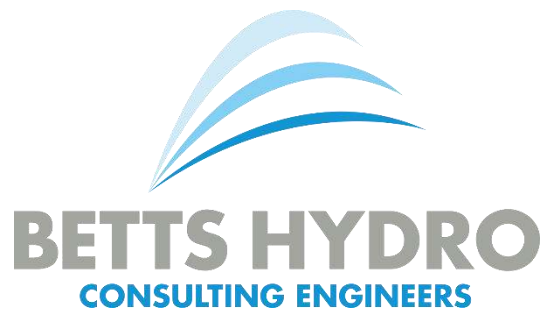
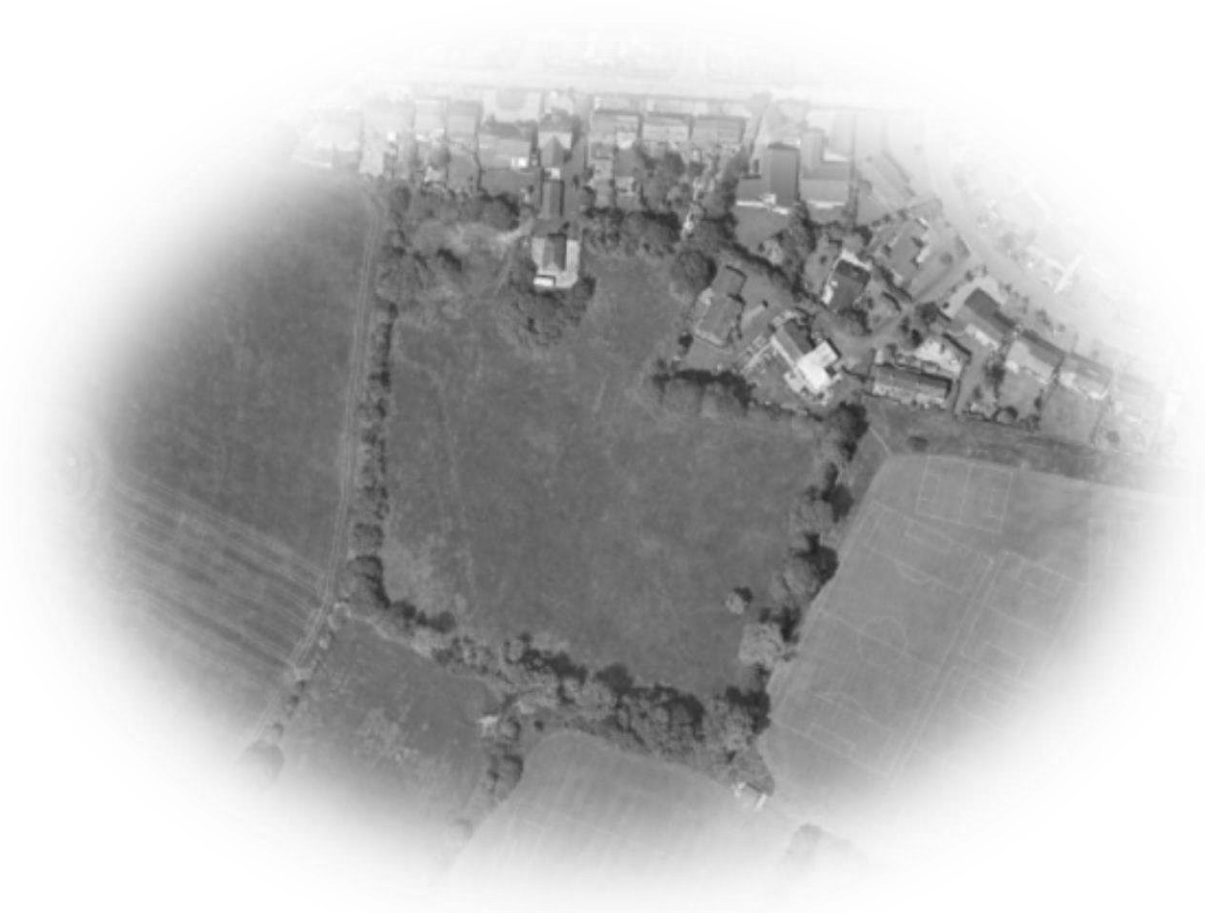




LAND OFF GREENVALE BAMFORD

FLOOD RISK ASSESSMENT



For

Wain Homes North West
Kelburn Court
Daten Park
Warrington
WA3 6UT



APRIL 2025

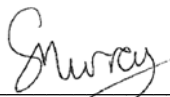
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**LAND OFF GREENVALE
BAMFORD
FLOOD RISK ASSESSMENT**

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EXECUTIVE SUMMARY

This Flood Risk Assessment was commissioned by Wain Homes North West, referred to hereafter as 'the client'. This report has been prepared to support an application for the construction of 43no. residential dwellings on land located off Greenvale in Bamford, Rochdale. The site lies solely within Flood Zone 1 based on the Environment Agency Flood Map for Planning.

The proposals are classified as 'More Vulnerable' in Annex 3: Flood Risk Vulnerability Classification, within the National Planning Practice Framework. The Planning Practice Guidance confirms that more vulnerable development is appropriate within Flood Zone 1 providing there is no increase in flood risk elsewhere due to the proposals.

In terms of updated National Planning Policy Framework, there is a requirement to ensure that future development avoids areas located within medium or high risk of flooding from all sources *now and in the future*. This report has reviewed all sources of flood risk both to and resulting from the proposed development site. Consultation with the Environment Agency, United Utilities, and Rochdale Metropolitan Borough Council has not identified any historical flooding to the site.

The nearest Main River to the site is Naden Brook, which is located 480m west of the site. The fluvial flood risk to the site from Naden Brook is 'low' based on the topography. In terms of other sources of flood risk, the site is at predominantly 'very low' risk of surface water flooding. There are isolated areas at higher risk, but these correspond with a naturally low-lying conveyance channel which routes through the site from the north to the south where ponding is likely to occur during extreme and prolonged rainfall events. In accordance with current NPPF, where built development is proposed within those areas shown to be at medium or high chance then there would be a need to consider the Sequential Test in support of the application.

To mitigate flood risks identified, it is advised that external levels fall away from the proposed buildings, to minimise the flood risk associated with overland flow. By keeping the Finished Floor Levels elevated relative to the externals, this should help create safe overland flood flow routes in the event of any source of flooding including surface water.

Although the site is shown to be at very low risk from based on the current mapping, the additional impermeable areas onsite (because of future development) has the potential to cause an increase in surface water flood risk to others if not managed appropriately. A separate Drainage Management Strategy has been to support the planning application which will detail the drainage strategy (refer to HYD883_GREENVALE.BAMFORD_DMS).

UU sewer records have shown a public surface water sewer crossing the site. Maintenance offsets are usually required from public sewers when they are located onsite these should be discussed with United Utilities, as they vary depending on the size of the infrastructure and the depth at which it is laid. If required offsets cannot be achieved, then diversion works may be required; early discussion with United Utilities is advised for any proposed works.

To summarise, the proposals are at 'low' flood risk from the key flood sources reviewed and appropriate mitigation will be put in place to ensure that there is no increase in flood risk because of the proposals. This assessment has been prepared in consultation with the relevant interested parties. The report is commensurate with the scale and nature of the proposals, and appropriate in accordance with the Planning Practice Guidance.

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Specialist Software

-  MicroDrainage WinDES (v.2020.1.3) – Calculation of Greenfield run-off volumes, rates of rainfall and stormwater storage estimates.

Abbreviations & Acronyms

AEP	Annual Exceedance Probability
CC	Climate Change
EA	Environment Agency
FRA	Flood Risk Assessment
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
mAOD	Metres Above Ordnance Datum
NPPF	National Planning Policy Framework
PFRA	Preliminary Flood Risk Assessment
PPG	Planning Practice Guidance
RMBC	Rochdale Metropolitan Borough Council
SFRA	Strategic Flood Risk Assessment
TWL	Top Water Level
UU	United Utilities

1.0 INTRODUCTION

1.1 Planning Policy Context

- 1.1.1 All forms of flooding and their impact on the natural and built environment are material planning considerations. The revised National Planning Policy Framework (NPPF) sets out the Government's objectives for the planning system, and how planning should facilitate and promote sustainable patterns of development, avoiding flood risk and accommodating the impacts of climate change.
- 1.1.2 Government policy with respect to development in flood risk areas is contained within the revised NPPF and the supporting Planning Practice Guidance (PPG) (refer to extracts in **Appendix A**). A Flood Risk Assessment (FRA) has been completed in accordance with the revised NPPF and the PPG to review all sources of flood risk both to and from the proposed development.
- 1.1.3 The proposals are classified as 'More Vulnerable' in Annex 3: Flood Risk Vulnerability Classification, within the National Planning Practice Framework. The PPG confirms that this type of land-use is appropriate for Flood Zone 1, providing there is no increase in flood risk elsewhere due to the proposals.

Sequential Testing

- 1.1.4 Recent updates to the NPPF (December 2024), along with recent appeal decisions have identified the requirement for focus on sequential testing future development sites in terms of the flood risks identified. *Paragraph 175 (NPPF, 2024)* states that:

"The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk)."

- 1.1.5 Whilst the Local Planning Authority's/Lead Local Flood Authority's Strategic Flood Risk Assessment provides a starting point in terms of strategic assessment, where there is more up to date mapping which considers current and future flood risks, then this should also be assessed to steer future development to the most appropriate locations.

1.2 Site Context

- 1.2.1 This FRA has been prepared to support a planning application the construction of 65no. residential dwellings on land south of Greenvale in Bamford, Rochdale. The proposals will be complete with access, car parking, external works, boundary fencing, external services, and drainage.

1.3 Consultation

- 1.3.1 The NPPF advises that Rochdale Metropolitan Borough Council (RMBC) as the Local Planning Authority (LPA) should consult with the EA who will provide advice and guidance on flood issues at a strategic level and in relation to planning applications.
- 1.3.2 The preparation of this report has been undertaken in consultation with the Environment Agency (EA), United Utilities (UU), and Rochdale Metropolitan Borough Council (RMBC). The consultation responses can be seen in **Appendix B, C, and D** respectively.

2.0 EXISTING SITE LOCATION

2.1 Location

- 2.1.1 The site is located Greenvale in Bamford, Rochdale. The nearest Ordnance Survey National Grid Reference is E: 386034, N: 413432 and the nearest postcode is OL11 5QL (see the Location Plan in **Appendix E**). The whole site covers 2.695ha and is edged in red in **Figure 1**.
- 2.1.2 In terms of the surrounding land-use, the site is bound to the north by Greenvale, and to the north-west by a culdesac off Norford Way. The site is surrounded by residential development to the north, and by undeveloped agricultural land to the south, west and east. The closest watercourse to the site is Naden Brook (Main River), located 480m west of the site.



2.2 Existing and Historical Land Use

- 2.2.1 The site is currently undeveloped agricultural land, and comprises of low-density vegetation, with larger shrubs and trees located along the field boundaries. No other historical land uses have been identified during the preparation of this report.

2.3 Topography

- 2.3.1 A topographic survey has been undertaken and is included within **Appendix F** for completeness. The topographic survey identifies that the site falls from a high point of 167.084mAOD in the north, down to a level of 156.215mAOD in the south of the site. The arrows shown in **Figure 1** indicate the general fall across the site.

2.4 Site Walkover

- 2.4.1 A site walkover was undertaken by Betts Hydro in November 2024. This visit was to confirm the general topography and to understand the natural drainage regimes serving the site. The site photographs from the visit are included in **Appendix G**.

3.0 DEVELOPMENT PROPOSALS

3.1 Nature of the Development

- 3.1.1 This planning application is for the construction of 43no. residential dwellings on land located off Greenvale in Bamford, Rochdale. The proposals will be complete with access, footpaths, car parking, external works, landscaping, boundary fencing, and drainage. The planning layout is included within **Figure 2** below (see full plan in **Appendix H**).



Figure 2: Planning Layout (MCK Associates Ltd, 2025)

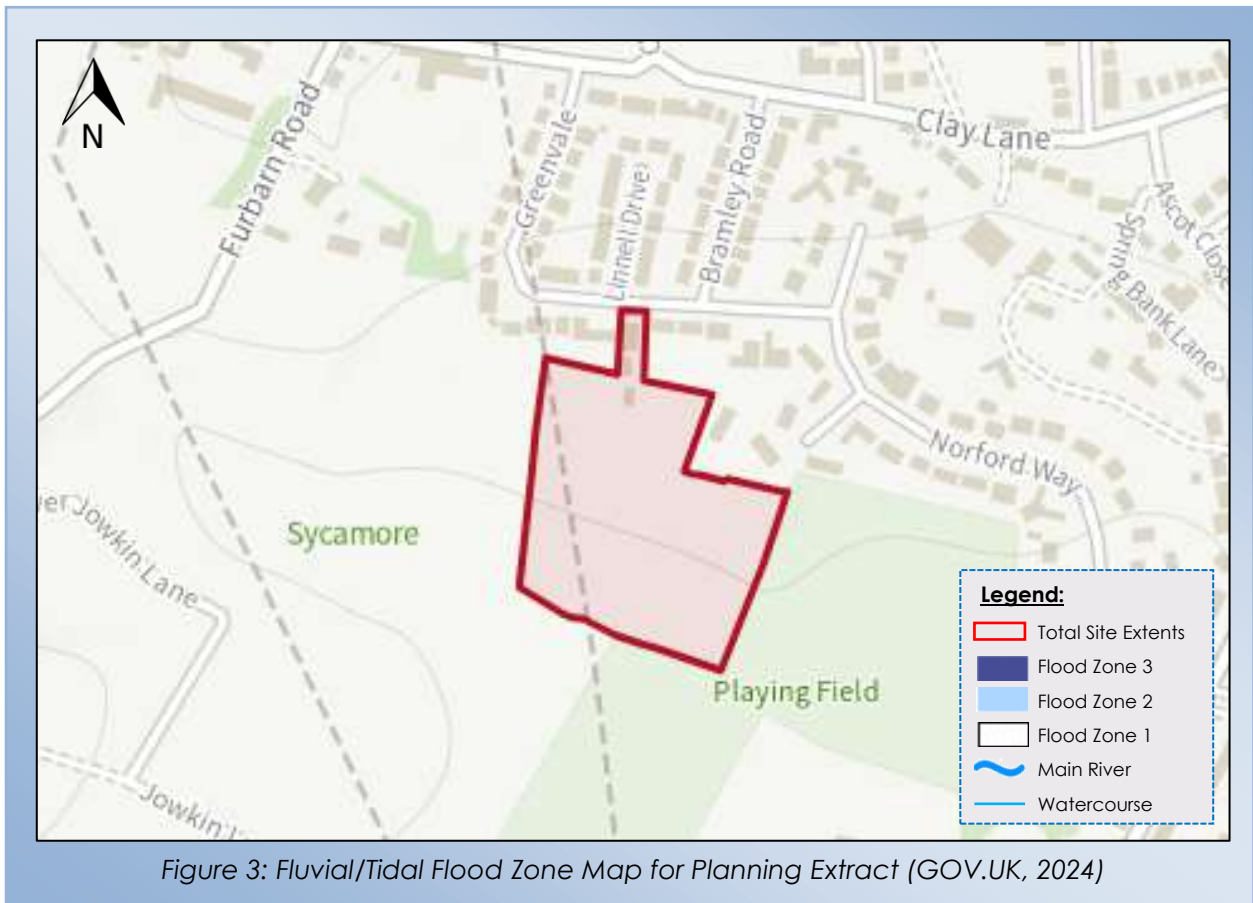
- 3.1.2 The total site covers 2.695ha and is 100% permeable at present, shown in red in **Figure 2**. Based on the above planning layout, the post-development impermeable areas will likely increase to approximately 55% of the development area, which will equate to 1.482ha.

- 3.1.3 There is a requirement to provide maintenance offsets from the public sewers, where they are located onsite. The specific offset needs to be discussed with UU as they vary depending on the size of the infrastructure and the depth at which it is laid. The proposals are to divert the public surface water sewer which crosses the site (subject to consent and agreement from UU). Early discussion with UU is recommended.
- 3.1.4 To satisfy NPPF guidance, it would be recommended that the proposed residential development avoids medium and high-risk of flooding areas where practical. Where residential development is required within these medium and high locations, then the Sequential Test may be required, especially where sites have not been allocated as part of the Local Plan.
- 3.1.5 Opportunities to provide soft landscaping on the site would provide added benefits to water quality and ecology. As illustrated in **Figure 2**, a large area to the west has been left undeveloped to accommodate a high voltage overhead cable, and this area has been excluded from the development area.
- 3.1.6 National and local policy identifies that SUDS should be incorporated into new development where feasible to manage surface water run-off generated. Betterment in the form of permeable surfaces opposed to external hardstanding should also be considered to reduce the surface water run-off.
- 3.1.7 A separate Drainage Management Strategy has been prepared to support the planning application which details the drainage strategy proposed (refer to HYD883_GREENVALE.BAMFORD_DMS).

4.0 SOURCES OF FLOOD RISK

4.1 Fluvial Flood Risk

- 4.1.1 Information relating to flood risk at the site has been obtained from the Environment Agency and the Gov.uk website. An extract of the EA's Flood Zone Map for Planning is shown in **Figure 3**, which illustrates that the site is located solely within Flood Zone 1. Flood Zone 1 is an area considered to be at little or no flood risk from rivers and/or the sea (as defined by the EA).



Main Rivers

- 4.1.2 The nearest Main River to the site is Naden Brook, which is located 480m west of the site. The fluvial flood risk to the site from Naden Brook is 'low' based on the surrounding topography. This is supported by the Flood Map for Planning, as shown within **Figure 3** (see **Appendix B**).

4.2 Tidal Flood Risk

- 4.2.1 The Northwest Coastline is located over 50km west of the site. The tidal flood risks associated are therefore 'very low'. This is supported by the EA's Flood Map for Planning, which shows the site in Flood Zone 1 and at little/no risk from tidal sources.

4.3 Flood Risk Vulnerability Classification and Flood Zone Compatibility

- 4.3.1 The proposals are classified as 'more vulnerable' in Annex 3: Flood Risk Vulnerability Classification within the National Planning Policy Framework. The Planning Practice Guidance confirms that this type of land-use is appropriate for Flood Zone 1, providing there is no increase in flood risk elsewhere due to the proposals.

4.4 Surface Water Flood Risk

- 4.4.1 Surface water flooding occurs when rainwater is unable to drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. The recently updated Flood Map for Planning (FMfP) data (25th March 2025), includes new published information relating to surface water flooding. The Surface Water Flood Map for Planning data includes present-day chance of flooding information only and does not currently show climate change scenarios for surface water.
- 4.4.2 Considering the surface water flood map for planning, the chance of surface water flooding in some parts of the wider site could be more than 3.3% AEP (1 in 30) each year, particularly in those naturally low-lying areas in the north and in the south-eastern corner of the site (see mapping snapshots in **Appendix B**).
- 4.4.3 The updated FMfP mapping also shows that there are parts of the site to have a chance of flooding equal to the 1% AEP (1 in 100) chance of flooding each year. This is considered to represent the medium risk scenario and is shown in the areas to the north and in the southeastern corner of the site. (see **Figure 4**). With areas along the centre of site and in the south-east corner of the site being shown to have 0.1% AEP (1 in 1000) chance of flooding each year (low risk). Any run-off conveying through the site at present should be catered for through continued routing in an appropriate manner, this will ensure no increased run-off elsewhere because of the proposals.

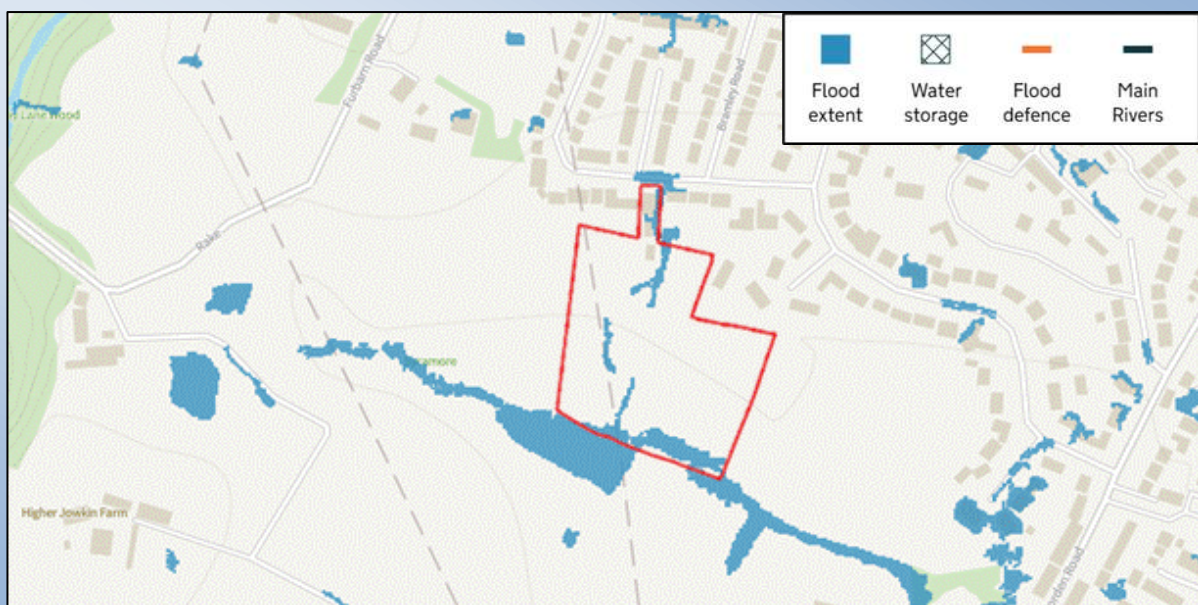
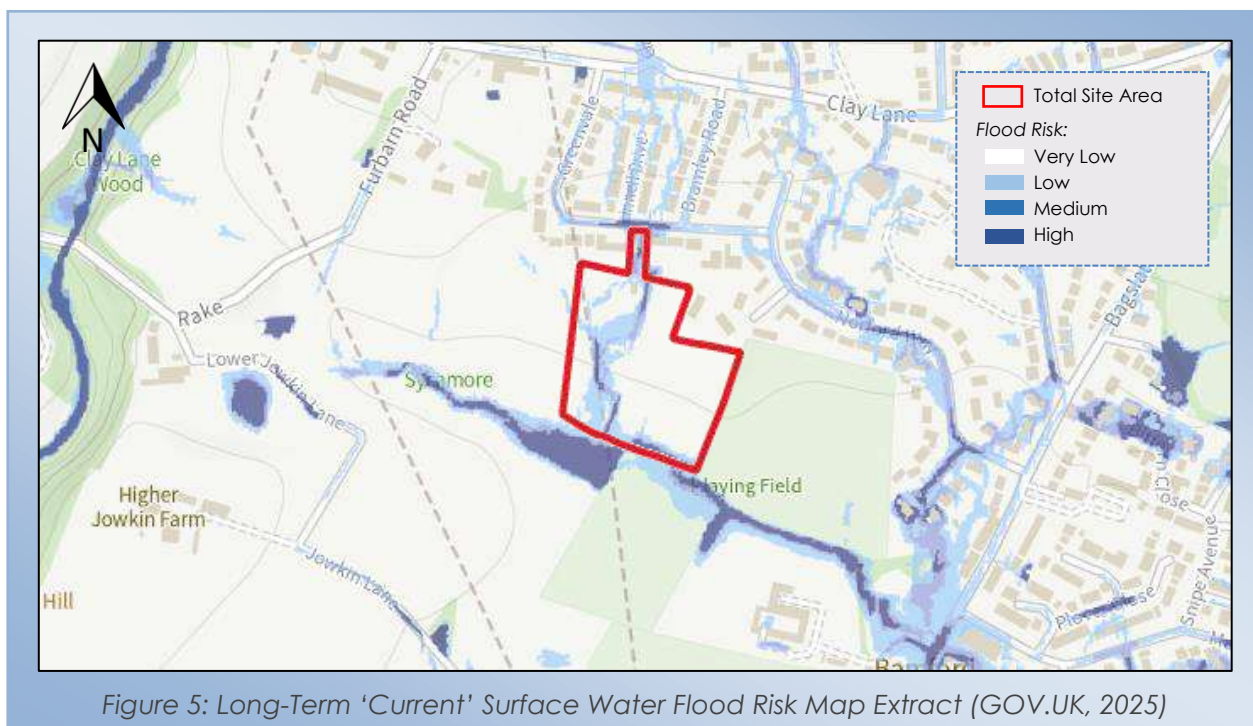


Figure 4: FMfP Surface Water 1 in 100yr Annual likelihood of Flooding (EA, 2025)

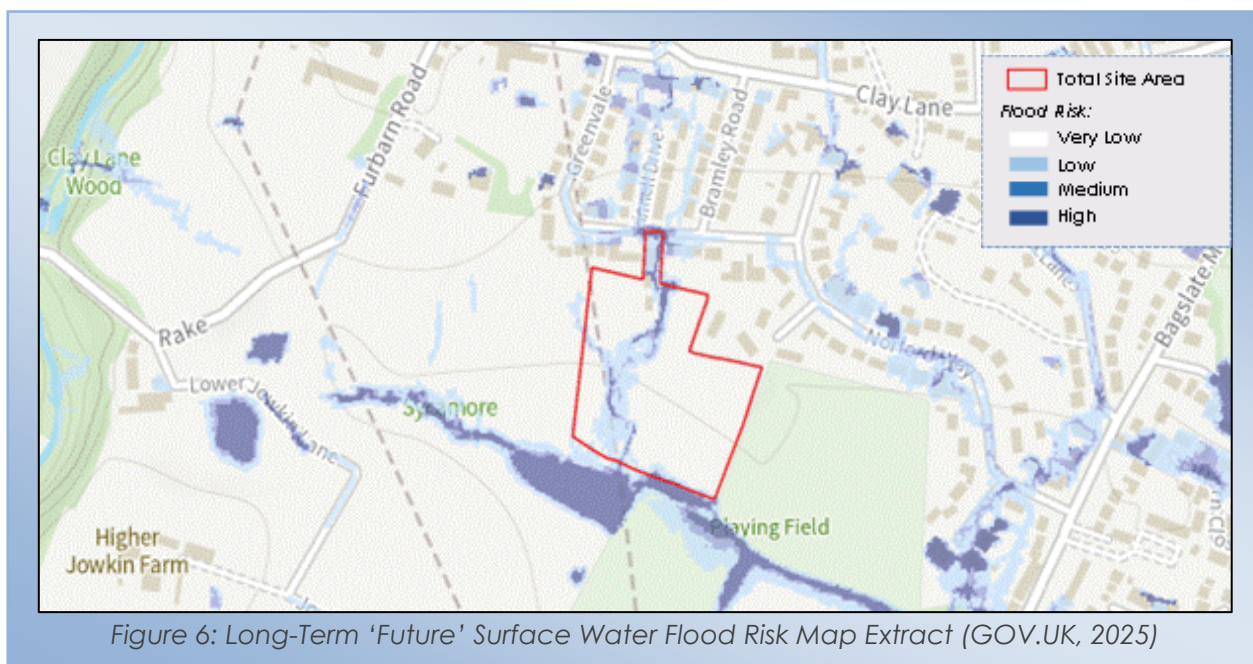
- 4.4.4 The EA also provide further information in terms of surface water flooding in the form of the long-term Risk of Flooding from Surface Water (RoFSW) mapping, extracts from which have been included subsequently and discussed (**Figure 5 & Figure 6**). Whilst this data is not intended for use in planning, the guidance does say that it can be used as part of initial risk assessment works.
- 4.4.5 The EA RoFSW dataset shows the current present-day chance of flooding from surface water, represented on a 2m resolution grid. The risk is displayed as one of following three likelihood categories:
- High (greater than or equal to 1 in 30 or 3.3% chance of flooding for any given year),
 - Medium (less than 1 in 30 or 3.3%, but greater than or equal to 1 in 100 or 1% chance of flooding in any given year), or
 - Low (less than 1 in 100 or 1% chance of flooding, but greater than or equal to 1 in 1000 or 0.1% chance of flooding in any given year).
- 4.4.6 As indicated in **Figure 5**, the site is at predominantly 'very low' chance of surface water flooding. The areas indicated to be at higher chance onsite correspond with a naturally low-lying conveyance channel which routes through the site from the north to the south (blue areas in **Figure 5**). Ponding in these locations would be most likely to occur during extreme and prolonged rainfall events. These extents mimic that shown on the Surface Water Flood Map for Planning noted in the previous paragraphs.



- 4.4.7 Whilst the Flood Map for Planning does not include climate change projected chance of flooding scenarios for consideration, future climate change scenarios have been provided as part of the recently updated and published EA Risk of Surface Water Flooding mapping. This updated future scenario indicates the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative

Concentration Pathway (RCP) 8.5. A near-term epoch (2040 – 2060 “2050s” epoch) and central allowances are used.

- 4.4.8 As indicated in **Figure 6**, the future surface water flood likelihood extents are slightly of higher chance when compared to the current surface water extents but are still associated with the same general areas (existing low-lying areas and conveyance routes towards the centre and south-east of the site. Whilst it is typically feasible to mitigate for the risk from surface water in most cases, this would not negate the need for sequential testing for un-allocated or previously non-tested sites, in accordance with the updated NPPF (December 2024).



- 4.4.9 Regarding the areas of medium and high chance of surface water flooding (**Figures 5 & 6**) an intra-site sequential approach should ideally be taken, and it would therefore be recommended that the proposed residential development avoids these medium and high-risk areas where practical. Where residential development is required within these medium and high chance locations, then the Sequential Test may be required, especially where sites have not been allocated as part of the Local Plan.
- 4.4.10 Any run-off conveying through the site at present (from land to the north) should be catered for through continued routing in an appropriate manner. This will ensure no increased run-off elsewhere because of the proposals. Regarding the areas of medium and high chance (**Figure 5 and Figure 6**) an intra-site sequential approach should be taken, and it would therefore be recommended that the proposed residential development avoids this low lying conveyance channel where at all practical.
- 4.4.11 In terms of residual risks onsite post-development, it is advised that external levels fall away from the proposed buildings, to minimise the flood risk from a variety of sources. By keeping the Finished Floor Levels elevated relative to the externals (typically 150mm to conform to standard Building Regs), this should help create safe overland flood flow routing in the event of any source of flooding that could lead to overland flows.

- 4.4.12 Any overland flows generated must be carefully controlled, safe avenues directing overland flow away from any existing/proposed buildings is advised. Potential residual flood risk from surface water will be managed, post-development through the implementation of a sustainable surface water management regime, to manage surface water run-off generated by the proposed development in a sustainable and efficient manner. This will ensure any overland flows generated by the proposals do not increase flood risk elsewhere. A separate Drainage Management Strategy has been prepared to support the planning application which details the drainage strategy proposed (refer to *HYD883_GREENVALE.BAMFORD_DMS*).

Pluvial (Overland run-off) Flood Risk

- 4.4.13 Intense rainfall that is unable to soak into the ground or enter drainage systems can run-off land and result in flooding. Local topography and the land-use can have a strong influence on the direction and depth of flow. The undeveloped land to the east, west, and south fall away from the site, although there is a low area towards the south of the site with potential for ponding in high rainfall events. The potential risk of pluvial run-off impacting the site is therefore considered low.
- 4.4.14 The volume and rate of overland flow from land can be exacerbated if development increases the percentage of impermeable area. Any overland flows generated by the development must be carefully controlled; safe avenues directing overland flow away from adjacent development are advised. An appropriate surface water drainage management regime will be implemented to cater for the increase in impermeable areas on the site, meaning a reduction in the overland flows generated on the site.

Sewer Flood Risk

- 4.4.15 In urban areas, rainwater is frequently drained into surface water sewers or sewers containing both surface and wastewater known as 'combined sewers'. Foul water flooding often occurs in areas prone to overland flow and can result when the sewer is overwhelmed by heavy rainfall and will continue until the water drains away.
- 4.4.16 Review of the UU sewer records has identified a public surface water sewer crossing the site. There is a requirement to provide maintenance offsets from the public sewers, where they are located onsite. The specific offset needs to be discussed with UU as they vary depending on the size of the infrastructure and the depth at which it is laid. Where any required offset cannot be achieved then diversion works may be required and early discussion with UU is advised for any proposed works.
- 4.4.17 Consultation with United Utilities has been undertaken and has confirmed that there are no known records of sewer flooding within the vicinity of the proposed development (see **Appendix C** for correspondence and sewer records).

4.5 Groundwater Flood Risk

- 4.5.1 High groundwater levels are usually the key source of groundwater flooding, which occurs when excess water emerges at the ground surface (or within manmade underground structures such as basements). Groundwater flooding is often more insistent than surface water flooding and would typically last for weeks/months rather than days meaning the result to property is often more severe.

- 4.5.2 In general terms groundwater flooding can occur from three main sources:
- ☞ If groundwater levels are naturally close to the surface, then this can present a flood risk during times of intense rainfall.
 - ☞ Seepage and percolation occur where embankments above ground level hold water. In these cases, water travels through the embankment material and emerges on the opposite side of the embankment.
 - ☞ Groundwater recovery/rebound occurs where the water table has been artificially depressed by abstraction. When the abstraction stops the water table makes a recovery to its original level. There is the potential for groundwater flooding in low lying areas where groundwater levels have been depressed below their pre-pumping conditions, where these were at or close to ground level.
- 4.5.3 The mapping data for groundwater shows that the site is underlain by a Secondary A bedrock aquifer, meaning that the rock layers in this area may support water supplies and/or river base flow on a local scale rather than strategic scale. The BGS mapping goes on to state that the site is also underlain with Secondary (undifferentiated) superficial deposits (this refers to rock deposits with variable permeability and storage properties).
- 4.5.4 The online BGS mapping also provides information on Groundwater Vulnerability, this mapping illustrates the vulnerability of the groundwater to a pollutant discharged at ground level. The mapping uses hydrological, geological, hydrogeological and soil properties within a one-kilometre square grid. In this case the site area is shown to be located within a medium-low risk area, which means that it is in an area with a lower likelihood of a pollutant reaching the groundwater (i.e., the vulnerability).
- 4.5.5 No historical flooding at or within proximity of the site due to groundwater related sources has however been identified as part of this assessment, including review of the Rochdale Metropolitan Borough Council SFRA, and the Greater Manchester Combined Authority SFRA (see mapping extracts in **Appendix I**).
- 4.5.6 Irrespective, it is advised that external levels fall away from the proposed dwellings to minimise the flood risk from a variety of sources. By keeping the Finished Floor Levels elevated relative to the externals, this should help create an overland flood flow route in the event of a breach or any other source of overland flooding.

Groundwater Source Protection Zones

- 4.5.7 In addition to the aquifer bedrock designations, mapping is available that shows the extent of groundwater Source Protection Zones (SPZs). The SPZs show the risk of contamination from any activities that might cause pollution in the area. Review of the mapping has identified that the site is not located within a SPZ.

4.6 Artificial Sources of Flood Risk

- 4.6.1 National policy states that an FRA should consider the potential risks from a variety of other flood sources including artificial sources (such as risks from reservoirs and canals).

Reservoirs

- 4.6.2 The Environment Agency recognises reservoirs as bodies of water over 25,000cu.m and the long-term flood mapping is included in **Appendix B**. The mapping shows that the site is not susceptible to flooding should a failure occur in a nearby reservoir.
- 4.6.3 Irrespective, it is advised that external levels fall away from the proposed buildings, to minimise the flood risk from a variety of sources. By keeping the Finished Floor Levels elevated relative to the externals, this should help create an overland flood flow route in the event of a breach or any other source of reservoir flooding.

Canals

- 4.6.4 The nearest canal to the site is located 3.4km south-west of the site. Given the proximity and topography in relation to the site, the flood risk to the site from canals is 'very low'.
- 4.6.5 Irrespective, it is advised that external levels fall away from the proposed buildings, to minimise the flood risk from a variety of sources. By keeping the Finished Floor Levels elevated relative to the externals, this should help create an overland flood flow route in the event of a breach or any other source of canal flooding.

4.7 Historical and Anecdotal Flooding Information

- 4.7.1 No historical flooding has been identified during our review of online sources, including review of the Rochdale Metropolitan Borough Council SFRA, and the Greater Manchester Combined Authority SFRA (see general mapping extracts in **Appendix I**).
- 4.7.2 Consultation with the Environment Agency, United Utilities, and Rochdale Metropolitan Borough Council has been carried out for this application and has not identified any historic flooding at or in close proximity to the site (correspondence in **Appendix B, C, and D**).

4.8 Flood Risk Mitigation Measures & Residual Risks

- 4.8.1 The development parcels are located wholly within Flood Zone 1 and are at little risk of fluvial/tidal flooding. To observe a conservative approach however, mitigation measures have been proposed below to safeguard against other potential residual sources of flood risk. The mitigation measures also consider the uncertainties of climate change in accordance with the revised NPPF and PPG.
- 4.8.2 Whilst the mitigation measures proposed are to safeguard the development, they would not remove the requirement for the Sequential and Exception Tests where built development is proposed within the extent of areas identified to be at high or medium flood risk.

Mitigation Measures

- 4.8.3 To satisfy NPPF guidance, it would be recommended that the proposed residential development avoids medium and high-risk of flooding areas where practical. Where residential development is required within these medium and high locations, then the Sequential Test may be required, especially where sites have not been allocated as part of the Local Plan.

- 4.8.4 It is advised that external levels fall away from the proposed buildings, to minimise the flood risk from a variety of sources. By keeping the Finished Floor Levels elevated relative to the externals (typically 150mm where practical), should help create a safe overland flood flow route externally in the event of a flooding associated with a variety of sources. Depending on other engineering factors, there may be scope to elevate further in some areas where proposals overlap with areas of greater risk.
- 4.8.5 Any run-off conveying through the site at present should be catered for through continued routing in an appropriate manner, this will ensure no increased run-off elsewhere because of the proposals. Safe avenues directing overland flow away from any existing/proposed buildings is advised.
- 4.8.6 To minimise the flood risk to the neighbouring properties it is recommended that the surface water run-off generated by the proposals be managed effectively with the peak rates of run-off being restricted to the equivalent of the pre-development situation (with betterment where required). A separate Drainage Management Strategy has been prepared to support the application, which details the drainage strategy (refer to *HYD883_GREENVALE.BAMFORD_DMS*).
- 4.8.7 The proposed onsite surface water drainage system will need to be sized to contain the 1 in 30yr return period event with exceedance from storm events up to and including the 1 in 100yr return period storm event with a 45% allowance for climate change being contained onsite.
- 4.8.8 As with any drainage system, blockages within either the foul or surface water system have the potential to cause flooding or disruption. It is important that should any drainage systems not be offered for adoption then an appropriate maintenance regime should be scheduled with a suitably qualified management company for these private drainage systems.

Residual Risks

- 4.8.9 If an extreme rainfall event exceeds the design criteria for the drainage system it is likely that there will be some overland flows that are unable to enter the system, it is important that these potential overland flows are catered for within the development site if the capacity of the drainage system is exceeded, or in the event of a system failure.

5.0 SUMMARY AND CONCLUSIONS

- 5.1 The site lies solely within Flood Zone 1 and the Planning Practice Guidance confirms that 'More Vulnerable' development is appropriate within Flood Zone 1, providing there is no increase in flood risk elsewhere due to the proposals. Consultation with the Environment Agency, United Utilities, and Rochdale Metropolitan Borough Council has not identified any historical flooding to the site or the wider area.
- 5.2 This report has reviewed all sources of flood risk both to and resulting from the proposed development site. The nearest Main River to the site is Naden Brook, which is located 480m west of the site. The fluvial flood risk to the site from Naden Brook is 'low' based on the surrounding topography.
- 5.3 The site is at predominantly 'very low' risk of surface water flooding. The areas indicated to be at higher risk onsite correspond with a naturally low-lying conveyance channel which routes through the site from the north to the south where ponding is likely to occur during extreme and prolonged rainfall events. An intra-site sequential approach should be undertaken, and all development should be located within areas at 'very low' surface water flood risk only, where practical.
- 5.4 UU sewer records show a public surface water sewer crossing the site. Maintenance offsets are usually required from public sewers when located onsite. The specific offset requirements should be discussed with United Utilities as they vary depending on the size of the infrastructure, and the depth at which it is laid. If required offsets cannot be achieved, then diversion works may be required; early discussion with United Utilities is advised for any proposed works.
- 5.5 It is advised that external levels fall away from the proposed buildings, to minimise the flood risk from a variety of sources. By keeping the Finished Floor Levels elevated relative to the externals, this should help create an overland flood flow route in the event of any source of flooding that could lead to overland flows.
- 5.6 A separate Drainage Management Strategy will be prepared in due course to support the planning application which will detail the preliminary drainage strategy (refer to *HYD883_GREENVALE.BAMFORD_DMS*). The focus of the Drainage Management Strategy will be on the effective management of surface water run-off generated by the development proposals to ensure that any surface water flood risk present is sufficiently managed, and that no increased flood risk will result from the proposals.
- 5.7 To summarise, the proposals are at 'low' flood risk from the flood sources reviewed as part of this assessment. This assessment has been prepared in consultation with the relevant interested parties. The report is commensurate with the scale and nature of the development proposals, and appropriate in accordance with the Planning Practice Guidance.

6.0 RECOMMENDATIONS

- 6.1 It is advised that external levels fall away from the proposed buildings, to minimise the flood risk from a variety of sources. By keeping the Finished Floor Levels elevated relative to the externals, this should help create a safe overland flood flow route externally in the event of a flooding associated with a variety of sources, including residual groundwater and surface water flooding.
- 6.2 Safe avenues directing overland flow away from any existing/proposed buildings is advised. Any run-off conveying through the site at present should be catered for through continued routing in an appropriate manner, this will ensure no increased run-off elsewhere because of the proposals.
- 6.3 To satisfy NPPF guidance, it would be recommended that the proposed residential development avoids medium and high-risk of flooding areas where practical. Where residential development is required within these medium and high locations, then the Sequential Test may be required, especially where sites have not been allocated as part of the Local Plan.
- 6.4 To minimise the flood risk to the neighbouring properties it is recommended that the surface water run-off generated by the proposals be managed effectively with the peak rates of run-off being restricted to the equivalent of the pre-development situation (with betterment where required). A separate Drainage Management Strategy will be prepared in due course to support the planning application which will detail the preliminary drainage strategy (refer to *HYD883_GREENVALE.BAMFORD_DMS*).
- 6.5 Early discussion with United Utilities is advised for any proposed works, given the presence of a public surface water sewer crossing the site. Maintenance offsets are typically required, with the specific offset varying depending on the size of infrastructure, and depth at which it is laid. Where any required offset cannot be achieved then diversion works may be required and early discussion with UU is advised for any proposed works.
- 6.6 The proposed onsite surface water drainage system will need to be sized to contain the 1 in 30yr return period event with exceedance from storm events up to and including the 1 in 100yr return period storm event with a 45% allowance for climate change being contained onsite.
- 6.7 As with any drainage system, blockages within either the foul or surface water system have the potential to cause flooding or disruption. It is important that should any drainage systems not be offered for adoption then an appropriate maintenance regime should be scheduled with a suitably qualified management company for these private drainage systems.
- 6.8 If an extreme rainfall event exceeds the design criteria for the drainage system it is likely that there will be some overland flows that are unable to enter the system, it is important that these potential overland flows are catered for within the development site if the capacity of the drainage system is exceeded, or in the event of a system failure.

BIBLIOGRAPHY & REFERENCES

Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities – Environment Agency/DEFRA 2016
CIRIA 522: Sustainable urban drainage systems – design manual for England and Wales (2000).
CIRIA 523: Sustainable urban drainage systems – best practice manual (2001).
CIRIA 609: Sustainable drainage systems. Hydraulic, structural and water quality advice (2004).
CIRIA 624: Development and flood risk – guidance for the construction industry (2004).
CIRIA 635: Designing for Exceedance in urban drainage: Good practice (2006).
CIRIA 644: Building Greener (2007).
CIRIA 753: The SUDS manual (2015).
Flood Risk to People – Phase 2 (FD2321/TR2), DEFRA and the Environment Agency (2006).
Flood estimation for small catchments: Institute of Hydrology Report No.124, NERC (1994).
Flood Estimation Handbook, Centre for Ecology and Hydrology (1999).
Planning Policy Statement 25: Development and Flood Risk (2006).
Sewers for Adoption 7th Edition, WRc (2012).
Technical Guidance to the National Planning Policy Framework, CLG (2019).

Web-based References

Bingmaps – <http://www.bing.com/Maps/>
British Geological Survey – <http://www.bgs.ac.uk/opengeoscience/home.html>
Chronology of British Hydrological Events – www.dundee.ac.uk/
CIRIA – <http://www.ciria.org/>
Cranfield University – <http://www.landis.org.uk/soilscapes/>
Environment Agency – www.environment-agency.gov.uk/
FloodProBE – <http://www.floodprobe.eu/>
Flood Forum – <http://www.floodforum.org.uk/>
Flood London – <http://www.floodlondon.com/>
Google Maps – <http://maps.google.co.uk/>
Streetmap – <http://www.streetmap.co.uk/>
United Utilities – <https://www.unitedutilities.com/>

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APPENDIX A: NPPF & PPG EXTRACTS

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14. Meeting the challenge of climate change, flooding and coastal change

161. The planning system should support the transition to net zero by 2050 and take full account of all climate impacts including overheating, water scarcity, storm and flood risks and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Planning for climate change

162. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating and drought from rising temperatures⁶¹. Policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.
163. The need to mitigate and adapt to climate change should also be considered in preparing and assessing planning applications, taking into account the full range of potential climate change impacts.
164. New development should be planned for in ways that:
- a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through incorporating green infrastructure and sustainable drainage systems; and
 - b) help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings in plans should reflect the Government's policy for national technical standards.
165. To help increase the use and supply of renewable and low carbon energy and heat, plans should:
- a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);

⁶¹ In line with the objectives and provisions of the Climate Change Act 2008.

- b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
 - c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.
166. In determining planning applications, local planning authorities should expect new development to:
- a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
 - b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.
167. Local planning authorities should also give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings, both domestic and non-domestic (including through installation of heat pumps and solar panels where these do not already benefit from permitted development rights). Where the proposals would affect conservation areas, listed buildings or other relevant designated heritage assets, local planning authorities should also apply the policies set out in chapter 16 of this Framework.
168. When determining planning applications for all forms of renewable and low carbon energy developments and their associated infrastructure, local planning authorities should:
- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal's contribution to a net zero future;
 - b) recognise that small-scale and community-led projects provide a valuable contribution to cutting greenhouse gas emissions;
 - c) in the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site.
169. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

Planning and flood risk

170. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where

development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

171. Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.
172. All plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:
 - a) applying the sequential test and then, if necessary, the exception test as set out below;
 - b) safeguarding land from development that is required, or likely to be required, for current or future flood management;
 - c) using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and
 - d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.
173. A sequential risk-based approach should also be taken to individual applications in areas known to be at risk now or in future from any form of flooding, by following the steps set out below.
174. Within this context the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test.
175. The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).
176. Applications for some minor development and changes of use⁶² should also not be subject to the sequential test, nor the exception test set out below, but should still meet the requirements for site-specific flood risk assessments set out in footnote 63.

⁶² This includes householder development, small non-residential extensions (with a footprint of less than 250m²) and changes of use; except for changes of use to a caravan, camping or chalet site, or to a mobile home or park

177. Having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.
178. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:
- a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and
 - b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
179. Both elements of the exception test should be satisfied for development to be allocated or permitted.
180. Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken into account.
181. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment⁶³. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:
- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
 - b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;
 - c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

home site, where the sequential and exception tests should be applied as appropriate.

⁶³ A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

- d) any residual risk can be safely managed; and
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

182. Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should:
- a) take account of advice from the Lead Local Flood Authority;
 - b) have appropriate proposed minimum operational standards; and
 - c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development.

Coastal change

183. In coastal areas, planning policies and decisions should take account of the UK Marine Policy Statement and marine plans. Integrated Coastal Zone Management should be pursued across local authority and land/sea boundaries, to ensure effective alignment of the terrestrial and marine planning regimes.
184. Plans should reduce risk from coastal change by avoiding inappropriate development in vulnerable areas and not exacerbating the impacts of physical changes to the coast. They should identify as a Coastal Change Management Area any area likely to be affected by physical changes to the coast, and:
- a) be clear as to what development will be appropriate in such areas and in what circumstances; and
 - b) make provision for development and infrastructure that needs to be relocated away from Coastal Change Management Areas.
185. Development in a Coastal Change Management Area will be appropriate only where it is demonstrated that:
- a) it will be safe over its planned lifetime and not have an unacceptable impact on coastal change;
 - b) the character of the coast including designations is not compromised;
 - c) the development provides wider sustainability benefits; and
 - d) the development does not hinder the creation and maintenance of a continuous signed and managed route around the coast⁶⁴.

⁶⁴ As required by the Marine and Coastal Access Act 2009.

186. Local planning authorities should limit the planned lifetime of development in a Coastal Change Management Area through temporary permission and restoration conditions, where this is necessary to reduce a potentially unacceptable level of future risk to people and the development.

(<http://www.legislation.gov.uk/ukxi/2015/596/article/4/made>) to require planning permission to be sought in each case.

Paragraph: 075 Reference ID: 7-075-20220825

Revision date: 25 08 2022

How can neighbourhood plans and neighbourhood development/community right to build orders take account of coastal change?

In any instance where a Neighbourhood Area is proposed in a Coastal Change Management Area, careful attention should be paid to the guidance on [what development would be appropriate in such an area](#), including whether [time-limiting planning permissions](#) are needed. The local planning authority will need to be consulted about existing and anticipated levels of risk, and the types of development that may or may not be appropriate.

See related policy in [paragraphs 170 to 173 of the National Planning Policy Framework](#) (<https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change>).

Paragraph: 076 Reference ID: 7-076-20220825

Revision date: 25 08 2022

Flood Zone and flood risk tables

- Table 1: Flood Zones
- [National Planning Policy Framework Annex 3 - Flood risk vulnerability classification](#) (<https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification>)
- [Table 2: Flood risk vulnerability and flood zone 'incompatibility'](#)

Paragraph: 077 Reference ID: 7-077-20220825

Revision date: 25 08 2022

Table 1: Flood Zones

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
Zone 2 Medium Probability	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual

Flood Zone	Definition
	probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)
Zone 3b The 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 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)

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the [Strategic Flood Risk Assessment](https://www.gov.uk/guidance/local-planning-authorities-strategic-flood-risk-assessment) (<https://www.gov.uk/guidance/local-planning-authorities-strategic-flood-risk-assessment>) when considering location and potential future flood risks to developments and land uses.

Paragraph: 078 Reference ID: 7-078-20220825

Revision date: 25 08 2022

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓ *

Key:

✓ Exception test is not required

X Development should not be permitted

Notes to table 2:

- This table does not show the application of the [Sequential Test](#) which should be applied first to guide development to the lowest flood risk areas; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and [Exception Tests](#) do not need to be applied to those developments set out in [National Planning Policy Framework footnote 56](#) (<https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change>). The Sequential and Exception Tests should be applied to ‘major’ and ‘non major’ development;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

“†” In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

“*” In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;

- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Paragraph: 079 Reference ID: 7-079-20220825

Revision date: 25 08 2022

Site-specific flood risk assessment: Checklist

1 - Development site and location

You can use this section to describe the site you are proposing to develop. It would be helpful to include, or make reference to, a location map which clearly indicates the development site.

- a. Where is the development site located? (e.g. postal address or national grid reference)
- b. What is the current use of the site? (e.g. undeveloped land, housing, shops, offices)
- c. Which Flood Zone (for river or sea flooding) is the site within? (i.e. Flood Zone 1, Flood Zone 2, Flood Zone 3). As a first step, you should check the [Flood Map for Planning \(https://flood-map-for-planning.service.gov.uk/\)](https://flood-map-for-planning.service.gov.uk/). Check the Strategic Flood Risk Assessment for the area available from the local planning authority to identify if the site is within Flood Zone 1 but at increased risk of flooding in future due to climate change
- d. Also check the Strategic Flood Risk Assessment to identify if there are any other sources of flooding that may affect the site now or in the future.

2 - Development proposals

You can use this section to provide a general summary of the development proposals. It would be helpful to include, or make reference to, an existing block plan and a proposed block plan, where appropriate.

- a. What are the development proposal(s) for this site? Will this involve a change of use of the site and, if so, what will that change be?
- b. In terms of vulnerability to flooding, what is the vulnerability classification of the proposed development? See [National Planning Policy Framework Annex 3 \(https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification\)](https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification) for an explanation of the vulnerability classifications.
- c. What is the expected or estimated lifetime of the proposed development likely to be (e.g. 100 years or 75 years)? See [paragraph 006](#) of this guidance for further advice on how to assess the lifetime of developments for flood risk and coastal

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APPENDIX B: EA INFORMATION & CORRESPONDENCE

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Hannah Buchanan

From: Hannah Buchanan
Sent: 18 September 2023 10:22
To: GMMC Info Requests
Subject: Flood Risk Information Request - Products 4, 5, 6, & 7
Attachments: Location Plan.pdf

To whom it may concern,

Greenvale, Bamford, Rochdale

Please could you confirm whether you have any information (Products 4, 5, 6, & 7) that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the above site (location plan attached), including details of historical flooding and specific drainage requirements; this would be greatly appreciated. If there are any other specific requirements that you require in a scope of works for this site, please can you advise at this stage so that it can be fully incorporated into the proposals at an early stage.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind Regards,

Hannah Buchanan BSc (Hons) MSc GradCIWEM
Graduate Flood Risk Analyst

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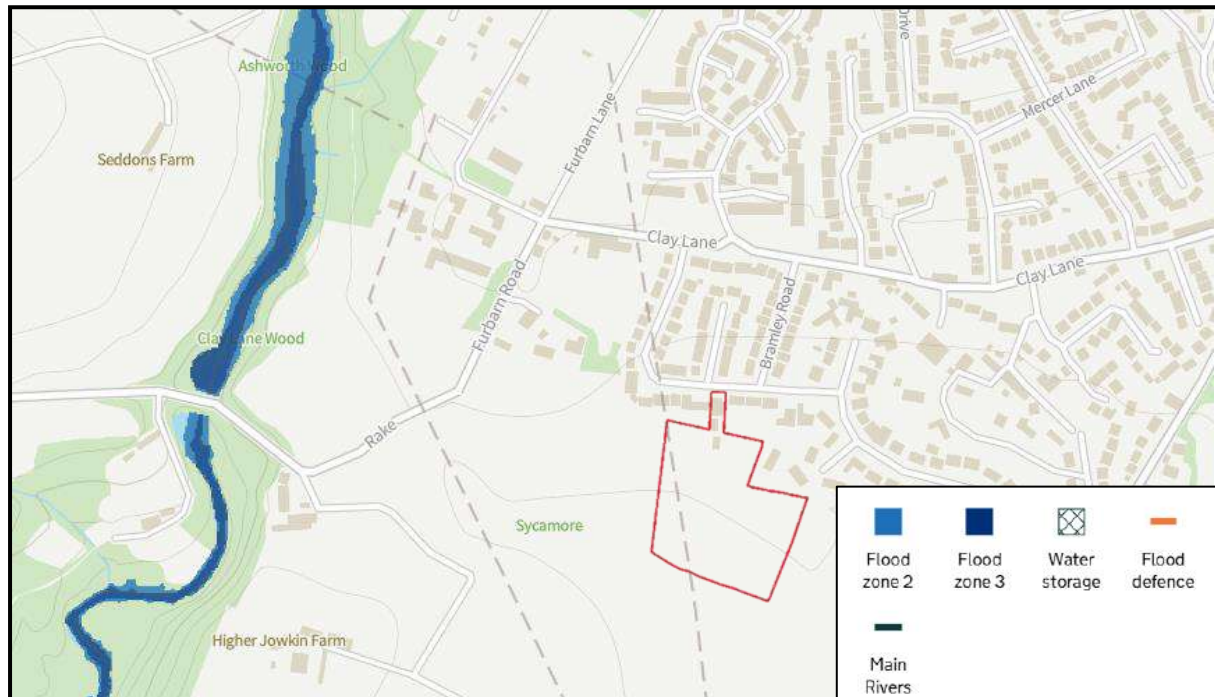
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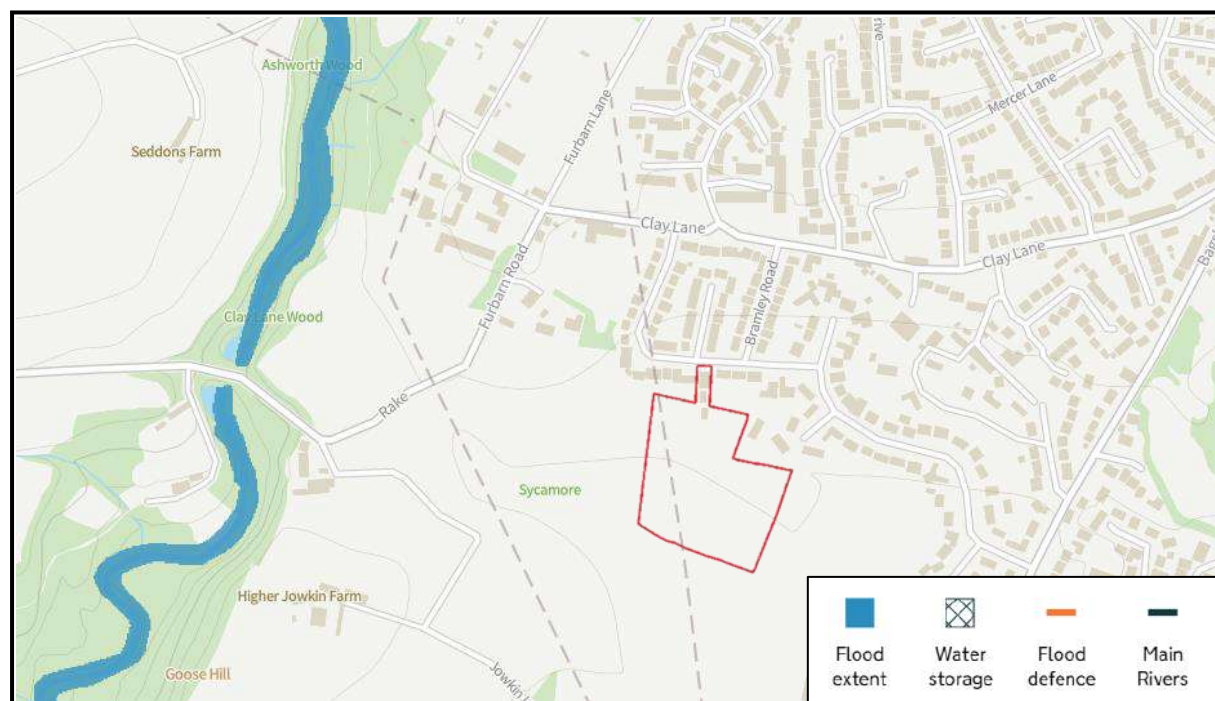
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FLOOD MAP FOR PLANNING

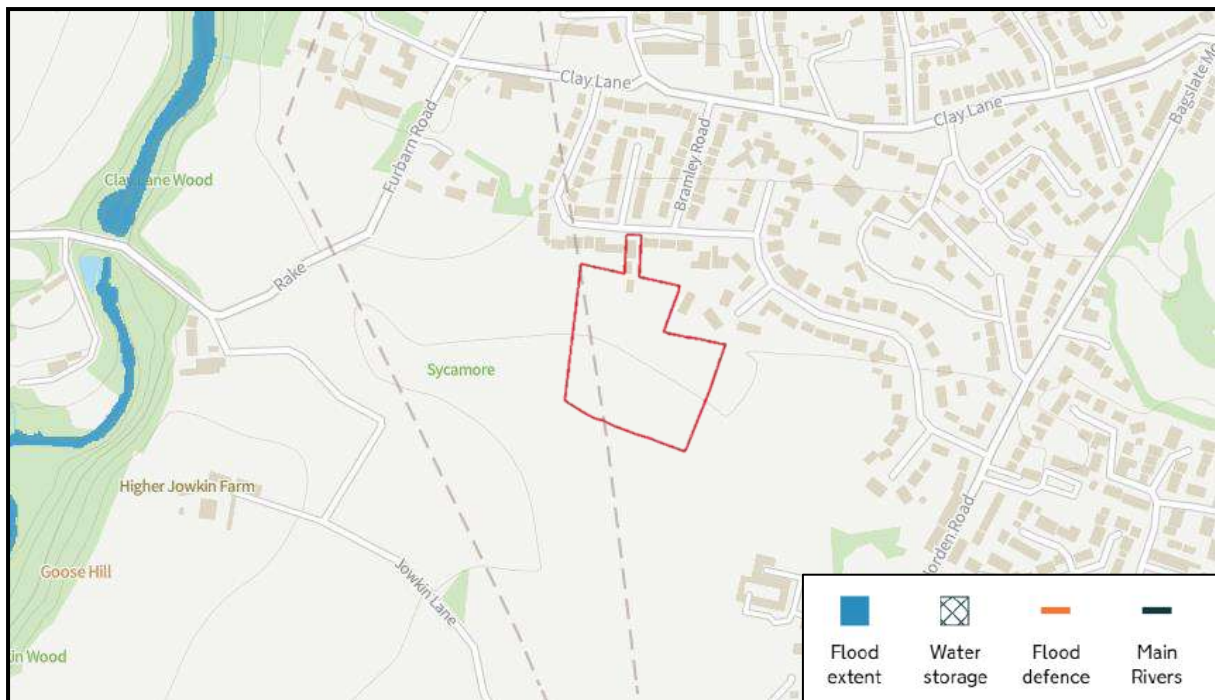
Flood Zones



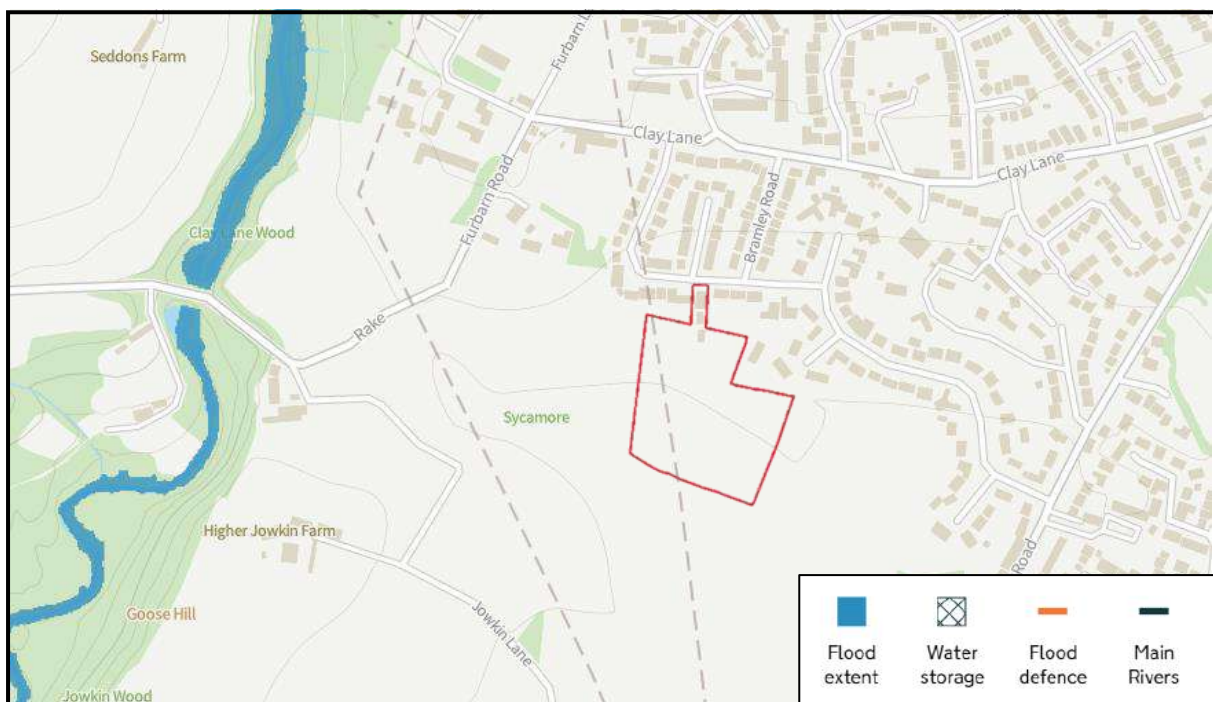
River and Sea with Defenses (Present Day) - 1 in 30yr



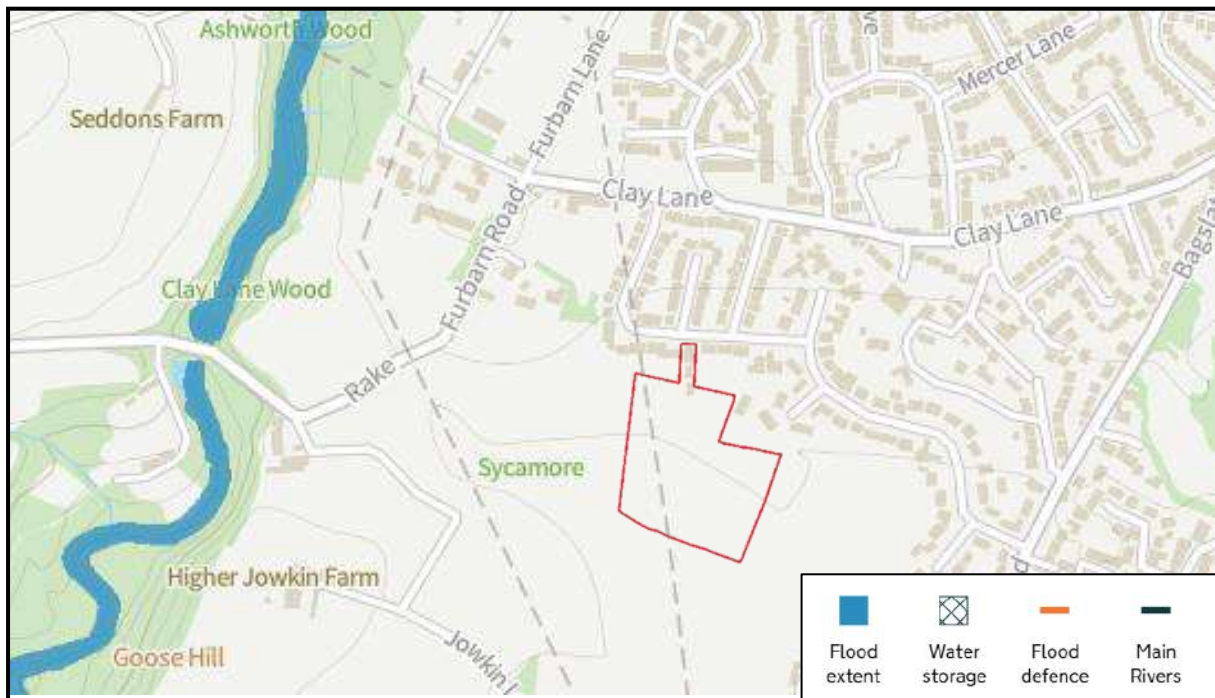
River and Sea with Defenses (Present Day) - 1 in 100yr/1 in 200yr



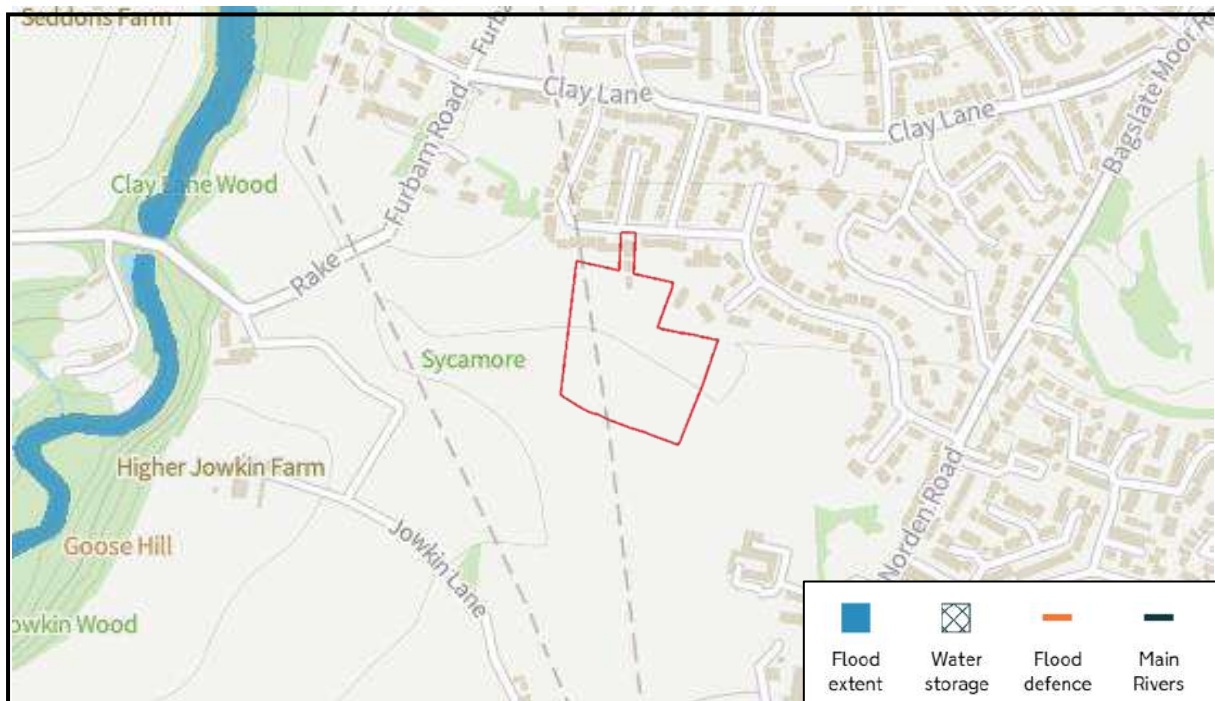
River and Sea with Defenses (Present Day) - 1 in 1000yr



River and Sea with Defenses (with Climate Change) – 1 in 30yr



River and Sea with Defenses (with Climate Change) – 1 in 100/1 in 200yr



NATIONAL FLOOD MAPPING

River and Sea with Defenses (with Climate Change) – 1 in 1000yr



River and Sea without Defenses (Current Day) – 1 in 100yr/1 in 200yr



NATIONAL FLOOD MAPPING

River and Sea without Defences (Current Day) - 1 in 1000yr



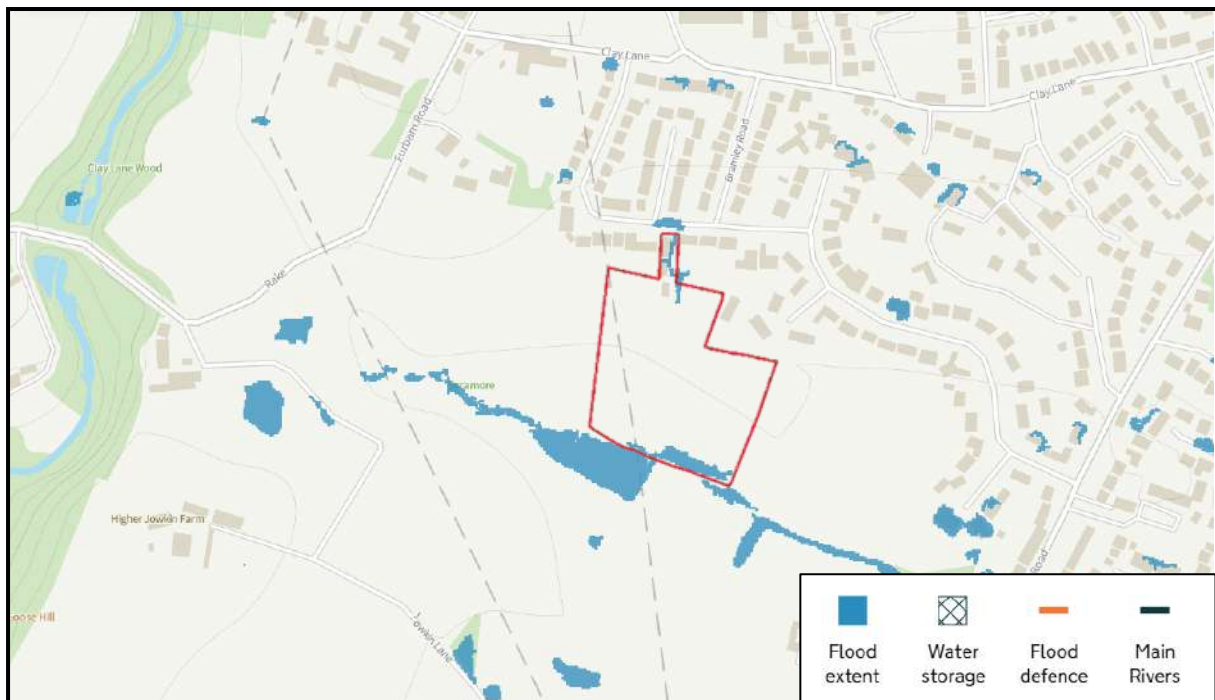
River and Sea without Defences (with Climate Change) - 1 in 100yr/1 in 200yr



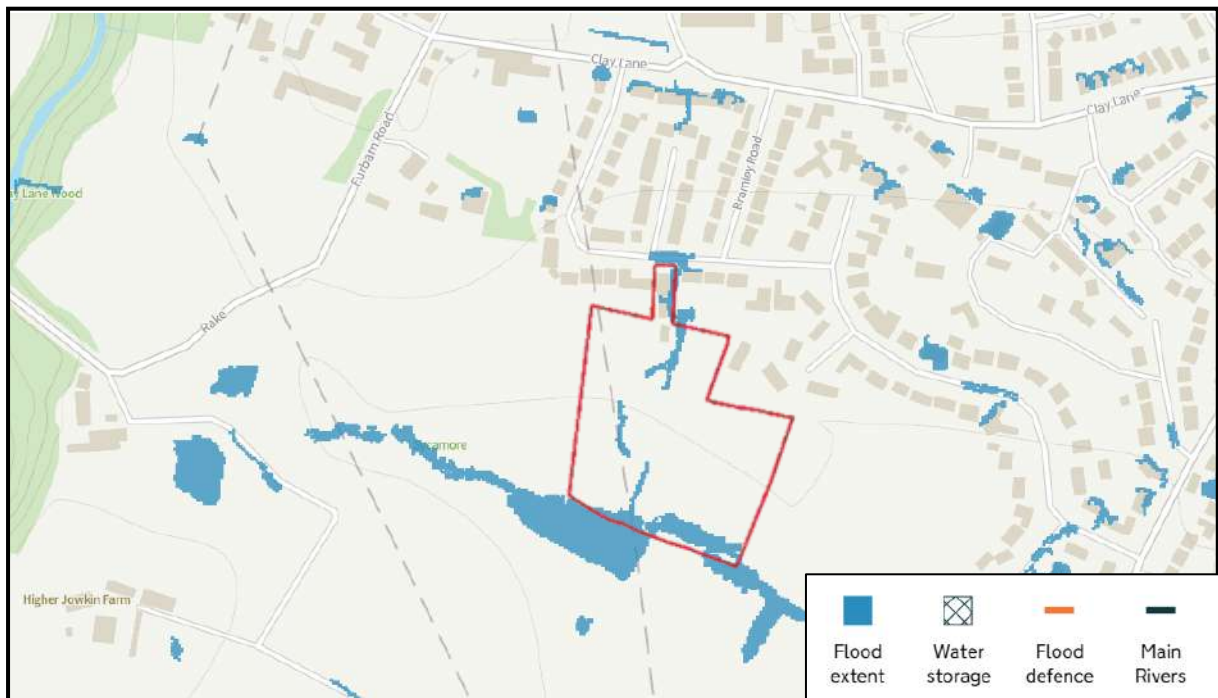
River and Sea without Defenses (with Climate Change) - 1 in 1000yr



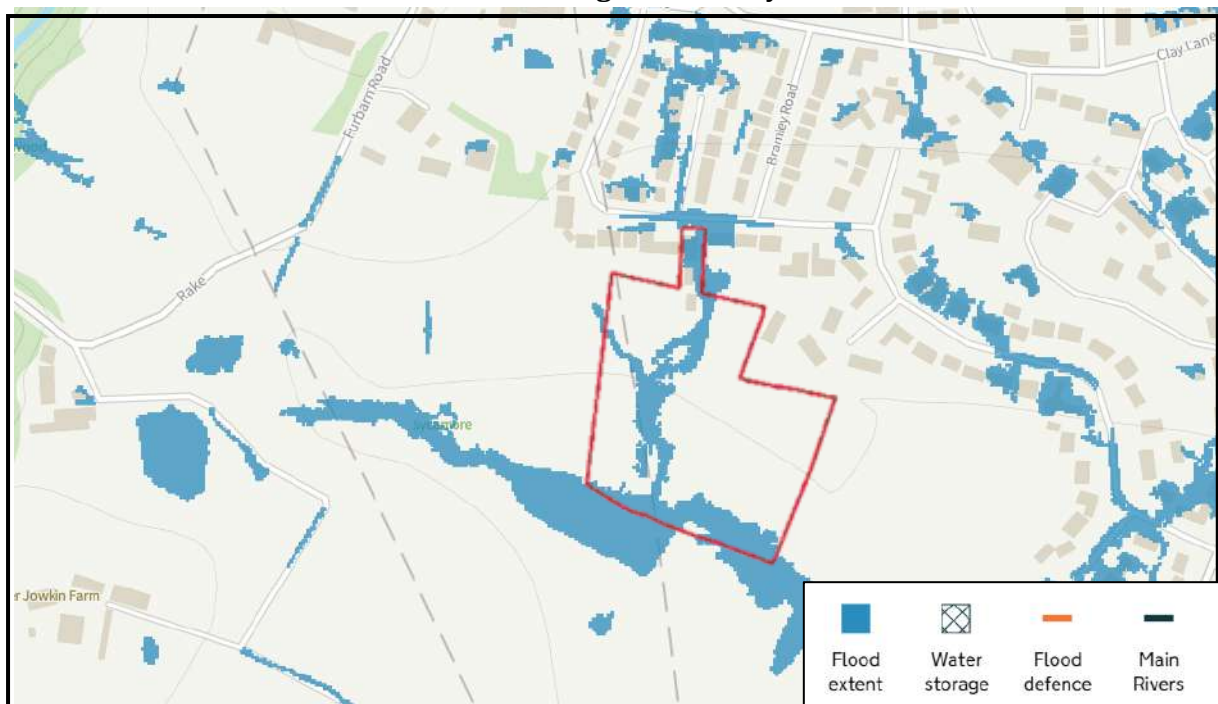
Surface Water Annual Likelihood of Flooding - 1 in 30yr



Surface Water Annual Likelihood of Flooding - 1 in 100yr

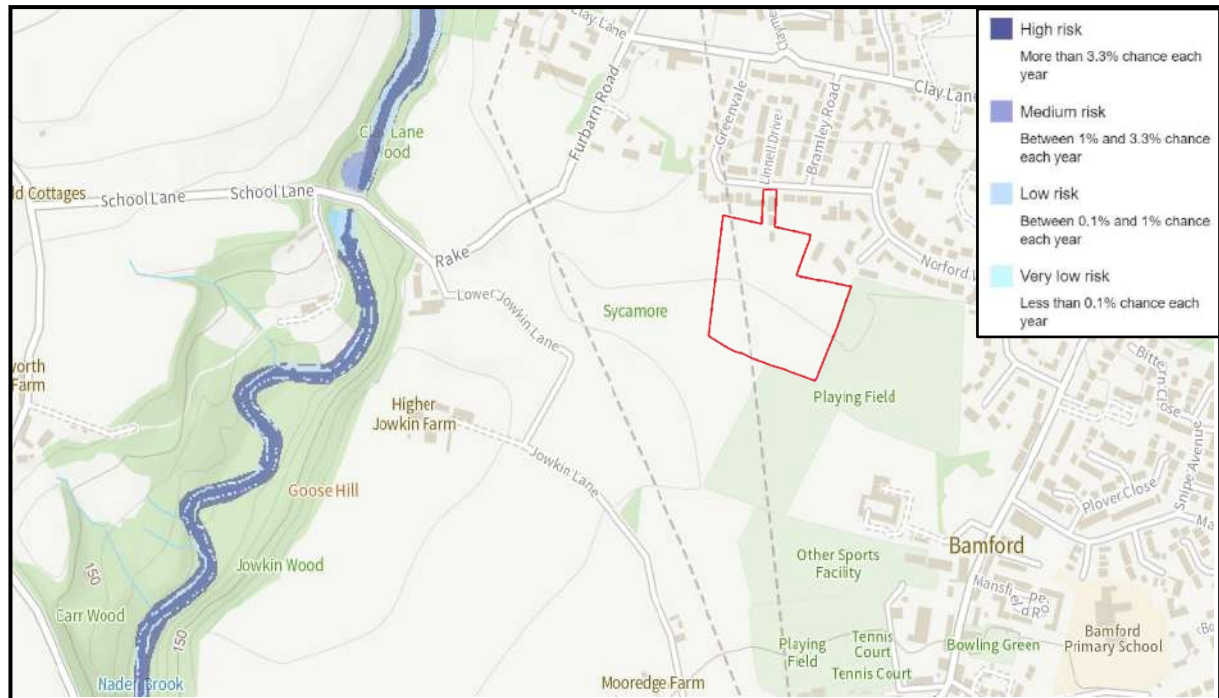


Surface Water Annual Likelihood of Flooding - 1 in 1000yr

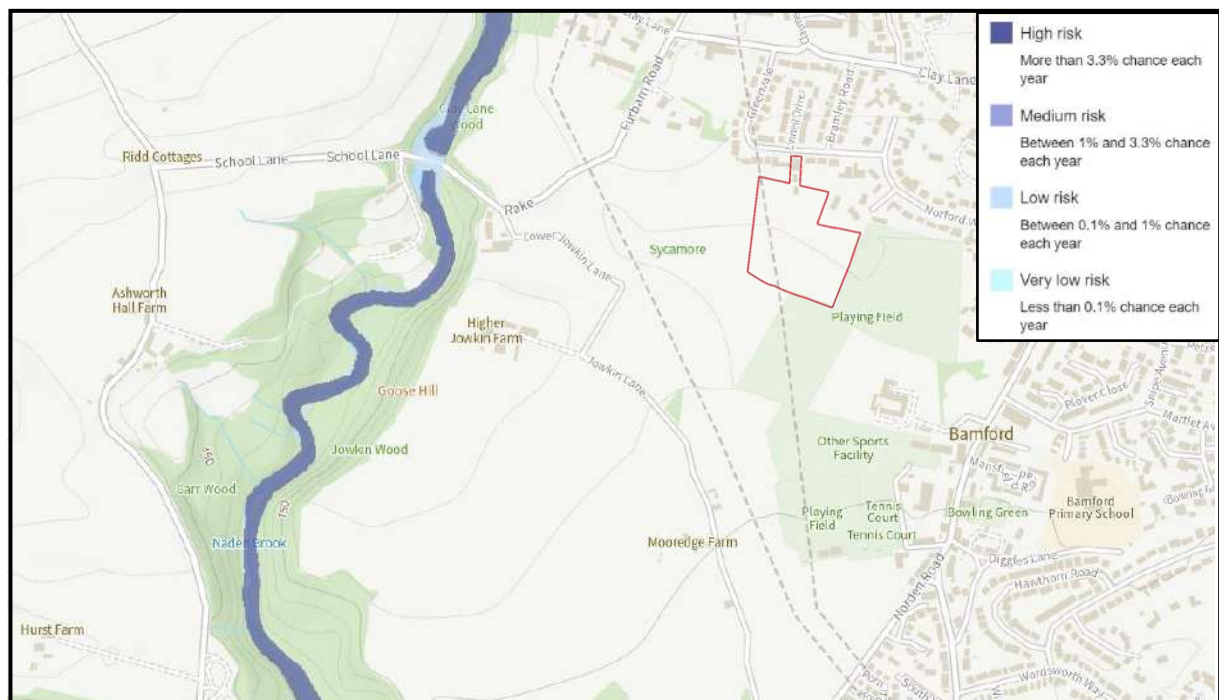


LONG TERM RISK OF FLOODING MAPPING

Rivers or Sea – Current



Rivers or Sea – Future (2036-2069)



Surface Water – Current



Future (2040-2060)



Long Term Flood Risk - Reservoirs



APPENDIX C: UU CORRESPONDENCE

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Hannah Buchanan

From: wastewaterdeveloperservices@uuplc.co.uk
Sent: 11 November 2024 10:33
To: Hannah Buchanan
Subject: RE: United Utilities - Our reference - 04651854 Greenvale, Bamford, Rochdale [Filed 11 Nov 2024 10:40]
Attachments: OL11 5QL.pdf
Categories: Filed by Mail Manager

Good Morning Hannah,

Please note that United Utilities Water Limited (Uuw) can only record and check flooding events which are reported to us, and we have to comply with our Regulators instructions on the qualification of flooding events. Our response does not include:

- any sewer flooding events caused by blockages or collapses which are the result of third-party actions, natural events or other actions over which Uuw has no control and not a facet of sewer capacity; or
- any historical sewer flooding events that have been resolved from investment in our infrastructure.

Please note that our modelling data is indicative, and only representative of the 1:100year storm event.

Please see attached file of the sewers in this area, we have no incidents of flooding on this site.

And our plans are indicative and that everything will need to be check on site for confirmation.

Regards,



James Darlington
Developer Engineer
Developer Services & Metering
T: 01925 429095
M: 07917096253
unitedutilities.com

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Visit: unitedutilities.com/wow

----- Original Message -----

From: wastewaterdeveloperservices@uuplc.co.uk [wastewaterdeveloperservices@uuplc.co.uk]
Sent: 11/11/2024 08:55
To: hannahbuchanan@betts-associates.co.uk
Subject: United Utilities - Our reference - 04651854 Greenvale, Bamford, Rochdale

Good Morning

Thank you for contacting United Utilities

Your query has been logged to an engineer who will respond on or before 14/11/2024

Kind Regards

If you feel you have received a good service from myself, please can you take two minutes to fill in the survey below. This will be much appreciated



Visit: <https://unitedutilities.thewowawards.co.uk/nominate>



Olivia Morley

Customer Advisor Advanced
Developer Services & Metering
Customer Services
unitedutilities.com

Tel: 0345 072 6067 Option 2 for
Wastewater Services)

Direct Tel:

----- Original Message -----

From: Hannah Buchanan [hannahbuchanan@betts-associates.co.uk]

Sent: 07/11/2024 16:44

To: wastewaterdeveloperservices@uuplc.co.uk

Subject: RE: 04651854 Sewer Flood Risk Information Request

Good afternoon,

I received the below response from your team last year, and the project has been on hold until now since then. I noticed the response says “no current record / we do have (a) current record”. Please could you confirm whether there is or isn’t records of flooding in proximity of this site?

Kind Regards,

Hannah Buchanan *BSc (Hons) MSc GradCIWEM*

Graduate Flood Risk Analyst

BETTS HYDRO

Consulting Engineers

Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY

Chester +44 (0)1244 289041

hannahbuchanan@betts-associates.co.uk

www.betts-associates.co.uk

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SUDS | STRUCTURAL SURVEYS | PARTY WALL DUTIES | INFILTRATION | GEOTECHNICAL

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From: wastewaterdeveloperservices@uuplc.co.uk <wastewaterdeveloperservices@uuplc.co.uk>

Sent: 20 September 2023 13:17

To: Hannah Buchanan <hannahbuchanan@betts-associates.co.uk>

Subject: 04651854 Sewer Flood Risk Information Request

Hi Hannah

'I can confirm that we have no current record / we do have (a) current record(s)] of sewer flooding within the vicinity of the proposed development.

Please note that United Utilities Water Limited (U UW) can only record and check flooding events which are reported to us and we have to comply with our Regulators instructions on the qualification of flooding events to place on the register.

Our response does not include:

- 1. any sewer flooding events caused by blockages or collapses which are the result of third party actions, natural events or other actions over which U UW has no control and not a facet of sewer capacity; or*
- 1. any historical sewer flooding events that have been removed from the register as a result of investment in our infrastructure.*

As with all development sites, we recommend you liaise with our water and wastewater engineers by contacting our Developer Services team so the details of your development proposal can be considered further. Details can be found at the following link.

<https://www.unitedutilities.com/services/builders-developers/>

Should you require any further information please do not hesitate to contact me.'

Kind regards Jill



Jill Ellis
Customer Advisor Advanced
Developer Services & Metering
Customer Services
Direct Tel: 01925 233 064
Tel: 0345 072 6067
[unitedutilities.com](https://www.unitedutilities.com)

If you have received a great service today why not tell us?

Visit: [unitedutilities.com/wow](https://www.unitedutilities.com/wow)

Did you know we now have a live chat facility available to you Mon to Friday 8 -5pm. You just click on the orange live chat box on our webpage and one of our advisors will be ready to chat to you and help you with your enquiry <https://www.unitedutilities.com/builders-developers/> or you can email us at WastewaterDeveloperServices@uuplc.co.uk

----- Original Message -----

From: Hannah Buchanan [hannahbuchanan@betts-associates.co.uk]

Sent: 18/09/2023 10:20

To: wastewaterdeveloperservices@uuplc.co.uk

Subject: Sewer Flood Risk Information Request

To whom it may concern,

Greenvale, Bamford, Rochdale

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the above site (location plan attached), including details of historical flooding and specific drainage requirements; this would be greatly appreciated. If there are any other specific requirements that you require in a scope of works for this site, please can you advise at this stage so that it can be fully incorporated into the proposals at an early stage.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind Regards,

Hannah Buchanan BSc (Hons) MSc GradCIWEM

Graduate Flood Risk Analyst

BETTS HYDRO

Consulting Engineers

Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY

Chester +44 (0) 1244 289041

hannahbuchanan@betts-associates.co.uk

www.betts-associates.co.uk

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SUDS | STRUCTURAL SURVEYS | PARTY WALL DUTIES | INFILTRATION | GEOTECHNICAL

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www.unitedutilities.com/subsidiaries



Atkins - Utility Solutions

The Hub
500 Park Avenue,, Aztec West, Almondsbury
Bristol,
BS32 4RZ

FAO:

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Your Ref: 216285_SJ
Our Ref: UUPS-ORD-540828
Date: 08/01/2024

Dear Sirs

Location: Site off Greenvale Hooley Bridge Rochdale

I acknowledge with thanks your request dated 05/01/2024 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

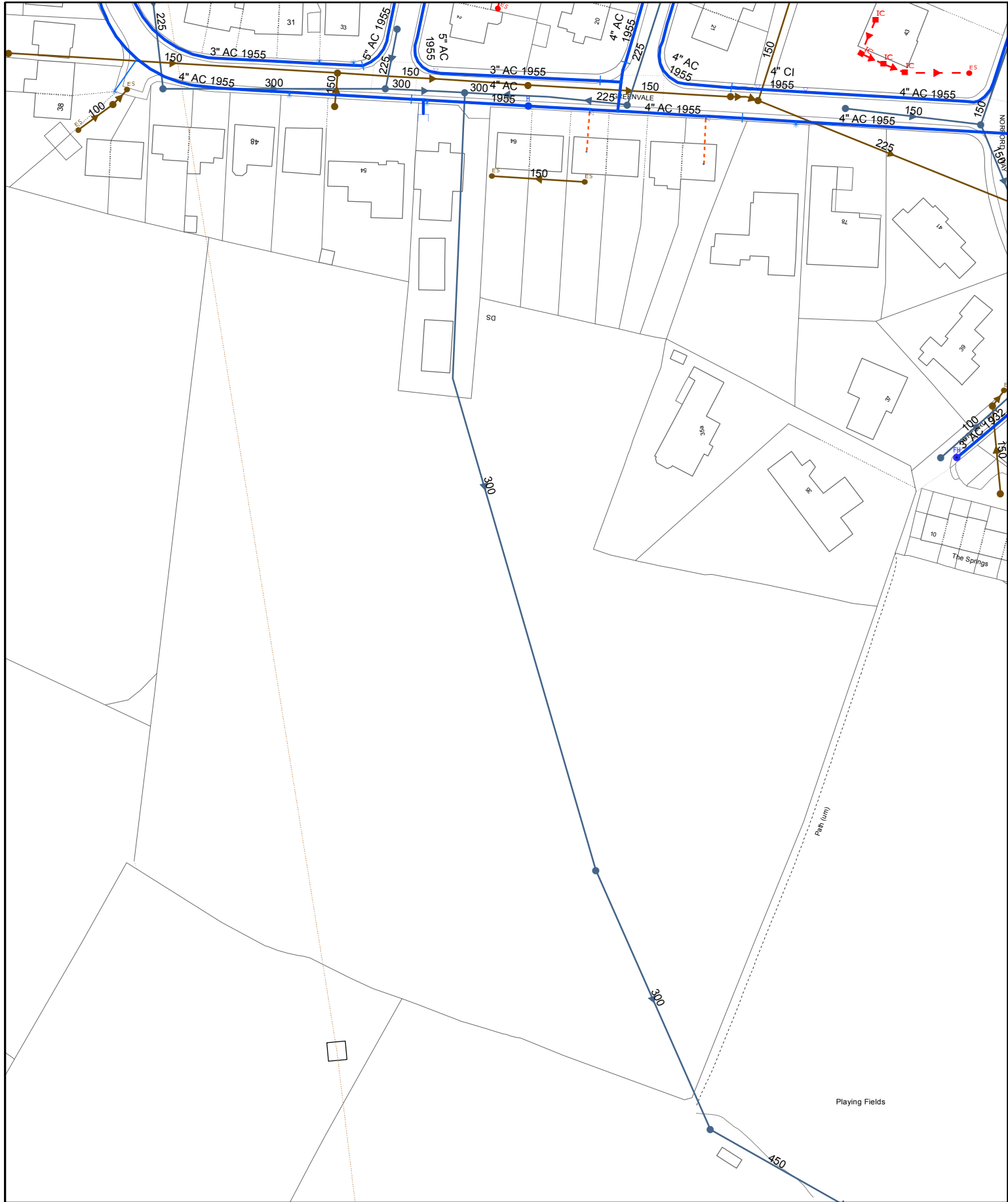
I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager



Date: 08/01/2024 **Extract from maps of public sewers and water mains**

Printed By:
Property Searches

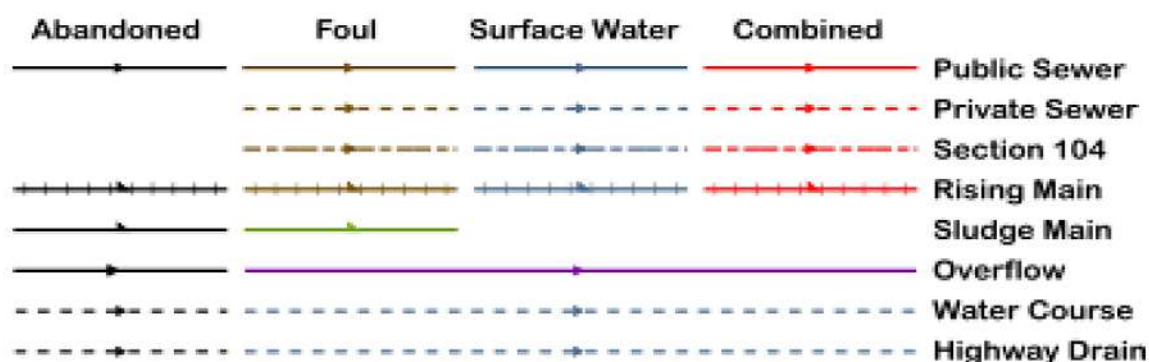
Site off Greenvale Hooley Bridge Rochdale



The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities Water PLC will not accept any liability for any damage caused by the actual positions being different from those shown.

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Wastewater Symbolology



All point assets follow the standard colour convention:

red – combined	brown - foul
blue – surface water	purple - overflow

Manhole	Side Entry Manhole
HS Head of System	Outfall
ES Extent of Survey	Screen Chamber
RE Rodding Eye	IC Inspection Chamber
IN Inlet	Bifurcation Chamber
DP Discharge Point	LH Lamp Hole
VV Vortex	T Junction / Saddle
PE Penstock	Catchpit
WO Washout Chamber	Valve Chamber
VA Valve	VC Vent Column
AV Air Valve	Vortex Chamber
NRW Non Return Valve	Penstock Chamber
SQ Soakaway	Network Storage Tank
GU Gully	Sewer Overflow
CA Cascade	Ww Treatment Works
FM Flow Meter	Ww Pumping Station
HA Hatch Box	Septic Tank
OI Oil Interceptor	Control Kiosk
SM Summit	
DS Drop Shaft	Change of Characteristic
OP Orifice Plate	

Clean Water Symbolology

Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water
			Air Valve
			AC Valve, open
			AC Valve, closed
			CC Valve, open
			CC Valve, closed
			Non Return Valve
			Pressure Management Valve
			OMS Valve
			Stop Tap
			Flow Meter
			Domestic Meter
			Commercial Meter
			Pump
			Hydrant
			Fire Hydrant
			Anode
			Chlorination Point
			De-chlorination Point
			Strainer Point
			Access Point
			Hatch Box
			IP Point
			Sampling Station
			Logger Box
			Bore Hole
			Inlet Point
			Bulk Supply Point
			End Cap
			Site Termination
			Change of Characteristic
			Condition Report
			<u>Property Types</u>
			Water Tower
			Valve House
			Booster Pumping Station
			Intake Pumping Station
			Water Treatment Works
			Supply Reservoir
			Service Reservoir
			Impounding Reservoir
			Pipe Bridge

Symbology for proposed assets is the same as above, but shown in **green**
Symbology for abandoned assets is the same as above, but shown in **black**

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

APPENDIX D: LPA/LLFA CORRESPONDENCE

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Hannah Buchanan

From: Kate Fletcher <Kate.Fletcher@Rochdale.Gov.uk> on behalf of Development Management <development.management@rochdale.gov.uk>
Sent: 25 September 2023 09:48
To: Hannah Buchanan
Subject: FW: Historic Flood Risk and Information Request

Hello Hannah

After seeking advice from an officer, he states that. If you are making queries in the interest of developing the site, I would recommend that their client submit a request for pre-application advice, where all matters including flood risk can be explored in more detail.

Matters of Flood Risk are typically considered by The Environment Agency who may hold additional detail to what we do. They operate a chargeable pre-application service which they may wish to consider.

I hope this helps
Kind Regards
Kate

Kate Fletcher

Senior Technical Admin Officer
Planning & Development



☎ 01706 924306

✉ kate.fletcher@rochdale.gov.uk

Rochdale Borough Council
Floor 3, Number One Riverside
Smith Street, Rochdale, OL16 1XU

To access our services go to www.rochdale.gov.uk

For news, events and social media updates go to www.rochdale.gov.uk/newsandevents

Please consider the environment before printing this email.

From: Environmental Management <environmental.management@rochdale.gov.uk>
Sent: 19 September 2023 16:25
To: Development Management <development.management@rochdale.gov.uk>
Subject: RE: Historic Flood Risk and Information Request

Hi Kate,

This is the attachment, please let me know if it still has not come through.
Thankyou .

Regards

Karla
Customer Service Advisor

Rochdale Borough Council
Floor 1, Number One Riverside
Smith Street, Rochdale, OL16 1XU
To access our services go to www.rochdale.gov.uk
For news and social media updates go to www.rochdale.gov.uk/news

From: development.management@rochdale.gov.uk
Sent: Tuesday, September 19, 2023 12:58 PM
To: Environmental.Management@Rochdale.Gov.UK
Subject: RE: Historic Flood Risk and Information Request

Hi Rabiah, do you have the attachment at all?

Thanks
Kate

Kate Fletcher
Senior Technical Admin Officer
Planning & Development



☎ 01706
924306
✉ kate.fletcher@rochdale.gov.uk

Rochdale Borough Council
Floor 3, Number One Riverside
Smith Street, Rochdale, OL16 1XU

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From: Environmental Management <Environmental.Management@Rochdale.Gov.UK>
Sent: 19 September 2023 12:16
To: Development Management <development.management@rochdale.gov.uk>
Subject: FW: Historic Flood Risk and Information Request

Afternoon,

Please see below

Thanks

Rabiah
Customer Service Advisor (Contact Centre)
Information, Customers & Communities

Rochdale Borough Council
Floor 1, Number One Riverside
Smith Street, Rochdale, OL16 1XU

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For news, events and social media updates go to
www.rochdale.gov.uk/newsandevents

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From: Council Mailbox <council@rochdale.gov.uk>

Sent: 18 September 2023 12:53

To: Hannah Buchanan <hannahbuchanan@betts-associates.co.uk>

Cc: Environmental Management <Environmental.Management@Rochdale.Gov.UK>

Subject: Re: Historic Flood Risk and Information Request

Good Afternoon

Thank you for your email, your email has been passed to the relevant service who will assist you with your enquiry.

Regards

Rochdale Council

From:
hannahbuchanan@betts-associates.co.uk

Sent: Monday, September 18, 2023 10:23 AM

To:
council@rochdale.gov.uk

Subject: Historic Flood Risk and Information Request

:CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

To whom it may concern,
Greenvale, Bamford, Rochdale

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the above site (location plan attached), including details of historical flooding and specific drainage requirements; this would be greatly appreciated. If there are any other specific requirements that you

APPENDIX E: LOCATION PLAN

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LOCATION PLAN

Greenvale, Bamford, Rochdale

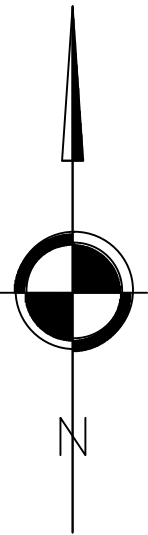


OS X (Eastings)	386034
OS Y (Northings)	413432
Nat Grid	SD860134 / SD8603413432
Nearest Post Code	OL11 5QL
Lat (WGS84)	N53:37:02 (53.61724358865183)
Long (WGS84)	W2:12:45 (-2.2125958835149233)
Lat, Long (WGS84)	53.61724358865183,-2.2125958835149233
Lat (OSGB36)	N53:37:01 (53.617011035206254)
Long (OSGB36)	W2:12:40 (-2.2111475770717584)
Lat, Long (OSGB36)	53.617011035206254,-2.2111475770717584



APPENDIX F: TOPOGRAPHICAL SURVEY

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Topographical Survey Legend

BLn	Liter bin	TL	Tie line
SH	Bore Hole	TP	Telegraph pole
BS	Bus stop	TFS	Tactile paving slabs
BT	British Telecom ic	TS	Traffic signal light
CR	Drain	TV	Television cover
CPS	Concrete paving slabs	VP	Vent pipe
DR	Drain	WM	Water meter
Elec	Electrical ic	WO	Wash Out
EP	Elec. pole	U/L	Unlode to lift
ER	Earth road	F/A	Fence annotation
FH	Fire Hydrant	B/W	Barbed wire
FP	Flagpole	C/B	Closed boarded
FT	Floodlight	C/I	Corrugated iron
G	Gully	CL	Chain link
GP	Gate post	C/P	Concrete panel
GV	Gas valve	H/R	Hand rail
IC	Inspection cover	I/R	Iron railings
JB	Junction box	O/B	Open boarded
KO	Kerb outlet	P/C	Post & chain
LB	Litter bin	P/R	Post & rail
LP	Lamp post	P/W	Post & wire
LM	Utility marker	W/M	Wire mesh
MP	Manhole	Level prefix descriptions	
MW	Monitoring Well	AL	Arch level
NP	Name plate	BL	Bed level
P	Post	CL	Cover level
PM	Parking meter	DH	Eaves level
RE	Road sign	FL	Floor level
RS	Road sign	IL	Invert level
RWP	Rain water pipe	PL	Parapet level
SP	Sign post	RH	Rodding level
ST	Stop tap	SL	Soffit level
SB	Service Box	Spr	Arch springing level
SV	Stop valve	Tsp	Top of pipe/culvert
TCS	Telephone call box	WH	Wall height
TH	Tree Hole	WL	Water level

BENCH MARK INFORMATION

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

NOTES

ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN
DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING
Levels defining edge of carriageway are observed at channel (bottom of kerb). Unless otherwise stated.
TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE AVERAGE SPREAD.
THE DRIP LINE LAYER DENOTES THE TREES EXTREMITY

SURVEY STATIONS

stn1	386042.064	413577.433	166.588
stn2	386094.536	413574.292	166.871
stn3	386012.736	413579.170	166.851
stn4	386041.525	413542.326	164.713
stn4a	386027.542	413542.908	164.455
stn5	386037.311	413515.133	164.128
stn6	386059.945	413489.302	164.260
stn7	386051.742	413434.339	161.111

REVISIONS

REV	DESCRIPTION	SURVEYED	DRAWN	DATE

JLP Surveying

JLP Surveying Consultants Ltd,
Suite 45 Rodney House,
King Street,
Wigan
WN1 1BT
Tel - 01942 243313
Fax - 01942 492230
Mobile - 07710 428498
EMAIL - peterhouston@jlpurveyors.com

PROJECT
Greenvale
Rochdale

DRAWING TITLE
Topographical Land Survey

SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
1:500	A1	1	18.08.2023	

DRAWING NUMBER
S23-0849

APPENDIX G: SITE PHOTOGRAPHS

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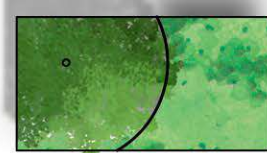


APPENDIX H: PROPOSED PLANNING LAYOUT

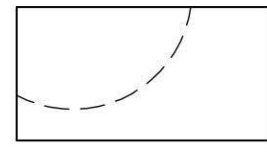
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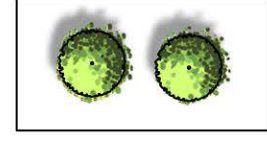
KEY & NOTES



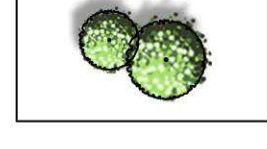
Existing Trees & Vegetation to be Retained
Refer to drawings and report by Iain Tavendale for further information



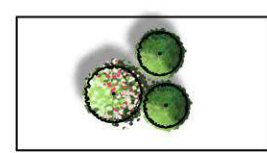
Trees to be Removed
Refer to drawings and report by Iain Tavendale for further information



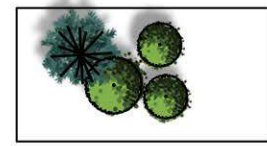
Proposed Avenue Trees
Pyrus calleryana 'Chanticleer' or similar appropriate street tree
16-18cm Extra Heavy Standard



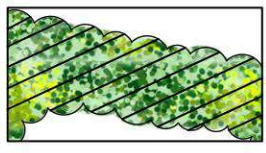
Proposed Street and Front Garden Trees
Mix of appropriate 12-14cm Heavy Standard native and ornamental tree species to include:
Acer campestre 'Elegant'
Betula albosinensis 'Fascination'
Crataegus prunifolia 'Splendens'
Gleditsia triacanthos 'Sunburst'
Robinia pseudoacacia 'Bessonianna'
Sorbus aria 'Lutescens'
Sorbus aucuparia
Sorbus 'Joseph Rock'



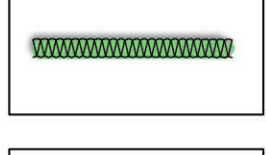
Proposed Back Garden Trees
Mix of appropriate 12-14cm Heavy Standard native and ornamental species to include:
Amelanchier lamarkii
Crataegus prunifolia 'Splendens'
Magnolia stellata
Prunus 'Tai Haku'
Prunus 'Charles Sargentii'
Sorbus vilmorinii



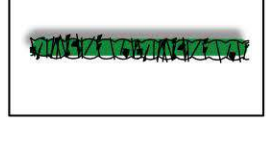
Proposed Native Species Trees
Mix of appropriate 12-14cm Heavy Standard (Pines to be 2-2.5m high) native species trees to include:
Acer campestre
Betula pendula
Malus sylvestris
Quercus robur
Pinus sylvestris
Sorbus aucuparia



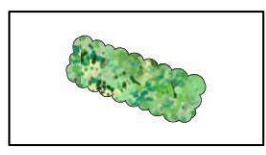
Proposed Native Understorey/Scrub Mix
To be a mix of appropriate 60-80cm bareroot native scrub species to include:
Crataegus monogyna
Corylus avellana
Ilex aquifolium
Rosa canina
Rubus fruticosus
Viburnum opulus



Proposed Ornamental Hedge
Ornamental hedgerows to properties to be 90-120cm bareroot Fagus sylvatica (Beech) or similar



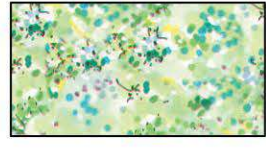
Proposed Native Species Hedge
Mix of appropriate 60-80cm bareroot native species to include:
Crataegus monogyna
Corylus avellana
Prunus spinosa
Ilex aquifolium
Viburnum opulus



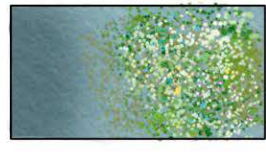
Proposed Ornamental Shrub Planting
Plants to be selected from a palette of appropriate ornamental/amenity species using a mix of 3lt, 5lt and 10lt cg plants



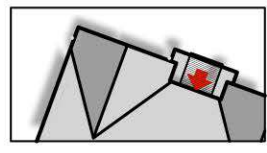
Proposed Amenity Grass



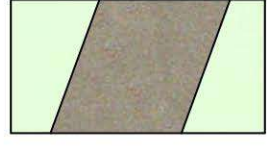
Proposed Wildflower Meadow
To be seeded with species rich wildflower meadow such as Emorsgate EM1 General Purpose Meadow Mix or similar



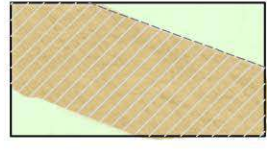
Proposed SuDS Pond with Wet Meadow
To be seeded with species rich meadow such as Emorsgate EM8 Meadow Mixture for Wetlands or similar



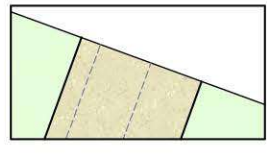
Proposed Houses



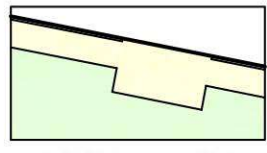
Proposed Roads



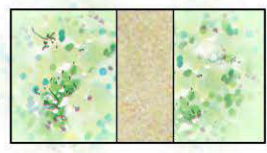
Proposed Shared Access Surfacing



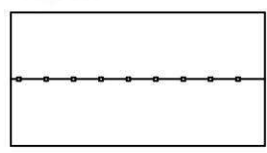
Proposed Driveways



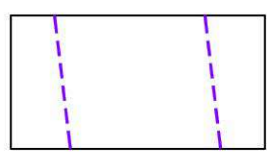
Proposed Paths and Patios



Proposed Pedestrian/Cycle Tracks
3m wide to enable maintenance vehicles (occasional) access to the ponds - Paths to be surfaced with compacted gravel.



Proposed Fences



Easement to Existing Power Lines

APPENDIX I: PFRA/SFRA PLANNING EXTRACTS

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