

ENVIRO PLANNING

**Land to Rear of 31-33 Church Road,
Newport NP19 7EL**

Flood Consequence Assessment

December 2025

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Introduction

This Flood Consequence Assessment (FCA) has been produced in support of a planning application for the proposed demolition/conversion of an existing vacant bakery building to residential use at land to the rear of 31-33 Church Road, Newport NP19 7EL.

The aim of this FCA is to demonstrate that flood risk from all sources is considered and assessed in line with the principles of Technical Advice Note 15 (TAN15) (2025) and that measures are considered to ensure that any flood risk is mitigated wherever possible. This proactive approach aims to ensure the safety and longevity of the infrastructure by considering historical data, topography, watercourses, drainage, and climate change impacts. The report will outline structural and non-structural mitigation strategies to protect the properties from flooding where appropriate.

This report will draw upon information supplied by the Client and that available within the public domain including the local authority planning portal and purchased NRW flood data. This report has been prepared in line with the updated 2025 Wales Technical Advice Note (TAN) 15 Development Flooding and Coastal Erosion and Circular 002/2025 Guidance on the Town & Country Planning (Flood Risk Area Development) (Notification) (Wales) Direction 2025 dated 31st March 2025.

Site Description and Location

The proposed development site is situated the rear of 31-33 Church Road fronting Dean Street. The River Usk is located approximately 760 meters to the west of the site. The NRW flood maps confirm the application site lies within Flood Zone 3 (Rivers & Sea) of the development Advice Map as contained in TAN 15.

The nearest site postcode is NP1997EL and the grid reference is ST 32043 88713.

The ground levels at the site are 8.6m AOD.



The Proposed Development

The proposal involves the part demolition part conversion of an existing vacant bakery building at land to the rear of 31-33 Church Road, Newport, NP19 7EL to provide a residential dwelling (Appendix A). The proposed development comprises internal and layout modifications only, the Finished Floor Level at the entrance of the dwelling (FFL) is to to be increased by 0.6m.

The proposed development is defined as a "redevelopment", which classes as a development on previously developed or brownfield land. The proposed development is classified as "highly vulnerable" as stated in Figure 4 TAN15, with a life expectancy of 75 years. The site is located within Tidal Flood Zone 3 ($\geq 0.5\%$ AEP), and as such, the design flood event for the development is the 0.5%AEP event.

In line with PPW & TAN15 guidelines, the development must also consider the impact of climate change and sea level rise to the year 2100, to ensure the development is adequately designed for its lifetime. This equates to a mean sea level rise of 0.84m on present day conditions. In addition, consideration should also be given to a mean sea level rise of 1.11m to inform mitigation measures and enhance the long-term resilience of the development. (Figure 2)

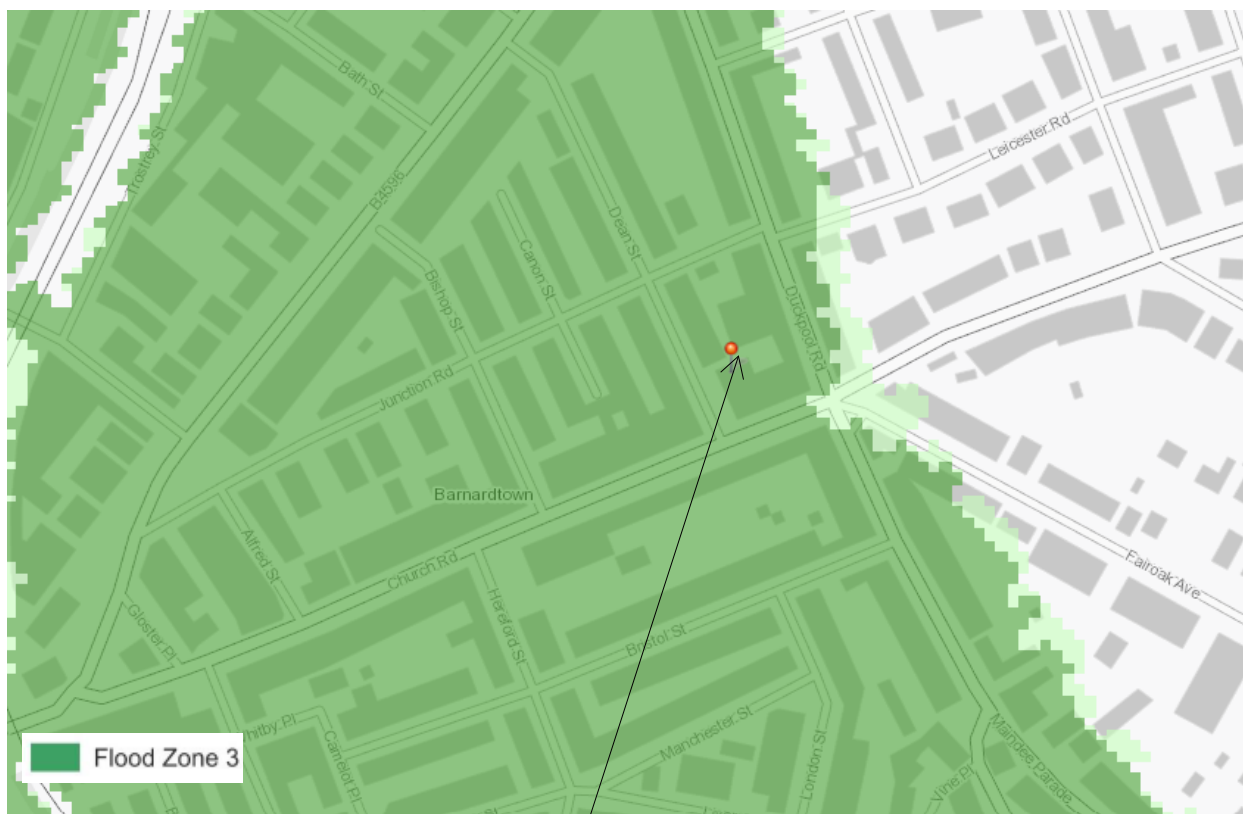


Figure 2. Flood Map for Planning 3

SITE

Existing Flood Risk

In accordance with TAN15 (2025), a Flood Consequence Assessment must include an assessment of all potential sources of flooding, including fluvial (rivers), tidal (sea), pluvial (surface water), groundwater, artificial sources (sewer, canal, reservoir failure etc.), or any combination of these. Consideration must also be given to any structures which may influence flood risk at and within the vicinity of the site, including bridges and culverts and any existing or proposed drains/sewers on site. This is done by utilising local and regional flood mapping, local authority and strategic documentation and topographical data.

Flood Risk (Rivers)

The site is located approximately 760m east of the nearest watercourse (River Usk). Flood Risk Assessment Wales (FRAW) mapping classifies the floodplain into risk-based categories based on the present day, defended flood risk to the site (Figure 4). As the site is located outside of a shaded area, the site is considered to be within an area at very low risk of flooding from fluvial sources, defined as less than 1 in 1000 (0.1%) chance of flooding each year.



Figure 3 NRW Flood Risk Assessment Wales

Flood Risk from Sea

The site is located within the tidal extent of River Usk indicating tidal flooding poses a risk to the site. The site is located approximately 760m to the east of the River Usk and approximately 760m east of the nearest flood defenses, comprising of a flood wall and providing a standard of Protection up to a 1 in 200 year flood. FRAW mapping indicates the site is located within an area at risk of flooding during a low annual probability event, defined as an area that has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 200 (0.5%) each year (Figure 4).

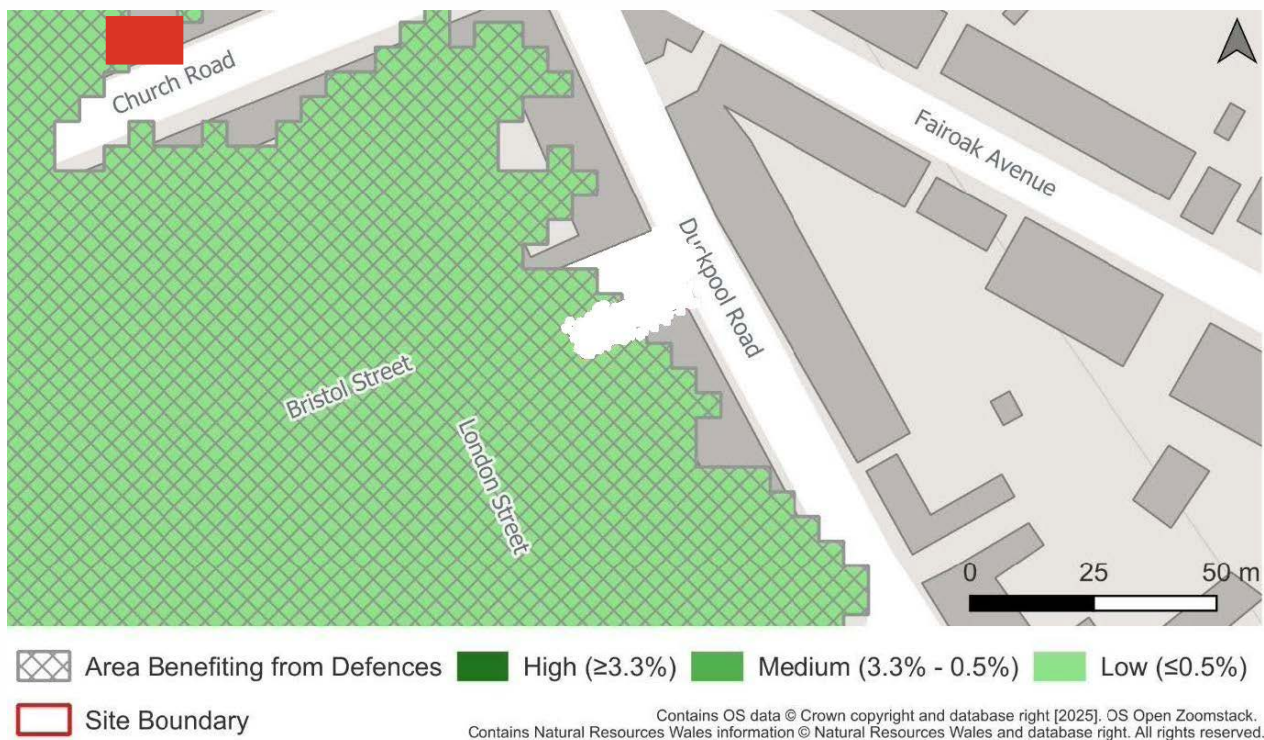


Figure 4 NRW Flood Risk Assessment Wales

Flood Risk from Surface Water & Watercourses

NRW FRAW mapping indicates there is no risk of flooding from surface water or small watercourses at the site (Figure 5). The map does show some surface water flooding in the Church that adjoins the site. However, this is accessed from Junction Road.



Figure 5 NRW Flood Risk Assessment Wales

Flood Risk from Groundwater

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, or may be localised sands and gravels in valley bottoms underlain by less permeable rocks where there is a good hydraulic connection with a major river. Due to the nature of groundwater flooding, it is difficult to map and model.

British Geological Survey mapping shows the site is underlain by St Maughans Formation - Sandstone. Superficial deposits of Tidal Flat Deposits of Clay and Silt were recorded near the site. Given the geology in the area, groundwater could permeate through to the superficial layer.

The British Geological Survey's (BGS) Groundwater Vulnerability Classification Maps indicate the development is in an area of High vulnerability, Figure 6 and 7.

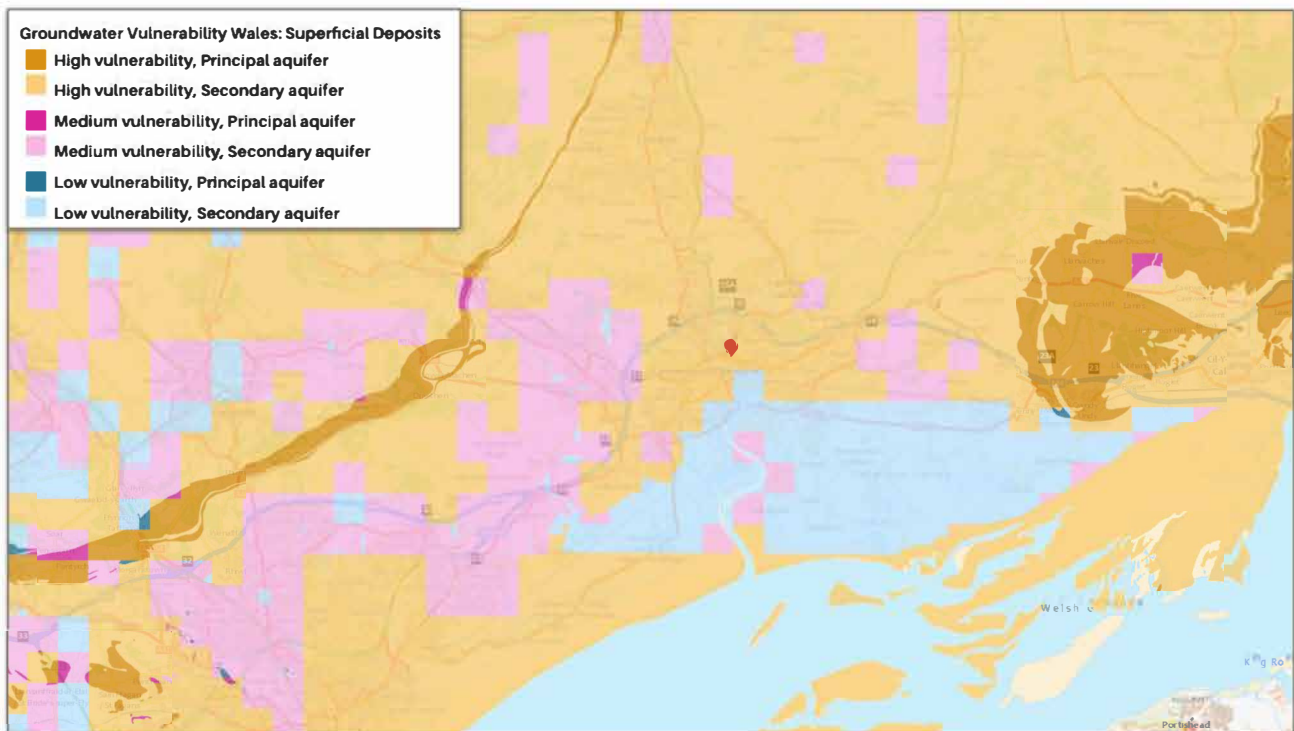


FIGURE 6. GROUNDWATER VULNERABILITY MAP - SUPERFICIAL DEPOSITS (BGS, 2025)

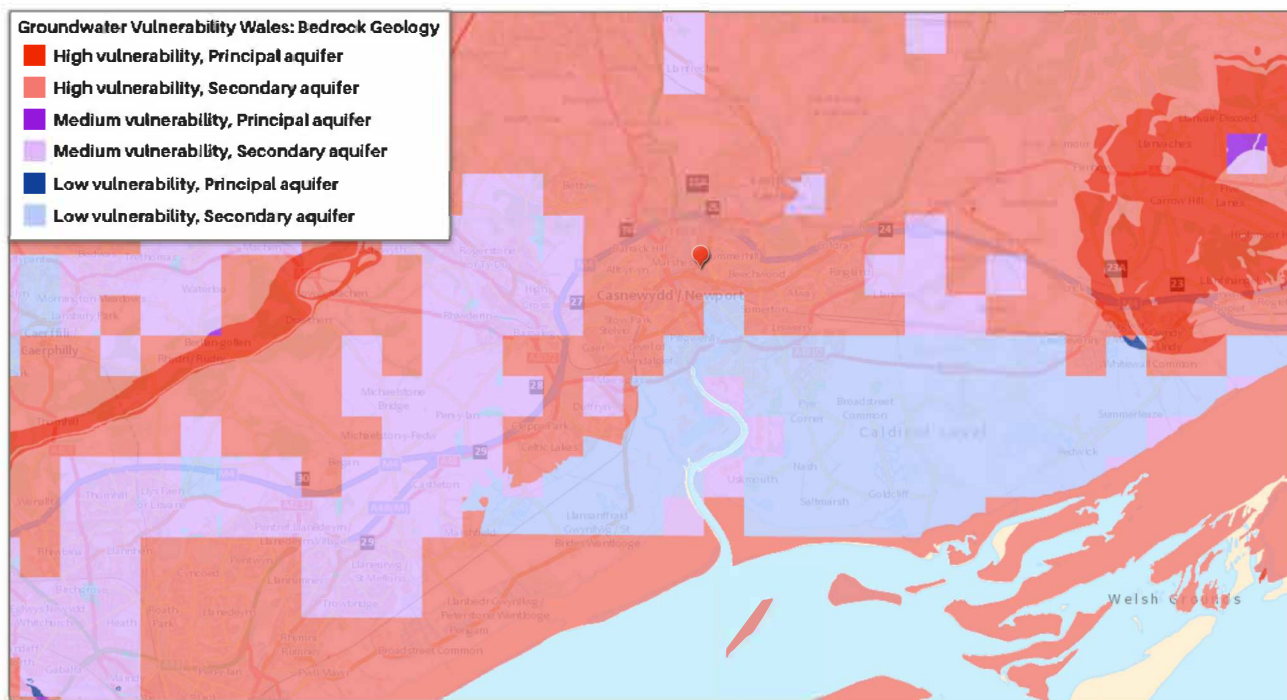


FIGURE 7. GROUNDWATER VULNERABILITY MAP - BEDROCK GEOLOGY (BGS, 2025)

However, these maps consider very large areas of the underlying geology, and ignore subtle shifts in local geology and ground levels. Groundwater flooding is an important consideration for subterranean basements. However, the proposed development will be designed to tolerate seasonal groundwater variation through suitable foundation detailing and low-permeability construction.

According to the Preliminary Flood Risk Assessment (PFRA), "The Environment Agency Wales have previously stated that the risk of groundwater flooding in Wales is not a major issue, and where groundwater flooding occurs, it is confined to a very local scale. CCC will investigate this further with the aim of clarifying the source of flooding".

Therefore, the likelihood of groundwater flooding is considered to be low risk.

Detailed Flood Risk Assessment

NRW model data comprising of Product 5 & Product 6 from the Caldicot and Wentlooge Coastal Model (2016) has been used to inform this report, produced by JBA Consulting. The site is located within the Caldicot Levels, bound the River Wye in the east and the River Usk in the west. The coastal frontage of the Caldicot Levels is defended by two earth embankments, whilst a series of embankments and raised concrete walls provide fluvial defences on the eastern bank of the River Usk.

Due to the flood risk at the site originating from tidal sources and the sites' location within a TAN15 Defended Zone, in line with PPW & TAN15 guidelines, consideration must include overtopping and breach scenarios. Whilst the presence of defence infrastructure is recognised, it should be demonstrated that in the event of a breach or overtopping of defences, subsequent flooding can be managed to an acceptable level.

As such, the below defended scenarios have been considered. In addition, breach scenarios (B) were also modelled and therefore been considered. To allow for an increase in sea levels attributed to climate change, an increase of 1.06m was applied to present day sea-levels within the model. This represents sea level rise expected to 2115.

- 2% AEP event
- 0.5% AEP event
- 0.5% AEP event + B
- 0.5% AEP event +CC
- 0.5% AEP event +CC + B
- 0.1% AEP event
- 0.1% AEP event + B
- 0.1% AEP event +CC
- 0.1% AEP event +CC + B

Upon review of the data, the site remains flood free during all present-day scenarios, including breach scenarios. With the exception of the 0.1% AEP event accounting for defences breach, flooding is projected to remain restricted to the bank of the River Usk. During the 0.1% AEP event accounting for defences breach, flooding is projected approximately 350m south-west of the site; however, the site is unaffected during this event (Figure 8).

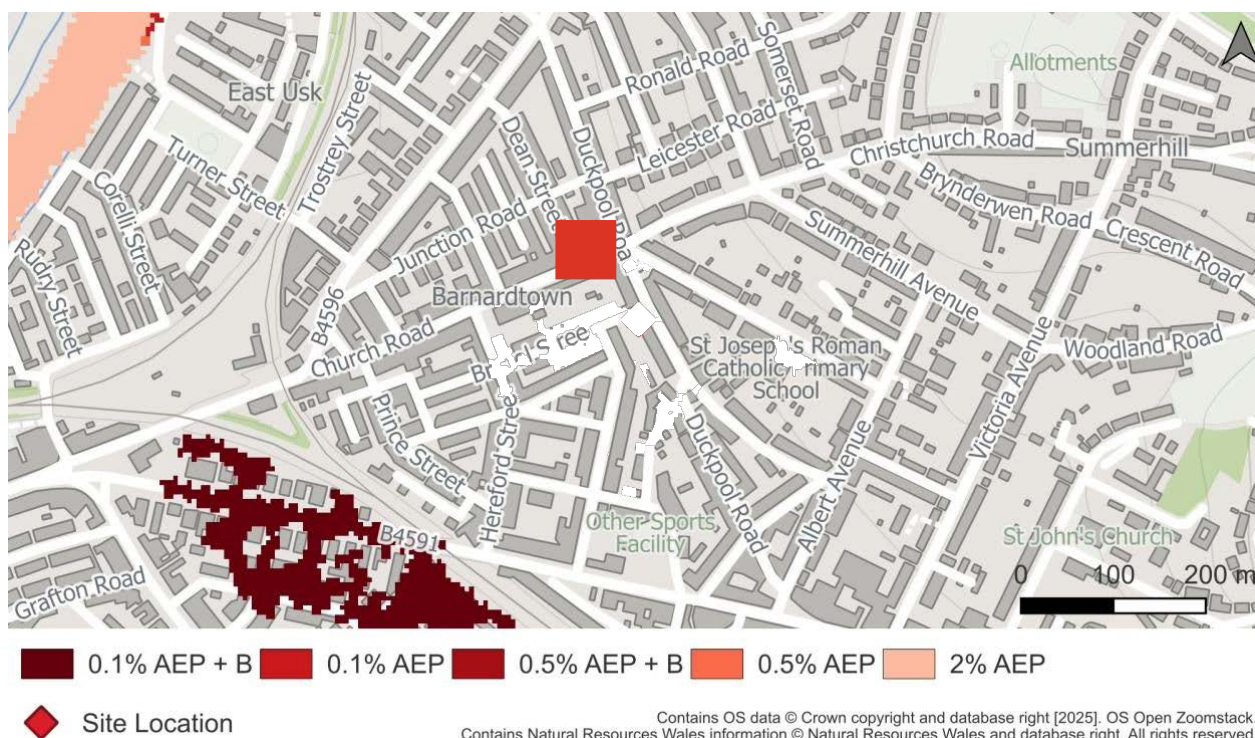


Figure 8 Maximum Modelled Flood Extents (present day)

When accounting for sea level rise of 1.06m on present day levels, flooding is projected at the site and surrounding area during the 0.5% AEP and 0.1% AEP events, including the events accounting for a breach scenario (Figure 9). However, a 1.06m increase in sea levels exceeds the required sea level allowance stated by PPW & TAN15 guidelines. The proposed development must consider a 0.84m sea level increase, 0.22m less than the sea level allowance included within the Caldicot and Wentlooge Coastal Model (2016). As such, the maximum modelled flood outlines seen below are considered highly conservative.

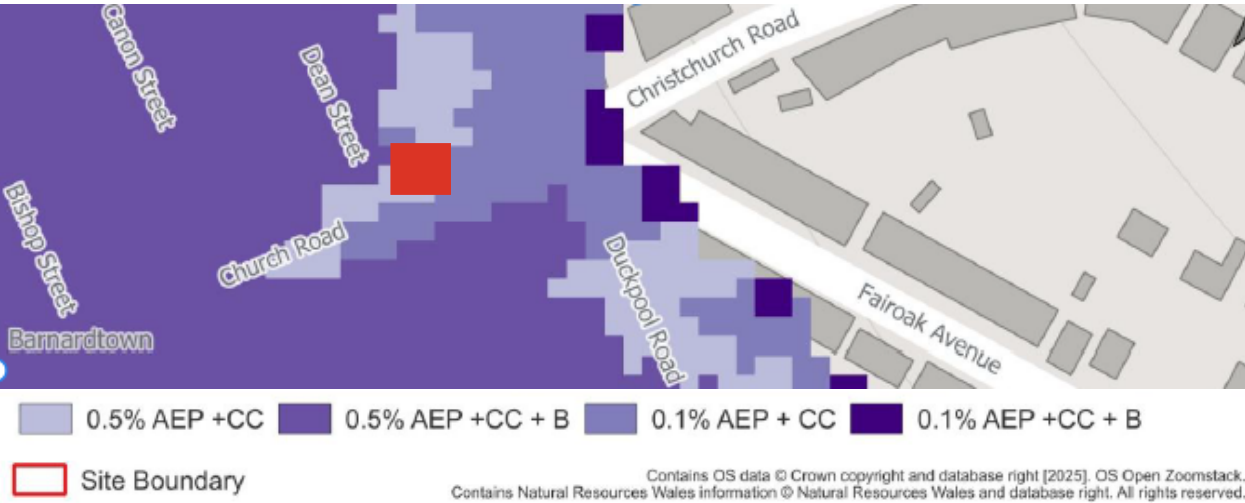


Figure 9 Maximum Modelled Flood Extents (climate change)

Table 1 displays the calculated flood depths at the site during modelled flood events accounting for a sea level rise of 0.84m on present day conditions. This has been calculated utilising the maximum modelled flood levels obtained from the Caldicot and Wentlooge Coastal Model (2016) Product 6, factoring in a 0.22m reduction to align with the required 0.84m sea level rise allowance instead of the 1.06m allowance included, and Finish Floor Level (9.2m AOD) after 0.6 raising.

Table 1 Calculated Flood Depths

	Maximum Modelled Flood Level (mAOD)		Calculated Flood Depth (m)
	SL = 1.06m	SL = 0.84m	FFL=9.2mAOD
0.5% AEP +CC	8.34	8.12	-
0.5% AEP +CC + B	8.02	7.80	-
0.1% AEP +CC	9.25	9.03	-
0.1% AEP +CC + B	9.41	9.19	-

During the 0.5% AEP event when accounting for sea level rise of 0.84m the site is to be Flood Free. Table 1 indicates that should defences breach during a 0.5% AEP +CC event, the site is not projected to experience flooding, the site is also projected to be flood free if the defences hold although maximum levels of flooding would be greater. The conditions and reasons as to why this occurs could not be confirmed upon review of the Product 5 data.

ACCEPTABILITY OF FLOOD CONSEQUENCES

In order for development within a flood risk zone to be deemed acceptable, it must be proved that the occupiers are aware of the flood risk, emergency plans and procedures are in place (if required), the development does not increase flood risk elsewhere and the development must be acceptably flood resilient. There must be minimal risk to life and property, and minimal impact to the surrounding area. The flood consequences must also be deemed acceptable for the type of development.

Flood Free Thresholds

As per Section 11.7 of TAN15, a development is required to remain flood free during the design flood event, which is the 0.5% AEP event, accounting for sea level rise of 0.84m attributed to climate change. However, as the proposed development comprises of a change of use and redevelopment of an existing property, the thresholds can be applied as a guide only. Notwithstanding this, the site remains flood free with the floor level being raised by 0.6m at the entrance. The site benefits from 2 no doors that would offer protection and in effect only the amenity area is likely to be subject to flooding.

Section 5 of TAN15 states that an FCA (such as this report) should establish if suitable mitigation and avoidance measures can be incorporated to ensure the safety of the development and subsequent occupiers, further discussed below.

Third Party Flood Risk

TAN15 requires that any development within a flood risk area must demonstrate that it does not cause or exacerbate flood risk elsewhere. In particular, the Flood Consequence Assessment must assess whether the development would lead to displacement of floodwater, a loss of floodplain storage, or obstruction of overland flow paths during a flood event.

The proposed development involves the conversion of an existing disused building within a defended tidal floodplain. There are no proposals to raise surrounding ground levels, extend the building footprint, or alter the existing site layout in a way that would affect flood storage capacity or flow paths. The site does include raising the internal floor level marginally with a ramped access up to the front door and down into the dwelling but does also include demolishing a number of extensions. Given the limited increase in internal floor level coupled with the demolition, overall the works are not considered to result in any significant displacement of flood water.

The site lies in an area benefiting from formal defences and is not located within the functional floodplain. As such, no encroachment or infilling of active floodplain corridors is proposed. The external ground levels will remain unaltered, and any external works will be minor and limited to resurfacing or SuDS features that do not materially change local floodplain hydraulics.

Accordingly, the proposal is consistent with the requirements of TAN15 (2025), Section 6.8 and Figure 2, which require that flood consequences must be managed without increasing risks elsewhere.

Flood Mitigation Measures

Finished Floor Level

The Finished Floor Level of the building will be raised to 9.2mAOD, (0.6m increase).

Flood Resilient Design

It is recommended that the below design options are implemented, which would enhance the proposed development flood resilience and speed up recoverability should flooding ever occur. These options should be confirmed at the detailed design stage following engagement with a specialist flood installer.

Windows* – Install flood resilient windows.

Flooring, Skirting & Walls – incorporate flood resilient flooring and skirting panels, in addition to an appropriate water resilient wall protection. For further wall protection, consider using horizontal plasterboard or lime-based plaster to dry-line (instead of gypsum).

Electricals – raise electrical sockets, fuse boxes, controls and wiring as high as feasible possible, or a minimum of 0.6m above floor level. Consider re-wiring internal electrics to run cables from ceiling level, minimising flood damage.

Flood Doors - 2no Flood doors are proposed at the entrances to offer resistance during standard design events and to delay the ingress of floodwater. These will serve to reduce the risk of flooding and disruption but will not be relied upon as the primary means of protection.

The site is located within NRW Flood Alert (103WATuskest – Usk Estuary) and Warning (103FWTt08- Usk Estuary at Maindee, North Liswerry and Spyttu Pill) Areas. It is therefore recommended that the site owner and/or tenants sign up to the NRW Flood Warnings¹. Should a flood warning be issued, it is recommended that occupiers follow evacuation procedures, informed by the NRW Flood Warning Service. Should the decision be made to evacuate, safe access and egress is available via Christchurch Road located approximately 80m north east of the site. Christchurch Road remains flood free during all modelled scenarios.

In the event of a severe flood, residents will be expected to remain indoors until floodwaters subside. Tidal flooding is generally short in duration and predictable. A site-specific Flood Response and Evacuation Plan will be prepared and maintained by the owner, setting out clear procedures for safe refuge and post-flood recovery.

The mechanism for flooding is generally prolonged episodes of rainfall, which affords good time for flood warnings to be issued. The likelihood of a rapid water level rise and possible rapid inundation of urban areas posing a risk to life is considered to be minimal with a forewarning of two (2) days of a pending flood event.

Conclusions

This report demonstrates that the proposed development meets with the criteria required when assessing Flood Consequences as laid out in TAN15 (2025). The site is NOT deemed to be at risk of tidal flooding during the present day events modelled within the Caldicot and Wentlooge Coastal Model (2016) subject to raising of internal floor level by 0.6m.

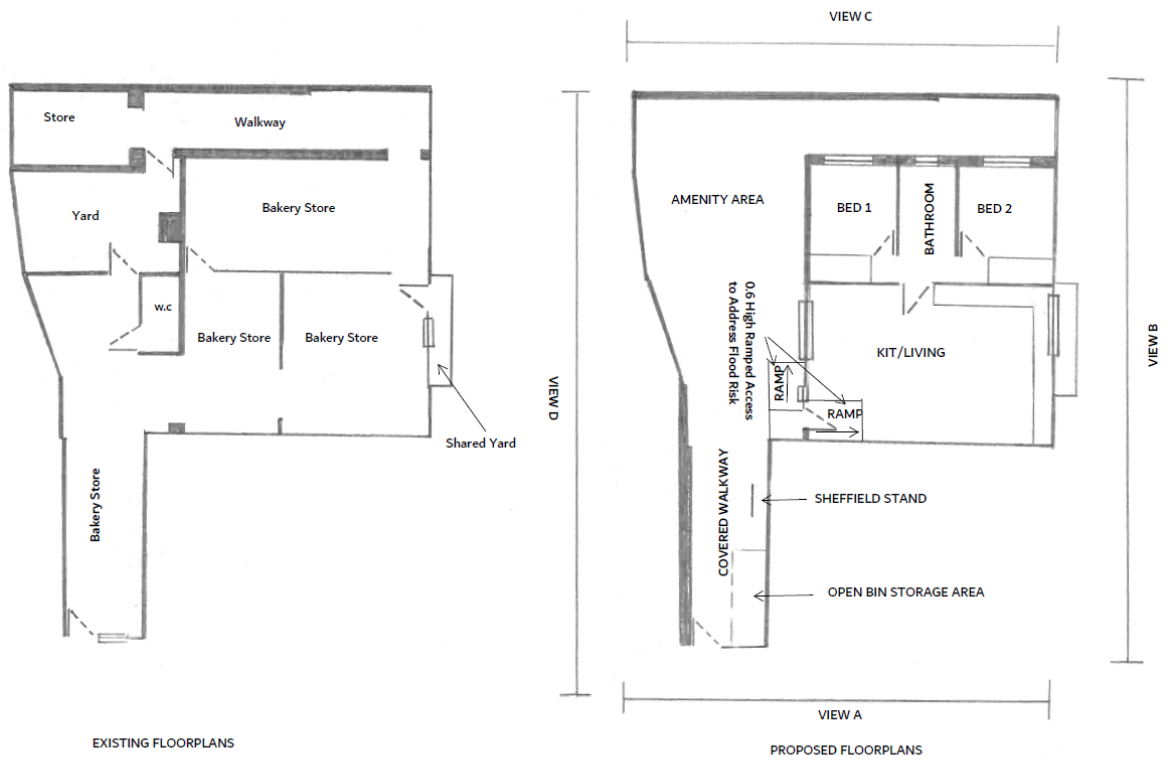
The site is also NOT at risk of flooding during events accounting for climate change within the model (subject to the raising of floor level); however, the climate change allowance within the model exceeds the required allowance for the development. This has been considered within this report, and the site is indicated to be flood free during the 0.5% AEP and 0.1% AEP events when accounting for sea level rise.

This report has demonstrated that as the site is a redevelopment, where the the flood free and tolerable thresholds set out in TAN15 should be applied as a guide only. Notwithstanding this, the site is projected to to be flood free during the design 0.5% AEP + CC event and during an extreme 0.1% AEP + CC event.

In order to mitigate against the consequences of potential flood events, flood mitigation measures should be introduced were practical. Additionally, it is recommended that the owner of the site and future occupiers of the dwelling sign up to the NRW Flood Warning Service so that adequate flood warnings are provided in the event of an emergency.

APPENDIX A

LAND TO THE REAR OF 31-33 CHURCH ROAD ADJACENT TO 48 DEAN STREET



DRWG: EXISTING & PROPOSED FLOORPLANS
SCALE: 1:100

PROPOSED PLANS