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FLOOD RISK ASSESSMENT

121-VDG-XX-XX-RP-C-5000 RevP1

EGMONT STREET, MOSSLEY

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CONTROL SHEET

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Report Limitation

All comments and proposals contained in this report are based on information available to VDG during recent investigations.

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GLOSSORY

Term	Definition
AP	Annual Probability is the probability of a rainfall or tidal event occurring within any one year. For example, an event of a 1 in 100 year return period has an AP of 1:100 or 1%.
Flood Defences	Artificial structures maintained to a set operational level designed to protect land people and property from tidal and fluvial flood sources to an established chance of happening in any year threshold.
Flood Source: Fluvial (River)	When flows within watercourses exceed the capacity of the watercourse causing out of bank flows.
Flood Source: Groundwate	Groundwater flooding is usually the result of prolonged wet weather causing groundwater levels to rise sufficiently to either emerge at surface or to cause flooding of below ground infrastructure, such as basements.
Flood Source: Surface Water	When rainfall causes overland flows which exceed the capacity of the drainage network, causing flooding to land that is normally dry.
Flood Source: Tidal	When high tide events overtop the shoreline to cause flooding to land behind.
Flood Zone 1	Low Probability. Land having a less than 0.1% annual probability of river or sea flooding
Flood Zone 2	Medium Probability. Land having between a 1.0% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding.
Flood Zone 3 (A)	High Probability. Land having a 1.0% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea.
Flood Zone 3 (B)	Functional Floodplain. According to the Planning Practice Guidance (2022) this zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: • land having a 3.3% or greater annual probability of flooding, with any existing floodrisk management infrastructure operating effectively; or • land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).
Flood Zone Map	The Environment Agency has produced a mapping data set which covers England and provides the general extents of Flood Zones 1, 2, and 3. However the national data set available online does not differentiate between Flood Zone 3 (A) and 3 (B).
Freeboard	In flood risk management Freeboard is a term used to identify the vertical difference between the design flood level, and the design height of any flood mitigation measures. For instance, if a pond had bank heights of 9.0m and the water level was at 8.6m the freeboard would be 0.4m (9.0-8.6). For river flooding, a freeboard of 0.3m is usually applied, for tidal 0.6m, and for surface water 0.15m.

LiDAR	Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. Up to 500,000 measurements per second are made of the ground, allowing highly detailed terrain models to be generated at spatial resolutions of between 25cm and 2 metres.
FWEP	Flood Warning and Emergency Plan. This is a document that should set out the steps that shall be taken by those on site, to arrive at a point safe from flood risk.
Term	Definition
Non-Major Development	'Non major development' is any development falling below the above thresholds but excluding minor development. For example, a planning application for 8 dwellings an office building creating 750 square metres of floor space, or a development with a site area of 0.4 hectares.
Major Development	Means development involving any one or more of the following: a) the winning and working of minerals or the use of land for mineral-working deposits b) waste development c) the provision of dwellinghouses where – i. the number of dwellinghouses to be provided is 10 or more; or ii. the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub- paragraph (c) (i) d) the provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or e) development carried out on a site having an area of 1 hectare or more. As defined by the Town and Country Planning (Development Management Procedure) (England) Order 2015 (Article 2) https://www.legislation.gov.uk/uksi/2015/595/article/2/made
Main River	Defined on the Main River map and relate to rivers where the Environment Agency has the powers to carry out flood defence works.
Minor Development	Minor development means: • minor non-residential extensions (industrial/commercial/leisure etc): extensions with a floorspace not more than 250 square metres. • alterations: development that does not increase the size of buildings, e.g. alterations to external appearance. • householder development: for example, sheds, garages, games rooms etc. within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling (e.g. subdivision of houses into flats) or any other development with a purpose not incidental to the enjoyment of the dwelling. Paragraph: 051 Reference ID: 7-051-20220825 Revision date: 25 08 2022 https://www.gov.uk/guidance/flood-risk-and-coastal-change
m AOD	Metres Above Ordnance Datum

OS	Ordnance Survey
Ordinary Watercourse	A watercourse which does not form part of a Main River. Works on Ordinary Watercourses usually require consent from either the Lead Local Flood Authority or the Internal Drainage Board.
QBAR	QBAR is the mean annual maximum flow rate, for a catchment which has an equivalent return period of 1 in 2.3 years
Return Period	The return period of a flood might be 100 years; otherwise expressed as its probability of occurring being 1 in 100, or 1% in any one year. If a flood with such a return period occurs, then this does not mean the next will occur in about one hundred years' time - instead, it means that, in any given year, there is a 1% chance that it will happen, regardless of when the last similar event was. Or, put differently, it is 10 times less likely to occur than a flood with a return period of 10 years (or a probability of 10%).
SuDS	Sustainable Drainage Systems, which are designed to manage surface water flows and mimic the Greenfield runoff from an undeveloped site.
Urban Creep	Urban creep is the conversion of permeable surfaces to impermeable over time e.g. surfacing of front gardens to provide additional parking spaces, extensions to existing buildings, creation of large patio areas.

1 EXECUTIVE SUMMARY

Providing the recommendations made in this Flood Risk Assessment (FRA) are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable, and the development would be in accordance with the requirements of the National Planning Policy Framework (NPPF).

This FRA demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the NPPF. The development should not therefore be precluded on the grounds of flood risk.

The site is located within the Environment Agency (EA) Flood Zone 1,2 and 3 category and is affected by Fluvial flooding. However, the majority of site lie within the flood Zone 1 and 2. To the entrance of the site a small Proportion of the road is situated in an area of predicted floodplain and therefore any loss of floodplain volume requires floodplain compensation. This is achievable within the finished levels plan of the proposed development and will ensure no detriment to flood risk elsewhere in the catchment.

All buildings are situated out of the floodplain within flood zone 1 and 2 and is 600m above the extreme flood event from modelled data received by the EA. Mitigation in terms of raised finished floor levels will prevent any ingress of flood waters into the proposed buildings even during such an extreme event. The Minimum FFL should be set no lower than 133.87AOD.

2 INTRODUCTION

This report has been prepared by VDG Limited on behalf of Bridge Water Land and Development to support a full planning application for a 3 storey residential development consisting of individual apartments with associated external landscaping, carpark and access road.

This FRA has been carried out in accordance with guidance contained in the National Planning Policy Framework (NPPF)[1], associated National Planning Practice Guidance (PPG)[2] and the PPG 'Site-specific flood risk assessment checklist.

2.1 Scope of Works

This FRA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

2.2 National Planning Policy Framework (NPPF)

One of the key aims of the NPPF is to ensure that flood risk is taken into account at all stages of the planning process; to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk. It advises that where new development is exceptionally necessary in areas of higher risk, this should be safe, without increasing flood risk elsewhere, and where possible, reduce flood risk overall.

A risk-based approach is adopted at stages of the planning process, applying a source pathway receptor model to planning and flood risk. To demonstrate this, an FRA is required and should include:

- whether a proposed development is likely to be affected by current or future flooding from all sources;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- if necessary, provide the evidence to the Local Planning Authority (LPA) that the Sequential Test can be applied; and
- whether the development will be safe and pass part c) of the Exception Test if this is appropriate.

2.3 Sources of Data

In accordance with the PPS25 practice guide, the report is based on the following information:

- Site Layout Plan.
- OS Explorer Series mapping.
- Environment Agency consultation.

- Tameside Strategic Flood Risk Assessment 2011.
- Consultation with Tameside Council.
- Site visit undertaken by VDG.
- British Geological Survey Drift & Geology Maps.
- Phase 1 Desktop study by Earth and Environmental.
- Topographic survey and lidar data.

3 LOCATION & DESCRIPTION

3.1 Site Location

The site (0.45hectares) is located on Egmont Street, Mossley. The approximate National Grid Reference for the centre of the site is SD 975015 (X: 397505, Y: 401735). The nearest postcode is OL5 9PY.

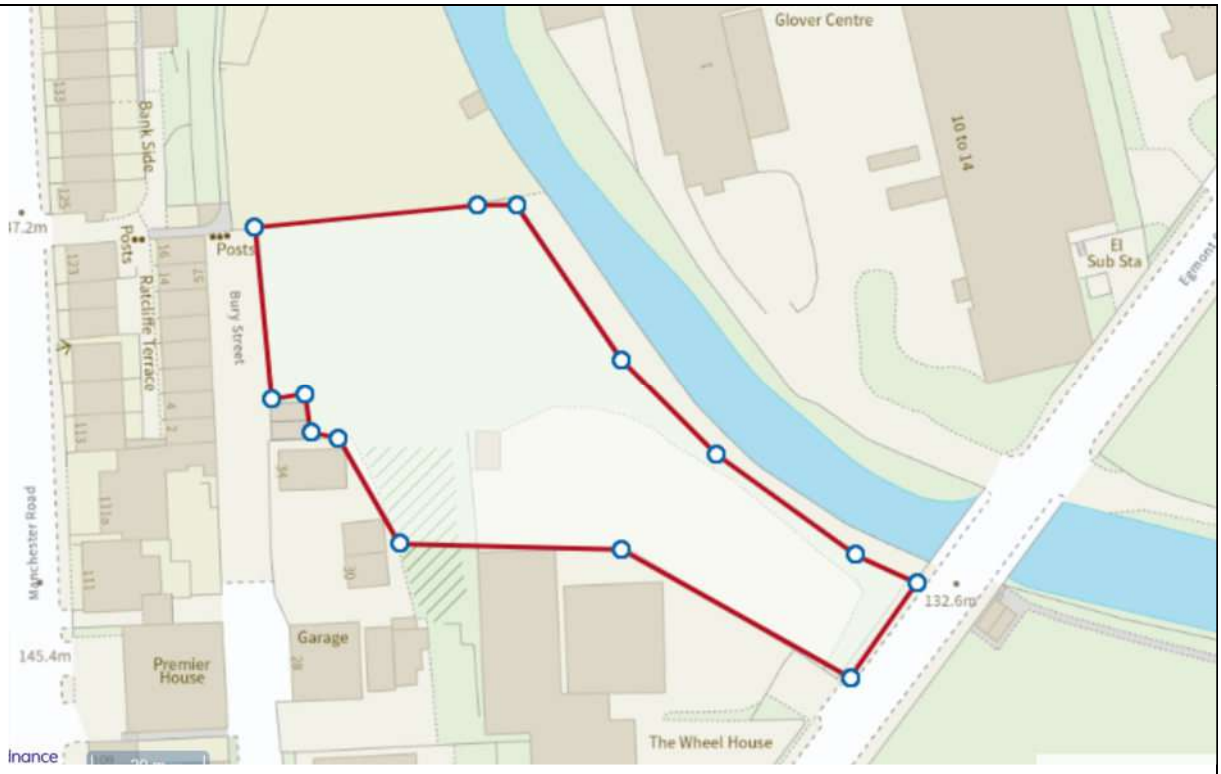


Figure 1-Site Location

3.2 Existing Development

The site is irregular shape of approximately 100m long (NW-SE) and approximately 45m wide (W-E), located approximately 5.8km to the south-east of the Oldham Town Centre.

Based on a readily available data and site walkover the site is unoccupied at the moment, formerly being part of a lorry loading station. The site is covered in gravel, rough vegetation, shrubs, and mature trees as well as with gravel in central, southern, and western part of the site.

3.3 Proposed Development

It is understood that the Client intends to convert old industrial area into three storey residential dwellings of apartments with associated external landscaping, carparking and access road. The development is situated around residential and industrial buildings.

The proposals development of residential apartments are within Appendix A.

3.4 Topography

A topographical survey of the site has recently been completed (see Appendix B). Due to the extent of overgrown landscaping a portion of the site could not be surveyed. The Topographic survey has been combined in areas of no data with lidar data and visual checks on site. Existing site levels have been provided within appendix B.

The topographical survey for the site shows the site to be characterised by a relatively level plateau with a river stone retaining wall to the River Tame on the eastern boundaries. The site is generally flat with the north west of the site raising up to Bury street. The existing site sections have been provided within the Appendix B. The site generally falls to the east towards the River Tame.

The maximum ground level of the site is in the region of 140.00 metres Above Ordnance Datum towards the banking to Bury Street and a minimum ground level of the site is 132.59mAOD.

3.5 Catchment Hydrology / Drainage

The River Tame is located approximately 3.5m to the site boundary east of the site. Appendix C contains the public sewer plan and confirms that there are public sewers immediately within the vicinity of the site.

The public sewer records show a 525/600mm diameter public combined sewer running in a northerly direction along Bury Street connecting to the main 1100mm diameter public combined sewer running eastly within the playing fields serving the industrial buildings and the residential developments. The site walkover survey identified that there is no formal drainage system serving the site. The Majority of the site is soft landscaping and consisting of permeable area.

3.6 Ground Conditions

The British Geological Survey (BGS) Map[3] shows that the site is not underlain by artificial deposits.
The site is partially underlain by superficial deposits of alluvium, comprising clay, silt, sand, and gravel, in the eastern part of the site.
There are eleven (11) borehole records identified within 250m of the site of which only three are non-confidential. The closest non-confidential record refers to a borehole located 65m to the south-west. In summary borehole consists of Made Ground to 5.25m underlain clays and gravels. The site is in an area where the hazard rating is moderate with regard to compressible deposits, low risk with regards to running sands and landslides, very low risk regards to collapsible deposits, shrink-swell clays and negligible risk regards to landslides, soluble rocks.

[3] https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.41604902.543517422.1681983105-2011341896.1681983105

4 FLOOD RISK

4.1 Sources of Flooding

All sources of flooding have been considered, these are; fluvial (river) flooding, tidal (coastal) flooding, groundwater flooding, surface water (pluvial) flooding, sewer flooding and flooding from artificial drainage systems/infrastructure failure.

4.2 Historic Flooding

There are no records of anecdotal information of flooding at the site including within the British Hydrological Society "Chronology of British Hydrological Events[4]". No other historical records of flooding for the site have been recorded. EA confirmed no records of Historic Flooding on site.

4.3 Existing and Planned Flood Defence Measures

It is understood that there are no defences in this area. Further risk management measures will be used to protect the site from flooding these are discussed in Section 6.0.

4.4 Environment Agency Flood Zones

A review of the Environment Agency's flood map indicates that the site is located within Flood Zone 1, 2 and 3. 37% of the site is situated in zone 1, 57% of the site situated in zone 2, 6% of the site situated in zone 3. The flood zones have been transferred on the proposed site plan and is shown in appendix D. Zone 3 is a very small percentage of the development and occurs to the access of the site. The building has been strategically positioned and lies within zone 2 and therefore has a 'medium probability' of fluvial flooding as shown in Figure 2. Flood Zone 2 is between 1:100 to a 1 in 1000 annual probability of river or sea flooding in any year (0.1-1%).

The Flood Zones are the current best information on the extent of the extremes of flooding from rivers or the sea that would occur without the presence of flood defences, because these can be breached, overtopped and may not be in existence for the lifetime of the development. The Environment Agency Flood Zones and acceptable development types are explained in Table 1. Table 1 shows that all development types are most developments are generally acceptable in Flood Zone 2.

[4] https://cbhe.hydrology.org.uk/

Figure 2- Environment Agency Flood Zones

Table 1 – Environment Agency Flood Zones and Appropriate Land Use

Flood Zone	Probability	Explanation	Appropriate Land Use
Zone 1	Low	Less than a 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)	All development types generally acceptable
Zone 2	Medium	Between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% 0.1%) in any year	Most development type are generally acceptable
Zone 3a	High	A 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year	Some development types not acceptable
Zone 3b	'Functional Floodplain'	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or land that is designed to flood (such as a flood attenuation scheme), even if it	Some development types not acceptable

		would only flood in more extreme events (such as 0.1% annual probability 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. (Not separately distinguished from Zone 3a on the Flood Map)	

4.5 Flood Vulnerability

In the Planning Practice Guidance to the NPPF (Table 1) appropriate uses have been identified for the Flood Zones. Applying the Flood Risk Vulnerability Classification in Table 2 and 3 of the PPG, the proposed development is classified as 'more vulnerable'. Table 2 of this report and Table 3 of the PPG states that 'more vulnerable' uses are appropriate within Flood Zone 2.

Table 2 – Flood Risk Vulnerability and Flood Zone 'Compatibility' as identified in Table 3 of the PPG

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception test required	✓	✓
Zone 3a	Exception test required	✓	×	Exception test required	✓
Zone 3b 'Functional Floodplain'	Exception test required	✓	×	×	×

Key: ✓: Development is appropriate, ×: Development should not be permitted.

Climate Change

Projections of future climate change, in the UK, indicate more frequent, short-duration, high intensity rainfall and more frequent periods of long duration rainfall. Guidance included within the NPPF recommends that the effects of climate change are incorporated into FRA. Recommended precautionary sensitivity ranges for peak rainfall intensities and peak river flows are outlined in the associated Planning Practice Guidance to the NPPF[5].

Table 3 shows peak river flow climate change allowances by river basin district. The flood risk assessments: climate change allowances guidance recommends that for 'More vulnerable' uses in Flood Zone 2 that the central allowances are used. Therefore, the design flood level for the site is the 1 in 100 year (+41%) event.

Table 3 – Peak River Flow Allowances by River Catchment

[5] https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#high-allowances

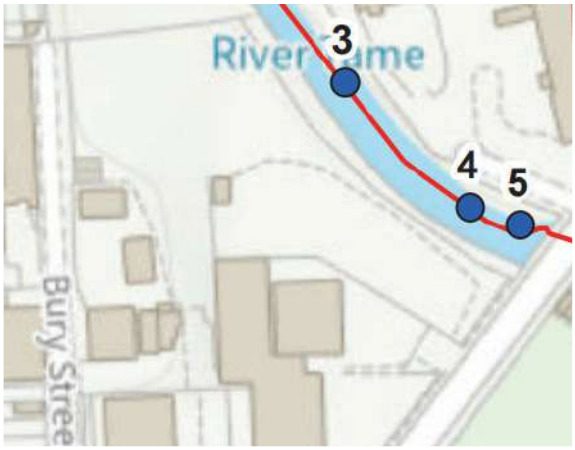
River Catchment	Allowance Category	2020s	2050s	2080s
Upper Mersey Management Catchment	Upper	+27%	+51%	+85%
	Higher	+17%	+31%	+53%
	Central	+13%	+22%	+41%

4.6 Fluvial (river) Flooding

The Environment Agency's Flood Map shows most of the site to be located within Flood Zone 2 which is defined as having an annual probability of flooding from rivers of between 1 in 100 and 1 in 1000 years (0.1% - 1% AEP). The Environment Agency's Flood Map is included in Appendix E.
Flood Level data from the Environment Agency (see Appendix E) has been compared with the site topographical survey to more accurately determine the flood zone extents within the site.

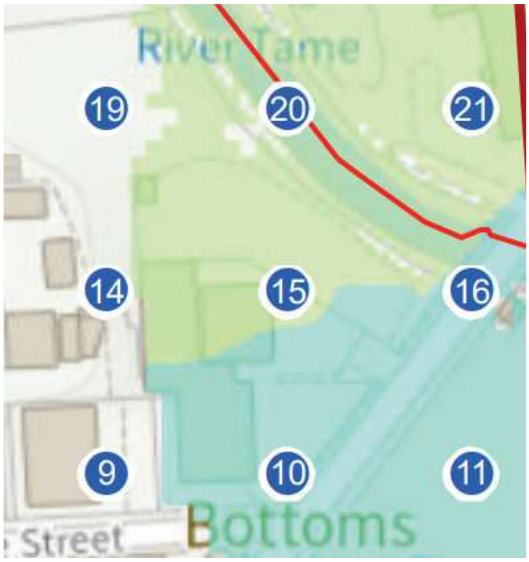
The following model data has been received from the EA and within the appendix.

The flooding node data can be summarised below:



Node Label	1% AEP	0.5%AEP	0.1%AEP	1%(+30%)	1%(+35%)	1%(+70%)
3	132.89	133.18	133.80	133.25	133.29	133.65
4	132.77	133.07	133.59	133.16	133.21	133.55
5	132.76	133.08	133.89	133.17	133.23	133.71

The modelled fluvial extent summarises below:



Zone area	1% AEP	0.5%AEP	0.1%AEP	1%(+30%)	1%(+35%)	1%(+70%)
15	-	132.86	133.58	132.93	132.99	133.47
16	-	132.7	133.24	132.76	132.79	133.00
20	132.87	133.16	133.76	133.24	133.28	133.63

The 1 in 100 year flood level is approximately 132.89mAOD.

Drawing No VDG-172-VDG-XX-XX-DR-C-5562 shows the extents of Flood Zones 2 and 3 within the site boundary.

The extent of Flood Zone 3 is constrained to the site entrance. The closest nodal data is node 4/5 to the site entrance the flood level to the river for a 1 in 100 year flood 35% climate change level is 133.23, through a linear relationship a 41% storm is estimated at 133.27AOD. The site sections show the top of the bank is 133.3AOD which falls toward the river is higher than the flood events so no flooding should occur to the site.

The site entrance is at 132.5AOD and reviewing the fluvial extent of the data within zone 16 the flood level for a 1 in 100 +35% climate change is 132.79, through a linear relationship a 41% storm is estimated at 132.82AOD. This would result in the extreme event that the road would be flooded in the region of approximately 300mm which would still allow safe egress on foot and for emergency services.

4.7 Tidal (coastal) Flooding

The site is not located within the vicinity of tidal flooding sources and the risk of tidal flooding is not significant.

4.8 Groundwater Flooding

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater

levels is exceeded. Groundwater flooding tends to occur sporadically in both location and time. When groundwater flooding does occur, it tends to mostly affect low-lying areas, below surface infrastructure and buildings (for example, tunnels, basements and car parks) underlain by permeable rocks (aquifers).

The susceptibility of the site to groundwater flooding, based on the underlying geological conditions, is low. There are no records of groundwater flooding at or near to the site. It can therefore be concluded that the risk of groundwater flooding is not significant.

4.9 Surface Water (pluvial) Flooding

The soil condition at the site and within the vicinity of the site and the topography of the site suggest that the site is relatively well drained and surface water flooding would not be expected to accumulate to any significant depths. Surface water flooding tends to occur sporadically in both location and time such surface water would tend to be confined to the streets around the development.

Figure 3 confirms that the site has a very low risk of surface water flooding with a chance of flooding of less than 1 in 1000 years (0.1%). Small areas within the vicinity of the site have a low risk of surface water flooding with a chance of flooding of 1 in 1000 (0.1%) to 1 in 100 (1%) years. This may result in water depths of less than 300mm and velocities of less than 0.25m/s. It can therefore be concluded that the risk of surface water flooding is of not significant.

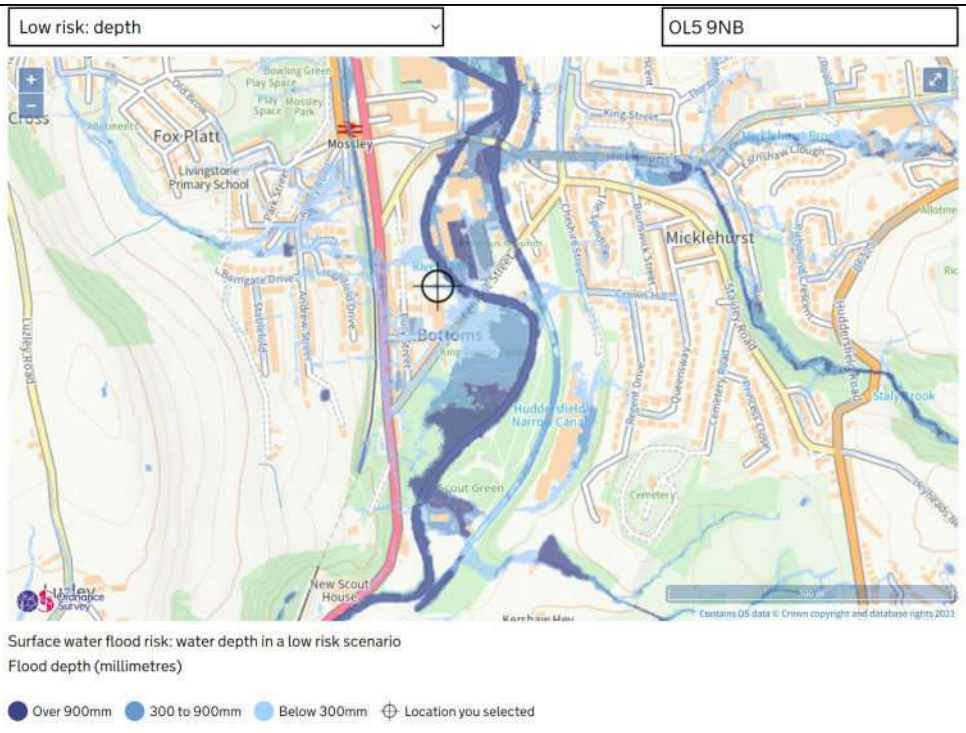


Figure 3 – Environment Agency Surface Water Flood Map

4.10 Sewer Flooding

Sewer flooding occurs when urban drainage networks become overwhelmed and maximum capacity is reached. This can occur if there is a blockage in the network causing water to back up behind it or if the sheer volume of water draining into the system is too great to be handled. Sewer flooding tends to occur sporadically in both location and time such flood flows would tend to be confined to the streets around the development.

There are existing public sewers within roads adjacent to the site these will inevitably have a limited capacity so in extreme conditions there would be surcharges, which may in turn cause flooding. Flood flows could also be generated by burst water mains, but these would tend to be of a restricted and much lower volume than weather generated events and so can be discounted for the purposes of this assessment. Given the design parameters normally used for drainage design in recent times and allowing for some deterioration in the performance of the installed systems, which are likely to have been in place for many years, an appropriate flood risk probability from this source could be assumed to have a return period in the order of 1 in 10 to 1 in 30 years.

The provision of adequate level difference between the ground floors and adjacent ground level would reduce the annual probability of damage to property from this source to 1 in 100 years or less. Therefore, sewer flooding poses a low flood risk to the site. It can therefore be concluded that the risk of sewer flooding is of low significance. The risk from this source will be further managed and mitigated by using a number of risk management measures (see Section 6.0).

4.11 Flooding from Artificial Drainage Systems/Infrastructure Failure

Reservoirs are located within the vicinity of the site. The Environment Agency Reservoir flood map shows that the site is at risk of reservoir flooding (see Figure 4). This map shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The Environment Agency Reservoir flood map has been prepared for emergency planning purposes and for this reason they reflect a worst-case scenario. Since this is a prediction of a worst-case scenario, it is unlikely that any actual flood would be this large.

Reservoir flooding is extremely unlikely; reservoirs in the UK have a very good safety record. There has been no loss of life in the UK from reservoir flooding since 1925. Since then reservoir safety legislation has been introduced to make sure reservoirs are well maintained.

The hazard is well managed through effective legislation and it is unlikely that the impact zone downstream of these reservoirs should not allow the proposed development. The risk of flooding from flooding from artificial drainage systems/infrastructure failure is considered to be not significant.

Figure 4 – Environment Agency Reservoir Flood Map

Effects of the Development on Flood Risk

It is evident that the modelled EA DATA localised areas floodplain within the site, with the site entrance area having a nominal depth of flooding. It is unlikely that any encroachment on these areas would impede flood flows from the River TAME as they are on the edge of the floodplain extent. However, to ensure no potential for impedance of flood flows a pragmatic approach is proposed to avoid any development footprint within these areas.

4.12 Summary of Site-Specific Flood Risk

A summary of the sources of flooding and a review of the risk posed by each source at the site is shown in Table 4.

Table 4 – Risk Posed by Flooding Sources

Sources of Flooding	Potential Flood Risk	Potential Source	Probability/Significance
Fluvial (river) Flooding	yes	River Tame	Medium
Tidal (coastal) Flooding	No	None Reported	Not significant
Groundwater Flooding	No	None Reported	Not significant
Surface Water (pluvial) Flooding	No	None Reported	Not significant
Sewer Flooding	Yes	Local Sewers	Low

Sources of Flooding	Potential Flood Risk	Potential Source	Probability/Significance
Flooding from Artificial Drainage Systems/Infrastructure Failure	Yes	Reservoirs	None

The site is, therefore, considered to be at a medium level of risk of flooding from the River Tame. This will have implications for the type of development that is suitable for the site and may require implementation of flood risk mitigation measures.

5 SEQUENTIAL AND EXCEPTION TESTS

5.1 Sequential / Exception Tests

The risk-based Sequential Test in accordance with the NPPF aims to steer new development to areas at the lowest probability of flooding (i.e. Flood Zone 1). The Sequential Test is a risk-based application intended to direct new development to areas of lowest possible flood risk, and ensuring development is located within an appropriate Flood Zone. This is done by classifying land use according to its vulnerability to the potential impacts of flooding. The proposed use is considered 'more Vulnerable'.

In consultation with Tameside council regarding allocated site and massing density policies it was concluded that the site needs to apply the sequential approach applying mitigation measures against the flood plain. The allocation of sites in respect of the Core Strategy allocations, the development is in the process of being promoted for the need of houses schemes in the borough. This consultation process, informed by Tameside Strategic Flood Risk Assessment, forms part of the sequential test process.

Under the NPPF (2021), Zone 2 is defined as medium probability flood risk. The proposal is for a residential dwelling with external parking, which in line with Table 2 is classified as 'More Vulnerable'. Placing both these criteria into Table 3 (Flood Risk Vulnerability and Flood Zone 'Compatibility'), More Vulnerable development in Flood Zone 2 determines that 'Development is Appropriate'

Tameside Council in partnership with Scott Wilson produced the Level 2 Strategic Flood Risk Assessment (SFRA) in 2011. The purpose of the SFRA is to assess and map all known sources of flood risk including fluvial, surface water, sewer, groundwater and all impounded water bodies, taking into account future climate change predictions.
A summary of the main elements from the SFRA are detailed below. The full report can be obtained from the Tameside Council website.

- Sequential and Exception tests to be undertaken where required.
- Current Surface Water flood maps indicate the site to be at low risk from surface water flooding.
- No recorded groundwater flood incidences.
- Site is not located in a Critical Drainage Area (CDA).
- The site is located with a identified development area.
- The site is located in a NLUD site 2009.

For all sites, development proposals should look at opportunities to incorporate SuDS to reduce the risk of surface water flooding.

Reviewing the SHLAA no sites within Mossley are reasonably available. Following a review of similar sites which have been identified for residential used within flood zones 2&3 flooding has been acceptable of 300mm above the flood zone.

Exception Test:
As the Sequential test is passed, the Exception test is therefore not required.

Sequential Approach

The Sequential approach has been adopted by strategically positioning the buildings out of the flood plain and within flood zone 1 and 2 of the development area.

6 RISK MANAGEMENT

6.1 Introduction

In this flood zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout, form of the development and the use of flood mitigation measures including SuDS techniques. The flooding sources will have to mitigated on the site by using a number of techniques, and mitigation strategies to manage and reduce the overall flood risk at the site. These will be used to ensure the development will be safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the proposed development on flood risk generally; and;
- Minimal disruption to natural heritage.

6.2 Minimum Floor Level

As discussed in Section 4.6, the primary flood risk to the site is the fluvial flood risk associated with the River Tame with a maximum flood level of 133.27mAOD in a 1 in 100 year event plus 41% climate change. In the absence of a 1 in 100 year +37% event this value has been adopted as a precautionary estimate.

The EA climate change guidance states:
"It is advised that Finished Floor Levels should be set no lower than '600mm' above the 1% river flood level plus climate change. Flood proofing techniques might be considered where floor levels cannot be raised (where appropriate). This 600mm freeboard takes into account any uncertainties in modelling/flood levels and wave action (or storm surge effects)."

Applying 600mm of freeboard gives a FFL of 133.87mAOD at the site.

6.3 Flood Resilience and Resistance

The development of the layout should always consider that the site is potentially at risk from an extreme event and as such the implementation of flood resilience and resistance methods should be assessed. Relatively simple measures such as raising utility entry points, using first floor or ceiling down electrical circuits and sloping landscaping away from properties can be easily and economically incorporated into the development of the site. The following measures can be implemented:

- Using suitably flood-proof materials to a level of 133.87mAOD that protect that building fabric from absorbing water and affecting the building's structural integrity. Ground floor to be solid (i.e. concrete floors), where possible, with waterproof membrane; Damp proof membranes should be included within the design of the dwellings, to minimise the passage of water through ground floors. Impermeable polythene membranes should be at least 1200 gauge to minimise ripping. Effective methods of joining membrane sections are overlaps of 300mm, and also taping (mastic tape with an overlap of 50mm minimum). Care should be taken not to stretch the membrane in order to retain a waterproof layer.

- Using sacrificial finishes to a level of 133.87mAOD that can be easily removed and replaced should a flood occur.
- •Raising all water-sensitive services, including internal wiring and the Electrical Consumer Units (ECUs) above 133.87mAOD as far as practicable.
- Installing flood proof air-bricks to prevent flood waters entering the building.
- Using non-return valves on drains to prevent the ingress of flood waters.
- Flood resilience measures should utilise kitemarked products where possible.
- Where possible, the finished floor levels of new buildings should be set at least 150mm above the surrounding ground level, and landscaping and ground levels should be designed to fall away from buildings, especially doorways and other points of access.

6.4 Access and Egress

Access into the buildings

The buildings are situated within flood zones 1&2 and minimum FFL will be 600mm above the flood plane so safe egress into and out of the building will be achieved.

Access into the site

The site entrance level is at 132.5AOD and reviewing the fluvial extent of the data within zone 16 the flood level for a 1 in 100 +35% climate change is 132.79 through a linear relationship for a climate change if 41% storm this flood level is estimated at 132.82AOD. This would result in the extreme event that the road would become flooded in the region of approximately 300mm which would still allow safe egress on foot and for emergency services. As the level of risk is low safe access into the site can be achieved.

Although the flood risk is considered to be very low in the case of this development, the EA and Tameside aims to provide a minimum two hours' notice of flooding, day or night through the Flood line Warnings Direct (FWD) Service, to enable people to take necessary action to protect themselves and their properties. This will take the form of automated phone calls and for the residents to log onto the EA website when there is potential for water levels to rise.

Once a flood warning has been received, the occupiers will have the opportunity to either stay in their property or to egress from the building to higher ground levels to the Northeast of the site. If required, a full and detailed flood evacuation plan and strategy will be prepared and provided to the owners in advance of occupation of the dwelling.

6.5 Flood Compensation

As previously referenced, the proposed development wholly avoids the 100-year return period flood contour and would have no impact on floodplain storage in this return period.

However, based on the detailed modelling outputs and proposed development layout, a very small region of the access road would encroach for the 100-year plus climate change flood contour.

In order to mitigate increasing the potential risk of flooding elsewhere by developing within this area, floodplain compensation will be required, and is readily achievable within the context of the proposed finished levels strategy.

Appendix D demonstrates the displaced areas of floodplain as a result of development within the 100-year plus climate change flood contour at133.50m AOD. Also shown are the proposed areas of floodplain compensation to ensure there is no loss in overall floodplain area or volume compared to the pre-development scenario, providing a level for level floodplain compensation arrangement within the identified flood depth band.

Table below shows a summary of the displaced floodplain and floodplain compensation areas indicated within Appendix D.

Flood Contour	Existing Flood Area displaced	Proposed flood plain compensation area
100 Year plus climate change	84m2	84m2 Adjacent to eastern boundary

6.6 Flooding Consequences

The mitigation measures detailed above show that the flood risk can be effectively managed and therefore the consequences of flooding are acceptable.

7 DRAINAGE REQUIREMENTS

7.1 National Planning Policy Framework Guidance

National Planning Policy Framework Guidance states 'Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable:

1. into the ground (infiltration);
2. to a surface water body;
3. to a surface water sewer;
4. to another drainage system;
5. to a combined sewer.

Particular types of sustainable drainage systems may not be practicable in all locations.

7.2 Statutory undertaker's requirements

The statutory undertake for the area is United Utilities, who state the following:

- Only foul sewerage will be permitted to be discharged into the public foul sewer.
- A connection agreement will be required prior to installation of the private drainage network and connection into a sewerage network.
- Surface water from new developments should not, unless there is no other option be connected to the public combined sewerage system.
- All options for SuDS must be explored prior to any application to connect to a public sewerage system.
- SuDS have the potential to be adopted.

There is no legal duty to accept highway drainage from new developments into the public sewerage system. However, in some cases highway drainage will be considered as part of the overall attenuated surface water drainage strategy.

7.3 Use of SuDS

The SuDS philosophy for any development site is the promotion of prevention and source control techniques.

7.4 The Non-Statutory Technical Standards for SuDS

It is best practice to develop drainage strategies to the DEFRA document 'The Non-Statutory Technical Standards for SuDS'.

The DEFRA document advises the following with respect to 'Peak Flow Control' and 'Volume Control':

S3 *For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff*

rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

- **S5** Where reasonably practicable, for *developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume for the development site prior to redevelopment for that event.*

7.5 North West SuDS Pro-Forma

The North West SuDS Pro-forma, endorsed and recommended for use by North West Regional Flood and Coastal Committee and United Utilities has been reviewed. This document states that the capacity of SuDS must provide effective drainage for the development taking account of the likely impacts of climate change.

The lifetime expectancy of the development is 100 years. Table 2 of 'Flood risk assessments: climate change allowances' indicates the following recommendations for climate change allowance:

Maximum lifetime of the development	Climate change allowance to be applied
2020s (2015-2039)	10%
2050s (2040 – 2069)	20%
2080s (2070-2115)	40%

7.6 Environment agency

Rainfall runoff management for developments report SC030219 states in section 3.3 that 'small sites would require impractically small controls to achieve the required flow rates where these are calculated to be less than 5l/s and therefore in this case a minimum flow of 5l/s is used'.

7.7 Site assessment forSuDS

Current policy and best practice encourage the use of SuDS and in particular, infiltration systems. SuDS techniques are not suitable for all sites; therefore, an assessment of the site is required so that SuDS limitations can be determined. Green SuDS are particularly favoured by Local Authorities.

The below table considers the use of Green SuDS in a dense urban environment.

Consideration of SuDS within the constraints of a dense urban environment	
Element	**Viability**
Green roofs rather than standard roof construction.	Within the scope of the scheme, the use of green roofs is deemed not suitable due to the architectural design of the roofs and to reduce the overall construction costs.
Runoff harvesting in tanks for non-potable use.	Not suitable for the end user and management company
Landscape irrigation and	NA
Use of permeable surfaces and/or sub-bases.	Owing to the favourable ground conditions, permeable paving has been included to the footpaths subject to ground investigation and soakaway testing.
Use of bioretention systems, open water amenity features and tree pits.	Within the context of a functional emergency services building, open water amenity features are not deemed viable.
Soakaway options to enable the runoff to infiltrate to the underlying sub strata	Due to the Potential of ground contamination, high water table infiltration may not be viable subject to further ground investigation.
Flow control devices and attenuation measures included to store water and/or provide treatment in confined spaces.	An option is to provide a flow control and head wall detail to restrict the discharge into the river tame by 5l/s. A below ground attenuation tank can be provided to store the 1:100 +40% climate change. No flooding to occur on site. Treatment to be provided for car-park. Treatment to meet Mitigation indices outline in Ciria document.

8 SUMMARY AND CONCLUSION

8.1 Introduction

This report presents an FRA in accordance with the NPPF for the proposed development at Egmont Street, Tameside This FRA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will need to be managed so that the development remains safe throughout the lifetime, taking climate change into account.

8.2 Sequential and Exception Tests

The development proposals should be considered by the LPA to satisfy the Sequential and Exception Tests as set out in the NPPF.

8.3 Risk Management

The flooding sources will be managed on the site by using a number of mitigation strategies to manage and reduce the overall flood risk at the site and will ensure the development will be safe. Measures used:

Minimum Floor Level - The finished floor levels will be maintained at existing levels.

Flood Resilience and Resistance - The development of the layout should always consider that the site is potentially at risk from an extreme event and as such the implementation of flood resilience and resistance methods should be assessed.

Access and Egress - The site and surrounding area is located within Flood Zone 1 therefore a permanently safe and dry access can be maintained.

8.4 Offsite Impacts

The new development does not impair the hydraulic continuity of any watercourse and the current ''local hydraulics'' of distributing watercourses / outfalls. The Development footprint does not cross or cover any existing or declared future catchment flood defences. Consequently, the applicant does not propose to augment or compromise the current catchment defences.
Surface water runoff will mimic the predevelopment regime and utilises SuDS solutions to satisfy the site constraints.

8.5 Residual Risk

With careful design of the drainage elements as described above there will be no residual flood related risks that will remain after the development has been completed.
Flood risk to people and property can be managed but it can never be completely removed; a residual risk remains after flood management or mitigation measures have been put in place.

8.6 Post Planning Consents

Following Planning Consent, several Post Planning Consents may be required, which are likely to be

informed by the findings of this document.

Flood Risk Activity Permit

Any works within 8m of a fluvial Main River or 16m of a tidal watercourse will require an Environment Agency Flood Risk Activity Permit. These are usually obtained post planning, once the detailed design of the proposed activities has been developed to a substantially complete status, including method statements for the proposed works to be undertaken.

Sewer Connection

Any new sewer connection to the public sewer should be agreed with the relevant water company, prior to starting work on site.

It is understood an easement from the river will be required for access and maintenance purposes, this is to include an 8m stand-off from the top of the river Retaining wall. This is to be confirmed by the council and EA. This easement slightly encroaches into the access road. EA to confirm suitability on consultation.

8.7 Conclusion

Providing the recommendations made in this FRA are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable, and the development would be in accordance with the requirements of the NPPF.

The site predominantly lies within Flood Zone 2, as defined in the National Planning Policy Framework (NPPF), which is land assessed as having an annual probability of flooding of between 1 in 100 years and 1 in 1000 years.

This FRA demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the NPPF. The development should not therefore be precluded on the grounds of flood risk.

APPENDIX A – Architectural Drawings

Drawing/ Document	Link
Site Masterplan	
Site Block Plans	

PROPOSED SITE PLAN

36No X 1 BED APTS @ 45 SQ/M
36No CAR PARKING SPACES

REV	DESCRIPTION

PROPOSED SITE PLAN

PROPOSED RESIDENTIAL DEVELOPMENT
LAND OFF EGMONT STREET
MOSSLEY, ASHTON

CLIENT:	BRIDGEWATER LAND & DEVELOPMENT
DWG NO:	PL K1096/01
SCALE:	1/200 @ A1
DRAWN BY:	D.D.
DATE:	05/07/23
REV:	

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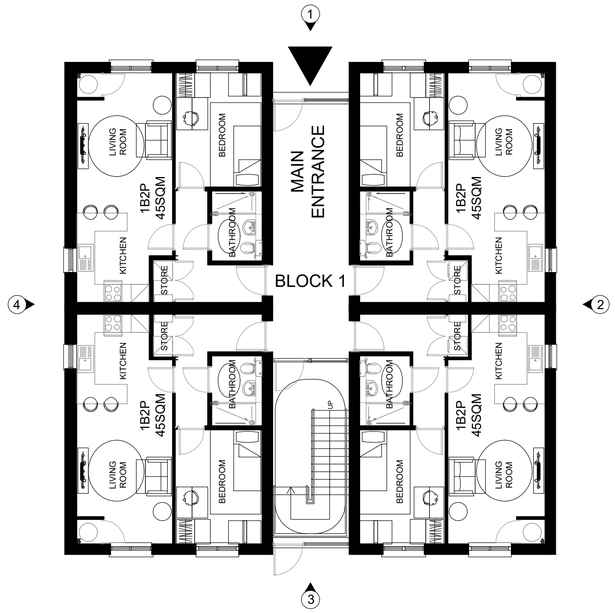
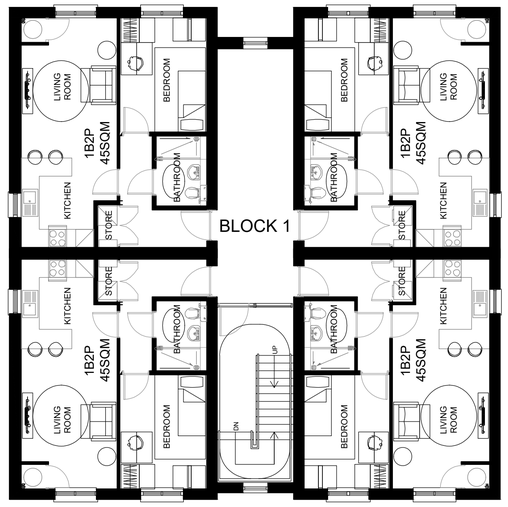
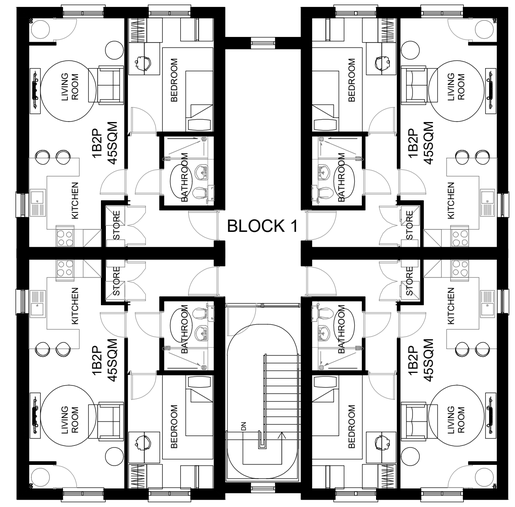


PROPOSED GROUND FLOOR PLAN



PROPOSED FIRST FLOOR PLAN



PROPOSED SECOND FLOOR PLAN

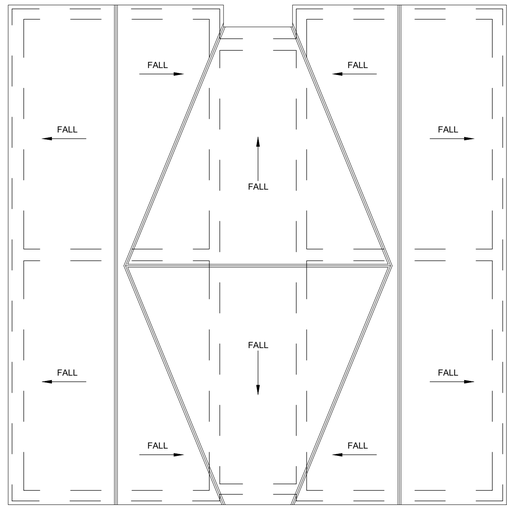
1. PROPOSED FRONT ELEVATION

2. PROPOSED SIDE ELEVATION

3. PROPOSED REAR ELEVATION

4. PROPOSED SIDE ELEVATION

1. MOCK GREY SLATE ROOF TILE,
2. PRE-CONSTITUTED STONE FINISH TO ELEVATIONS,
3. UPVC WINDOW FRAMES TO CLIENT'S SPECIFICATION,
4. UPVC PANELS TO MATCH WINDOW FRAMES,
5. ALUMINIUM EXTERNAL QUALITY ENTRANCE DOORS,
6. UPVC GUTTERS, FASCIA BOARDS AND SOFFIT TO CLIENT'S SPECIFICATION,
7. STONE SURROUNDS TO WINDOWS WHERE SHOWN,
8. STONE CILLS TO WINDOWS AS SHOWN,
9. SMOOTH STONE BAND TO RUN ACROSS BUILDING AS SHOWN.



PROPOSED ROOF PLAN

REV	DESCRIPTION

BLOCK 1 - PROPOSED FLOOR PLANS, ROOF PLAN AND ELEVATIONS

PROPOSED RESIDENTIAL DEVELOPMENT
LAND OFF EGMONT STREET
MOSSLEY, ASHTON

CLIENT:	BRIDGEWATER LAND & DEVELOPMENT
DWG NO:	PL K1096/02
SCALE:	1/100 @ A1
DRAWN BY:	D.D.
DATE:	05/07/23
REV:	

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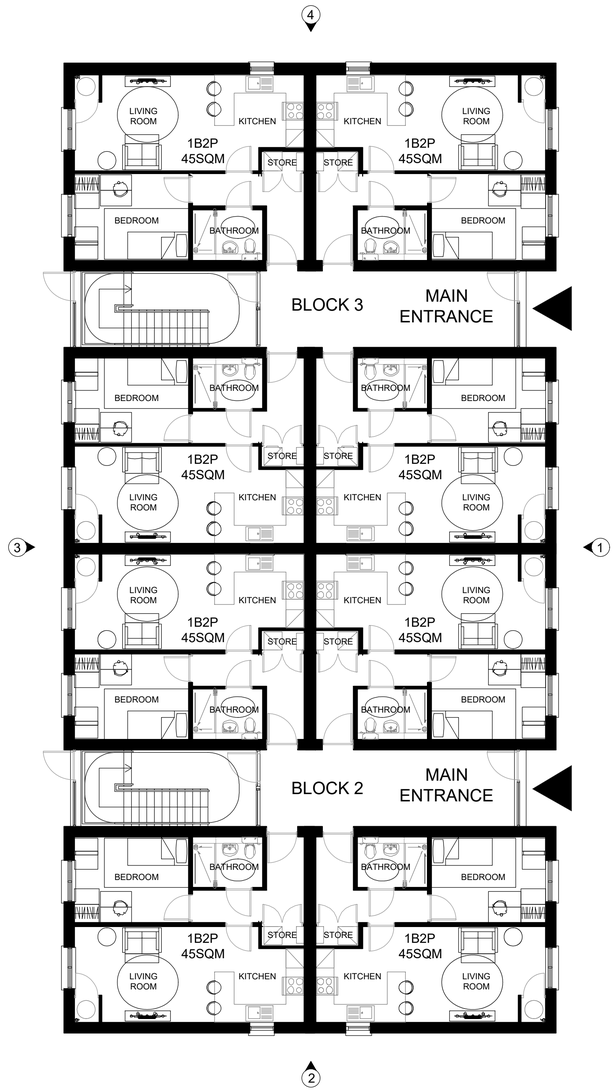
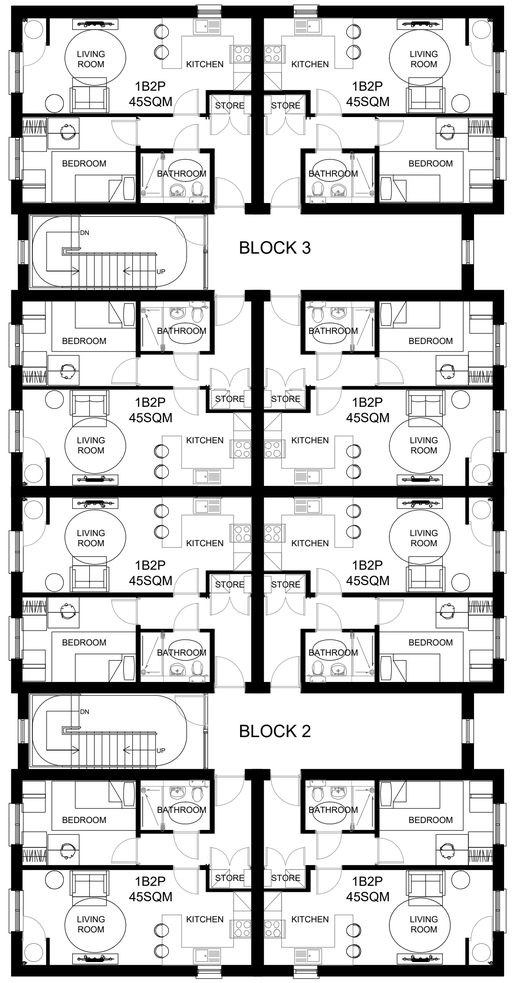
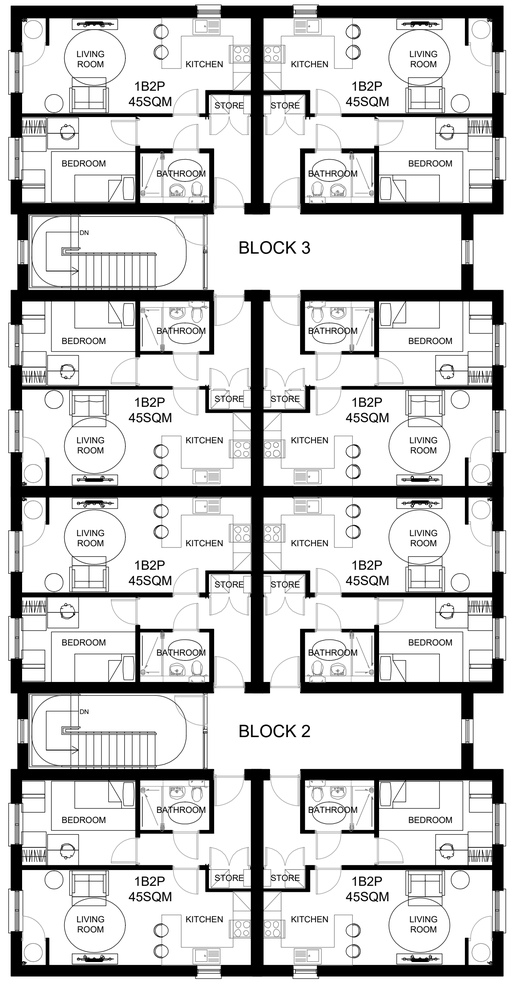


PROPOSED GROUND FLOOR PLAN



PROPOSED FIRST FLOOR PLAN



PROPOSED SECOND FLOOR PLAN

REV	DESCRIPTION

BLOCK 2 AND BLOCK 3 - PROPOSED FLOOR PLANS

PROPOSED RESIDENTIAL DEVELOPMENT
LAND OFF EGMONT STREET
MOSSLEY, ASHTON

CLIENT:	BRIDGEWATER LAND & DEVELOPMENT
DWG NO:	PL K1096/03
SCALE:	1/100 @ A1
DRAWN BY:	D.D.
DATE:	05/07/23
REV:	

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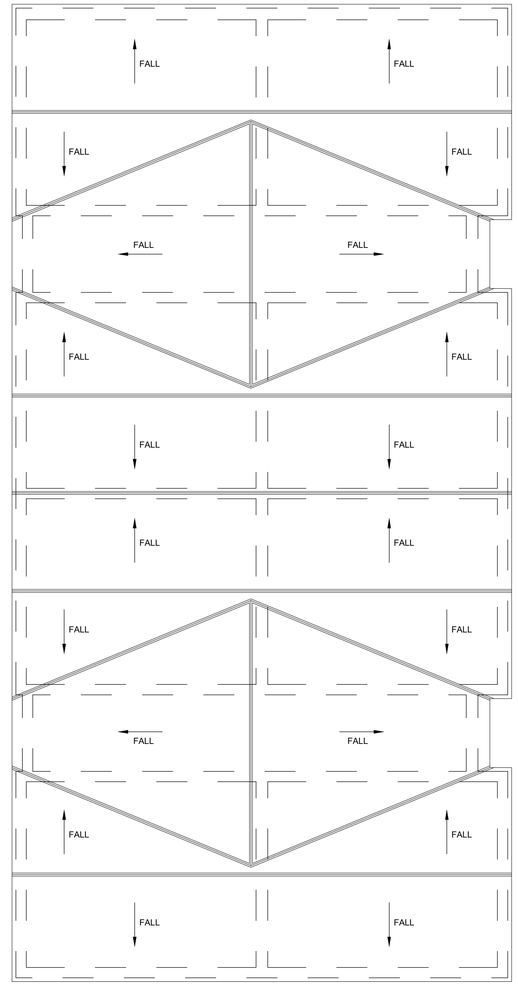
1. PROPOSED FRONT ELEVATION

3. PROPOSED REAR ELEVATION

2. PROPOSED SIDE ELEVATION

4. PROPOSED SIDE ELEVATION

1. MOCK GREY SLATE ROOF TILE,
2. PRE-CONSTITUTED STONE FINISH TO ELEVATIONS,
3. UPVC WINDOW FRAMES TO CLIENT'S SPECIFICATION,
4. UPVC PANELS TO MATCH WINDOW FRAMES,
5. ALUMINIUM EXTERNAL QUALITY ENTRANCE DOORS,
6. UPVC GUTTERS, FASCIA BOARDS AND SOFFIT TO CLIENT'S SPECIFICATION,
7. STONE SURROUNDS TO WINDOWS WHERE SHOWN,
8. STONE CILLS TO WINDOWS AS SHOWN,
9. SMOOTH STONE BAND TO RUN ACROSS BUILDING AS SHOWN.



PROPOSED ROOF PLAN

REV	DESCRIPTION

BLOCK 2 AND BLOCK 3 - PROPOSED ROOF PLAN AND ELEVATIONS

PROPOSED RESIDENTIAL DEVELOPMENT
LAND OFF EGMONT STREET
MOSSLEY, ASHTON

CLIENT:	BRIDGEWATER LAND & DEVELOPMENT
DWG NO:	PL K1096/04
SCALE:	1/100 @ A1
DRAWN BY:	D.D.
DATE:	05/07/23
REV:	

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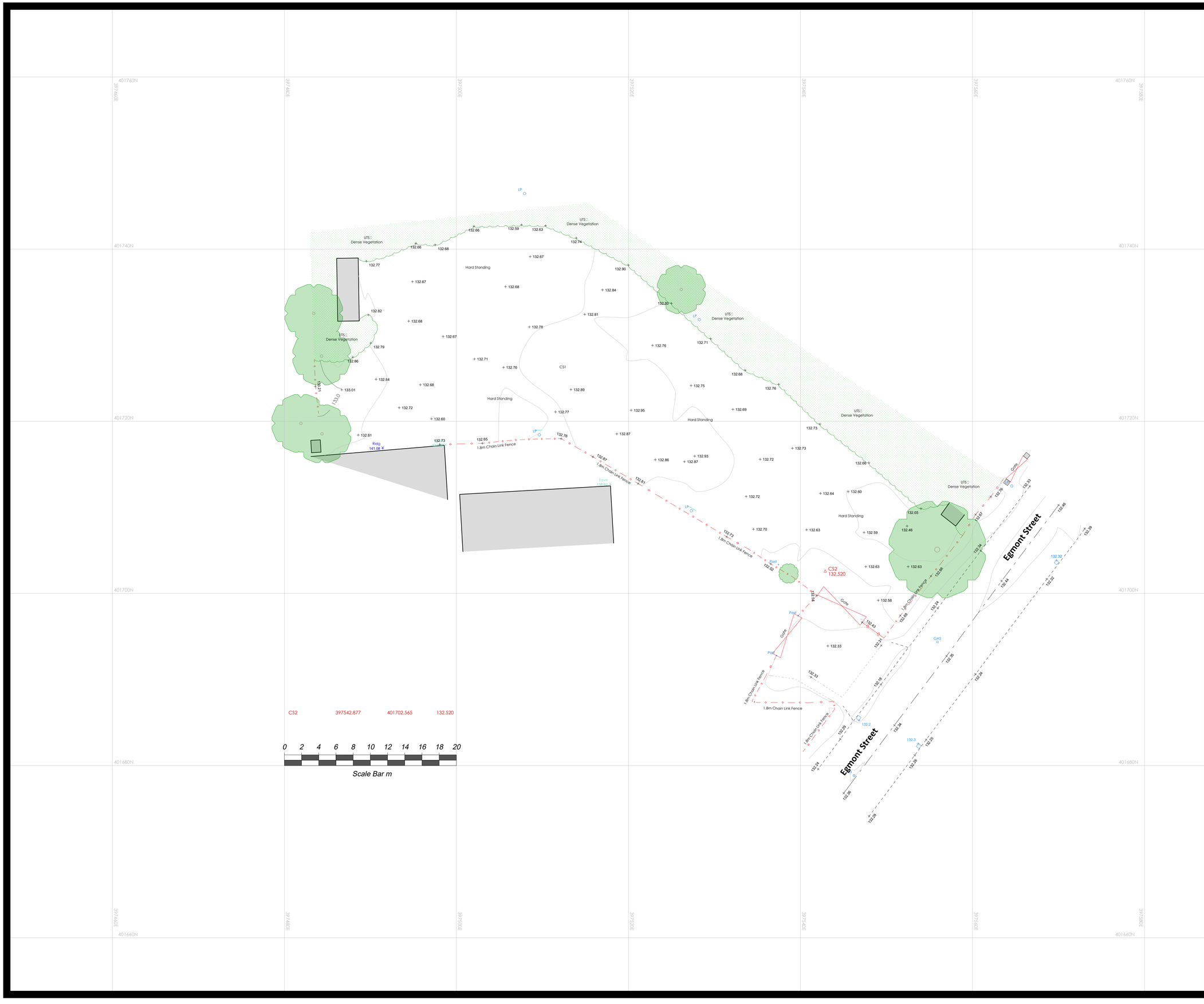
APPENDIX B – Topographical Survey & Site Sections

Drawing/ Document	Link
Topographical Survey	
VDG Existing Site constraint Plan	
VDG Existing Site Sections	



Floor Plan Legend:

- SHt 1.00m / HHt 2.00m — Window Cill & Head Height; SHt: Sill Height From FFL; HHt: Head Height From FFL
- Ht 2.00 — Door Height From FFL
- Overhead Detail
- Stairs/Step
- RAD — Radiator
- Ventilation / Overhead
- Hatch — Access Hatch
- TV Point
- Phone Point
- 13A Power Socket
- Fused Socket
- Shaver Socket
- Extractor Fan
- Lantern Light
- Down Light
- Light Dimmer Switch
- Light Switch
- Fixed Lighting
- FA — Fire Alarm Button
- FX — Fire Extinguisher
- Reception — Room Name
- Carpet — Floor Covering
- 2.49 — Ceiling Height
- IFL 145.80 — Internal Floor Level

Topographic Legend:

- Buildings / Walls
- Building Canopy / Overhang
- Concrete edge
- Kerb line
- Centre Line
- Barrier
- Hedge
- Security Fence
- Panel Fence
- Gate
- Overhead Line
- SAP — Tree / Sapling
- Tree Canopy Line
- Chambers
- CS1 — Survey Station & Name
- BM 100.00 — Bench Mark
- TBM 100.00 — Temporary Bench Mark
- CL — Cover level
- IL — Invert level
- Inv Ø 0.25 — Pipe invert (diameter)
- GU — Gully
- MH — Manhole
- IC — Inspection chamber

Trig	Trig Pillar	FS	Flag Staff
Rdg	Ridge Level	Mrk	Gas Marker
Eave	Eave Level	EP	Electric Post
DPC	Dpc Level	TP	Telegraph Post
FL	Floor Level	inv‡	Pipe Invert
Soff	Soffit Level	GU	Gully
TiBo	Control Box	RP	Rodding Point
LP	Lamp Post	BT	Bt Cover
SP	Sign Post	CO	Cover Unknown
Post	Post	EC	Electricity Cover
WM	Water Meter	TL	Traffic Light
BB	Bellisha Beacon	FH	Fire Hydrant
BOL	Bollard	GAS	Gas Cover
BS	Bus Stop	SV	Stop Valve
ER	Earthing Rod	TV	Tv Cover
Box	Pool Box	GV	Gas Valve
MS	Mile Stone	Peg	Peg

CASTLE SURVEYS LTD

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01530 569338

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91 PRINCESS STREET, MANCHESTER, M1 4HT
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54 POLAND STREET SOHO, LONDON, W1F 7NJ
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SITE DETAILS:
(Site 1)
(Site 2)

TITLE: Topographical

DRAWING NO.: Job Number

REV: -

SCALE: 1: 500

DATE:

DRAWN:

CHECKED:

LEVEL DATUM: OSGB36(15)

Paper Size - A1

Comments:

This plan should only be used for its original purpose. Castle Surveys Ltd dos not accept any responsibility for this plan if supplied to any other party, other than the original client.

All dimensions and levels should be check on site prior to design and construction.

Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only. Some services may have been omitted due to parked vehicles or due to the site being overgrown with vegetation.

Tree information (where applicable) has been surveyed from ground level and therefore should be treated as approximate only. Advise that a tree survey should be carried out.

Roof linework (where applicable) is indicative only.

DO NOT SCALE

GENERAL NOTES

1. DO NOT SCALE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
3. SHOULD THERE BE ANY DISCREPANCY BETWEEN DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS THE ENGINEER SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.
4. UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT AUTHORITIES IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ISSUED ARE PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR START SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT HIS OWN RISK.
5. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS NOTED OTHERWISE.
6. ALL SURVEY INFORMATION IS PROVIDED BY THE SURVEYING COMPANY AND XOSQUARE LIMITED CANNOT ACCEPT ANY LIABILITY FOR ANY DISCREPANCIES THERE IN. ALL SURVEY INFORMATION TO BE VERIFIED ON SITE BY CONTRACTOR. SHOULD DISCREPANCIES BE IDENTIFIED, XOSQUARE LIMITED IS TO BE NOTIFIED IMMEDIATELY.

LEGEND

- SITE BOUNDARY
- RIVER EASEMENT MAINTENANCE STRIP
- 80m EXISTING LEVEL (AOD)
- FZ2=2375m2
- FZ3-AREA=240m2

POINT OF CONNECTION 2

PUMP REQUIRED. BECOMES MORE DIFFICULT FOR ADOPTION BY UU. ADVISE DRAINAGE TO BECOME PRIVATE

SITE CONTAMINATION TBC
LIVE SERVICES TBC
TREE PROTECTION ZONES TBC
ECOLOGICAL ISSUES TBC

EXISTING RIVER RETAINING WALL

EXTENT OF FZ2. AREA APPROXIMATELY 2380m2

FLOOD COMPENSATION AREA PROVIDED WITHIN FINISHED LEVELS

FLOOD PLAIN AFFECTED WITHIN FLOOD ZONE3. PROPOSED FLOOD COMPENSATION REQUIRED

EXTENT OF FZ3. AREA APPROXIMATELY 240m2

REQUEST ADJACENT SITE FOUL DRAINAGE

525mm DIA COMBINED PUBLIC SEWER

POINT OF CONNECTION 1

HIGHWAYS APPROVAL AND THIRD PARTY LAND APPROVAL TO PLAYING FIELDS

1100 DIA COMBINED PUBLIC SEWER

RIVER TAME

EGMONT STREET

Egmont Street

RESIDENT CARPARK

BLOCK 3 MAIN ENTRANCE

BLOCK 2 MAIN ENTRANCE

REFUSE STORE

PRIVATE AMENITY SPACE

1:5

2-2

3-3

RETAINING HEIGHTS

ALL RETAINING HEIGHTS AND 1:3 SLOPES ARE SUBJECT TO GEOLOGY CONFIRMATION.

EXISTING LEVELS

ALL LEVELS ON THIS DRAWING ARE SUBJECT TO FURTHER TOPOGRAPHIC SURVEYS. A PRELIMINARY SURVEY HAS BEEN UNDERTAKEN TO AREAS FREE OF TREES AND WHICH ARE ACCESSIBLE. FURTHER LEVELS HAVE BEEN ADDED FROM LIDAR DATA.ALL LEVELS TO BE CONFIRMED.

Rev	Date	By	Description
P01	15.07.23	PS	INITIAL ISSUE

REVISIONS

Vision | DESIGN | Group
Engineering Consultancy

Client
BRIDGEWATER LAND AND DEVELOPMENTS

Project Name
EGMONT STREET MOSSLEY

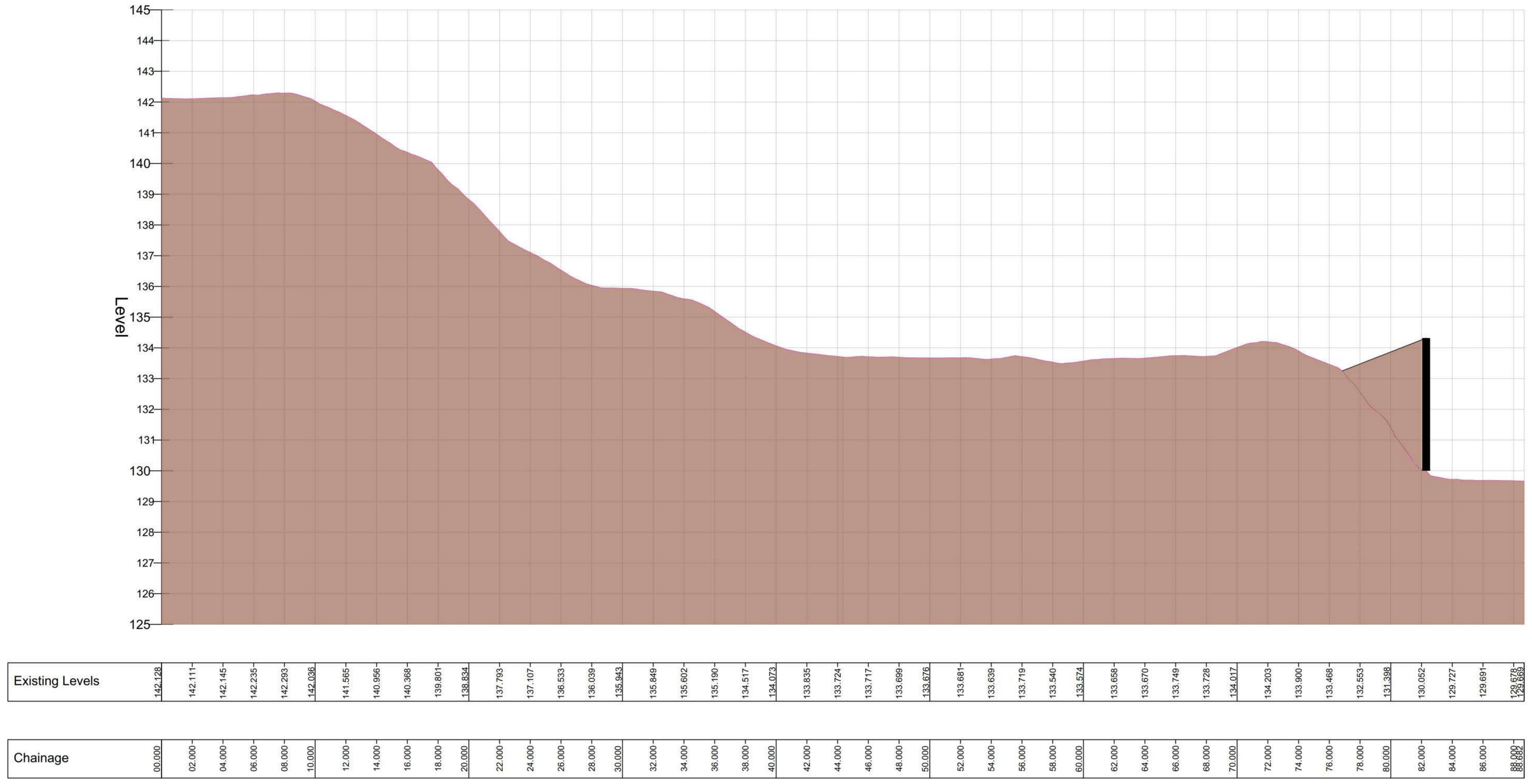
Drawing Title
EXISTING LEVELS AND CONSTRAINT PLAN

Drawing Status	Project No
INFORMATION	121

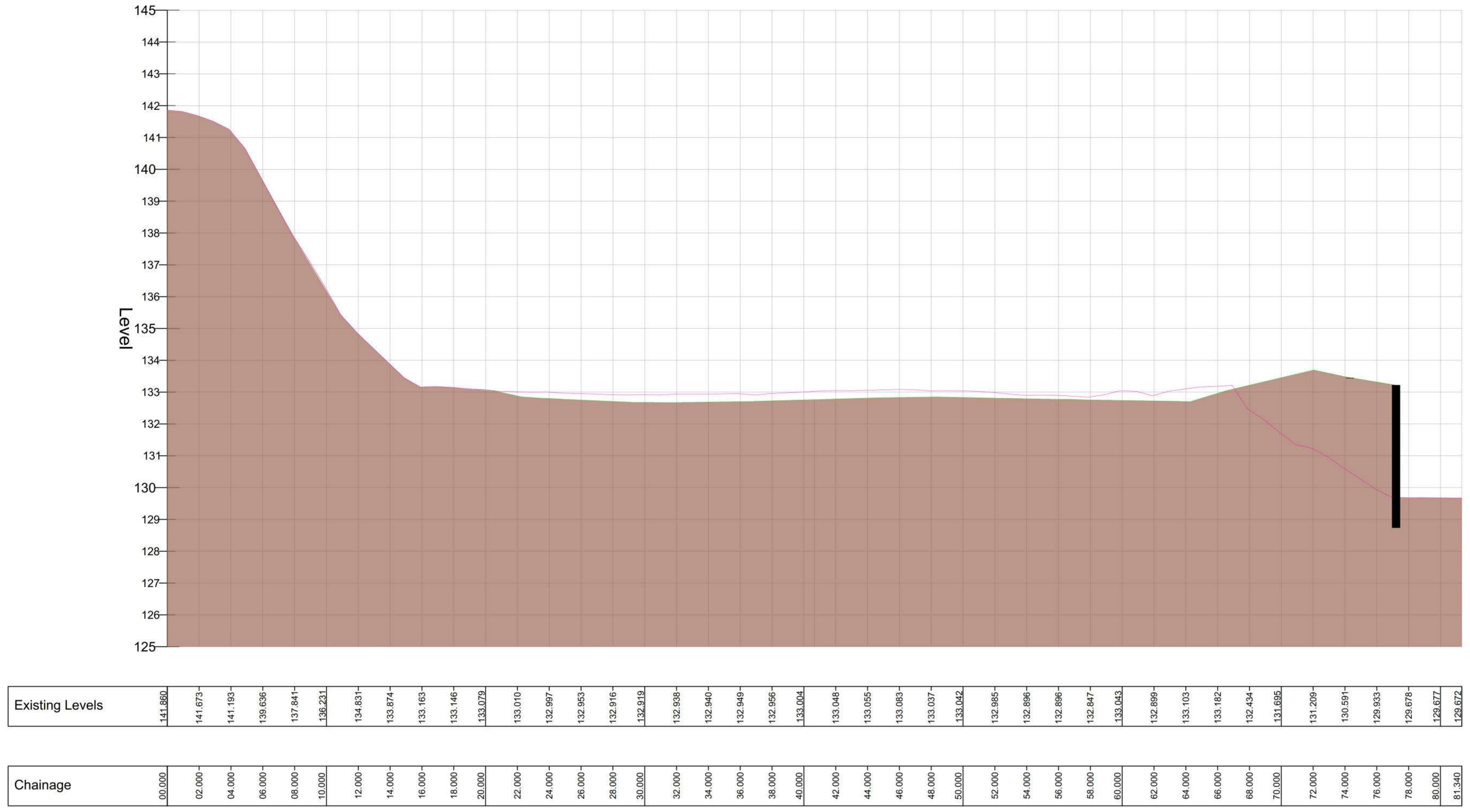
Drawn	Approved	Scale	First Issue	Size
JF	MW	1:100	FIRST_ISSUE	A0

JOB No.	COMPANY	ZONE	LEVEL	TYPE	ROLE	DRAWING No.	REVISION
121	VDG	XX	XX	DR	C	5560	P01

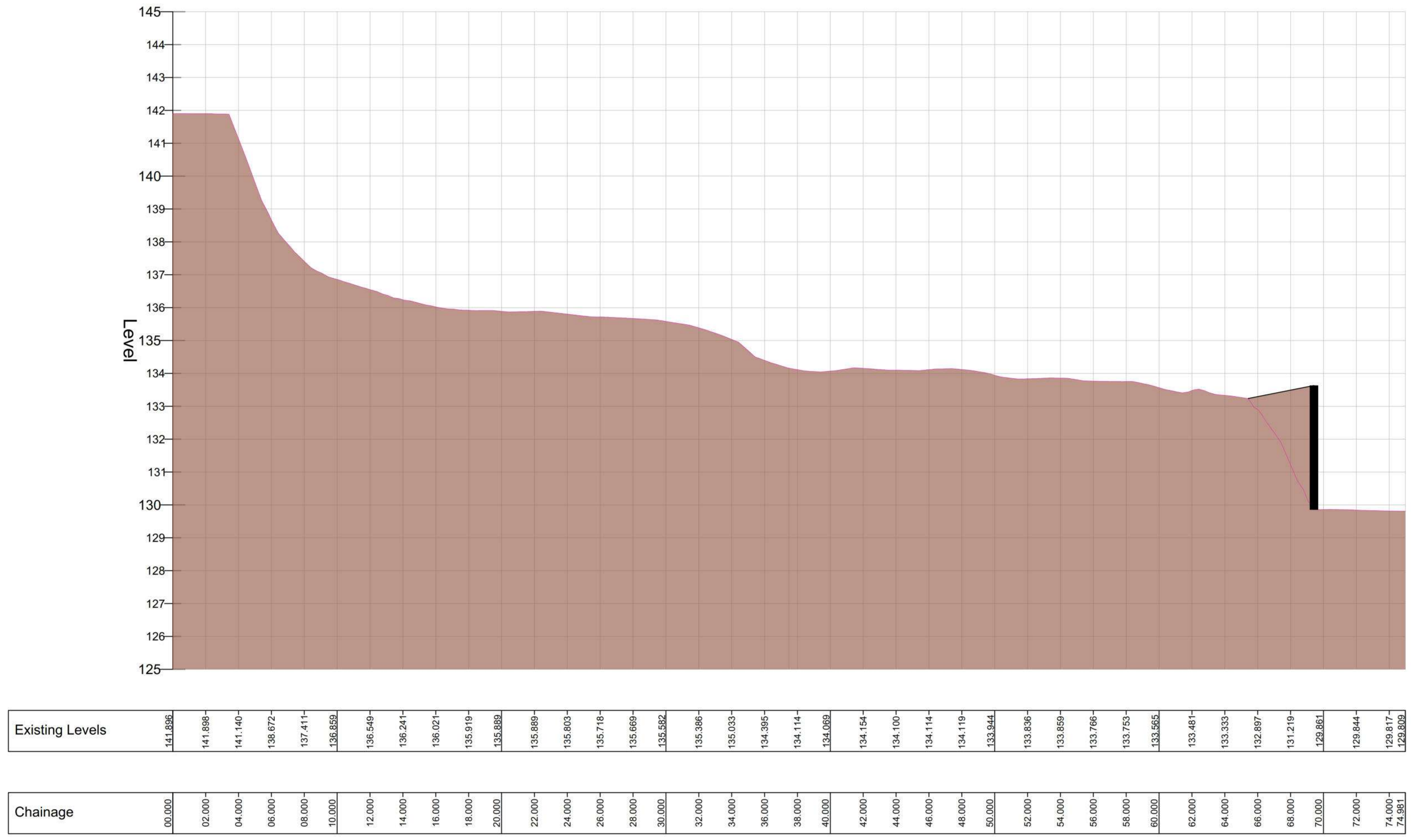
SECTION 1-1
SCALE: H 1:200,V 1:100. DATUM: 125.000



SECTION 3-3
SCALE: H 1:200,V 1:100. DATUM: 125.000



SECTION 2-2
SCALE: H 1:200,V 1:100. DATUM: 125.000



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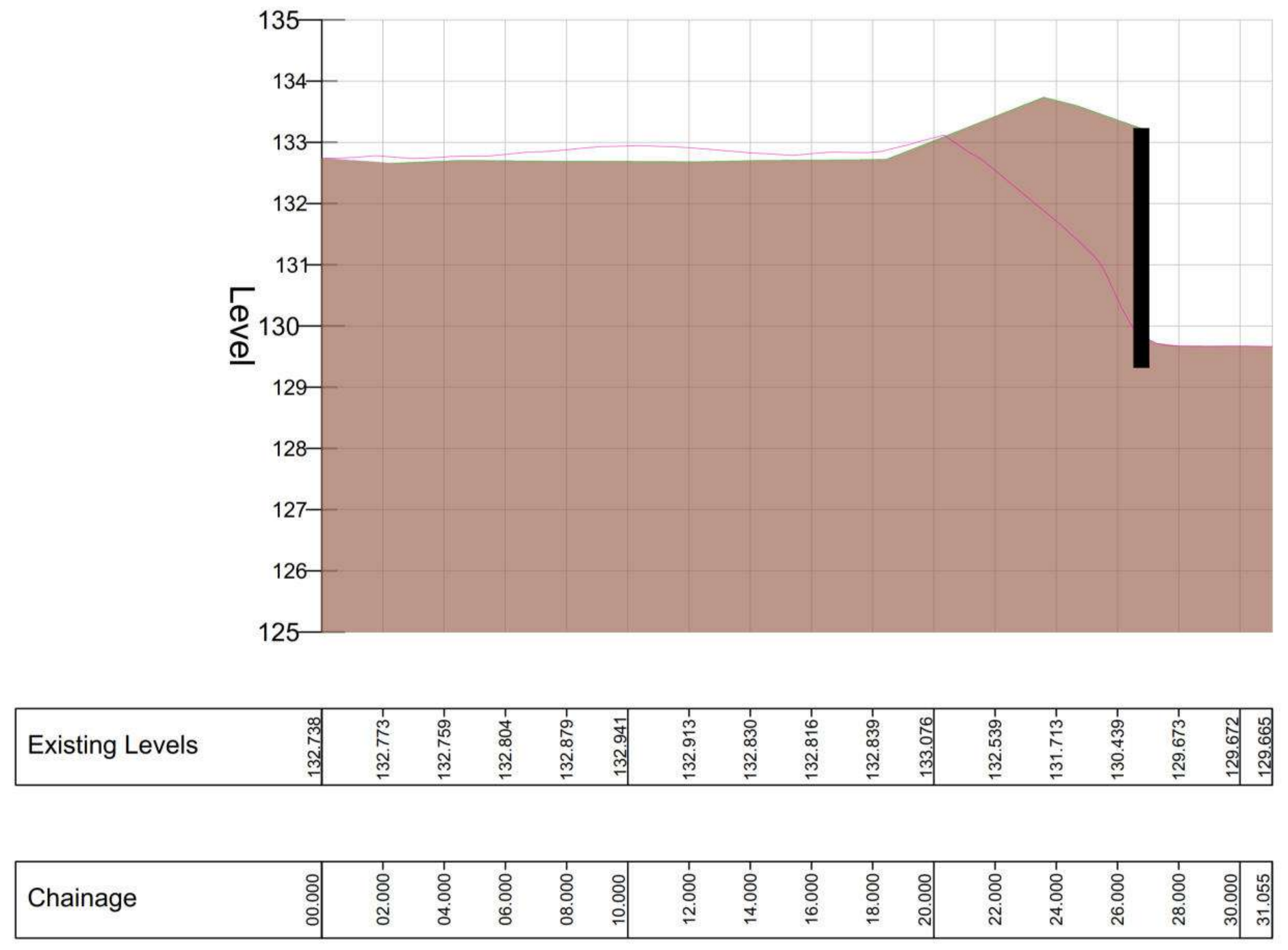
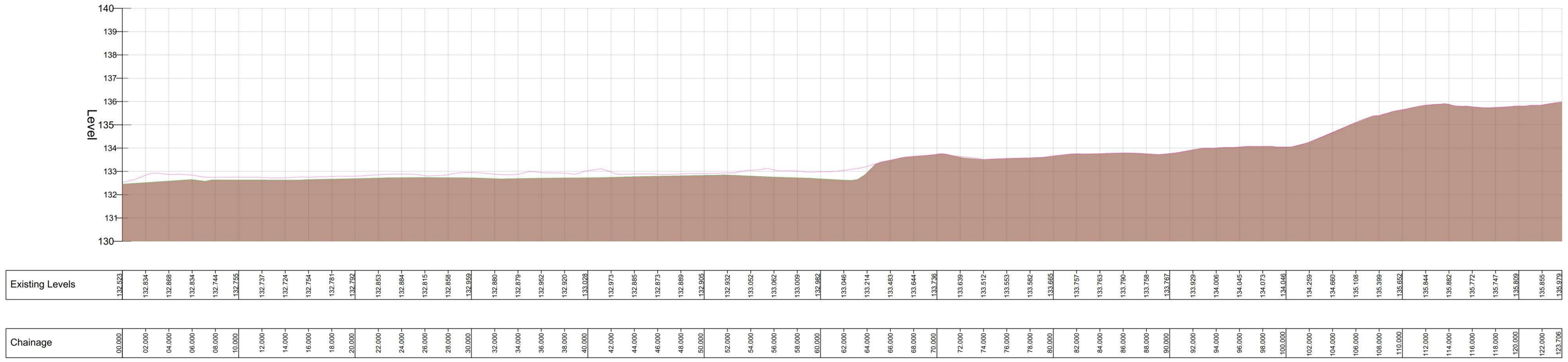
SCALE: H 1:200,V 1:100. DATUM: 125.000



SECTION 5-5
SCALE: H 1:200,V 1:100. DATUM: 130.000



USE FIGURED DIMENSIONS, DO NOT SCALE. CHECK ALL DIMENSIONS ON SITE BEFORE FABRICATION OR SETTING OUT.

GENERAL NOTES

1. DO NOT SCALE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
3. SHOULD THERE BE ANY DISCREPANCY BETWEEN DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS THE ENGINEER SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.
4. UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT AUTHORITIES IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ISSUED ARE PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR START SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT HIS OWN RISK.
5. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
6. ALL SURVEY INFORMATION IS PROVIDED BY THE SURVEYING COMPANY AND XOSQUARE LIMITED CANNOT ACCEPT ANY LIABILITY FOR ANY DISCREPANCIES THERE IN. ALL SURVEY INFORMATION TO BE VERIFIED ON SITE BY CONTRACTOR. SHOULD DISCREPANCIES BE IDENTIFIED, XOSQUARE LIMITED IS TO BE NOTIFIED IMMEDIATELY.

LEGEND

EXISTING LEVELS
LIDAR SURVEY

Rev	Date	By	Description
P1	17.07.23	MW	INFORMATION ISSUE

REVISIONS

Vision | DESIGN | Group
Engineering Consultancy

Client
BRIDGEWATER LAND AND DEVELOPMENTS

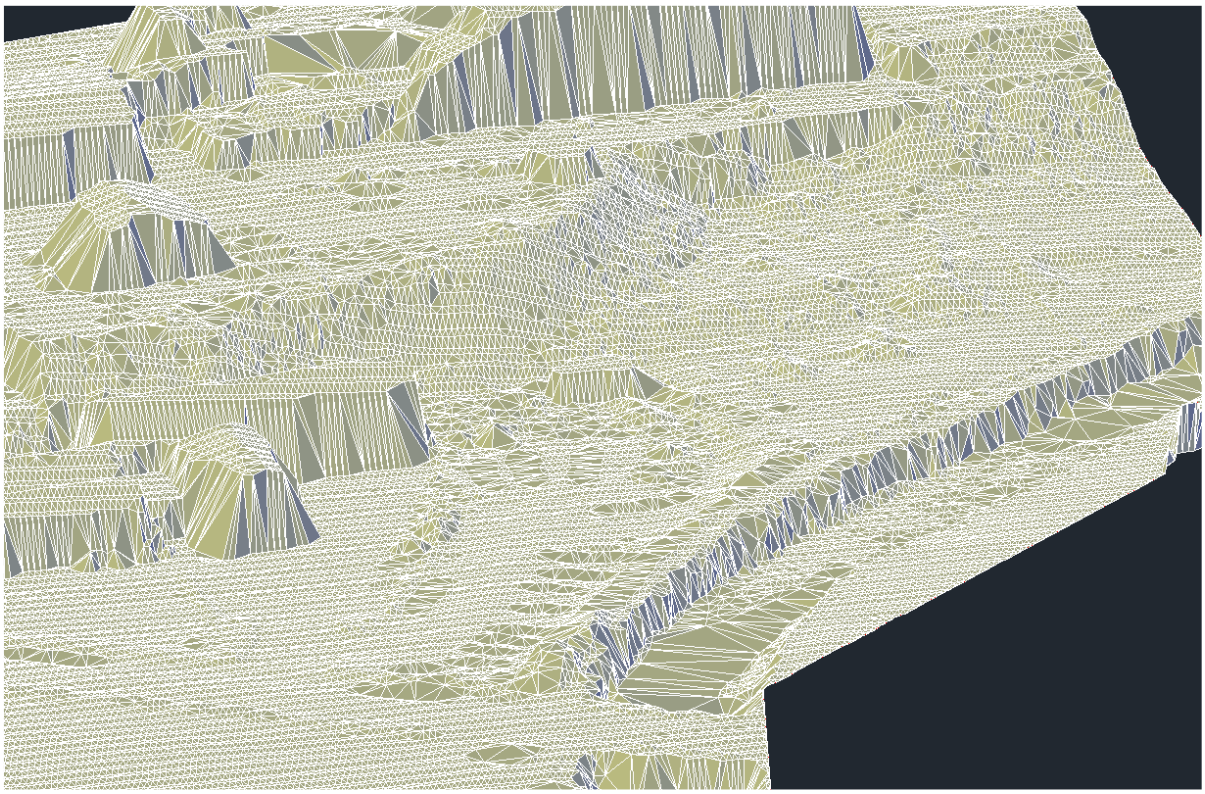
Project Name
EGMONT STREET MOSSLEY

Drawing Title
EXISTING SITE SECTIONS

Drawing Status	Project No
INFORMATION	**121**

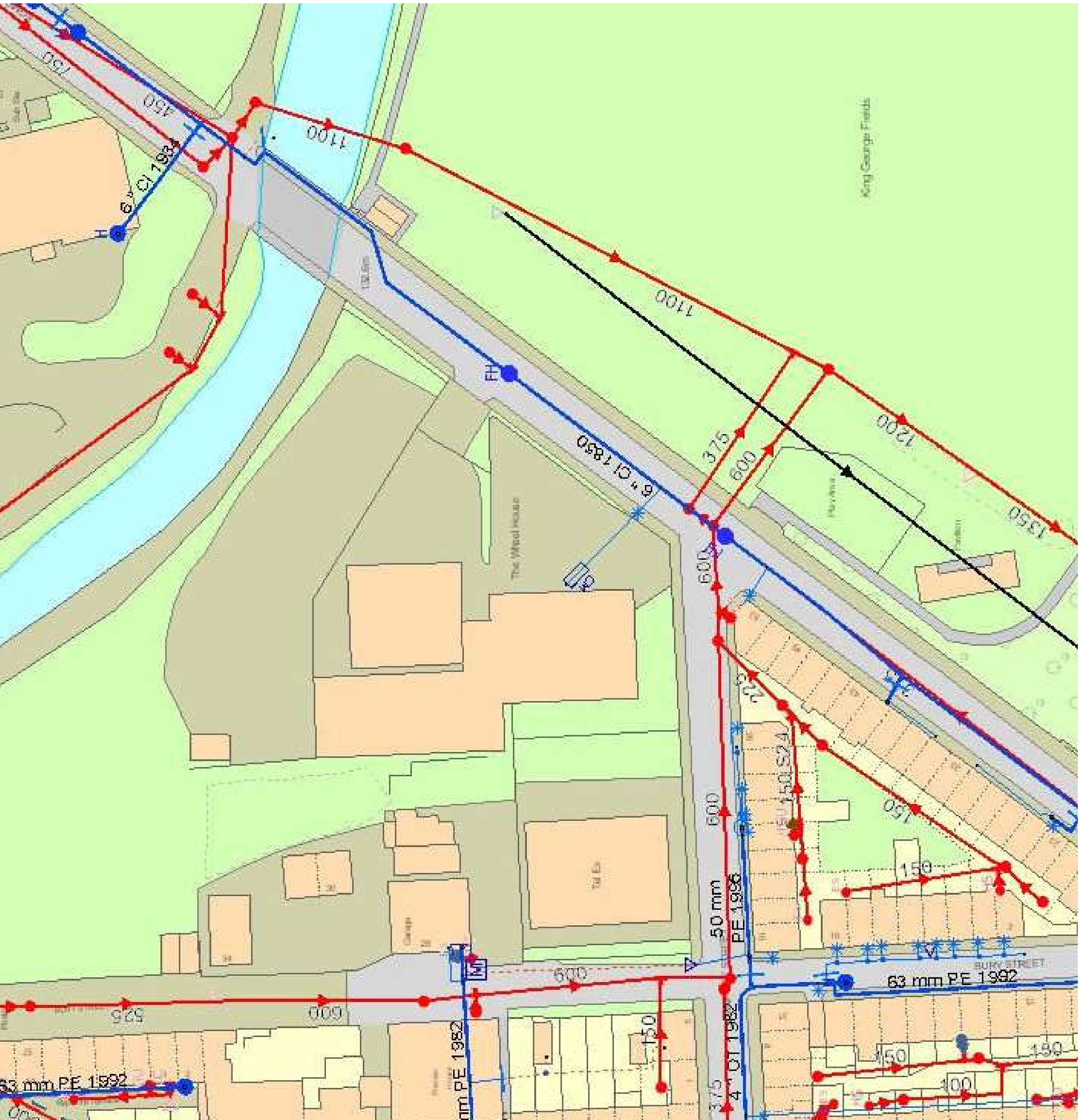
Drawn	Approved	Scale	First Issue	Size
JF	**MW**	**1:100**	FIRST_ISSUE	**A0**

JOB No.	COMPANY	ZONE	LEVEL	TYPE	ROLE	DRAWING No.	REVISION
121	**VDG**	**XX**	**XX**	**DR**	**C**	**5561**	**P01**



APPENDIX C – Public Sewer Plan

Drawing/ Document	Link
Public Sewer Plan	



6 " CI 1934
1100
1200
1350
375
600
6 " CI 1850
150
225
50 mm
PE 1996
BURY STREET
63 mm PE 1992
525
600
90 mm PE 1982
150
4 " CI 1982
375
110
mm PE
1982
63 mm PE 1991
MANCHESTER ROAD
100
750
300
8 " CI

APPENDIX D – FLOOD ZONES AND FLOOD COMPENSATION AREAS

GENERAL NOTES

1. DO NOT SCALE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
3. SHOULD THERE BE ANY DISCREPANCY BETWEEN DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS THE ENGINEER SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.
4. UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT AUTHORITIES IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ISSUED ARE PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR START SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT HIS OWN RISK.
5. ALL DIMENSIONS SHOWN ARE IN METERS UNLESS NOTED OTHERWISE.
6. ALL SURVEY INFORMATION IS PROVIDED BY THE SURVEYING COMPANY AND XOSQUARE LIMITED CANNOT ACCEPT ANY LIABILITY FOR ANY DISCREPANCIES THERE IN. ALL SURVEY INFORMATION TO BE VERIFIED ON SITE BY CONTRACTOR. SHOULD DISCREPANCIES BE IDENTIFIED, XOSQUARE LIMITED IS TO BE NOTIFIED IMMEDIATELY.

LEGEND

- SITE BOUNDARY
- RIVER EASEMENT MAINTENANCE STRIP
- X 80m — EXISTING LEVEL (AOD)
- FZ2
- FZ3
- FLOOD COMPENSATION AREA

POINT OF CONNECTION 2

PUMP REQUIRED. BECOMES MORE DIFFICULT FOR ADOPTION BY UU. ADVISE DRAINAGE TO BECOME PRIVATE

SITE CONTAMINATION TBC
LIVE SERVICES TBC
TREE PROTECTION ZONES TBC
ECOLOGICAL ISSUES TBC

EXISTING RIVER RETAINING WALL

EXTENT OF FZ2. AREA APPROXIMATELY 2380m2

FLOOD COMPENSATION AREA PROVIDED WITHIN FINISHED LEVELS

FLOOD PLAIN AFFECTED WITHIN FLOOD ZONE3. PROPOSED FLOOD COMPENSATION REQUIRED

EXTENT OF FZ3. AREA APPROXIMATELY 240m2

REQUEST ADJACENT SITE FOUL DRAINAGE

525mm DIA COMBINED PUBLIC SEWER

1100 DIA COMBINED PUBLIC SEWER

POINT OF CONNECTION 1

HIGHWAYS APPROVAL AND THIRD PARTY LAND APPROVAL TO PLAYING FIELDS

RIVER TAME

EGMONT STREET

Egmont Street

Egmont Street

PRIVATE AMENITY SPACE

RESIDENT CARPARK

TURNING HEAD

REFUSE STORE

AMENITY SPACE

1.8m Chain Link Fence

RETAINING HEIGHTS

ALL RETAINING HEIGHTS AND 1:3 SLOPES ARE SUBJECT TO GEOLOGY CONFIRMATION.

EXISTING LEVELS

ALL LEVELS ON THIS DRAWING ARE SUBJECT TO FURTHER TOPOGRAPHIC SURVEYS. A PRELIMINARY SURVEY HAS BEEN UNDERTAKEN TO AREAS FREE OF TREES AND WHICH ARE ACCESSIBLE. FURTHER LEVELS HAVE BEEN ADDED FROM LIDAR DATA.ALL LEVELS TO BE CONFIRMED.

Rev	Date	By	Description
P01	15.07.23	PS	INITIAL ISSUE

REVISIONS

vision DESIGN group
ENGINEERING CONSULTANCY

Client
BRIDGE WATER LAND AND DEVELOPMENTS LTD

Project Name
EGMONT STREET MOSSLEY

Drawing Title
FLOOD ZONES AND FLOOD COMPENSATION AREAS

Drawing Status	Project No
INFORMATION	121

Drawn	Approved	Scale	First Issue	Size
JF	MW	1:200	FIRST_ISSUE	A0

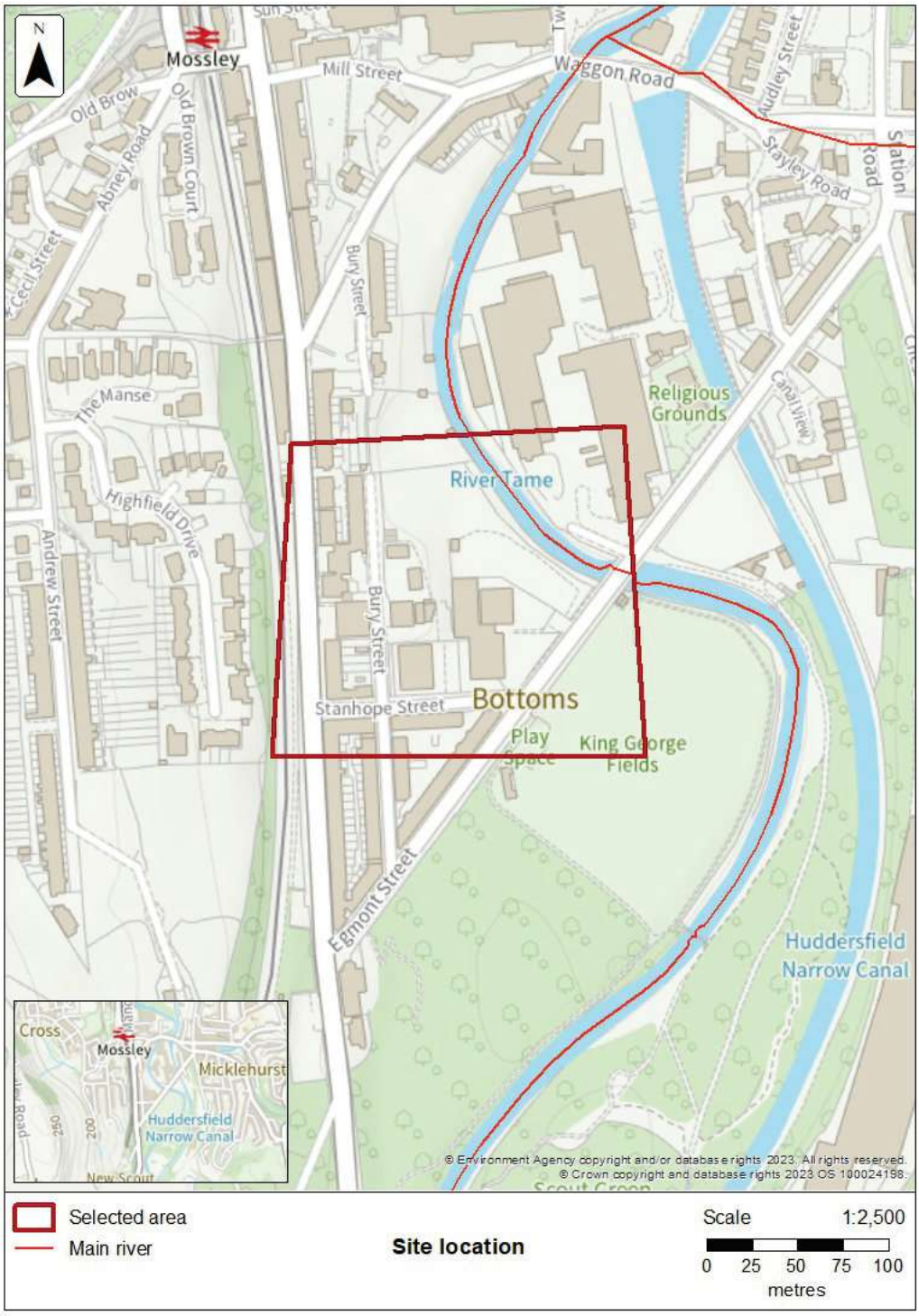
JOB No.	COMPANY	ZONE	LEVEL	TYPE	ROLE	DRAWING No.	REVISION
121	VDG	XX	XX	DR	C	5562	P01

APPENDIX E – EA DATA

Flood risk assessment data

Location of site: 397488 / 401707 (shown as easting and northing coordinates)
Document created on: 23 June 2023
This information was previously known as a product 4.
Customer reference number: 5E4C6RNCY9MV

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)
- 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

Not included in this document

This document does not include a Flood Defence Breach Hazard Map.

If your location has a reduced flood risk from rivers and sea because of defences, you need to request a Flood Defence Breach Hazard Map and information about the level of flood protection offered at your location from the Greater Manchester Merseyside and Cheshire Environment Agency team at inforequests.gmmc@environment-agency.gov.uk. This information will only be available if modelling has been carried out for breach scenarios.

Include a site location map in your request.

Information that's unavailable

This document **does not** contain:

- historic flooding

We do not have historic flooding data for this location.

Please note that:

- 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 floodng from rivers or the sea

You can 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.

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: Tame at Uppermill Model 2019
Scenario(s): No defences exist fluvial, no defences exist climate change fluvial
Date: 12 November 2019

This model contains 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 occuring 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

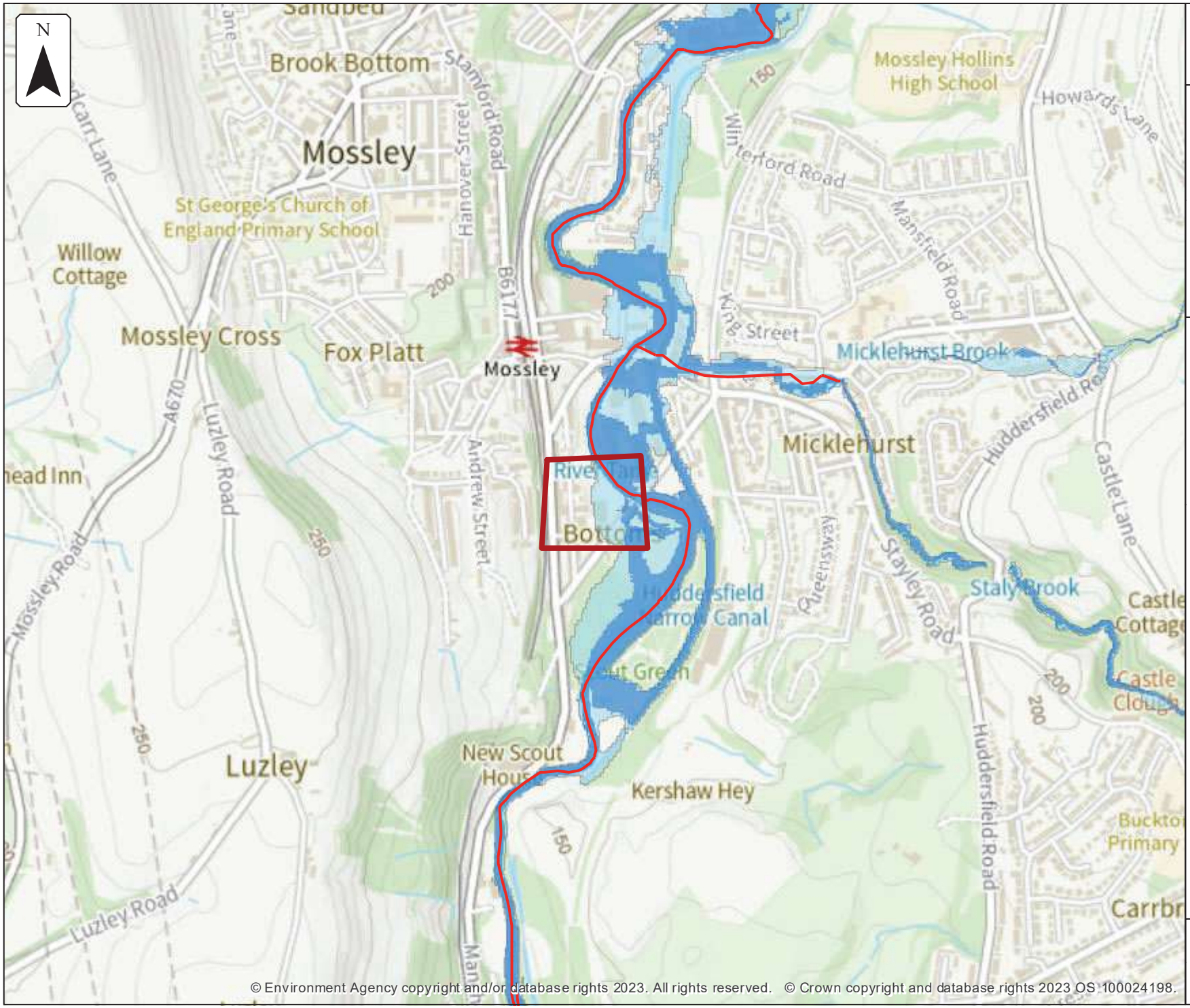
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- 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

This data is updated on a quarterly basis as better data becomes available.



Environment Agency

Flood map for planning

Location (easting/northing)
397488/401707

Scale
1:10,000

Created
23 Jun 2023

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

0 100 200 300 400 500
metres

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

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

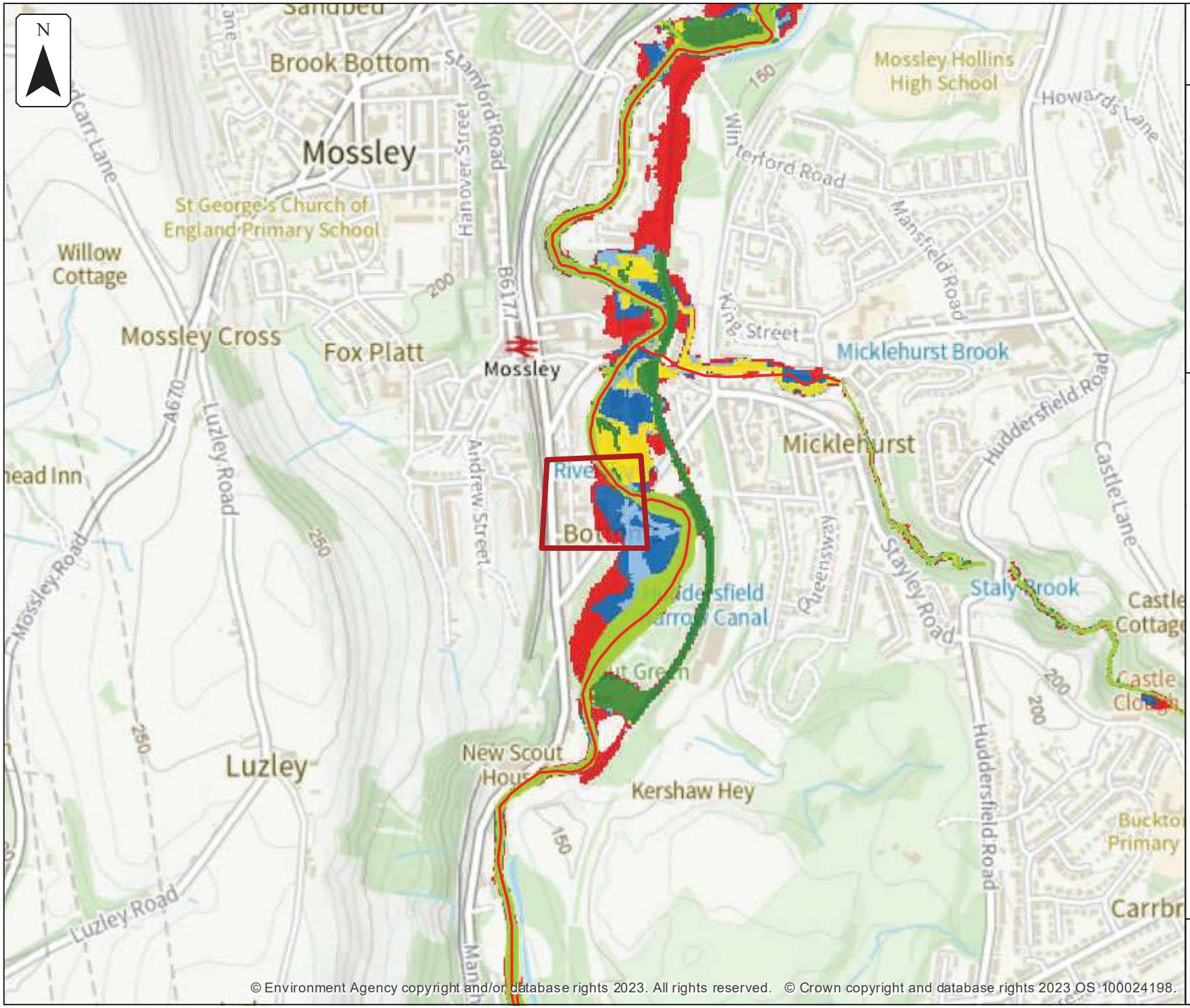
The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

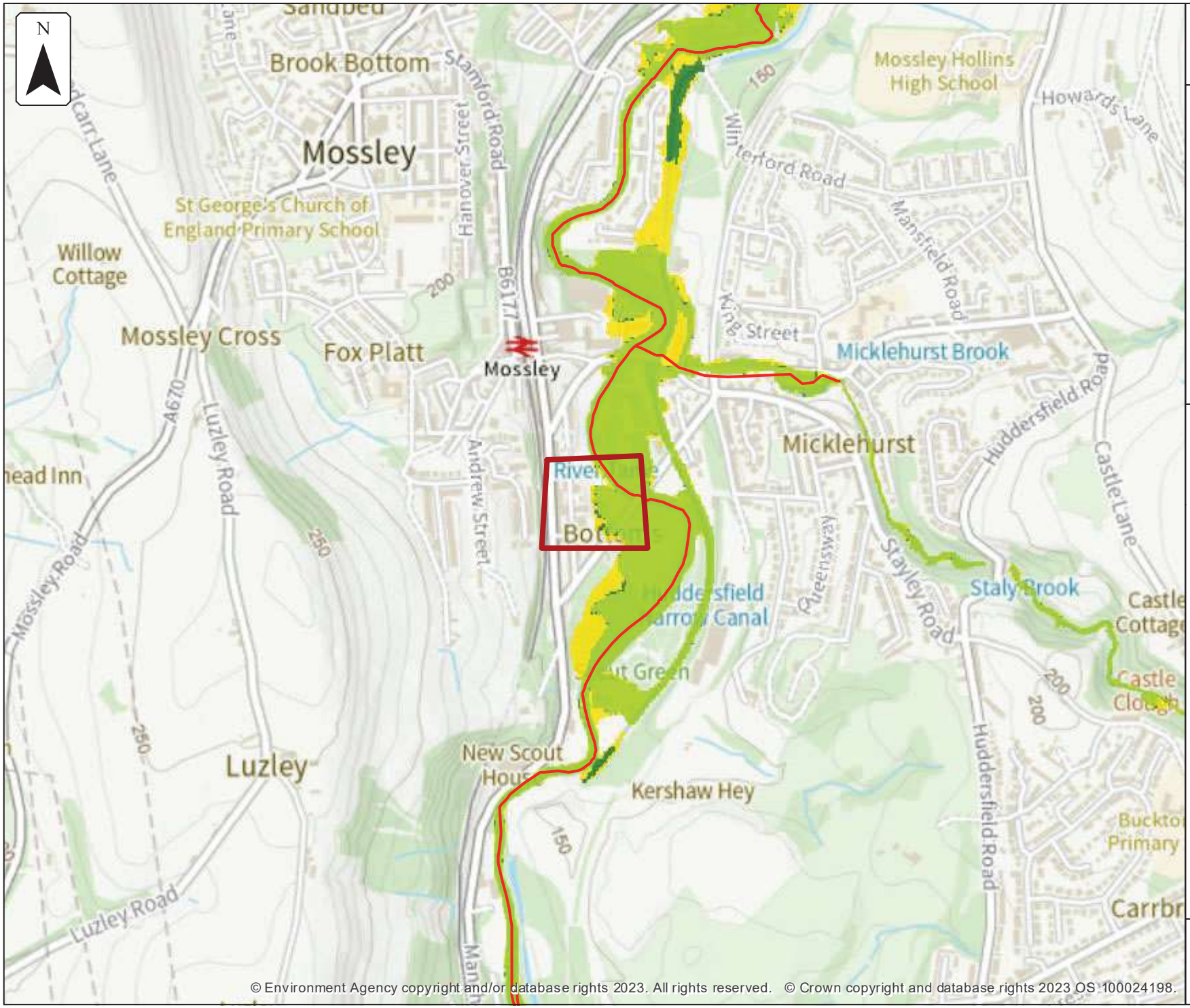
The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

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


N
Brook Bottom
Mossley
St George's Church of England Primary School
Willow Cottage
Mossley Cross
Fox Platt
Mossley
Mossley Hollins High School
Howards Lane
Winterford Road
Mansfield Road
Micklehurst Brook
Micklehurst
Huddersfield Road
Castle Lane
Stayley Brook
Castle Cottage
Stamford Road
Hanover Street
B6177
Andrew Street
Luzley Road
A670
Mossley Road
Luzley
New Scout
Kershaw Hey
Huddersfield Road
Buckton Primary
Carrbr
Greensway
Stayley Road
Canal
150
200
250
Environment Agency
No defences exist modelled fluvial extent
Location (easting/northing)
397488/401707
Scale
1:10,000
Created
23 Jun 2023
Model name
Tame at Uppermill Model 2019
Selected area
Main river
Modelled flood extent
5% AEP
2% AEP
1.33% AEP
1% AEP
0.5% AEP
0.1% AEP
Flood extents may not be visible where they overlap other return periods
0 100 200 300 400 500
metres
© Environment Agency copyright and/or database rights 2023. All rights reserved. © Crown copyright and database rights 2023 OS 100024198.



Environment Agency

No defences exist climate change modelled fluvial extent

Location (easting/northing)
397488/401707

Scale
1:10,000

Created
23 Jun 2023

Model name
Tame at Uppermill Model 2019

Selected area

Main river

Modelled flood extent

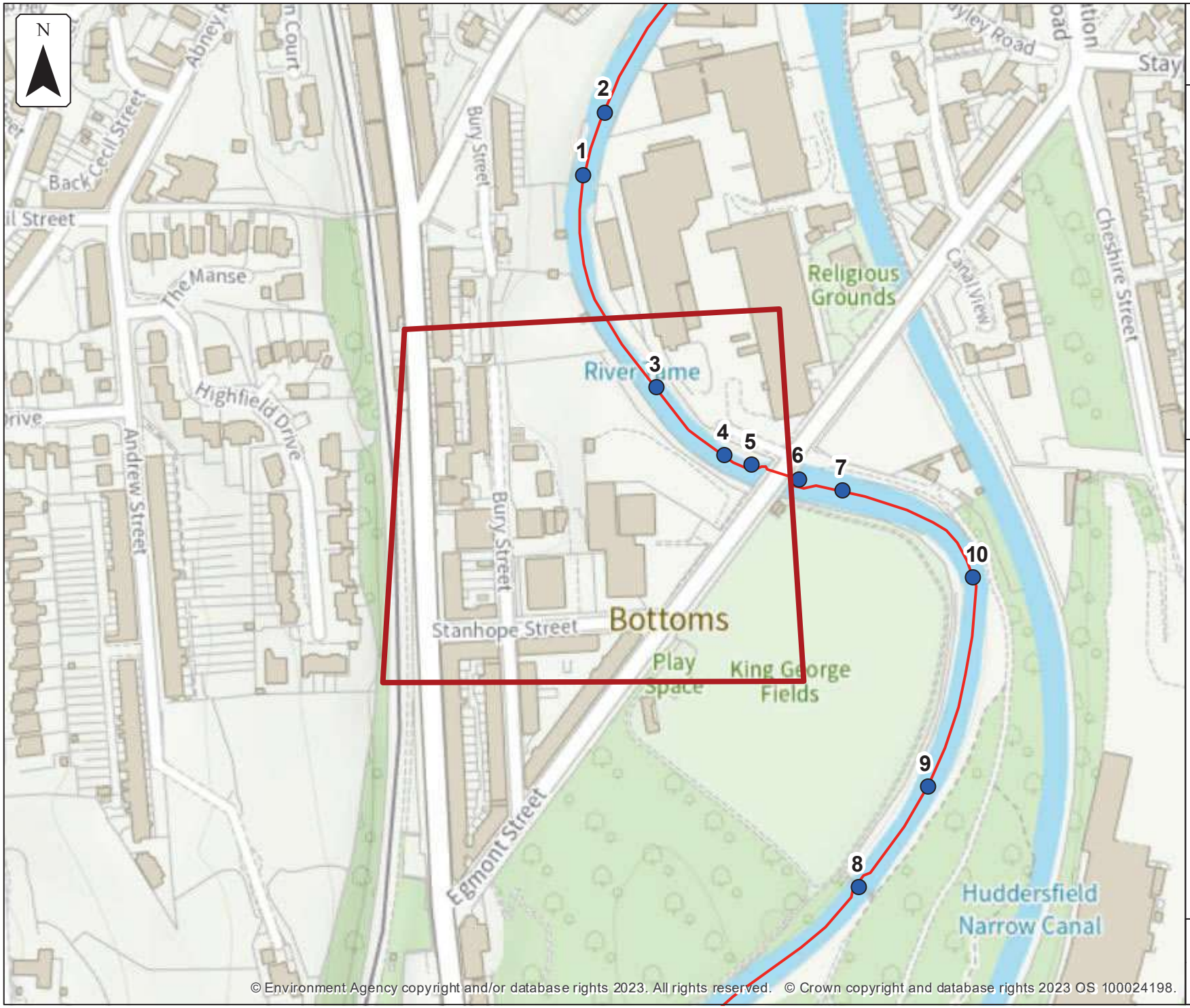
1.0% AEP (+30%)

1.0% AEP (+35%)

1.0% AEP (+70%)

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

0 100 200 300 400 500
metres



Environment Agency

No defences exist modelled fluvial node locations

Location (easting/northing)
397488/401707

Scale
1:2,500

Created
23 Jun 2023

Model name
Tame at Uppermill Model 2019

- Selected area
- Modelled location
- Main river

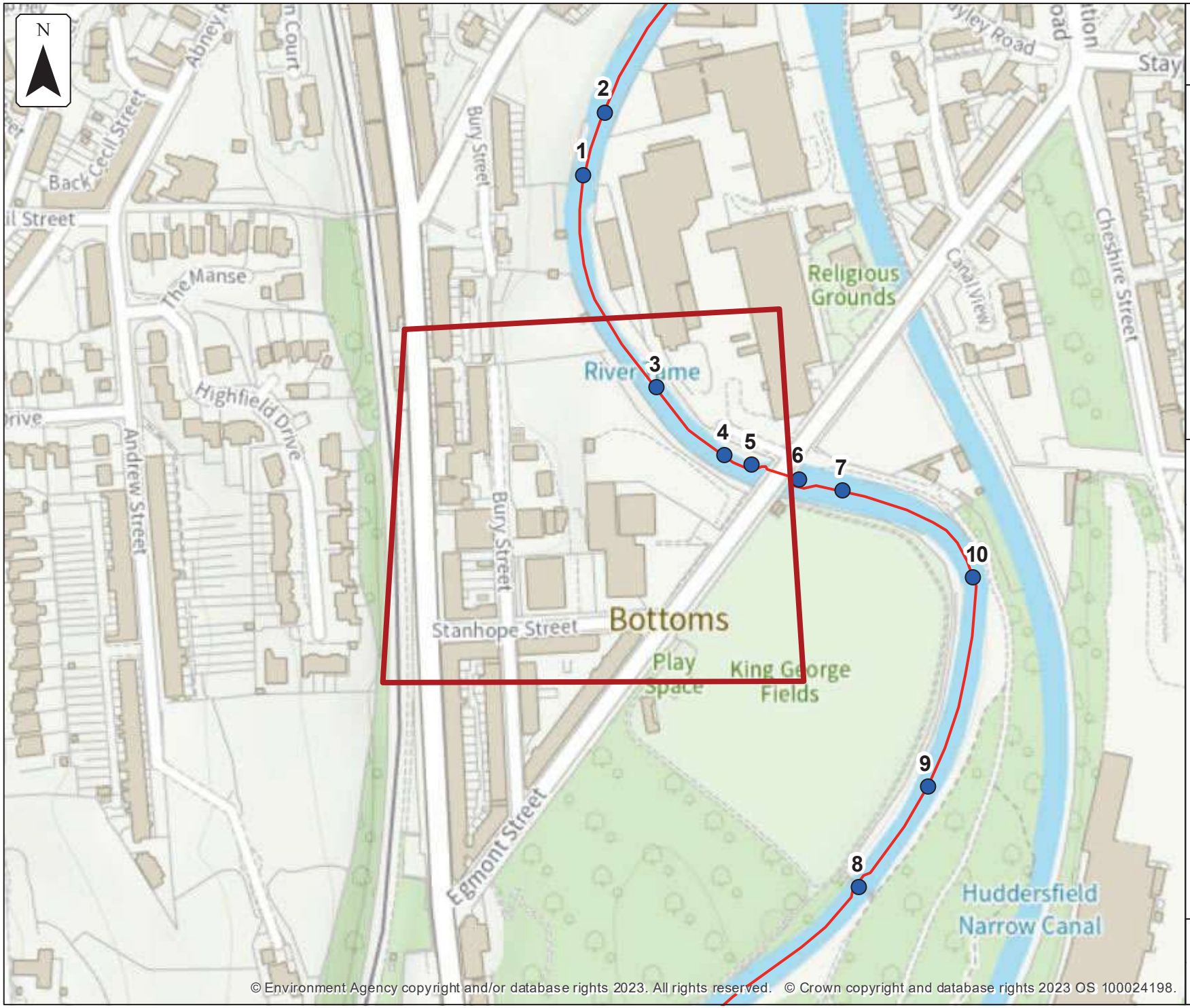
0 25 50 75 100
metres

Modelled node locations data

No defences exist

Label	Modelled location ID	Easting	Northing	5% 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	1275420	397483	401867	132.30	68.85	132.73	82.41	132.90	87.86	133.0	89.08	133.26	95.46	133.91	128.12
2	1274866	397494	401897	132.42	68.84	132.84	82.40	133.01	88.28	133.09	89.95	133.33	98.91	133.96	137.53
3	1275436	397519	401763	132.12	68.91	132.58	82.49	132.78	87.23	132.89	88.11	133.18	93.29	133.80	131.98
4	1274854	397552	401730	131.99	68.95	132.47	82.50	132.66	87.62	132.77	90.22	133.07	96.61	133.59	143.59
5	1275666	397565	401725	131.97	68.96	132.46	82.54	132.65	87.62	132.76	90.27	133.08	95.40	133.89	97.01
6	1274908	397588	401718	131.50	68.96	131.78	82.54	131.89	87.62	131.95	90.27	132.17	95.40	133.08	97.01
7	1275042	397610	401713	131.40	68.98	131.68	82.55	131.79	87.66	131.86	90.30	132.08	96.02	133.08	100.12
8	1274827	397618	401520	130.52	69.12	130.79	82.83	130.92	88.51	130.99	91.89	131.26	102.81	132.88	128.13
9	1274710	397651	401569	130.76	69.08	131.03	82.78	131.15	88.47	131.21	91.84	131.45	101.89	133.03	117.11
10	1274709	397673	401671	131.11	69.03	131.39	82.61	131.51	87.73	131.58	90.47	131.82	97.46	133.07	101.14

Data in this table comes from the Tame at Uppermill Model 2019 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.


N
Environment Agency
No defences exist climate change modelled fluvial node locations
Location (easting/northing)
397488/401707
Scale
1:2,500
Created
23 Jun 2023
Model name
Tame at Uppermill Model 2019
Selected area
Modelled location
Main river
1
2
3
4
5
6
7
8
9
10
Bottoms
Stanhope Street
Bury Street
Egmont Street
Andrew Street
Highfield Drive
The Manse
Back Cecil Street
Religious Grounds
Canal View
Cheshire Street
Play Space
King George Fields
Huddersfield Narrow Canal
0 25 50 75 100
metres
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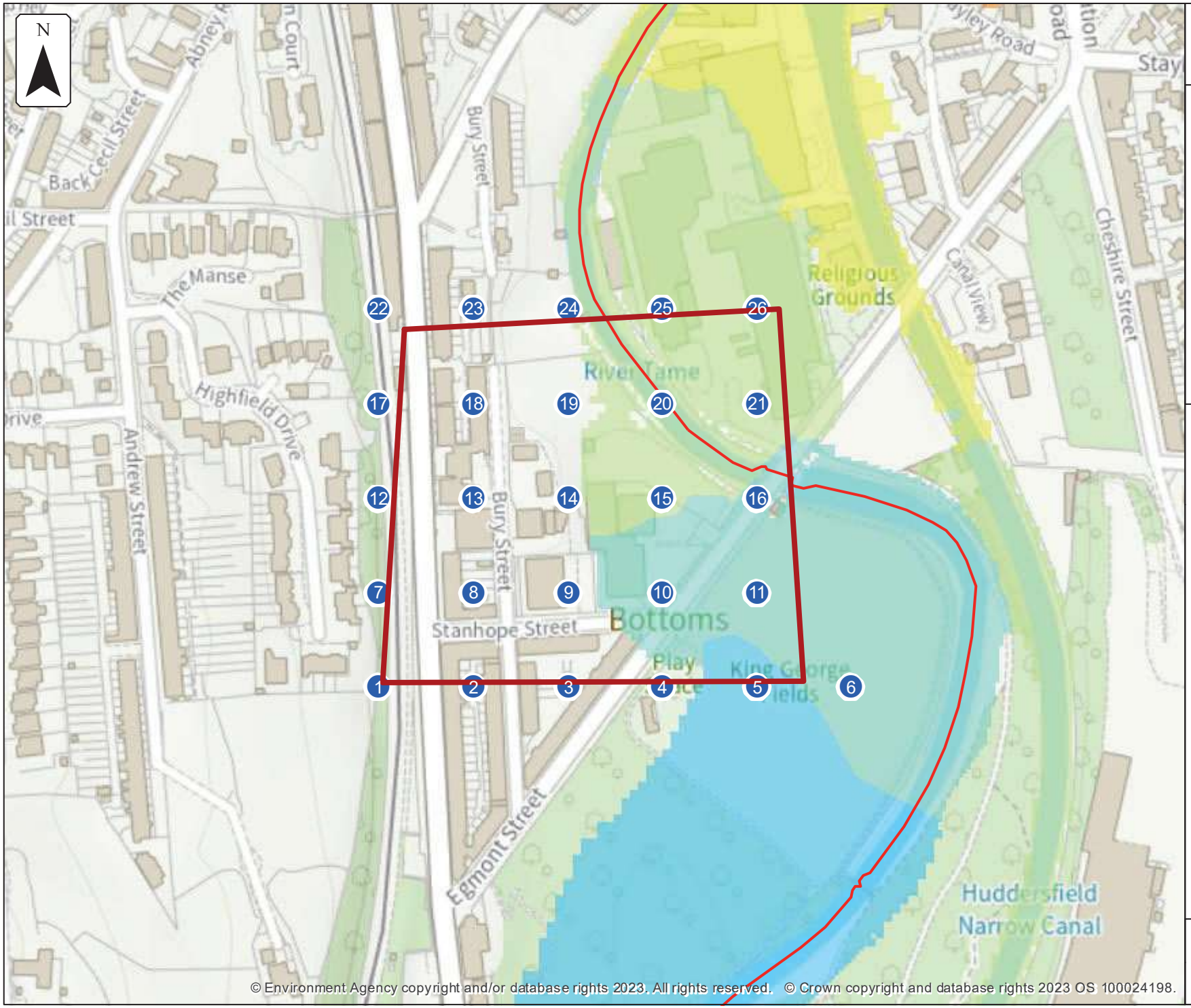
Modelled node locations data

No defences exist 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	1275420	397483	401867	133.33	99.21	133.38	101.82	133.75	121.58
2	1274866	397494	401897	133.40	103.37	133.44	106.47	133.80	130.28
3	1275436	397519	401763	133.25	97.06	133.29	99.87	133.65	123.51
4	1274854	397552	401730	133.16	98.69	133.21	99.60	133.55	123.76
5	1275666	397565	401725	133.17	95.83	133.23	95.92	133.71	96.39
6	1274908	397588	401718	132.26	95.83	132.32	95.92	132.86	96.39
7	1275042	397610	401713	132.18	96.89	132.24	97.32	132.84	99.66
8	1274827	397618	401520	131.38	107.65	131.47	111.11	132.60	126.90
9	1274710	397651	401569	131.57	105.53	131.66	108.05	132.75	117.01
10	1274709	397673	401671	131.93	99.38	132.01	100.48	132.83	101.13

Data in this table comes from the Tame at Uppermill Model 2019 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.



Environment Agency

No defences exist modelled fluvial extent and height

Location (easting/northing)
397488/401707

Scale
1:2,500

Created
23 Jun 2023

Model name
Tame at Uppermill Model 2019

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 132.0
- 132.0 - 132.5
- 132.5 - 133.0
- 133.0 - 133.5
- 133.5 - 134.0
- 134.0 - 134.5
- 134.5 - 135.0
- 135.0 - 135.5
- 135.5 - 136.0

This map shows the 0.1% AEP height data

0 25 50 75 100
metres

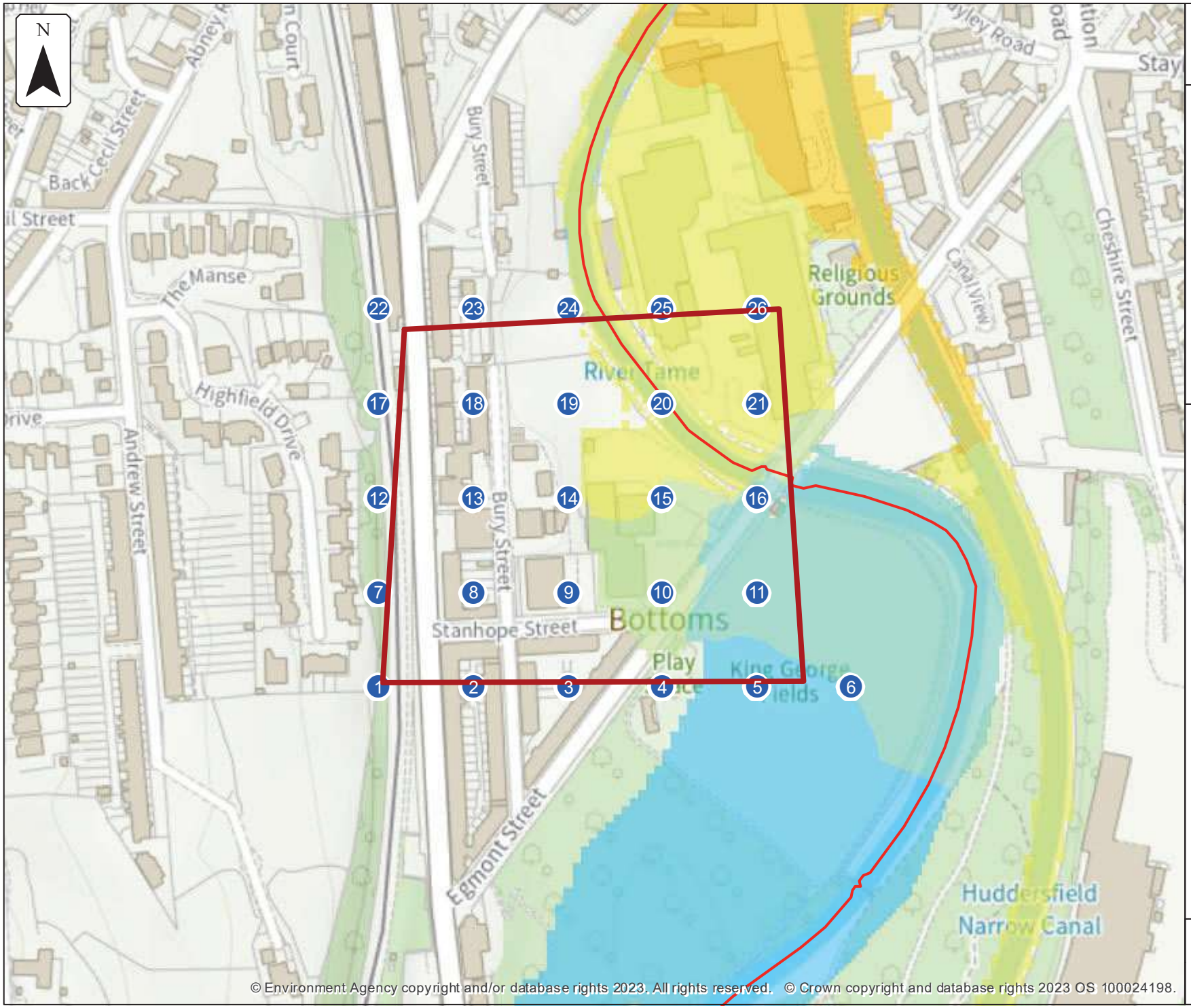
Sample point data

No defences exist

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	397384	401618	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	397430	401618	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	397476	401618	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	397522	401618	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	397568	401618	NoData	NoData	NoData	NoData	NoData	NoData	0.01	132.08	0.12	132.19	0.88	132.96
6	397614	401618	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.03	132.12	0.94	133.03
7	397384	401664	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	397430	401664	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	397476	401664	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	397522	401664	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.03	132.73	0.63	133.33
11	397568	401664	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.11	132.52	0.67	133.08
12	397384	401710	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
13	397430	401710	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	397476	401710	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	397522	401710	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.01	132.86	0.72	133.58
16	397568	401710	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.13	132.70	0.66	133.24

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	397384	401756	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
18	397430	401756	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
19	397476	401756	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	397522	401756	2.79	132.10	3.25	132.56	3.45	132.75	3.56	132.87	3.85	133.16	4.45	133.76
21	397568	401756	NoData	NoData	NoData	NoData	0.57	132.77	0.69	132.89	0.97	133.18	1.60	133.80
22	397384	401802	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
23	397430	401802	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
24	397476	401802	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
25	397522	401802	NoData	NoData	NoData	NoData	0.34	132.77	0.45	132.89	0.75	133.19	1.39	133.83
26	397568	401802	NoData	NoData	NoData	NoData	0.63	132.77	0.75	132.89	1.04	133.18	1.68	133.82

Data in this table comes from the Tame at Uppermill Model 2019 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.



Environment Agency

No defences exist climate change modelled fluvial extent and height

Location (easting/northing)
397488/401707

Scale
1:2,500

Created
23 Jun 2023

Model name
Tame at Uppermill Model 2019

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 132.0
- 132.0 - 132.375
- 132.375 - 132.75
- 132.75 - 133.125
- 133.125 - 133.5
- 133.5 - 133.875
- 133.875 - 134.25
- 134.25 - 134.625
- 134.625 - 135.0

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

0 25 50 75 100
metres

Sample point data

No defences exist climate change

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
1	397384	401618	NoData	NoData	NoData	NoData	NoData	NoData
2	397430	401618	NoData	NoData	NoData	NoData	NoData	NoData
3	397476	401618	NoData	NoData	NoData	NoData	NoData	NoData
4	397522	401618	NoData	NoData	NoData	NoData	NoData	NoData
5	397568	401618	0.16	132.23	0.18	132.26	0.61	132.69
6	397614	401618	0.07	132.16	0.09	132.17	0.67	132.76
7	397384	401664	NoData	NoData	NoData	NoData	NoData	NoData
8	397430	401664	NoData	NoData	NoData	NoData	NoData	NoData
9	397476	401664	NoData	NoData	NoData	NoData	NoData	NoData
10	397522	401664	0.12	132.82	0.18	132.88	0.52	133.22
11	397568	401664	0.17	132.57	0.20	132.61	0.43	132.84
12	397384	401710	NoData	NoData	NoData	NoData	NoData	NoData
13	397430	401710	NoData	NoData	NoData	NoData	NoData	NoData
14	397476	401710	NoData	NoData	NoData	NoData	NoData	NoData
15	397522	401710	0.07	132.93	0.13	132.99	0.61	133.47
16	397568	401710	0.18	132.76	0.21	132.79	0.42	133.00

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
17	397384	401756	NoData	NoData	NoData	NoData	NoData	NoData
18	397430	401756	NoData	NoData	NoData	NoData	NoData	NoData
19	397476	401756	NoData	NoData	NoData	NoData	NoData	NoData
20	397522	401756	3.92	133.24	3.97	133.28	4.32	133.63
21	397568	401756	1.04	133.25	1.08	133.29	1.44	133.65
22	397384	401802	NoData	NoData	NoData	NoData	NoData	NoData
23	397430	401802	NoData	NoData	NoData	NoData	NoData	NoData
24	397476	401802	NoData	NoData	NoData	NoData	NoData	NoData
25	397522	401802	0.82	133.26	0.87	133.30	1.24	133.67
26	397568	401802	1.11	133.26	1.16	133.30	1.52	133.67

Data in this table comes from the Tame at Uppermill Model 2019 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