

Flood Risk Assessment

To accompany a planning application for a new
dwelling on land adjacent to

27-29 Tarn Drive, Bury, BL9 9QB

Prepared by

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November 2025



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1 Executive Summary

- A The proposal is non-major development;
- B The site lays, in a small part, in Flood Zones 2 & 3;
- C The dwelling will be located wholly within Flood Zone 1 on site, the most sequentially preferable flood zone for new development;
- D Floor levels can be raised 600mm above the EA's modelled (and updated with climate change) flood level without any compromise to the design or access to the dwelling;
- E Flood resilience and mitigation methods are not required;
- F Safe access/egress routes are immediately available and future owners will be guided to sign up to the free flood warning schemes;
- G There is no documented evidence of flood risk from any other sources;
- H The development does not impact on flood risk elsewhere;
- I Assuming the warning and evacuation procedures can be maintained over the lifetime of the development, the proposed non-major development to provide a new dwelling located wholly within Flood Zone 1, with floor levels set at least 600mm above estimated design flood levels and found to be at Low flood risk from all other sources is considered acceptable.

Designer actions required

- 1 Show FFL on the plans set no lower than 70.46m AOD.
- 2 Confirm the design intention to manage surface water at source in line with the drainage hierarchy and current best practice.

2 Introduction

2.1 Site location

The project is on land at 27-29 Tarn Drive, Bury, BL9 9QB (see Figure 1).

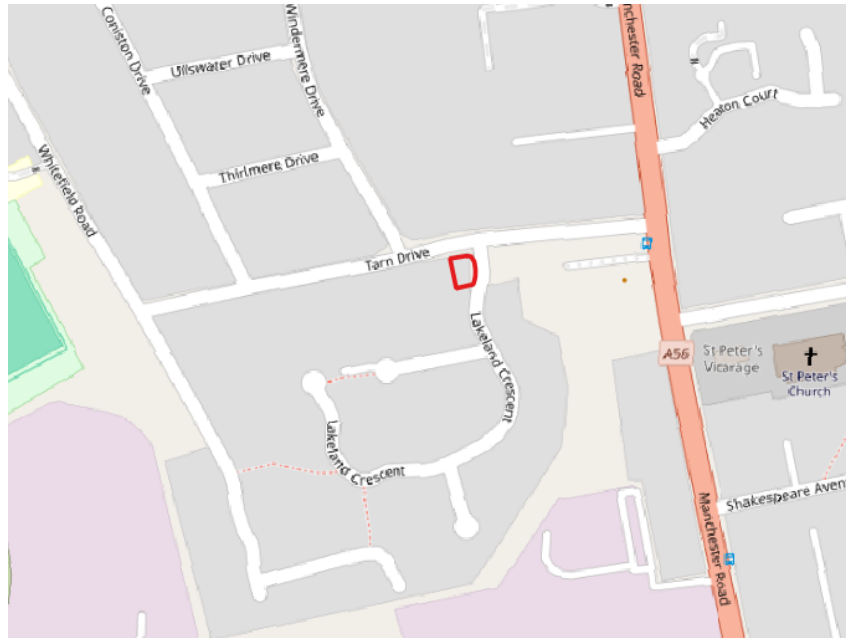


Figure 1: Site location plan, as indicated with North topmost. (source: EA flood mapping)

2.2 Development description

The proposal is for a new dwelling. The proposed work is classed as non-major development.

The proposed layouts and proposed sections are to be submitted under separate cover.

2.3 Site geology

Geological mapping data from within the vicinity indicate River Terrace Deposits, 1 - Sand and gravel however this would require confirmation on site. If available on site, the superficial deposits could offer only medium to high permeability.

Infiltration SuDS may therefore be viable (subject to site testing and site constraints).

3 Policies

In preparation for this Flood Risk Assessment (FRA), National Planning Policy Framework^[3] and British Standards on Assessing and Managing Flood Risk^[1] were reviewed, and their related policies are, where applicable, referred to in this report.

The Environment Agency has been consulted in order to establish the flood zone of the proposed site.

In addition, planning policies from the Local Authority were also reviewed including its Strategic Flood Risk Assessment.

3.1 Environment Agency Guidance

The FRA should be:

- appropriate to the scale, nature and location of the development;
- proportionate to the degree of flood risk.

A FRA should include:

- the site address;
- a description of the development;
- the estimated flood level for your development, taking into account the impacts of climate change over its lifetime;
- details of the finished floor levels;
- details of your flood resistance and resilience plans;
- any supporting plans and drawings any other information.

Floor levels

- floor levels are set at least 600 millimetres (mm) above the estimated flood level. You may be able to reduce this to 300mm if there is a high level of certainty about your estimated flood level. If there is a particularly high level of uncertainty it may need to be increased;
- if floor levels cannot be raised in this way, you will also need to include extra flood resistance and resilience measures. These measures should protect the property to at least 600mm above the estimated flood level.

The building design should also:

- prioritise excluding flood water where possible;
- speed recovery in case water gets in.

4 Flood risk analysis

4.1 Sources of potential flooding

Flood risk from various sources at the site is analysed in this section.

4.1.1 Flood risk from sea and rivers

Flooding can occur from the sea due to a particularly high tide or surge, or combination of both.

The site is not at risk from tidal flooding.

Flooding can also take place from flows that are not contained within a river channel due to high levels of rainfall in the catchment.

With reference to the Environment Agency flood map, Figure 2, the site, in part, lies in Flood Zone 3. This means that the Western boundary of the site is at a High risk of fluvial flooding (greater than a 1 in 100yr annual probability of fluvial flooding).

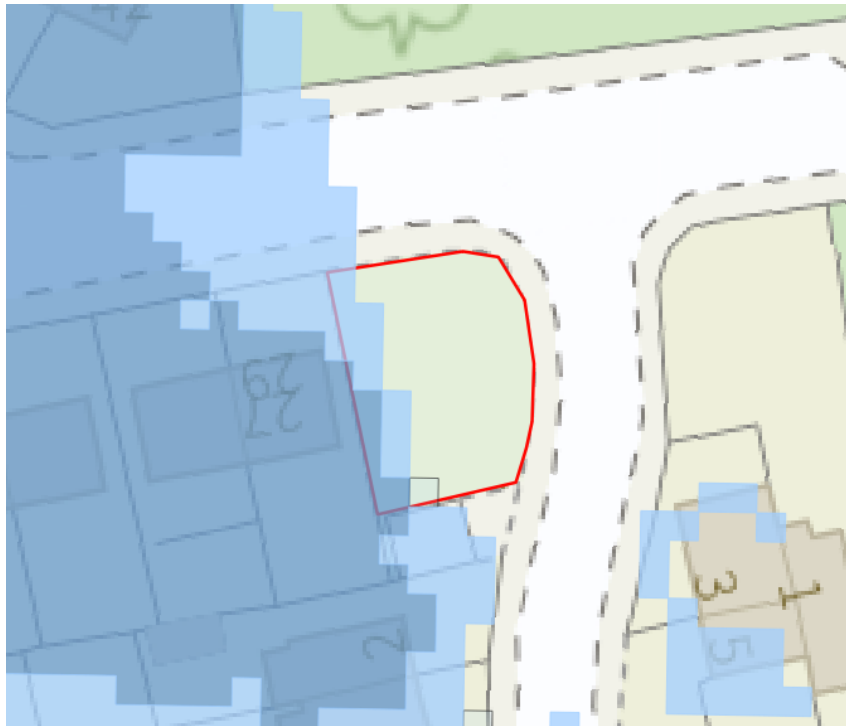


Figure 2: Flood mapping from the EA online data. The site, in part, falls within Flood Zone 3 (with a CC allowance)

Historic flooding

The site is not shown to lie in an area of historic flooding as indicated in Figure 3. Note: this data does not however show localised events.

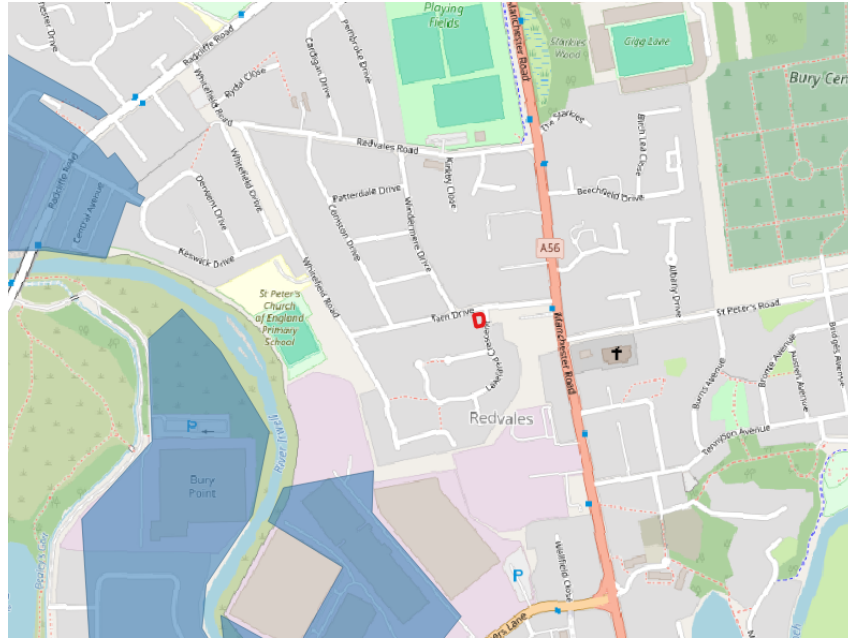


Figure 3: Historic flood mapping from the EA online data. The site falls outside an area of historic flooding

4.1.2 Flood risk from groundwater

Groundwater flooding occurs when water levels in the ground rise above surface levels. It is most common in low-lying areas underlain by permeable rock (aquifers), usually due to extended periods of wet weather. The site's geology is classified as having a High susceptibility to groundwater flooding ($\geq 50\% < 75\%$) as indicated in Figure 4.

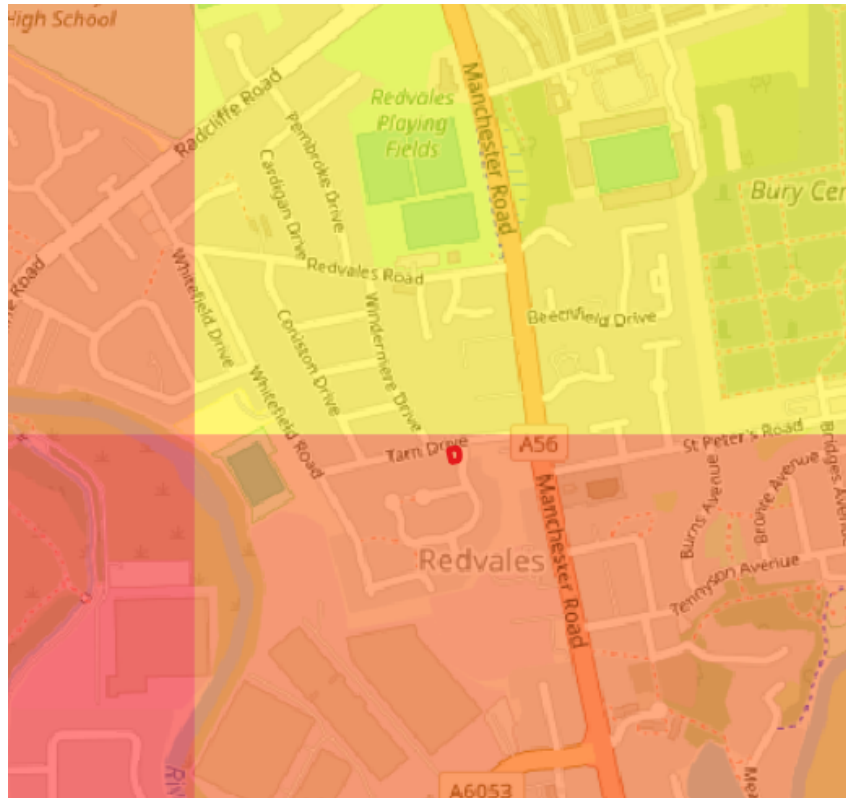


Figure 4: Susceptibility to ground water flooding. The site falls within an area at a High, ($\geq 50\% < 75\%$) risk

Since the proposed development does not involve any basement elements, the impact of groundwater flooding on the proposed site will be minimal.

Hence, the risk of groundwater flooding on the proposed site can be considered to be Low.

4.1.3 Flood risk from sewer and highway drains

Flooding occurs when combined, foul or surface water sewers and highway drains are temporarily over-loaded due to excessive rainfall or due to blockage.

There are no indicators to Sewer flooding at the site.

Hence, the risk of sewer and highway flooding to the proposed site can be considered to be Low.

4.1.4 Flooding risk from surface water

Flooding occurs when rainfall fall on a surface (on or off the site) which acts as run-off which has not infiltrated into the ground or entered into a drainage system.

Present day risk With reference to the 25.03.2025 release of the Flood Map for Planning data set, Figure 5, the site is at a generally very Low, less than 1 in 100yr, risk from surface water flooding.

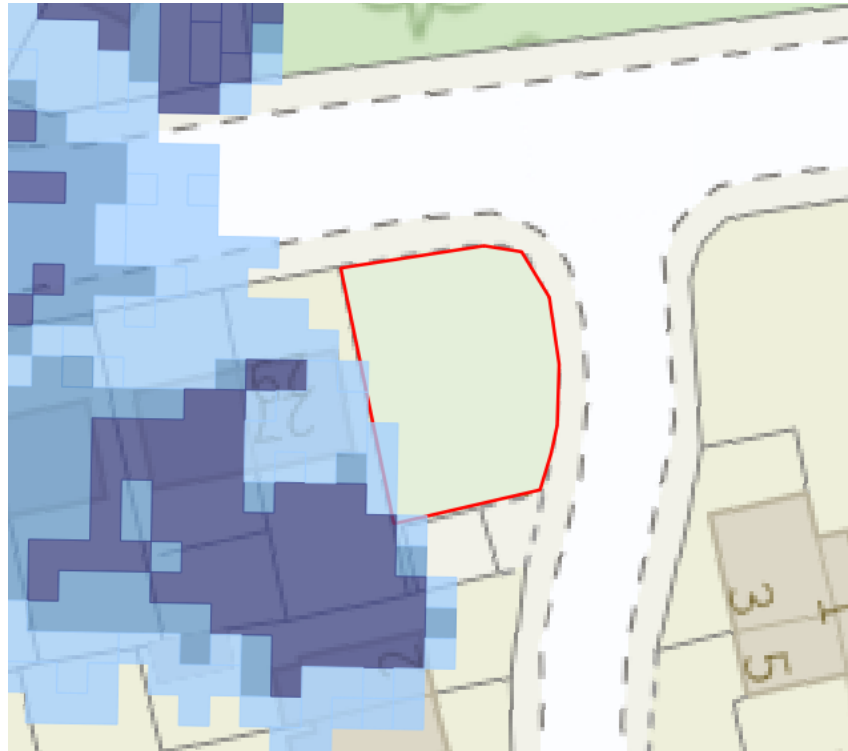


Figure 5: SW flood risk mapping of current risk. The site is shown to be at a very Low risk.

Future risk With reference to the 25.03.2025 release of the E.A online SW data set, Figure 6, the site's SW flood risk remains very Low.

For the design period, 1 in 100yr+ CC, there is a Low probability of occurrence for depths of surface water flooding up to 200mm at the site as shown in Table 1).

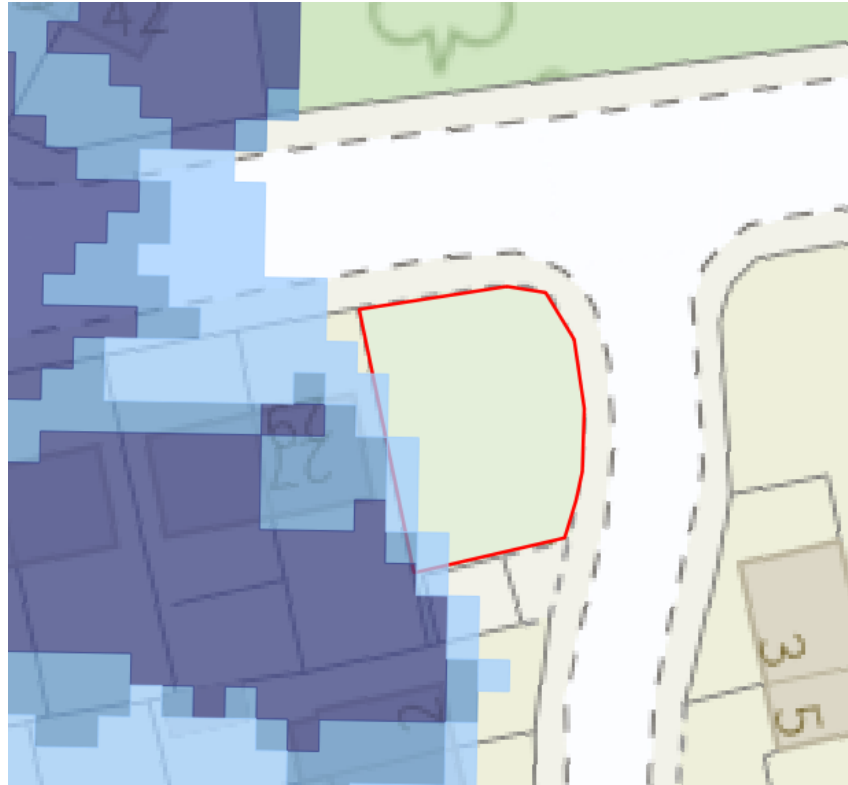


Figure 6: SW flood risk mapping including climate change. The site is in an area at very Low future risk

Depth	Probability of occurrence
0 - 0.2m	Nil
0.2 - 0.3m	Nil
0.3 - 0.6m	Nil
0.6 - 0.9m	Nil
0.9 - 1.2m	Nil

Table 1: Design period, 1 in 100yr + CC SW flood depth and highest related probability of occurrence at the site

4.1.5 Flood risk from infrastructure failure

Flooding occurs because of canals, reservoirs, industrial processes, burst water mains or failed pumping stations.

The site is shown to be at flood risk due to reservoir failure in the event that it was to coincide with a fluvial flood event, as indicated by the lighter blue areas in Figure 7.

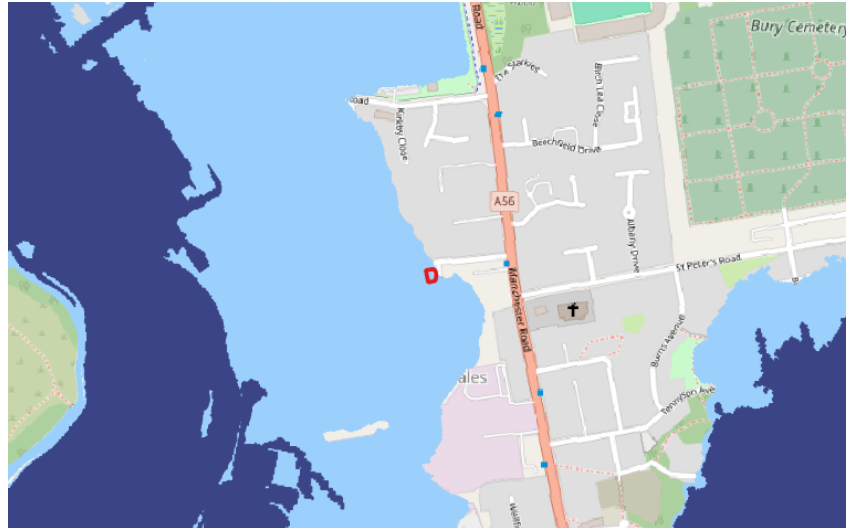


Figure 7: Flood risk from reservoir flooding. The site is shown to be at risk in the event that reservoir failure coincides with a fluvial flood event (Source: EA flood mapping - “wet day” flooding)

However the EA have previously stated that:

“Reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, we ensure that reservoirs are inspected regularly and essential safety work is carried out.”

Hence the flood risk to the site from reservoir failure is considered to be Low.

4.1.6 Urban flash flooding

With reference to the UFF dataset there are no referenced flash flood incidents at this location.

4.2 On-site surface water analysis and management

4.2.1 Generation of Run-off

The post-development surface water run-off volume will increase when compared to the pre-development level because there is an overall reduction in permeable areas.

4.2.2 SuDS Statement:

Surface water will be managed in full alignment with the SuDS hierarchy as required under provisions made under the Town and Country Planning Act 1990.

While not required for Planning permission consent it can be confirmed that all SW on site will be also be designed, installed and tested in full accordance with Part H of the Building Regulations 2010 (as amended 2013), Requirement H3, as made under the Building Act 1984.

It is possible that soakaways will be viable given the expected ground conditions associated with the local geology hence the recommendation of this report would be to adopt the use of a shallow soakaway, raised rain garden planters and water butts as a viable and proportionate SuDS provision on site.

4.3 Impact on flood risk elsewhere

SW arising: Since the proposal is intending to manage any additional surface water at source the impact on flood risk elsewhere is Low.

5 Levels

5.1 External ground level

The site levels are shown in Figure 8. The site level ranges from 70.09m AOD to 71.06m AOD.

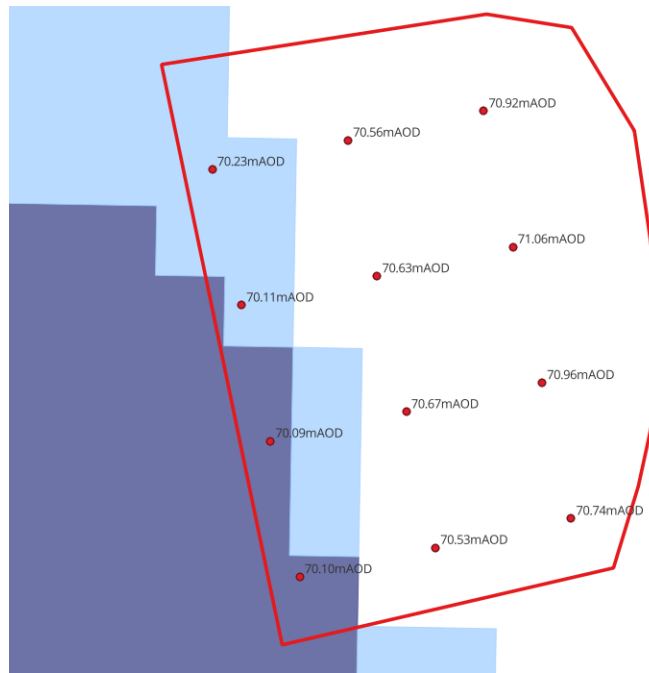


Figure 8: Lidar derived spot levels and Flood Zone extents. The site is at it's lowest along the Western boundary.

5.2 Flood level

5.2.1 Climate change allowance

With reference to Figure 9 the climate change allowance for this site is +35% on 1 in 100yr base flows.

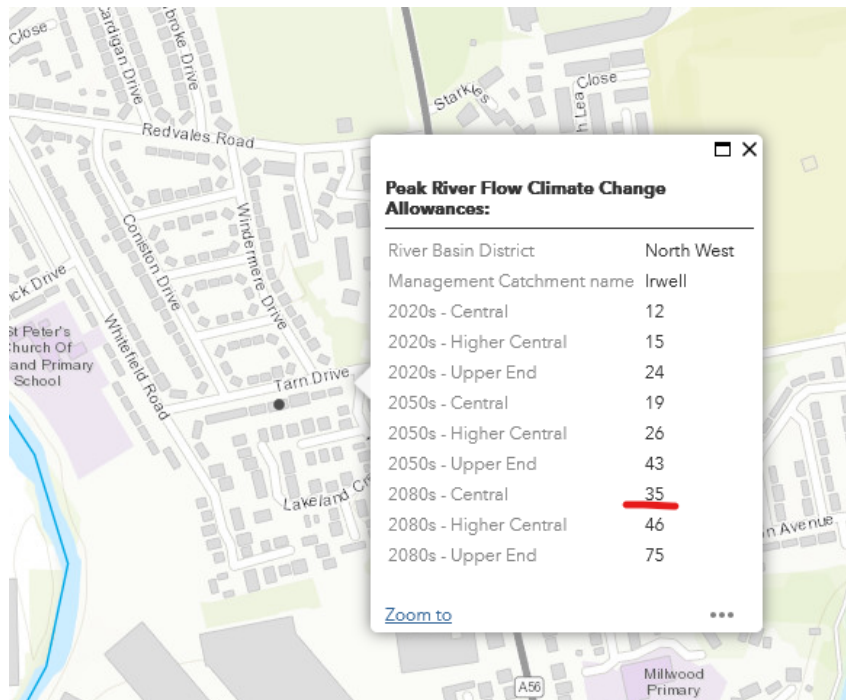


Figure 9: Climate change allowance

5.2.2 Fluvial

Product 6 data as provided by the EA (as received 24.11.2025) has been extracted for the nearest river upstream node to the site (ea013_0185_IRWE04_4322). This data does not include any allowance for climate change hence a Stage Discharge curve has been constructed (Figure 10).

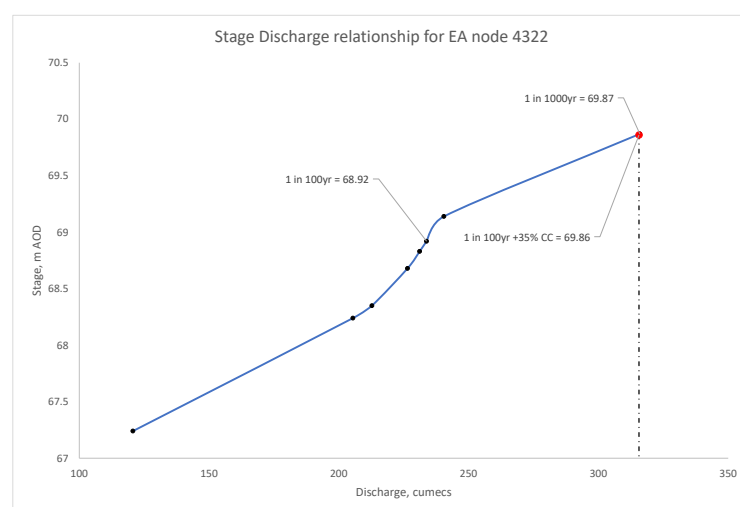


Figure 10: Stage Discharge curve for the nearest EA model node

The 1 in 100yr flow rate is given as 233.79 cumecs. With a further increase of 35% this becomes 315.62 cumecs.

The 1 in 1000yr flow rate is given as 315.95 cumecs.

From this it is found that for the purpose of design the 1 in 100 +35% flood level is **69.86m AOD** (and 1 in 100yr flood level is given as 69.87m AOD).

Note: the design flood level of 69.68m AOD appears lower than the elevations of the flood extents as shown in Figure 8. There is therefore a level of uncertainty in this level (ref to Section 3.1).

Hence a further “estimation” is considered here based on Lidar data and the 1 in 100yr + CC¹ flood extents² as depicted in Figure 2.

The “estimated” 1 in 100yr + CC flood level based on flood extents and site levels is 70.10m AOD (as extracted from the spot levels in Figure 8 and the cross section shown in Figure 11).

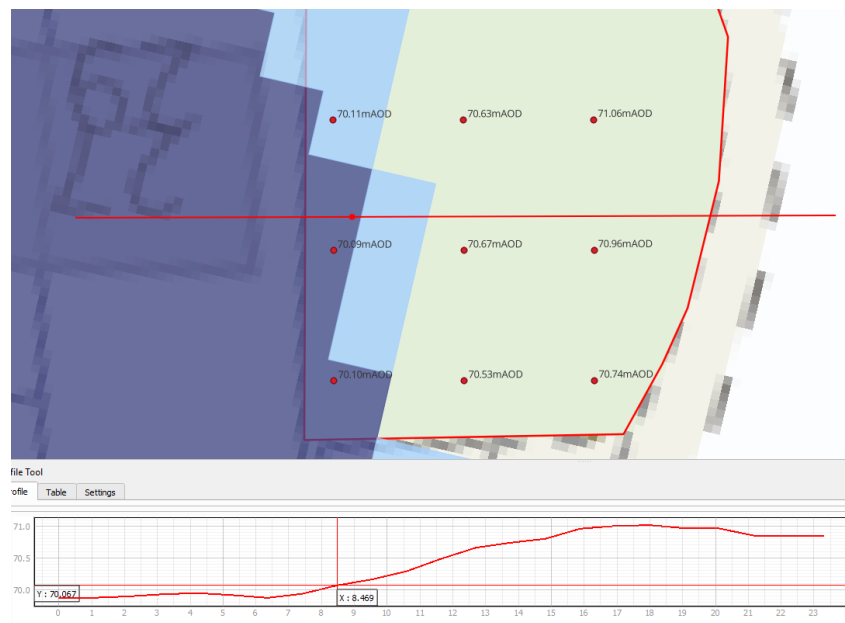


Figure 11: Lidar Section through site and Flood Zone. The estimated flood level is taken at the red dot on the section line.

5.2.3 Pluvial

No pluvial flood depths on site.

5.3 Free board

600mm required where there is a degree of uncertainty with the estimated flood level.

¹“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.”

²Ref: Data link

300mm required where there is a higher degree of certainty with the estimated flood level.

5.4 Dwelling's floor level

In line with EA advice the FFL of the dwelling should therefore be set no lower than the higher of:

$69.86 + 0.6 = 70.46\text{m AOD}$ (modelled flood level based on updated EA provided data + 600mm).

$70.10 + 0.3 = 70.40\text{m AOD}$ (flood level based on Lidar levels at the EA flood extents + 300mm).

For the purpose of design the floor levels should be set no lower than **70.46m AOD**.

This would in practice appear to be readily achievable.

6 Management of flood risk

6.1 Flood risk resilience measures

Given it appears that the a minimum freeboard of 600mm is readily achievable no further specific flood resilience measures are required.

6.2 Management of residual risk

Any residual risk can be safely managed by not impairing access and evacuation routes, signing residents up to flood warning schemes and preparation of domestic flood plans.

6.3 Safe access and egress routes

The NPPF stipulates that, where required, safe access and escape routes should be available to/from new developments in flood risk areas. Access routes should be such that occupants can safely access and exit buildings in design flood conditions. The site offers immediately available safe access and egress routes (ref Figure 12).

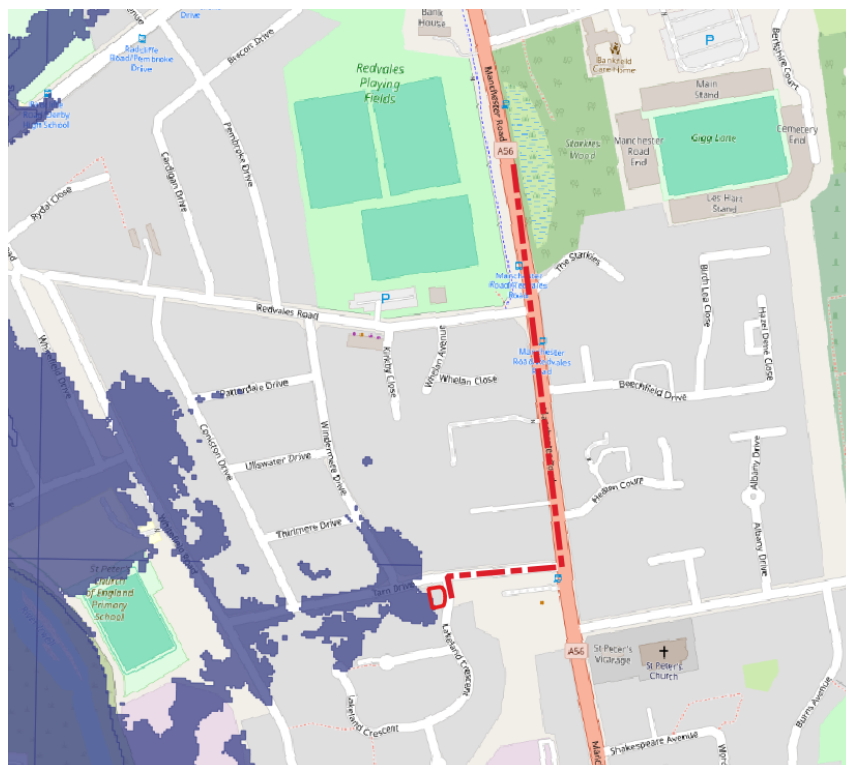


Figure 12: Access and Egress routes. The site offers immediate safe access and egress routes.

6.4 Flood warning schemes

Since it has been established that the site is in an area with a possibility of flooding the future owners of the dwelling should sign up to the E.A. “Flood Warnings Direct” which is a free service providing flood warnings by phone, text or email. See <https://www.fws.environment-agency.gov.uk/app/olr/register>, or call the E.A. on 0345 988 1188 for full information.

6.5 Flood Plan

This report also provides the future owners of the dwelling with a proforma Flood Plan (See Appendix A for an example). The plan will, when completed bespoke to the owners and property, provide guidance on emergency response procedures in the event of flooding to the site. This will:

- Provide details of who to contact and how;
- Provide details of how to turn off gas, electricity and water mains supplies;
- Provide details of designated safe egress routes out of the building and out of the local area at risk;
- Provide details of E.A. Flood warning codes;
- Provide details of local radio stations
- Provide a check list of essential items.

6.6 Sequential test

The aim of this test (as undertaken by the LPA) is to steer new development to areas at the lowest flood risk. Generally this means fluvial Flood Zone 1 and areas at Low risk for all other sources of flooding.

While this report has found that a small part of the site is in Flood Zones 2 & 3, the location of the dwelling itself will be steered to be wholly within flood Zone 1 and at Low risk from all other sources.

6.7 Vulnerability class

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	✗	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	✗	✗	✗

Key: ✓ Development is appropriate.
 ✗ Development should not be permitted.

Figure 13: Flood risk vulnerability and flood zone compatibility^[2]

With reference to Figure 13, the proposed development is classified as “More Vulnerable”. The dwelling will be located wholly in Flood Zone 1.

New “more vulnerable” development is appropriate development.

7 Conclusions

Given that:

- The proposal is non-major development;
- The site lays, in a small part, in Flood Zones 2 & 3;
- The dwelling will be located wholly within Flood Zone 1 on site, the most sequentially preferable flood zone for new development;
- Floor levels can be raised 600mm above the EA's modelled (and updated with climate change) flood level without any compromise to the design or access to the dwelling;
- Flood resilience and mitigation methods are not required;
- Safe access/egress routes are immediately available and future owners will be guided to sign up to the free flood warning schemes;
- There is no documented evidence of flood risk from any other sources;
- The development does not impact on flood risk elsewhere;

and assuming the warning and evacuation procedures can be maintained over the lifetime of the development, the proposed non-major development to provide a new dwelling located wholly within Flood Zone 1, with floor levels set at least 600mm above estimated design flood levels and found to be at Low flood risk from all other sources is considered acceptable.

Signed:



Dr Robin Saunders CEng, C. Build E, MCABE, BEng(Hons), PhD

Date: 24th November, 2025

References

- [1] BSI. BS 8533:2011. Technical report, 2011.
- [2] Department for Communities and Local Government. Technical guidance to the national planning policy framework. 2018.
- [3] Ministry of Housing, Communities and Local Government. National planning policy framework. 2021.

A Emergency flood plan (example)

Personal flood plan

Name

Environment Agency

Are you signed up to receive flood warnings?
If not call Floodline on 0345 988 1188 to see if your area receives free flood warnings.

Let us know when you've completed your flood plan by calling Floodline on 0345 988 1188. This will help us learn more about how people are preparing for flooding.

General contact list	Company name	Contact name	Telephone
Floodline	Environment Agency		0345 988 1188
Electricity provider			
Gas provider			
Water company			
Telephone provider			
Insurance company and policy number			
Local council			
Local radio station			
Travel/weather info			

Key locations

Service cut-off	Description of location
Electricity	
Gas	
Water	

Who can help/who can you help?

Relationship	Name	Contact details	How can they/you help?
Relative			
Friend or neighbour			

Be prepared for flooding. Act now

Personal flood plan

What can I do NOW?

☐ Put important documents out of flood risk and protect in polythene

☐ Check your insurance covers you for flooding

☐ Look at the best way of stopping floodwater entering your property

☐ Make a flood plan and prepare a flood kit

☐ Find out where you can get sandbags

☐ Identify what you would need to take with you if you had to leave your home

☐ Identify who can help you/ who you can help

☐ Understand the flood warning codes



What can you do if a flood is expected in your area?

Actions	Location
Home - Move furniture and electrical items to safety - Put flood boards, polythene and sandbags in place - Make a list now of what you can move away from the risk - Turn off electricity, water and gas supplies - Roll up carpets and rugs - Unless you have time to remove them hang curtains over rods - Move sentimental items to safety - Put important documents in polythene bags and move to safety	
Garden and outside - Move your car out of the flood risk area - Move any large or loose items or weigh them down	
Business - Move important documents, computers and stock - Alert staff and request their help - Farmers move animals and livestock to safety	
Evacuation - Prepare a flood kit in advance - Inform your family or friends that you may need to leave your home - Get your flood kit together and include a torch, warm and waterproof clothing, water, food, medication, toys for children and pets, rubber gloves and wellingtons	

There are a range of flood protection products on the market to help you protect your property from flood damage. A directory of these is available from the **National Flood Forum** at www.bluepages.org.uk

Be prepared for flooding. Act now

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