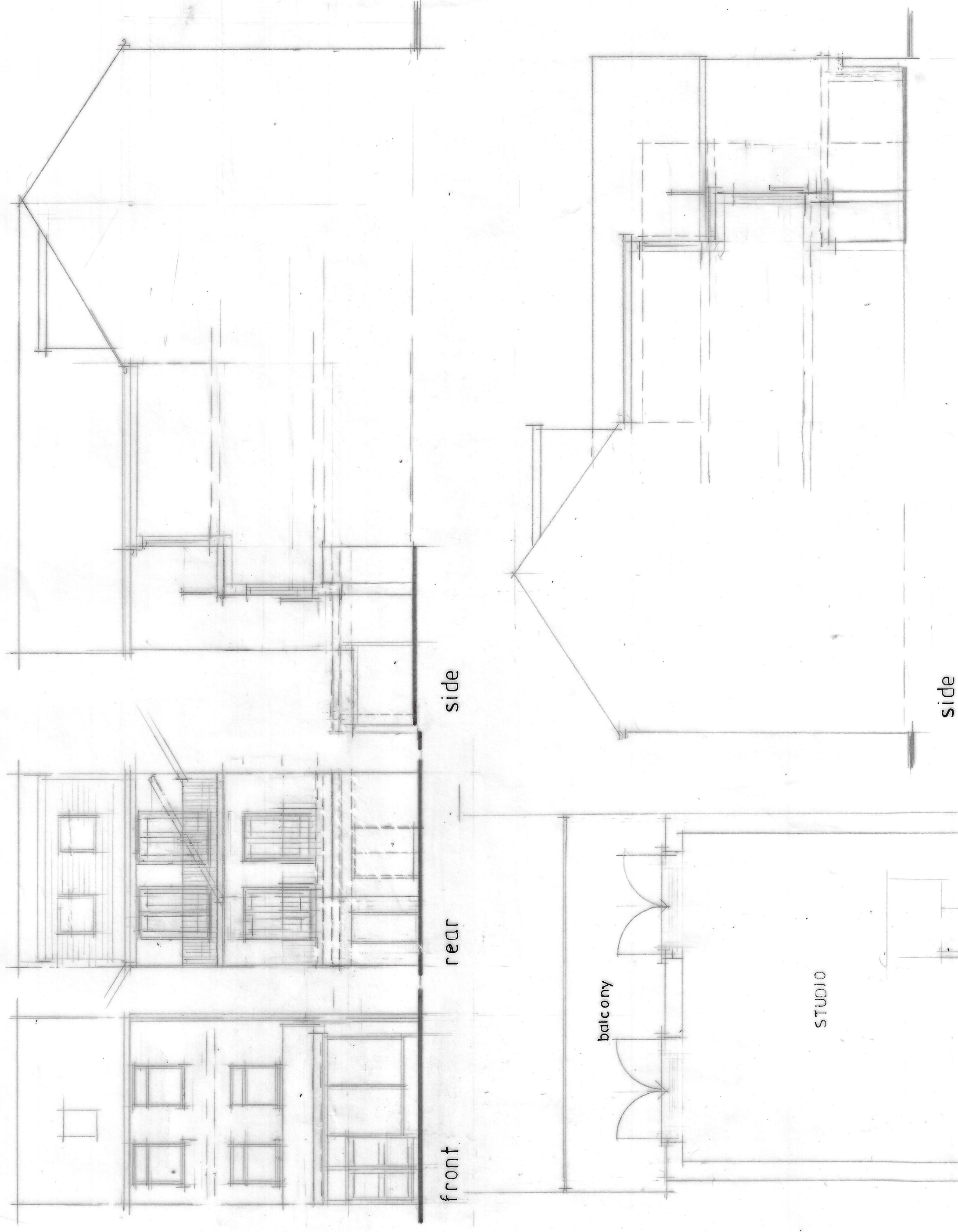
side

side

rear

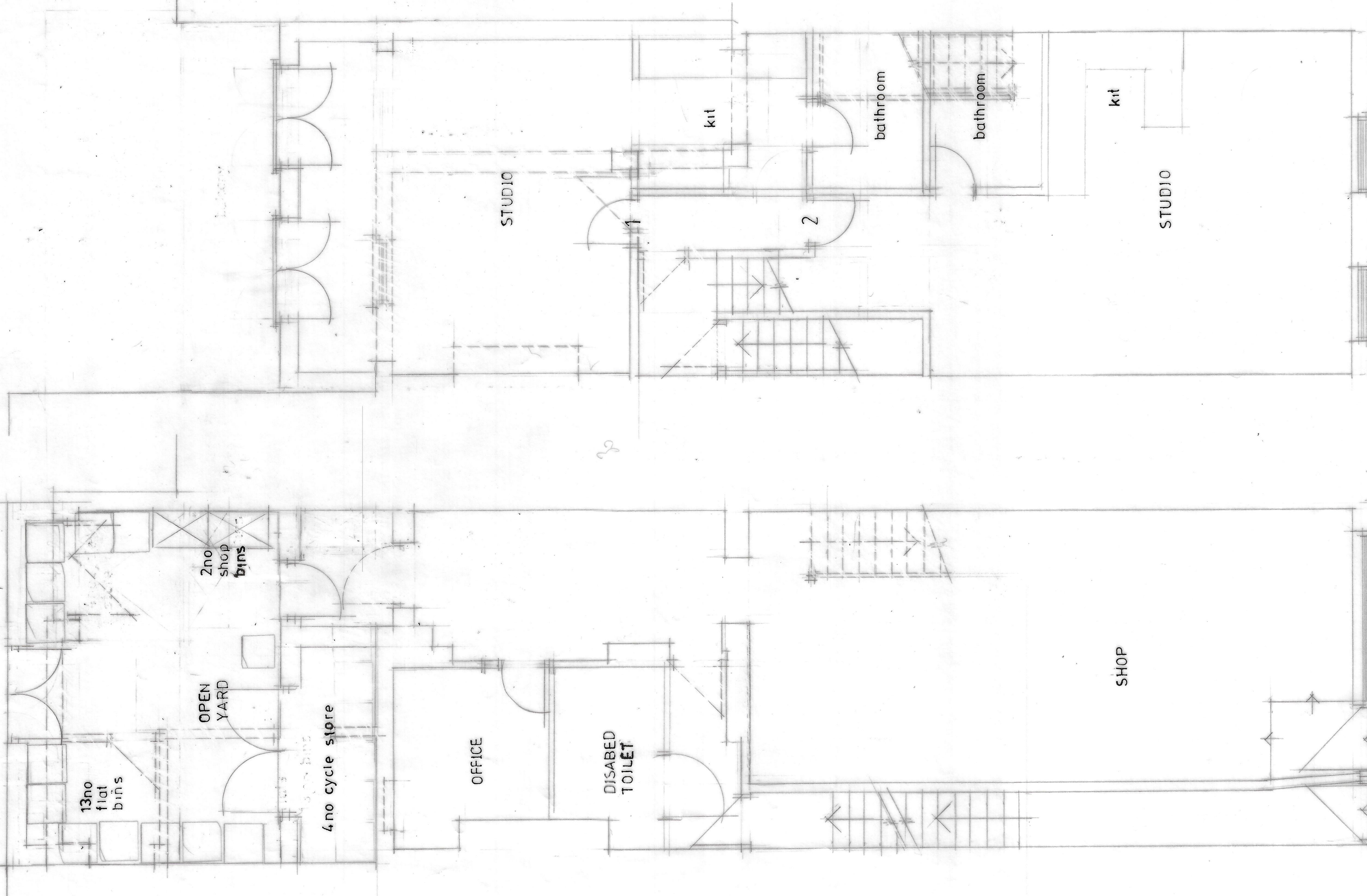
front

CLIENT	LUCKY SINGH PROPERTIES LTD 50 BURY NEW ROAD MANCHESTER M8 8EL
JOB TITLE	PROPOSED NEW FLATS
DRAWING TITLE	PLANS AND ELEVATIONS AS EXISTING
HOLBOROW + ORMESHER LIMITED	architectural & interior design
COMPANY ADDRESS:	100-102, CHICHESTER MIDSWICH CHESHIRE CV10 0PZ PHONE: 0770 884 989
SCALE	1:50 & 1:100
DATE	
BY	
CHECKED	
APPROVED	
DRAWING NUMBER	2321 / 23 / 01



FLAT 3 37 sq m
FLAT 4 59 sq m

THIRD



FLAT 1 30.5 sq m
FLAT 2 38 sq m

FIRST

FLATS SHOP
GROUND

CLIENT		LUCKY SINGH PROPERTIES LTD 50 BURY NEW ROAD MANCHESTER M8 8EL	
JOB TITLE		PROPOSED NEW FLATS	
DRAWING TITLE		PLANS AND ELEVATIONS AS PROPOSED	
HOLBOROW + ORMESHER LIMITED		architectural & interior design	
COMPANY ADDRESS:		15 OVERTON CLOSE MIDDLEWICH CHESHIRE CW10 0PE PHONE 0770 884 989	
SCALE	1:50	1:100	1:200
REVISION	1	2	3
DRAWN	AS	AS	AS
CHECKED	AS	AS	AS
DATE	15/01/02	15/01/02	15/01/02
DRAWING NUMBER	2321/23/02		

Appendix 1: Site Photographs



Photo 1: View of 50 Bury New Road from across the road.



Photo 2: Photo showing steps into the commercial ground floor.



Photo 3: View of the rear of 50 Bury New Road.

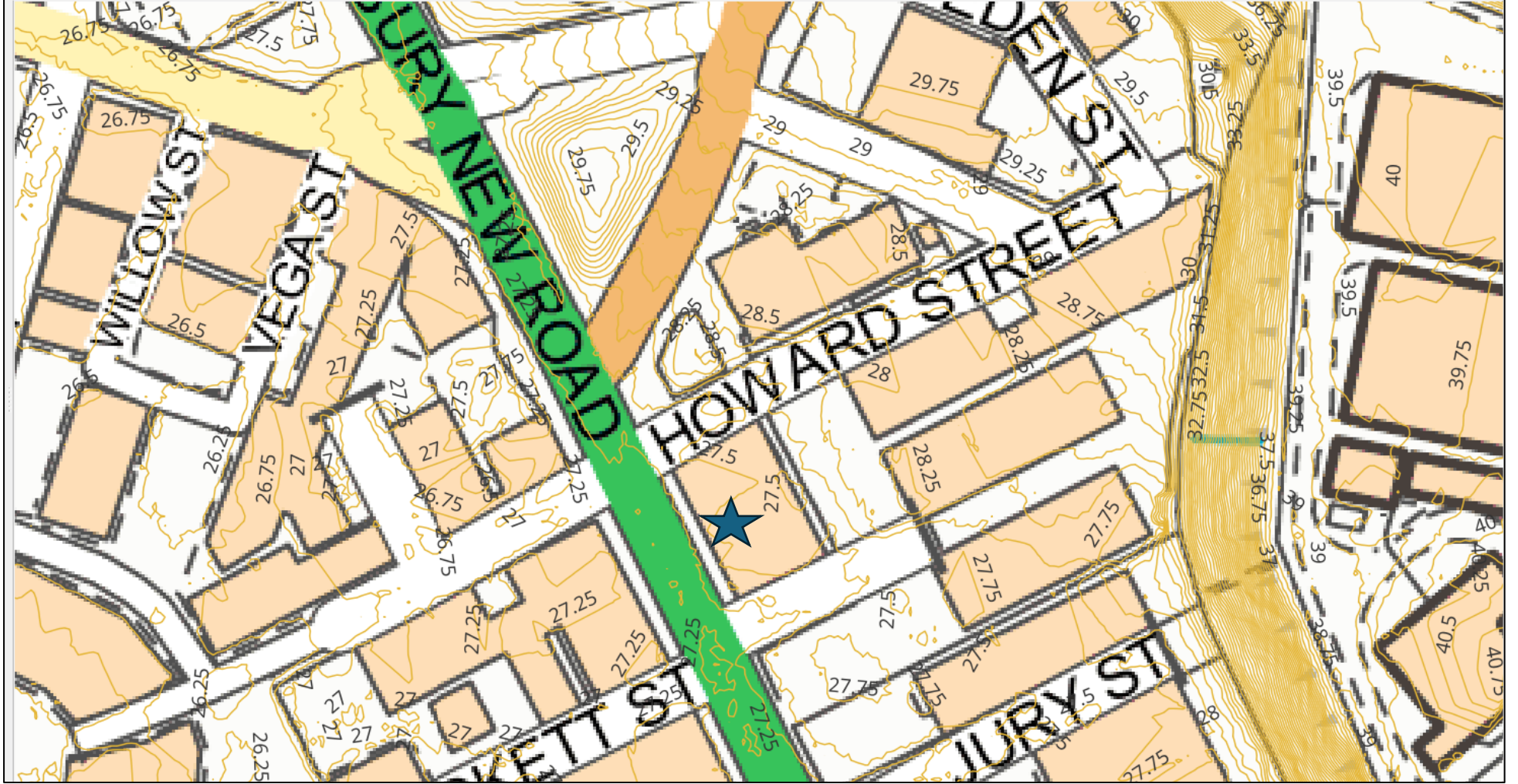


Photo 4: View of fencing at rear of 50 Bury New Road.



Photo 5: Entrance to the proposed flats above the commercial ground floor at 50 Bury New Road.

Appendix 2: LiDAR Topographic Data



Appendix 3: Environment Agency Product 4 Data

Flood risk assessment data

Location of site: 383492 / 399760 (shown as easting and northing coordinates)

Document created on: 26 April 2024

This information was previously known as a product 4.

Customer reference number: DJAF6UM64KR3

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- historic flooding
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Surface water and other sources of flooding

Use the [long term flood risk service](#) to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Lower Irwell Model 2017

Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial, defences removed climate change fluvial

Date: 1 April 2018

These models contain the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

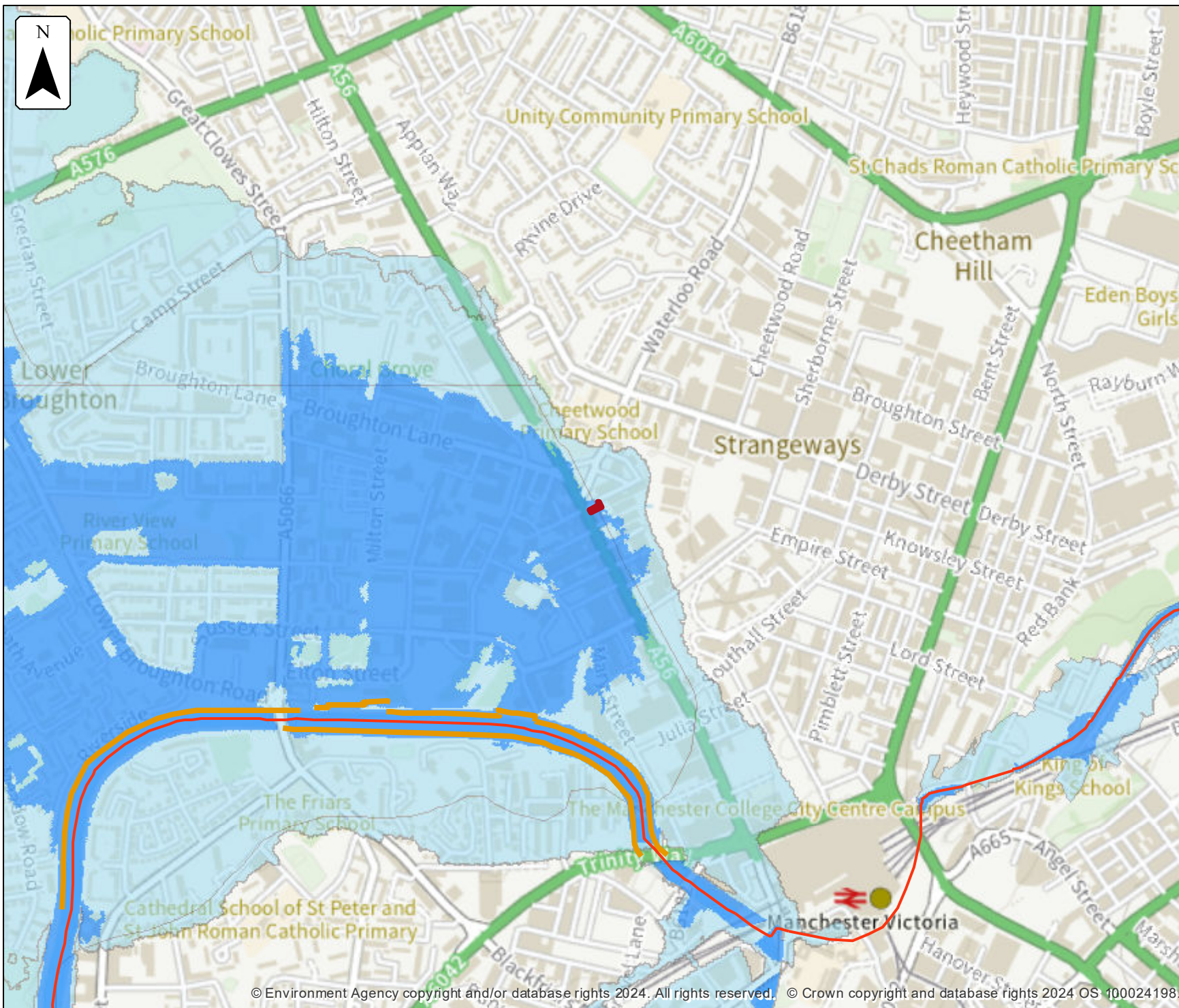
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

The flood zones are not currently being updated. The last update was in November 2023. Some of the flood zones may have changed, however all source data is included in the models below.



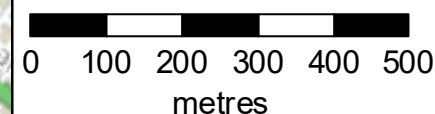
Flood map for planning

Location (easting/northing)
383492/399760

Scale
1:10,000

Created
26 Apr 2024

-  Selected area
-  Main river
-  Flood defence
-  Flood zone 3
-  Flood zone 2



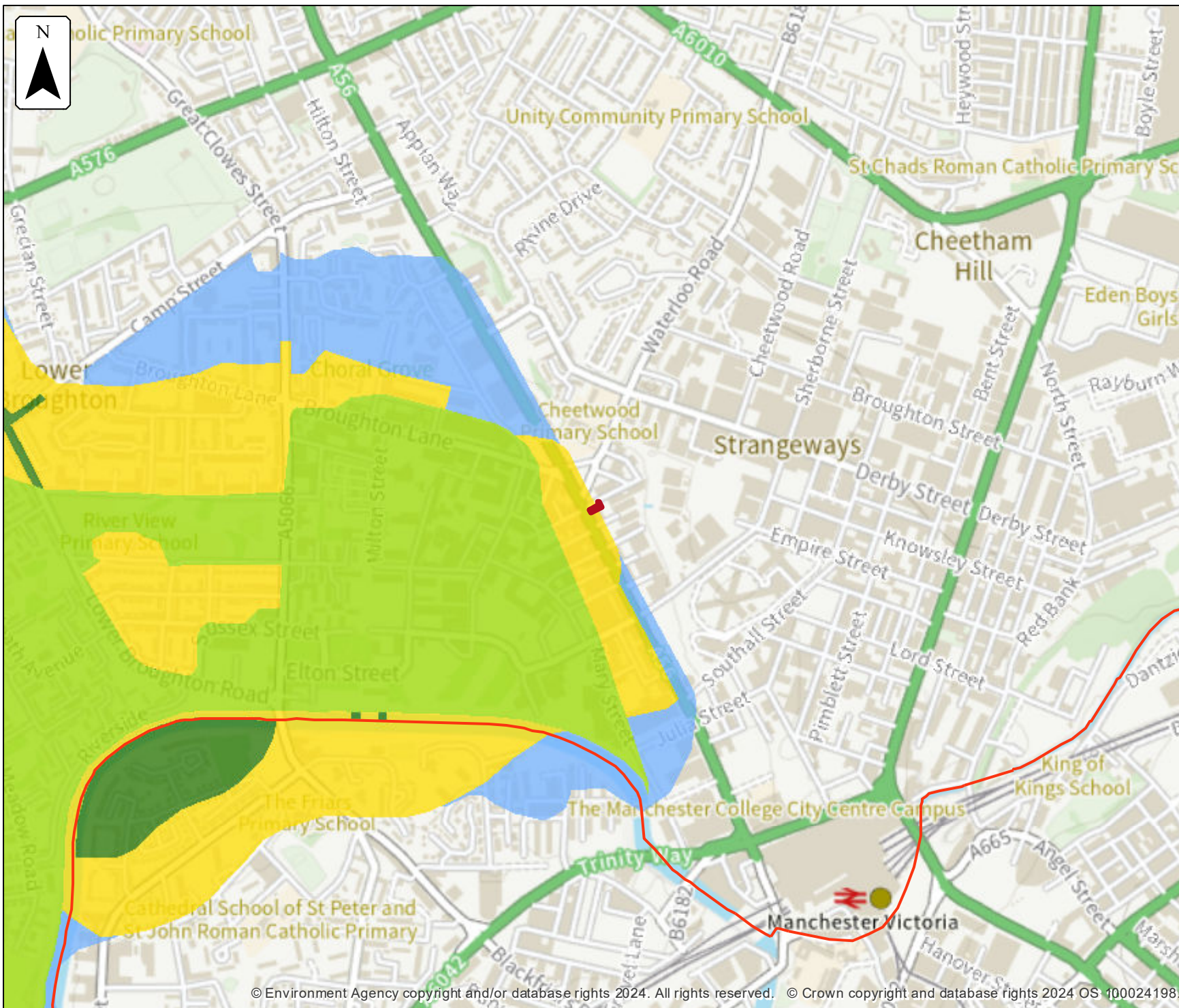
Historic flooding

This map is an indicative outline of areas that have previously flooded. Remember that:

- our records are incomplete, so the information here is based on the best available data
- it is possible not all properties within this area will have flooded
- other flooding may have occurred that we do not have records for
- flooding can come from a range of different sources - we can only supply flood risk data relating to flooding from rivers or the sea

You can also contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

[Download recorded flood outlines in GIS format](#)



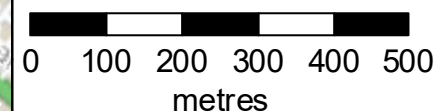
Historic flood map

Location (easting/northing)
383492/399760

Scale
1:10,000

Created
26 Apr 2024

-  Selected area
-  Main river
- Date of flood event
 -  December, 2015
 -  January, 1954
 -  September, 1946
 -  November, 1866



Historic flood event data

Start date	End date	Source of flood	Cause of flood	Affects location
26 December 2015	26 December 2015	main river	overtopping of defences	No
21 January 1954	22 January 1954	main river	channel capacity exceeded (no raised defences)	No
20 September 1946	21 September 1946	main river	channel capacity exceeded (no raised defences)	Yes
01 November 1866	02 November 1866	main river	channel capacity exceeded (no raised defences)	Yes

Flood defences and attributes

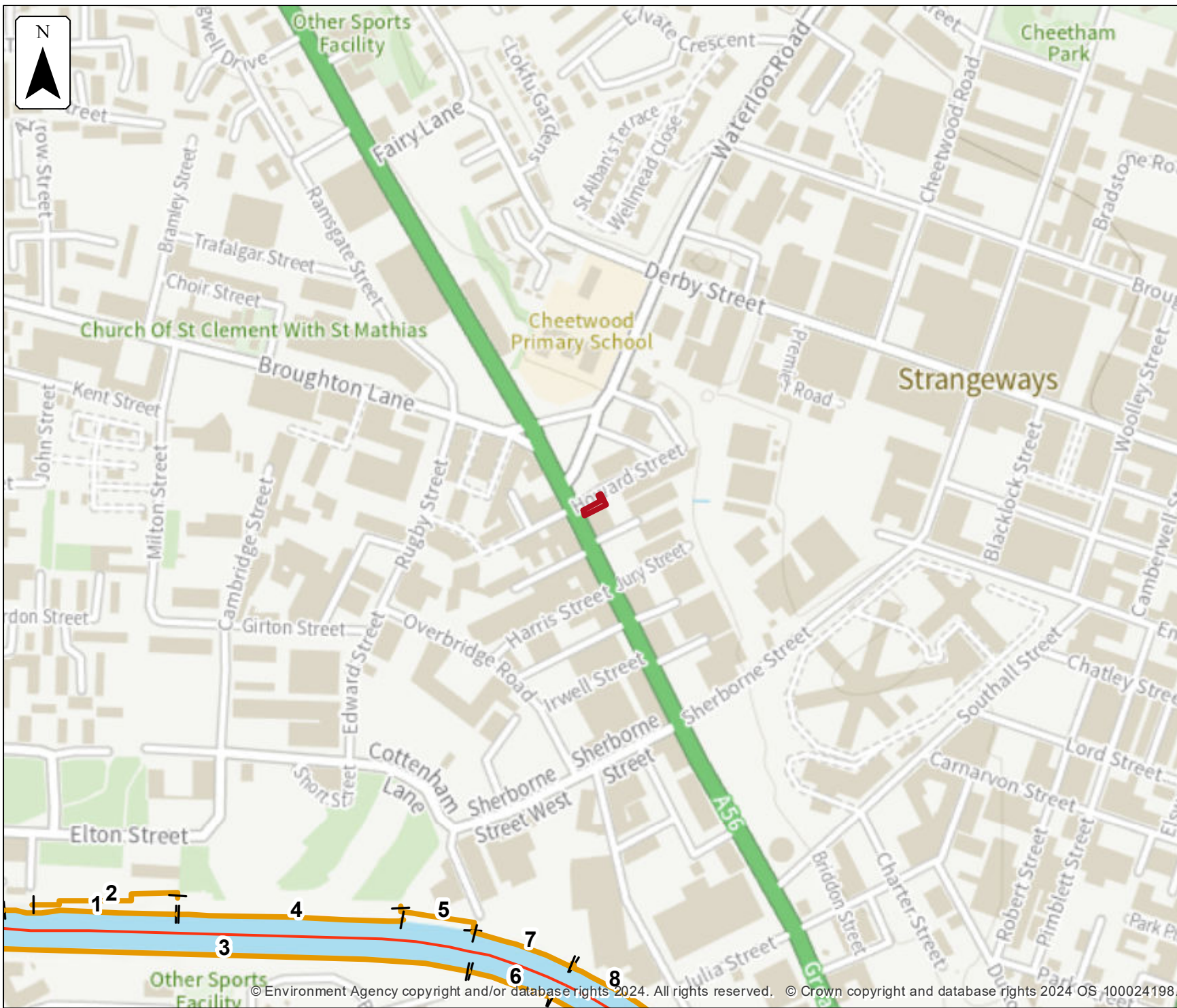
The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is in mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk



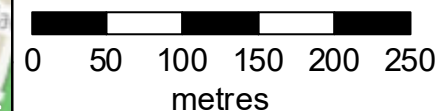
Flood defences

Location (easting/northing)
383492/399760

Scale
1:5,000

Created
26 Apr 2024

- Selected area
- Main river
- | Flood defence



Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	452369	Engineered High Ground	5				
2	452918	Wall		Poor	28.30	27.10	
3	89057	Embankment	75	Good	28.58	27.01	
4	452758	Embankment	75	Good	27.10	27.10	27.10
5	181081	Wall	75	Fair	27.07	27.10	
6	384247	Engineered High Ground		Fair	27.10	27.01	
7	88893	Engineered High Ground	75	Fair	27.20	27.44	
8	88831	Engineered High Ground	75	Fair	27.44	27.66	

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

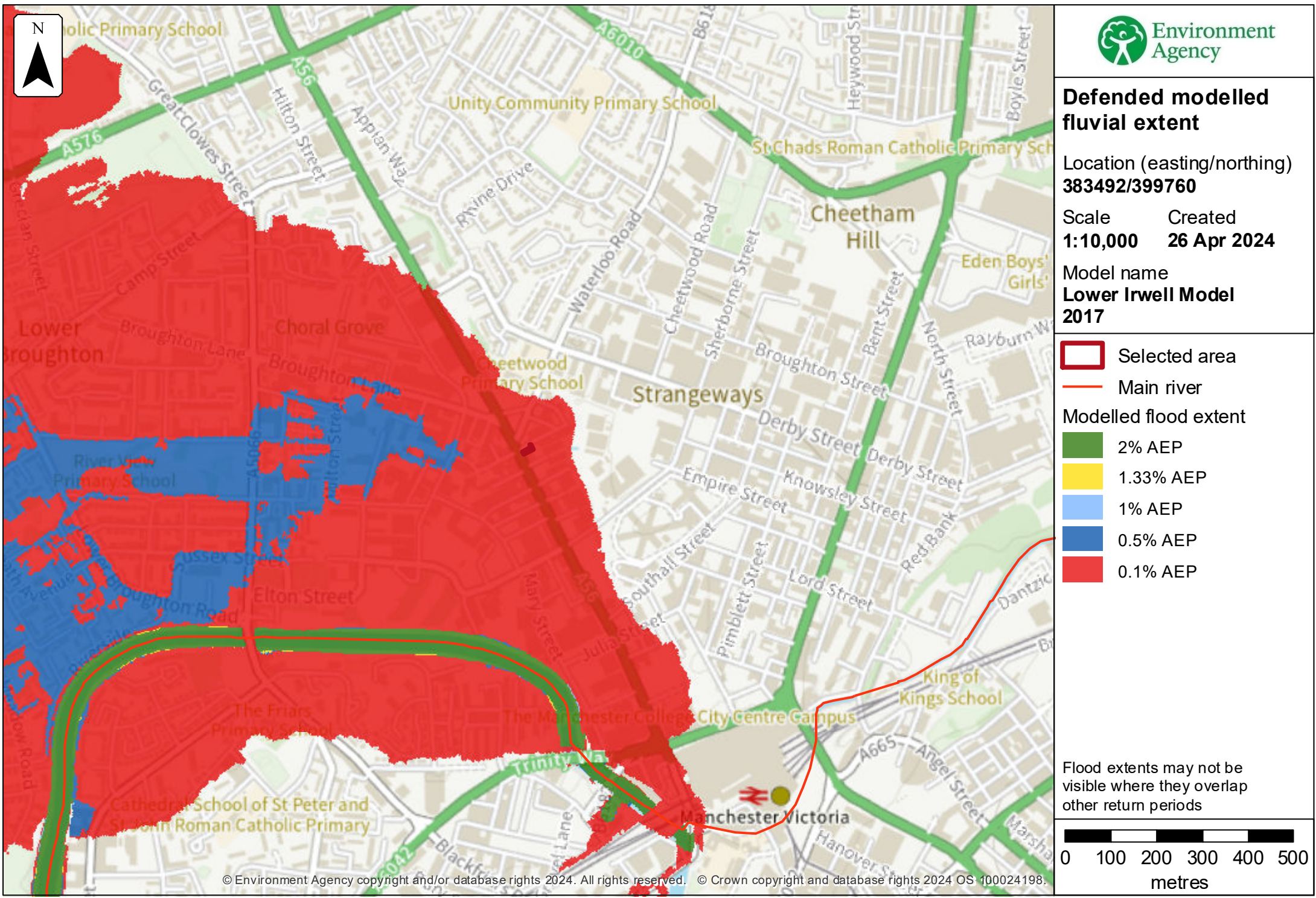
The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

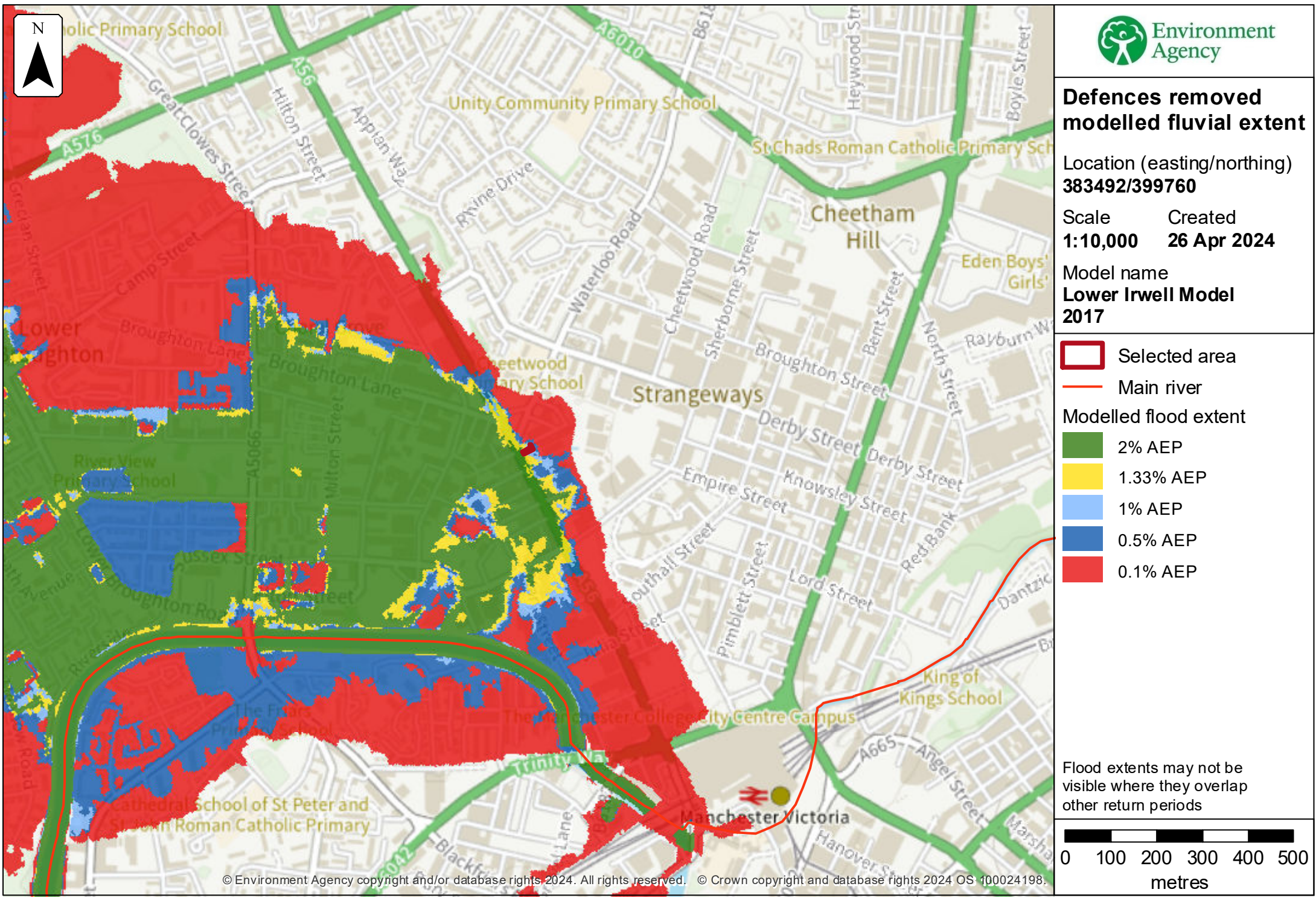
The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

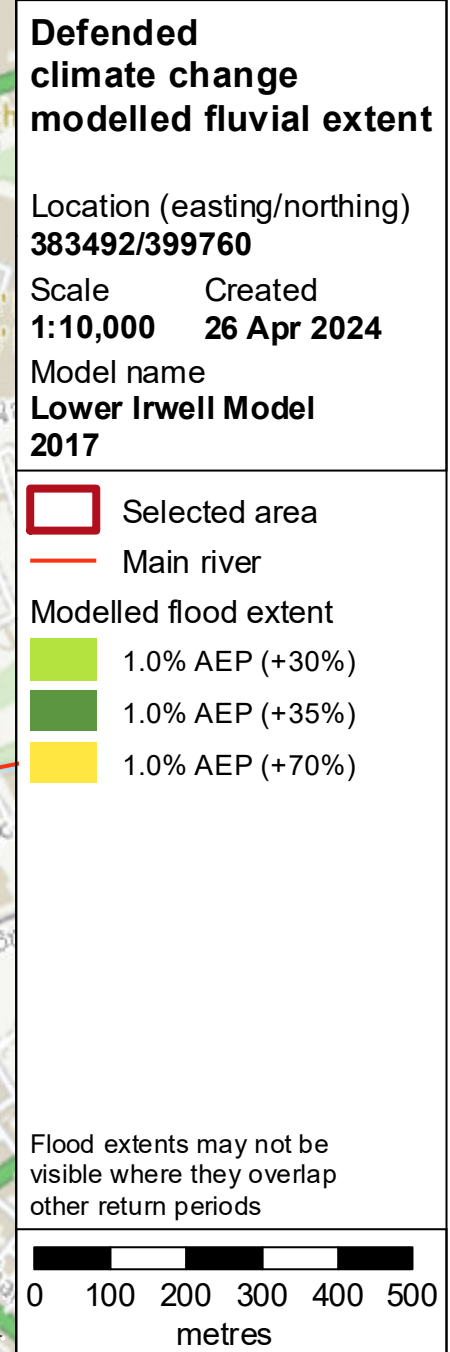
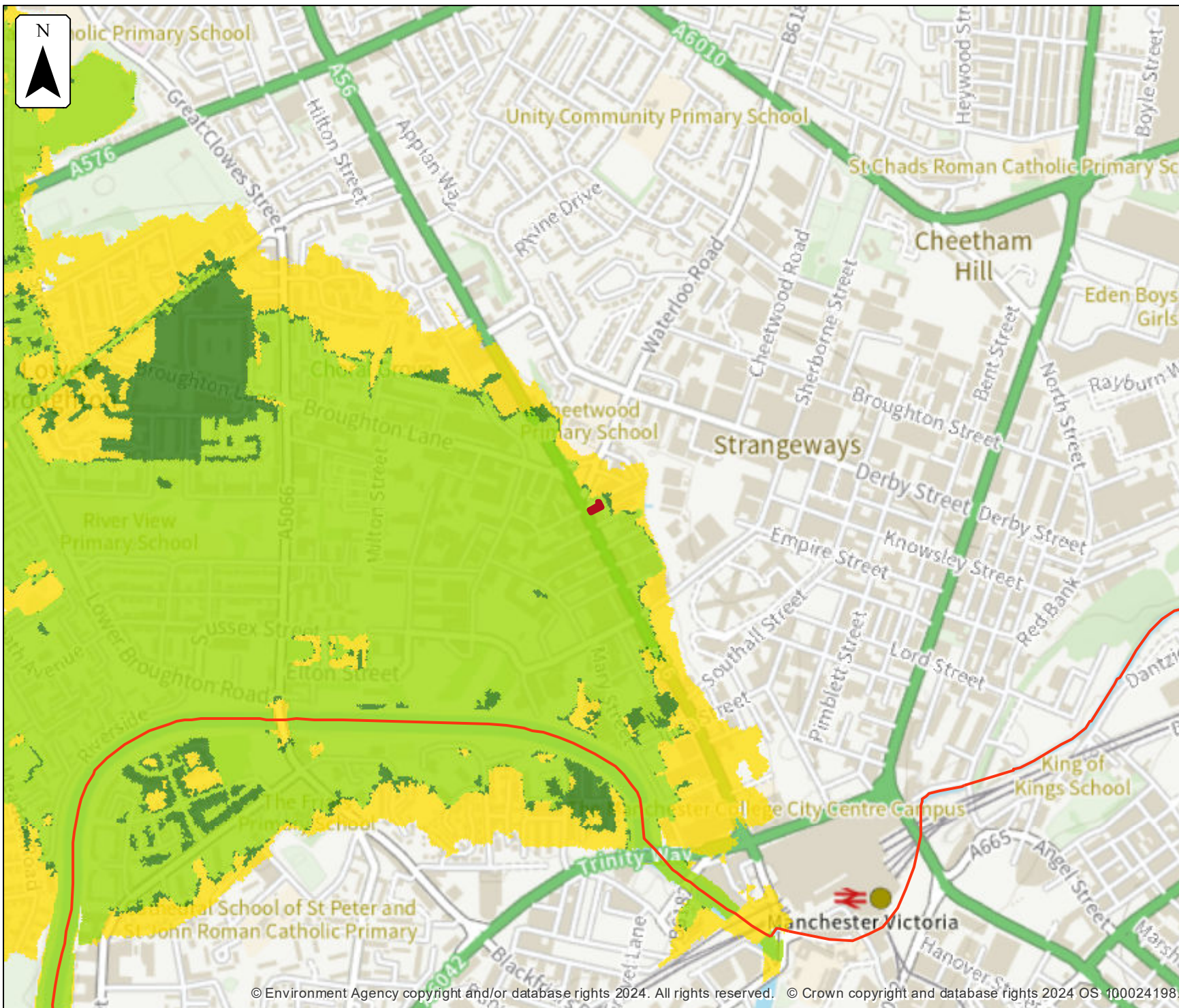
Modelled scenarios

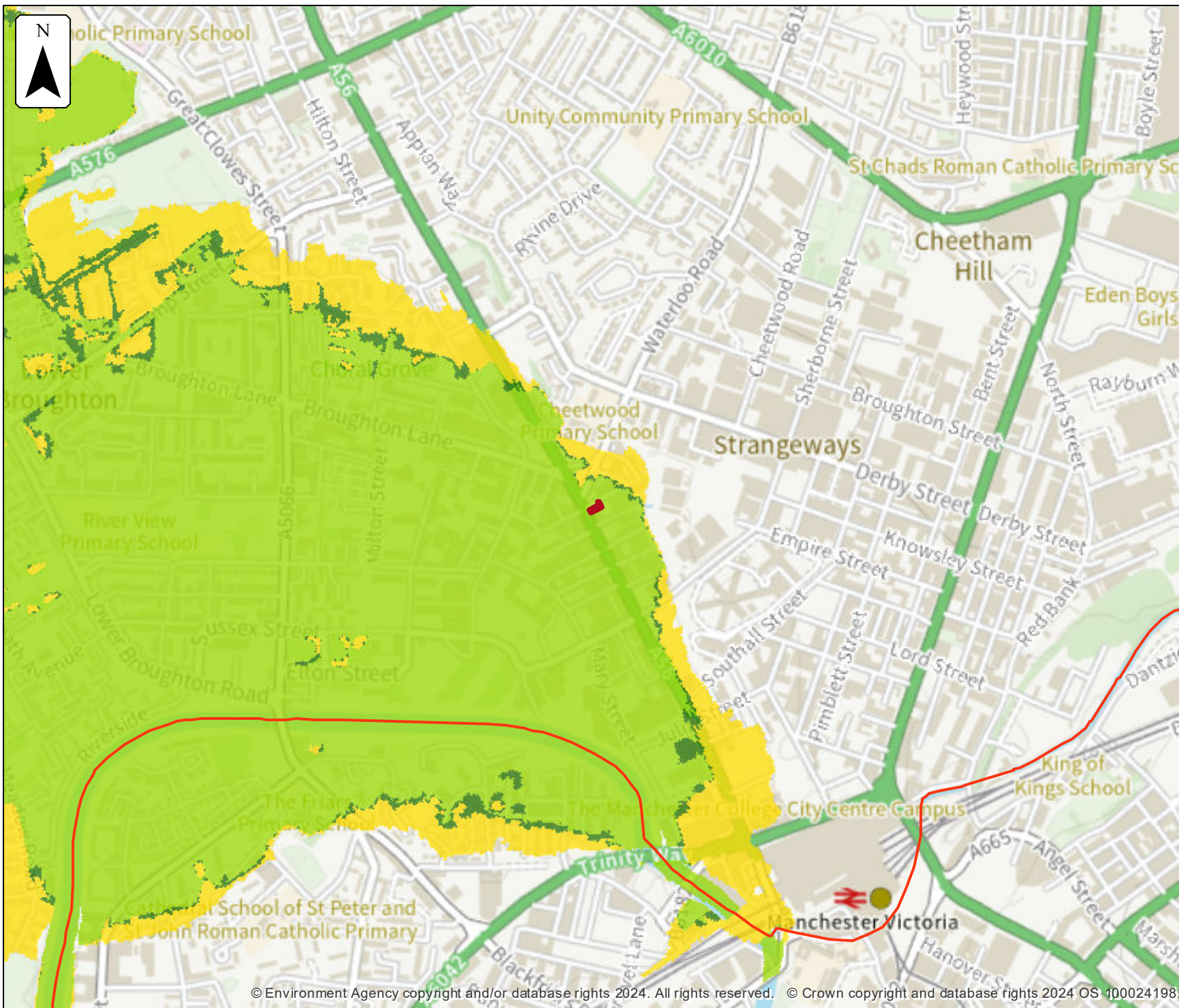
The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed
- No defences exist modelled fluvial: risk of flooding from rivers where there are no flood defences
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change
- No defences exist climate change modelled fluvial: risk of flooding from rivers where there are no flood defences, including estimated impact of climate change









Defences removed climate change modelled fluvial extent

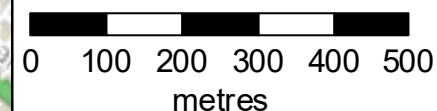
Location (easting/northing)
383492/399760

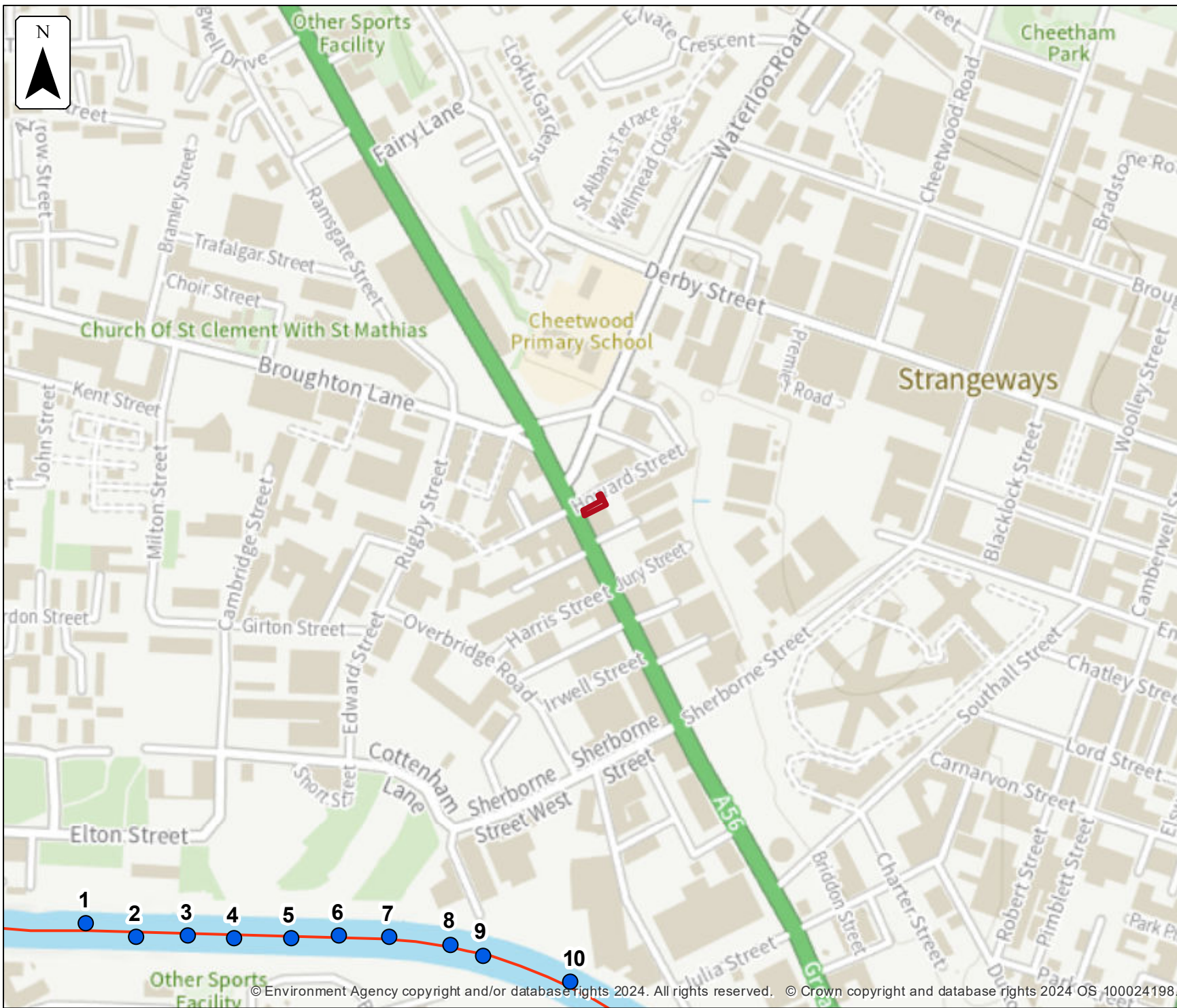
Scale Created
1:10,000 26 Apr 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Main river
- Modelled flood extent
 -  1.0% AEP (+30%)
 -  1.0% AEP (+35%)
 -  1.0% AEP (+70%)

Flood extents may not be
visible where they overlap
other return periods





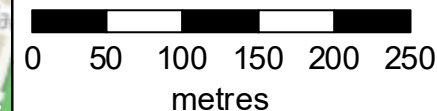
Defended modelled fluvial node locations

Location (easting/northing)
383492/399760

Scale Created
1:5,000 26 Apr 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

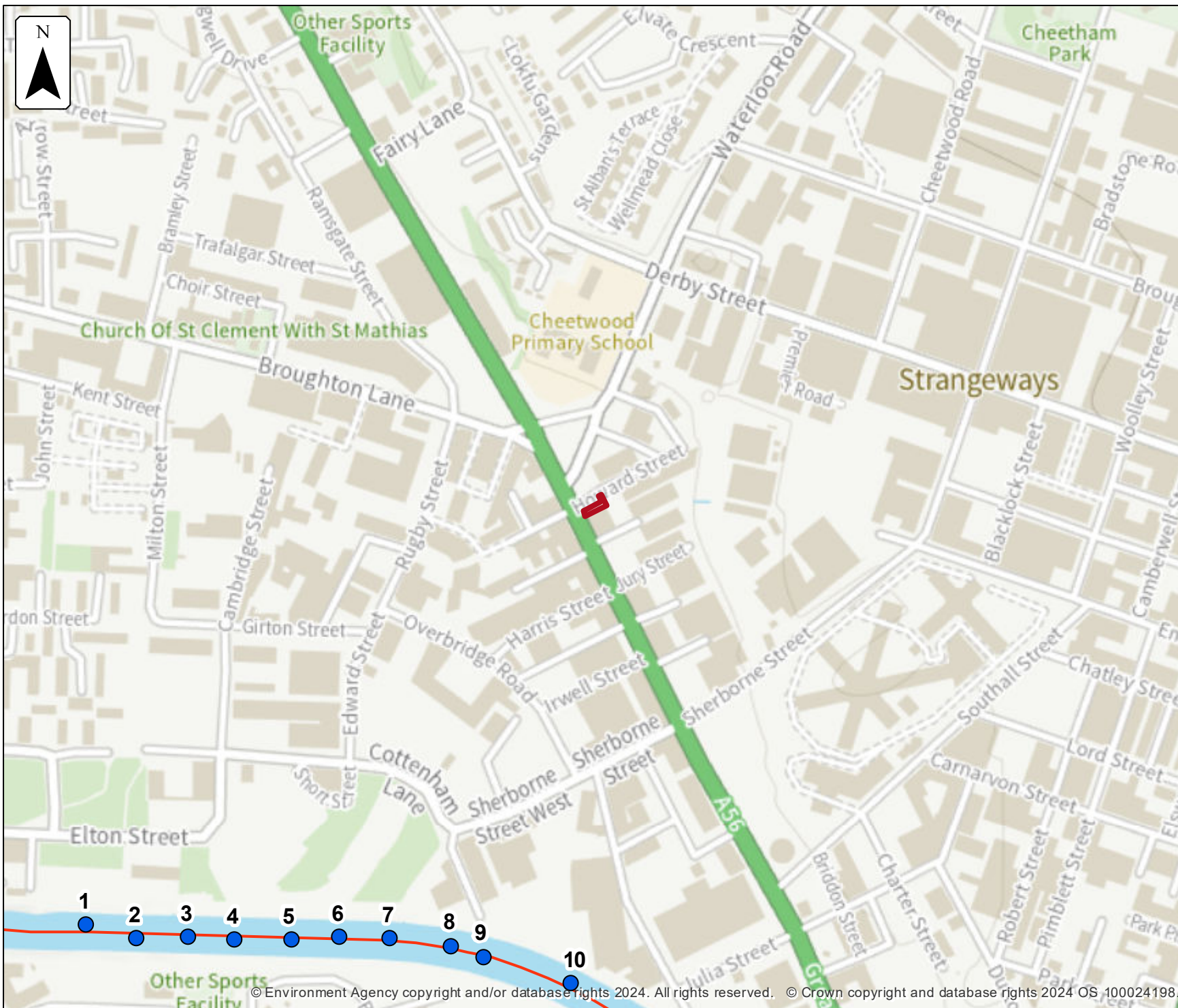
Defended

Label	Modelled location ID	Easting	Northing	4% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	946031	382997	399355	26.41	387.02	26.62	406.52	26.74	417.24	26.82	424.93	27.11	472.34	30.31	437.04
2	946026	383046	399341	26.39	387.05	26.61	406.56	26.73	417.28	26.80	424.98	27.10	472.36	30.30	437.53
3	946123	383096	399343	26.37	387.08	26.58	406.60	26.71	417.34	26.78	425.03	27.08	472.38	30.30	436.74
4	945988	383142	399341	26.35	387.12	26.57	406.65	26.69	417.38	26.76	425.09	27.06	472.40	30.29	435.80
5	946131	383196	399340	26.32	387.16	26.55	406.70	26.67	417.44	26.74	425.15	27.04	472.42	30.29	433.58
6	946121	383243	399342	26.30	387.20	26.52	406.74	26.65	417.49	26.72	425.20	27.02	472.45	30.28	437.52
7	946075	383292	399342	26.28	387.25	26.51	406.80	26.63	417.55	26.70	425.26	27.0	472.48	30.27	449.06
8	945984	383352	399334	26.26	387.29	26.48	406.85	26.61	417.61	26.68	425.33	26.98	472.52	30.24	474.40
9	946006	383383	399324	26.24	387.32	26.46	406.88	26.59	417.65	26.66	425.36	26.96	472.53	30.24	494.47
10	946007	383468	399298	26.11	387.40	26.34	406.98	26.47	417.76	26.54	425.47	26.83	472.59	30.19	519.73

Data in this table comes from the Lower Irwell Model 2017 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



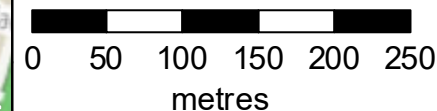
Defences removed modelled fluvial node locations

Location (easting/northing)
383492/399760

Scale Created
1:5,000 26 Apr 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

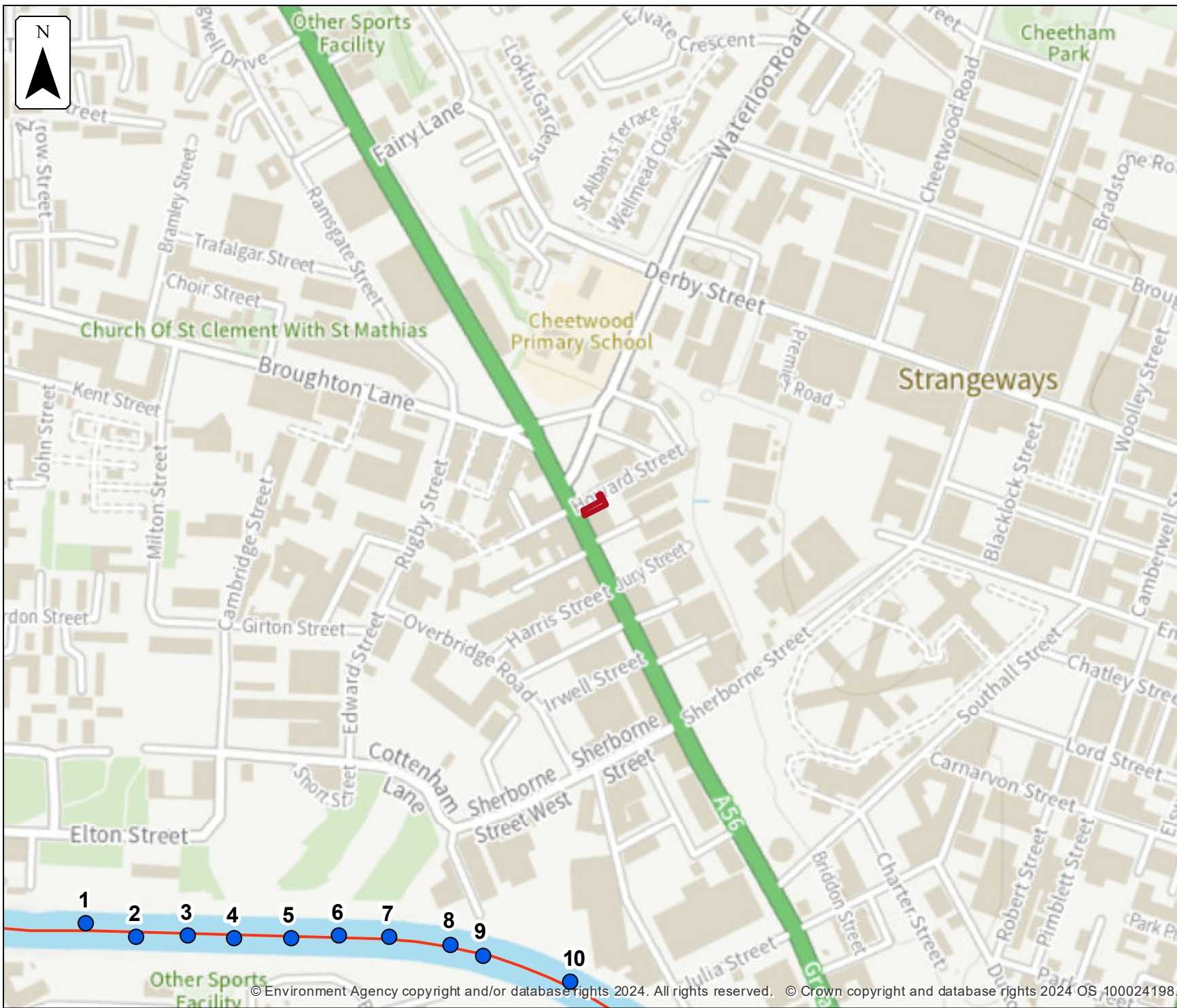
Defences removed

Label	Modelled location ID	Easting	Northing	4% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	946031	382997	399355	26.34	387.89	26.63	416.45	26.76	427.71	27.0	436.85	27.54	454.23	30.65	451.03
2	946026	383046	399341	26.32	387.91	26.61	416.48	26.74	427.75	26.99	436.84	27.54	454.02	30.65	450.20
3	946123	383096	399343	26.29	387.92	26.59	416.52	26.72	427.78	26.96	440.39	27.51	459.66	30.64	444.25
4	945988	383142	399341	26.27	387.94	26.57	416.54	26.70	427.80	26.94	443.18	27.48	464.63	30.64	440.40
5	946131	383196	399340	26.25	387.96	26.55	416.56	26.67	432.01	26.90	451.54	27.43	478.80	30.63	434.91
6	946121	383243	399342	26.22	387.97	26.52	416.62	26.65	432.83	26.87	453.49	27.40	485.19	30.63	438.68
7	946075	383292	399342	26.20	387.99	26.50	416.66	26.63	432.81	26.86	453.95	27.38	487.55	30.62	443.73
8	945984	383352	399334	26.18	388.01	26.48	416.70	26.61	433.33	26.83	457.32	27.35	498.71	30.60	466.21
9	946006	383383	399324	26.15	388.03	26.46	416.72	26.59	434.26	26.80	460.26	27.32	507.94	30.59	489.16
10	946007	383468	399298	26.02	388.06	26.33	416.74	26.46	434.28	26.67	460.28	27.18	509.27	30.55	517.98

Data in this table comes from the Lower Irwell Model 2017 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



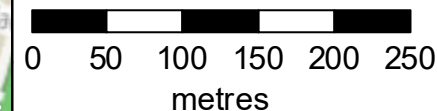
Defended climate change modelled fluvial node locations

Location (easting/northing)
383492/399760

Scale Created
1:5,000 26 Apr 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

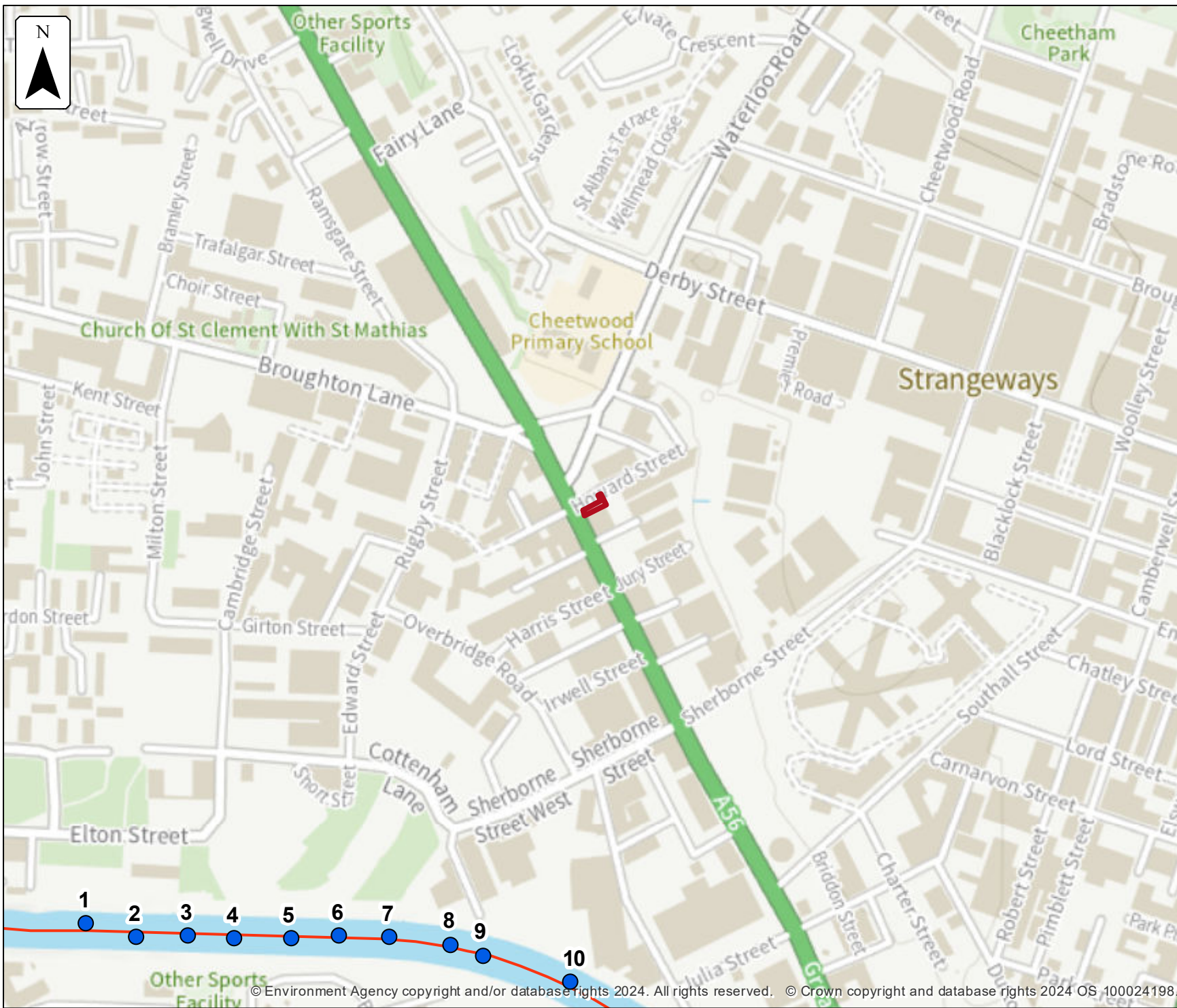
Defended climate change

Label	Modelled location ID	Easting	Northing	1.0% AEP (+30%)		1.0% AEP (+35%)		1.0% AEP (+70%)	
				Level	Flow	Level	Flow	Level	Flow
1	946031	382997	399355	27.72	482.70	27.89	480.78	29.63	463.17
2	946026	383046	399341	27.71	482.70	27.88	480.75	29.62	463.0
3	946123	383096	399343	27.69	482.71	27.86	480.79	29.61	462.24
4	945988	383142	399341	27.66	482.72	27.84	481.0	29.60	461.07
5	946131	383196	399340	27.62	492.54	27.79	490.72	29.59	470.83
6	946121	383243	399342	27.58	497.49	27.75	497.68	29.58	483.80
7	946075	383292	399342	27.56	501.37	27.73	502.26	29.56	490.74
8	945984	383352	399334	27.52	516.71	27.69	518.61	29.53	509.23
9	946006	383383	399324	27.50	526.40	27.66	532.84	29.52	523.36
10	946007	383468	399298	27.36	528.87	27.52	539.41	29.45	541.44

Data in this table comes from the Lower Irwell Model 2017 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



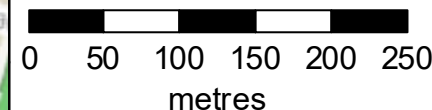
Defences removed climate change modelled fluvial node locations

Location (easting/northing)
383492/399760

Scale Created
1:5,000 26 Apr 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defences removed climate change

Label	Modelled location ID	Easting	Northing	1.0% AEP (+30%)		1.0% AEP (+35%)		1.0% AEP (+70%)	
				Level	Flow	Level	Flow	Level	Flow
1	946031	382997	399355	28.38	457.56	28.61	457.53	30.04	464.22
2	946026	383046	399341	28.36	457.37	28.60	457.26	30.03	463.98
3	946123	383096	399343	28.34	460.20	28.58	458.67	30.02	459.68
4	945988	383142	399341	28.33	463.96	28.57	461.90	30.01	457.02
5	946131	383196	399340	28.30	474.76	28.55	472.64	30.01	461.79
6	946121	383243	399342	28.26	484.19	28.52	481.16	30.0	467.52
7	946075	383292	399342	28.22	492.24	28.48	489.0	29.98	469.35
8	945984	383352	399334	28.18	508.89	28.44	506.19	29.95	480.96
9	946006	383383	399324	28.16	525.61	28.42	522.09	29.95	502.07
10	946007	383468	399298	28.02	548.53	28.30	545.82	29.89	530.36

Data in this table comes from the Lower Irwell Model 2017 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



Defended modelled fluvial extent and height

Location (easting/northing)
383492/399760

Scale Created
1:500 26 Apr 2024

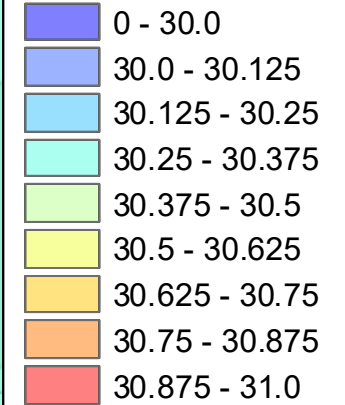
Model name
**Lower Irwell Model
2017**

 Selected area

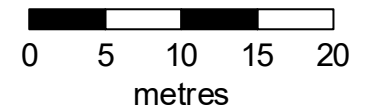
 Main river

Modelled 2D grid

Water level in mAOD



This map shows the
0.1% AEP height data



Sample point data

Defended

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	383479	399745			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.21	30.30
2	383485	399745			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.03	30.30
3	383473	399751			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.13	30.30
4	383479	399751			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.12	30.30
5	383485	399751			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.87	30.30
6	383491	399751			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.87	30.30
7	383497	399751			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.90	30.30
8	383503	399751			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.92	30.30
9	383473	399757			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.18	30.30
10	383479	399757			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.07	30.30
11	383485	399757			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.00	30.30
12	383491	399757			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.96	30.30
13	383497	399757			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.85	30.30
14	383503	399757			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.86	30.30
15	383509	399757			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.82	30.30
16	383473	399763			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.11	30.31

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	383479	399763			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.98	30.31
18	383485	399763			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.81	30.31
19	383491	399763			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.87	30.30
20	383497	399763			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.88	30.30
21	383503	399763			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.76	30.30
22	383509	399763			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.54	30.30
23	383485	399769			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.96	30.31
24	383491	399769			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.82	30.31
25	383497	399769			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.71	30.30
26	383503	399769			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.67	30.30
27	383509	399769			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.48	30.30
28	383491	399775			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.80	30.31
29	383497	399775			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.69	30.30
30	383503	399775			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.55	30.30
31	383491	399781			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.58	30.31
32	383497	399781			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.60	30.30

Data in this table comes from the Lower Irwell Model 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



Defences removed modelled fluvial extent and height

Location (easting/northing)
383492/399760

Scale Created
1:500 26 Apr 2024

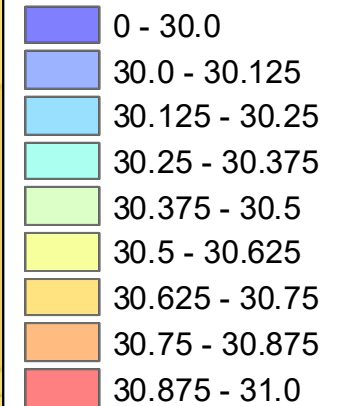
Model name
**Lower Irwell Model
2017**

 Selected area

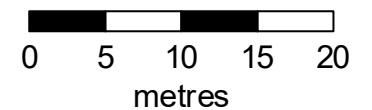
 Main river

Modelled 2D grid

Water level in mAOD



This map shows the
0.1% AEP height data



Sample point data

Defences removed

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	383479	399745			0.11	27.20	0.34	27.43	0.43	27.53	0.70	27.79	3.55	30.64
2	383485	399745			NoData	NoData	0.16	27.43	0.26	27.52	0.52	27.78	3.38	30.64
3	383473	399751			NoData	NoData	0.26	27.43	0.36	27.53	0.62	27.80	3.48	30.65
4	383479	399751			0.03	27.20	0.24	27.43	0.34	27.53	0.61	27.80	3.46	30.65
5	383485	399751			NoData	NoData	NoData	NoData	0.10	27.53	0.36	27.79	3.21	30.65
6	383491	399751			NoData	NoData	NoData	NoData	0.09	27.52	0.36	27.79	3.21	30.64
7	383497	399751			NoData	NoData	NoData	NoData	0.12	27.52	0.38	27.79	3.24	30.64
8	383503	399751			NoData	NoData	NoData	NoData	0.15	27.52	0.41	27.79	3.27	30.64
9	383473	399757			0.08	27.20	0.30	27.43	0.40	27.53	0.67	27.80	3.52	30.65
10	383479	399757			0.02	27.20	0.20	27.43	0.30	27.53	0.56	27.80	3.42	30.65
11	383485	399757			NoData	NoData	0.13	27.43	0.23	27.53	0.49	27.80	3.35	30.65
12	383491	399757			NoData	NoData	0.09	27.43	0.18	27.53	0.45	27.79	3.30	30.65
13	383497	399757			NoData	NoData	NoData	NoData	0.08	27.53	0.34	27.79	3.19	30.65
14	383503	399757			NoData	NoData	NoData	NoData	0.09	27.53	0.35	27.79	3.20	30.64
15	383509	399757			NoData	NoData	NoData	NoData	0.05	27.53	0.31	27.79	3.17	30.64
16	383473	399763			0.01	27.20	0.24	27.43	0.34	27.53	0.60	27.80	3.46	30.65

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	383479	399763			NoData	NoData	0.10	27.43	0.20	27.53	0.47	27.80	3.32	30.66
18	383485	399763			NoData	NoData	NoData	NoData	0.04	27.53	0.29	27.80	3.15	30.65
19	383491	399763			NoData	NoData	NoData	NoData	0.09	27.53	0.36	27.80	3.21	30.65
20	383497	399763			NoData	NoData	0.01	27.43	0.10	27.53	0.37	27.79	3.22	30.65
21	383503	399763			NoData	NoData	NoData	NoData	NoData	NoData	0.26	27.79	3.11	30.65
22	383509	399763			NoData	NoData	NoData	NoData	NoData	NoData	0.03	27.79	2.89	30.65
23	383485	399769			NoData	NoData	NoData	NoData	NoData	NoData	0.45	27.80	3.30	30.66
24	383491	399769			NoData	NoData	NoData	NoData	0.04	27.53	0.31	27.80	3.16	30.66
25	383497	399769			NoData	NoData	NoData	NoData	NoData	NoData	0.21	27.80	3.06	30.65
26	383503	399769			NoData	NoData	NoData	NoData	NoData	NoData	0.17	27.80	3.02	30.65
27	383509	399769			NoData	NoData	NoData	NoData	NoData	NoData	0.01	27.80	2.83	30.65
28	383491	399775			NoData	NoData	NoData	NoData	0.03	27.53	0.29	27.80	3.15	30.65
29	383497	399775			NoData	NoData	NoData	NoData	NoData	NoData	0.18	27.80	3.03	30.65
30	383503	399775			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.89	30.65
31	383491	399781			NoData	NoData	NoData	NoData	NoData	NoData	0.12	27.80	2.92	30.65
32	383497	399781			NoData	NoData	NoData	NoData	NoData	NoData	0.10	27.80	2.95	30.65

Data in this table comes from the Lower Irwell Model 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



**Defended
climate change
modelled fluvial
extent and height**

Location (easting/northing)
383492/399760

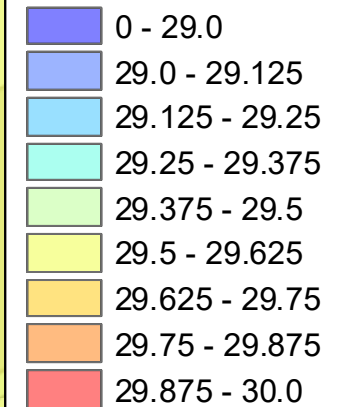
Scale Created
1:500 26 Apr 2024

Model name
**Lower Irwell Model
2017**

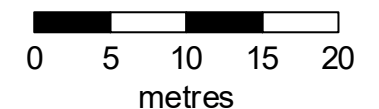
 Selected area

 Main river

Modelled 2D grid
Water level in mAOD



This map shows the
1.0% AEP +70% height data



Sample point data

Defended climate change

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
1	383479	399745	0.78	27.88	0.90	28.00	2.52	29.61
2	383485	399745	0.60	27.87	0.72	27.99	2.34	29.61
3	383473	399751	0.71	27.88	0.83	28.00	2.45	29.62
4	383479	399751	0.69	27.88	0.81	28.00	2.43	29.62
5	383485	399751	0.45	27.88	0.57	28.00	2.18	29.61
6	383491	399751	0.44	27.88	0.56	28.00	2.18	29.61
7	383497	399751	0.47	27.88	0.59	27.99	2.21	29.61
8	383503	399751	0.50	27.88	0.62	27.99	2.24	29.61
9	383473	399757	0.76	27.88	0.88	28.00	2.49	29.62
10	383479	399757	0.65	27.88	0.77	28.00	2.39	29.62
11	383485	399757	0.58	27.88	0.70	28.00	2.32	29.62
12	383491	399757	0.54	27.88	0.65	28	2.27	29.61
13	383497	399757	0.43	27.88	0.55	28	2.16	29.61
14	383503	399757	0.44	27.88	0.56	28.00	2.17	29.61
15	383509	399757	0.40	27.88	0.52	28.00	2.13	29.61
16	383473	399763	0.69	27.89	0.81	28.01	2.43	29.63

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
17	383479	399763	0.56	27.89	0.68	28.01	2.30	29.63
18	383485	399763	0.38	27.89	0.50	28.01	2.12	29.63
19	383491	399763	0.44	27.88	0.56	28.00	2.18	29.62
20	383497	399763	0.46	27.88	0.58	28	2.19	29.61
21	383503	399763	0.34	27.88	0.46	28	2.08	29.61
22	383509	399763	0.12	27.88	0.24	28.00	1.85	29.61
23	383485	399769	0.53	27.89	0.65	28.01	2.28	29.63
24	383491	399769	0.39	27.89	0.51	28.01	2.13	29.62
25	383497	399769	0.30	27.88	0.41	28.00	2.03	29.61
26	383503	399769	0.26	27.88	0.38	28.00	1.99	29.61
27	383509	399769	0.07	27.88	0.18	28.00	1.80	29.61
28	383491	399775	0.38	27.89	0.50	28.01	2.12	29.62
29	383497	399775	0.27	27.89	0.39	28.01	2.00	29.62
30	383503	399775	0.13	27.89	0.25	28.01	1.86	29.62
31	383491	399781	0.18	27.89	0.28	28.01	1.89	29.62
32	383497	399781	0.18	27.89	0.30	28.01	1.92	29.62

Data in this table comes from the Lower Irwell Model 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



Defences removed climate change modelled fluvial extent and height

Location (easting/northing)
383492/399760

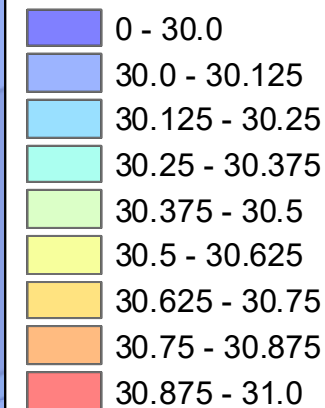
Scale Created
1:500 26 Apr 2024

Model name
**Lower Irwell Model
2017**

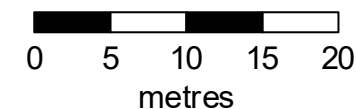
 Selected area
 Main river

Modelled 2D grid

Water level in mAOD



This map shows the
1.0% AEP +70% height data



Sample point data

Defences removed climate change

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
1	383479	399745	1.31	28.40	1.53	28.62	2.93	30.02
2	383485	399745	1.13	28.39	1.35	28.61	2.75	30.02
3	383473	399751	1.24	28.41	1.46	28.63	2.85	30.03
4	383479	399751	1.22	28.41	1.44	28.63	2.84	30.02
5	383485	399751	0.98	28.41	1.19	28.62	2.59	30.02
6	383491	399751	0.97	28.40	1.19	28.62	2.59	30.02
7	383497	399751	1.00	28.40	1.22	28.62	2.62	30.02
8	383503	399751	1.03	28.40	1.25	28.62	2.65	30.02
9	383473	399757	1.29	28.41	1.50	28.63	2.90	30.03
10	383479	399757	1.18	28.41	1.40	28.63	2.80	30.03
11	383485	399757	1.11	28.41	1.33	28.63	2.73	30.03
12	383491	399757	1.06	28.41	1.28	28.63	2.68	30.02
13	383497	399757	0.95	28.40	1.17	28.62	2.57	30.02
14	383503	399757	0.96	28.40	1.18	28.62	2.58	30.02
15	383509	399757	0.92	28.40	1.14	28.62	2.54	30.02
16	383473	399763	1.22	28.42	1.44	28.64	2.84	30.03

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
17	383479	399763	1.10	28.43	1.32	28.65	2.71	30.04
18	383485	399763	0.91	28.42	1.13	28.64	2.53	30.03
19	383491	399763	0.97	28.41	1.19	28.63	2.59	30.03
20	383497	399763	0.98	28.40	1.20	28.62	2.60	30.02
21	383503	399763	0.87	28.40	1.08	28.62	2.49	30.02
22	383509	399763	0.64	28.40	0.86	28.62	2.26	30.02
23	383485	399769	1.07	28.42	1.29	28.64	2.68	30.04
24	383491	399769	0.92	28.42	1.14	28.64	2.54	30.03
25	383497	399769	0.82	28.41	1.04	28.63	2.44	30.02
26	383503	399769	0.78	28.41	1.00	28.63	2.40	30.02
27	383509	399769	0.59	28.41	0.81	28.63	2.21	30.02
28	383491	399775	0.91	28.41	1.13	28.64	2.52	30.03
29	383497	399775	0.79	28.41	1.01	28.63	2.41	30.03
30	383503	399775	0.65	28.41	0.87	28.63	2.27	30.03
31	383491	399781	0.68	28.41	0.90	28.63	2.30	30.03
32	383497	399781	0.71	28.41	0.93	28.63	2.33	30.03

Data in this table comes from the Lower Irwell Model 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

[Find out more about flood risk activity permits](#)

Help and advice

Contact the Greater Manchester Merseyside and Cheshire Environment Agency team at inforequests.gmmc@environment-agency.gov.uk for:

- [more information about getting a product 5, 6, 7 or 8](#)
- general help and advice about the site you're requesting data for