



116 Alexandra Road

Flood Consequence Assessment

Job Number: 1615

Date	Version	Notes/Amendments
September 2025	1	Issued for Information

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Acronyms	
AOD	Above Ordnance Datum
NRW	Natural Resources Wales
FCA	Flood Consequence Assessment
PPW	Planning Policy Wales

Executive Summary

This Flood Consequence Assessment (FCA) supports a planning application for the conversion of an existing two-storey building at 116 Alexandra Road, Newport, to residential flats. The site lies within Flood Zone 3 (Sea) on the Flood Map for Planning and is located within an undefended tidal floodplain. However, detailed model outputs confirm that no flooding occurs at the site under any present-day (2021 epoch) tidal scenario, whether defended or undefended.

Flood risk arises only under future climate change conditions. The 0.1% annual exceedance probability (AEP) tidal event in the 2121 epoch is the first scenario in which the site is predicted to flood. This defines the design basis for the development. In the undefended 0.1% AEP (2121) scenario, the predicted flood level is 9.485 m AOD, with a corresponding depth of 0.540 m. In the defended case, the depth increases to 0.906 m. These flood depths are depth-driven, with no velocity data provided, and hazard classifications confirm a “Danger for Most” rating under the defended 0.1% AEP event.

All residential finished floor levels (FFLs) will be set at or above 9.485 m AOD, ensuring that all habitable areas remain dry during all modelled flood scenarios, including future events with climate change. No sleeping or residential accommodation will be located at ground floor level. This design response removes the need to rely on depth or velocity tolerability thresholds and provides permanent, in-situ refuge in line with TAN15 Section 11.4.

All residential accommodation will be set at or above 9.485 m AOD. Flat 1 is located at ground floor level, but its internal finished floor is raised 690 mm above external ground, ensuring it remains dry during the design flood event. The remaining flats are located on the upper floor. Ground floor areas outside Flat 1 are retained in commercial use, classified as Less Vulnerable under TAN15. Although safe dry access is not maintained along the entire route in the most extreme scenario, the exceedance is short in extent and dry ground is reached within approximately 130 m of the site. A refuge-led strategy is considered acceptable in accordance with TAN15, supported by a site-specific Flood Response and Evacuation Plan (FREP).

No flood risk is present from rivers, surface water, groundwater, reservoirs, or sewers. The development involves the conversion of an existing building on previously developed land, with no increase in footprint, no land raising, and no encroachment on any functional floodplain. It does not displace floodwater and does not increase flood risk elsewhere.

The proposal is not subject to referral under the Flood Risk Area Development Notification Direction (Circular 002/2025), and complies with the policy criteria for highly vulnerable development through change of use in a tidal flood zone. The consequences of flooding have been assessed as acceptable in accordance with TAN15, and the development can be supported in full from a flood risk perspective.

Introduction

Flume Consulting Engineers have been appointed to prepare an FCA in support of a planning application for the proposed conversion of an existing building at 116 Alexandra Road, Newport, NP20 2JG to residential use. The proposals involve the reconfiguration of an established structure on previously developed land to form multiple self-contained flats.

This FCA has been prepared in accordance with the March 2025 edition of TAN15, Planning Policy Wales (Edition 12), and the associated Flood Risk Area Development Notification Direction (Circular 002/2025). It assesses the potential flood risks to the site from all relevant sources and evaluates the acceptability of flood consequences in line with the justification and tolerability criteria set out in TAN15.

The Flood Map for Planning, published by NRW, identifies the site as lying within Flood Zone 3 (Sea) and located in an undefended tidal floodplain. The primary source of risk is coastal flooding, with no risk identified from fluvial, surface water, reservoir, groundwater, or sewer sources. The development does not involve new build, ground raising, or any extension to the existing building footprint.

This FCA draws on site-specific model outputs from the Newport_5_V8.0_2022 dataset, last updated by NRW on 22 May 2025. The predicted tidal flood level in the 0.1% AEP scenario with climate change is 9.485 m AOD. All proposed residential floor levels will be set above this threshold, ensuring internal areas remain dry and that the consequences of flooding are considered acceptable under TAN15.

Site Description and Location

The application site is located at 116 Alexandra Road, Newport, NP20 2JG. It comprises an existing two-storey building situated within an established residential area approximately 500 m west of the River Usk. The building fronts onto Alexandra Road to the east, with neighbouring terraced properties to either side and a railway line to the south.

The site lies on previously developed, brownfield land with no recorded history of flooding. External ground levels across the plot range from approximately 8.94 m AOD at the front (north-east corner) to around 9.00 m AOD at the rear. Proposed finished floor levels for all new residential accommodation will be set at or above 9.485 m AOD.

The site is identified as being within Flood Zone 3 (Sea) on the Flood Map for Planning and is classified as lying within an undefended tidal floodplain under the latest tidal modelling. There are no watercourses, culverts, or known flood defence structures within or adjacent to the site boundary. Surface water runoff is directed to the public sewer network, and there are no significant topographic depressions or low-lying areas within the plot that could promote localised ponding.

The National Grid Reference for the centre of the site is ST 31535 86226. The location and site boundary are illustrated in Figure 1.



FIGURE 1. SITE LOCATION

Development Proposal

The proposed development involves the conversion of the existing two-storey building at 116 Alexandra Road to form multiple residential flats. The site is in active use and comprises a previously developed brownfield plot with no changes proposed to the building footprint or site boundaries.

Internal reconfiguration will create self-contained residential units across both floors, with all habitable and sleeping accommodation located at finished floor levels set at or above 9.485 m AOD. The proposed layout ensures that all highly vulnerable spaces, including bedrooms and living areas, remain above the predicted tidal flood level in the 0.1% AEP scenario with climate change. No basement or semi-basement accommodation is proposed.

Internal reconfiguration will create self-contained residential units. Flat 1 is provided at ground floor level, but with its finished floor raised 690 mm above surrounding external ground to exceed the modelled 0.1% AEP + climate change flood level. All other residential units are located on the upper floor, with the remainder of the ground floor retained in commercial use, consistent with the Less Vulnerable classification.

The development does not involve any new building extensions, raising of external ground levels, or alterations that would affect overland flow routes or existing drainage. External works are limited to minor landscaping and resurfacing, with no material impact on surface water management or floodplain function.

A site-specific FREP will be prepared as part of the mitigation strategy, and no ground floor residential units will be brought into use until raised FFLs are confirmed to exceed the critical flood level threshold.

Figure 2 illustrates the proposed floor plans and typical section with reference to flood levels and internal thresholds.

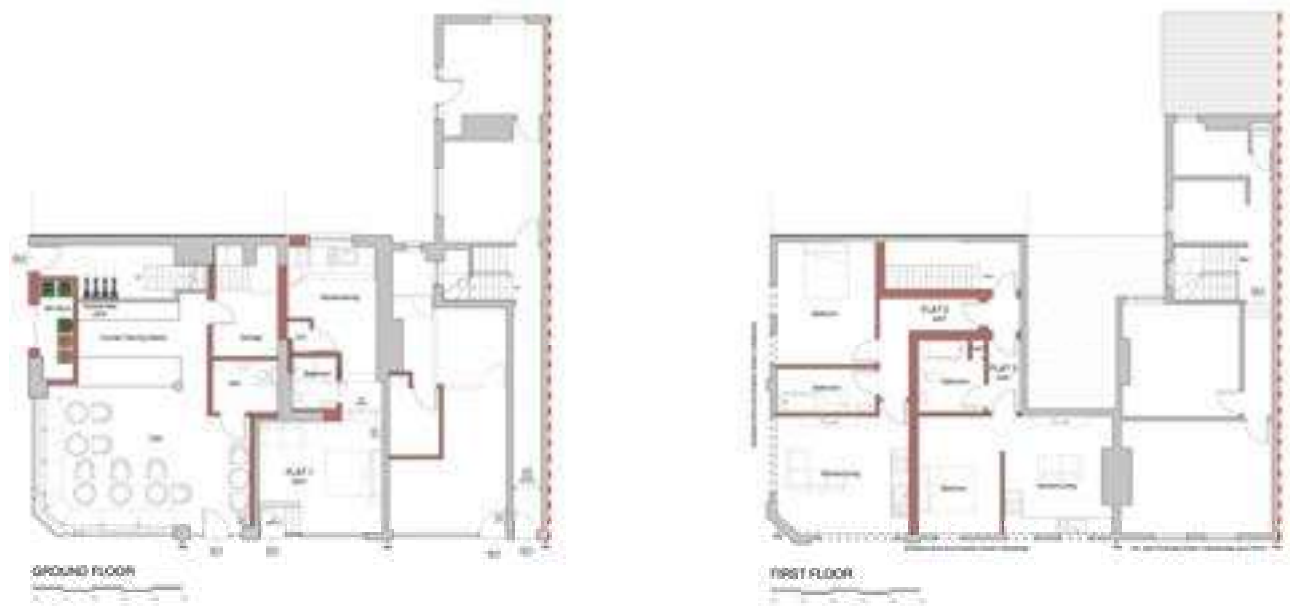


FIGURE 2. DEVELOPMENT PROPOSAL

Flood Consequence Assessment

The site lies within Flood Zone 3 (Sea) on the Flood Map for Planning and is located in an undefended tidal floodplain as defined in the Newport_5_V8.0_2022 tidal model maintained by Natural Resources Wales (NRW). The proposed development qualifies as highly vulnerable development (HVD) and is therefore subject to detailed flood risk assessment under TAN15.

This section provides a summary of the predicted flood behaviour at the site, including flood levels, depths, and hazard classifications, based on the most recent model outputs. The assessment considers both defended and undefended scenarios for the 0.5% and 0.1% annual exceedance probability (AEP) events, including allowances for climate change to the 2115 epoch.

According to the model, the site is not subject to fluvial flooding from the River Usk and lies entirely outside the mapped extents for flooding from surface water, small watercourses, reservoirs, and sewer surcharges. The flood risk is therefore limited to tidal inundation from the sea.

In the defended 0.1% AEP + climate change scenario (2121 epoch), the site experiences predicted flood depths of up to 0.906 m, with a corresponding flood level of 9.817 m AOD. In the undefended 0.1% AEP + climate change scenario, which forms the design basis for this assessment, the predicted flood level at the site is 9.485 m AOD, with a corresponding depth of 0.540 m.

No velocity raster was provided with the model outputs, and as such, direct assessment of site-specific velocities is not possible. Flood hazard has instead been assessed using NRW's ZUK_0 raster, which incorporates flood depth, an assumed velocity profile, and a standardised debris factor to classify risk to people. Under the defended 0.1% AEP (2121) scenario, the site falls within the "Danger for Most" classification, with a hazard score of 1.576.

All residential accommodation will be located above the 9.485 m AOD threshold, thereby remaining dry in all modelled future flood events. This satisfies the requirements of TAN15 Section 11.9 for highly vulnerable development to remain flood-free, and eliminates the need to rely on tolerable depth or velocity thresholds for internal safety.

The development does not involve any extension into the functional floodplain, and no ground raising is proposed. There is no displacement of floodwaters or interruption of overland flow paths, and third-party flood risk remains unchanged.

Detailed assessment of individual flood sources and their relevance to the site is presented in the chapters that follow.

Existing Flood Risk Summary

Flood risk to the site at 116 Alexandra Road has been assessed using the Flood Map for Planning, NRW's surface water hazard datasets, and site-specific tidal model outputs from the Newport_5_V8.0_2022 dataset. The model was last updated by NRW on 22 May 2025 and includes defended and undefended scenarios for both present-day (2021 epoch) and future climate change (2121 epoch) conditions.

The site lies within Flood Zone 3 (Sea) on the Flood Map for Planning, indicating that it is considered at risk of flooding from tidal sources during the most extreme events. However, detailed modelling confirms that no flooding is predicted at this location under any 2021 epoch tidal scenario, either defended or undefended. This includes the 0.5% and 0.1% annual exceedance probability (AEP) events.

Flooding at the site only arises under the 2121 epoch climate change scenarios, and is therefore considered a future, climate-driven risk. The 0.1% AEP (undefended, 2121) scenario predicts a flood level of 9.485 m AOD and a depth of 0.540 m, which forms the basis for the design response. The defended 0.1% AEP scenario results in a greater depth of 0.906 m at the site. No flooding occurs under the 0.5% AEP scenario in either condition.

Other sources of flooding have been assessed and summarised below:

Source	Risk Level	Notes
Tidal (Sea)	High (future only)	No flooding in 2021; flood risk arises only under 2121 climate scenarios
Fluvial (Rivers)	None	Site lies outside all fluvial flood extents
Surface Water	None	Not affected by NRW's surface water flood mapping
Groundwater	Low	Underlain by low-permeability tidal flat deposits; no emergence risk
Reservoirs	None	Outside all mapped reservoir breach extents
Sewer	Low	No recorded surcharge incidents; urban drainage environment

There is no recorded history of flooding at the site, and the site is not identified in the Local Flood Risk Management Strategy or the Preliminary Flood Risk Assessment as an area of concern.

The development does not involve any works that would alter runoff pathways, affect conveyance, or increase vulnerability to flooding from any source. Further detail on specific flood mechanisms is provided in the subsequent chapters.

Planning Policy and Flood Risk

This chapter sets out the relevant national policy context for flood risk in Wales, including the updated requirements of TAN15 and Circular 002/2025. The acceptability of the proposed development is assessed with reference to its vulnerability classification, flood zone location, and policy criteria for highly vulnerable development (HVD) within areas at risk.

The governing national planning policy is TAN15 (March 2025), which was published alongside the new Flood Map for Planning. This map replaces the previous Development Advice Map and identifies the site as lying in Flood Zone 3 (Sea), within an undefended tidal floodplain. TAN15 establishes a more precautionary framework, with greater restrictions on HVD in high-risk areas.

The proposed development involves the conversion of an existing building on previously developed land to form residential flats. In accordance with TAN15 Figure 4, this is classified as HVD, but qualifies as a change of use and is therefore subject to the more flexible policy approach set out in paragraphs 10.20 to 10.23.

Specifically, paragraph 10.23 confirms that HVD through change of use “may be acceptable where it can be demonstrated that the consequences of flooding are manageable over the lifetime of development.” This includes raised finished floor levels, internal refuge, and supporting mitigation measures. The proposed development satisfies these requirements in full, with all residential accommodation located above the modelled flood level for the 0.1% AEP scenario with climate change.

The flood depths and velocities at the site have been compared against the tolerability thresholds in TAN15 Figure 6. Although the access route exceeds the 600 mm depth threshold locally in the defended scenario, dry ground is reached within 130 m and the site benefits from a refuge-led life safety strategy in accordance with Section 11.4.

The development is not subject to referral under the Flood Risk Area Development Notification Direction (Circular 002/2025), as the proposal:

- Involves the change of use of an existing building,
- Lies on previously developed land, and
- Does not introduce new dwellings on undeveloped land in Zone 3.

The proposal is therefore compliant with national planning policy in principle, subject to the acceptability of flood consequences as demonstrated in the following chapters.

As flooding consequences may not be acceptable for particular types of development, the precautionary framework identifies the vulnerability of land uses subject to flooding, by sub-dividing land usage in three categories outlined below:

Development Category	Types
Emergency Services	Hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood.
Highly vulnerable development	All residential premises (including hotels and caravan parks), public buildings, (e.g. schools, libraries, leisure centres), especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites.
Less vulnerable development	General industrial, employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites.

FIGURE 3. VULNERABILITY CLASSIFICATION

Flood Risk from Watercourses

Flood risk from main rivers and ordinary watercourses has been assessed using the Flood Map for Planning, NRW's surface water mapping, and the Newport_5_V8.0_2022 model dataset. The site is located in a dense urban area with no direct connection to any fluvial system or open channel.

The nearest main river is the River Usk, located approximately 500 m to the east of the site. However, the site lies outside the fluvial floodplain extents in all modelled scenarios. The updated Flood Map for Planning confirms that the site is not affected by fluvial flooding under either the 0.5% or 0.1% AEP scenarios, with or without climate change.

There are no mapped ordinary watercourses, culverts, or surface drainage features within or adjacent to the site boundary. There is no evidence of any historical overland flow routes affecting the site from upstream catchments. NRW's Flood Risk Assessment Wales dataset and local surface water hazard maps also show no risk from small watercourses.

Accordingly, the risk of flooding from watercourses is considered to be negligible. There is no requirement for fluvial floodplain compensation, no known interaction with river hydraulics, and no design implications from fluvial processes for the proposed development.



FIGURE 4. NRW FLOOD RISK FROM RIVERS OR SEA MAP (FLOOD-MAP-FOR-PLANNING.NATURALRESOURCES.WALES, 2025)

Flood Risk from Groundwater

At this site, superficial deposits are mapped as tidal flat deposits comprising clay and silt, which are characteristically low in permeability and unlikely to support significant groundwater movement. This is illustrated in Figure 5, which shows the site located within a low-permeability superficial geology zone.

British Geological Survey mapping confirms the underlying bedrock geology is a Secondary Aquifer with low groundwater vulnerability. As shown in Figure 6, the site lies within a bedrock classification of low susceptibility to groundwater emergence.



FIGURE 5. GROUNDWATER VULNERABILITY MAP - SUPERFICIAL DEPOSITS (BGS, 2025)

At this site, superficial deposits are mapped as tidal flat deposits comprising clay and silt, which are characteristically low in permeability and unlikely to support significant groundwater movement. This is illustrated in Figure 5, which shows the site located within a low-permeability superficial geology zone.

British Geological Survey mapping confirms the underlying bedrock geology is a Secondary Aquifer with low groundwater vulnerability. As shown in Figure 6, the site lies within a bedrock classification of low susceptibility to groundwater emergence.

The site is not in an area identified by NRW as being at elevated risk of groundwater flooding. There is no evidence of springs, saturated ground conditions, or historic groundwater flooding within or near the site boundary.



FIGURE 6. GROUNDWATER VULNERABILITY MAP - BEDROCK GEOLOGY (BGS, 2025)

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*”.

Given these conditions, and the urbanised character of the site, the risk of groundwater flooding is considered to be low and does not represent a constraint to the proposed development. No specific groundwater mitigation measures are required.

Flood Risk from Surface Water and Overland Flows

Surface water flooding occurs when intense rainfall is unable to infiltrate into the ground or overwhelms the drainage system. This surface water runs across the surface of the ground causing flooding. Overland flows can also be generated by burst water mains, failed dams and any failure in a system storing or transferring water.

NRW's surface water flood hazard maps show that the site at 116 Alexandra Road lies outside all mapped extents of surface water flood risk, including for the 3.3%, 1%, and 0.1% AEP scenarios. There are no mapped overland flow routes, depressions, or historical drainage exceedance indicators affecting the building footprint or immediate surrounds.

The site is relatively level and bound by surrounding built form on all sides. Local topography gently falls away eastward toward the road corridor, and the existing building thresholds are slightly elevated relative to adjacent surfaces. No part of the site is identified within NRW's mapped surface water or ordinary watercourse extents. This has been verified against the 2025 Flood Map for Planning and supporting evidence from NRW's Flood Risk Assessment Wales dataset.



FIGURE 7. FLOOD RISK FROM SURFACE WATER AND SMALL WATERCOURSES MAP (FLOOD-MAP-FOR-PLANNING.NATURALRESOURCES.WALES, 2025)

To further reduce the potential for localised runoff accumulation, any new hardstanding introduced as part of the development will be appropriately drained or made permeable in accordance with Building Regulations and SuDS principles.

Accordingly, the risk of flooding from surface water and overland flow is considered to be low, and no additional mitigation measures are required beyond standard drainage good practice.

Flood Risk from Reservoir Failure

The NRW's information states that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Reservoir Act of 1975 ensures that reservoirs are inspected regularly and essential safety work is carried out.

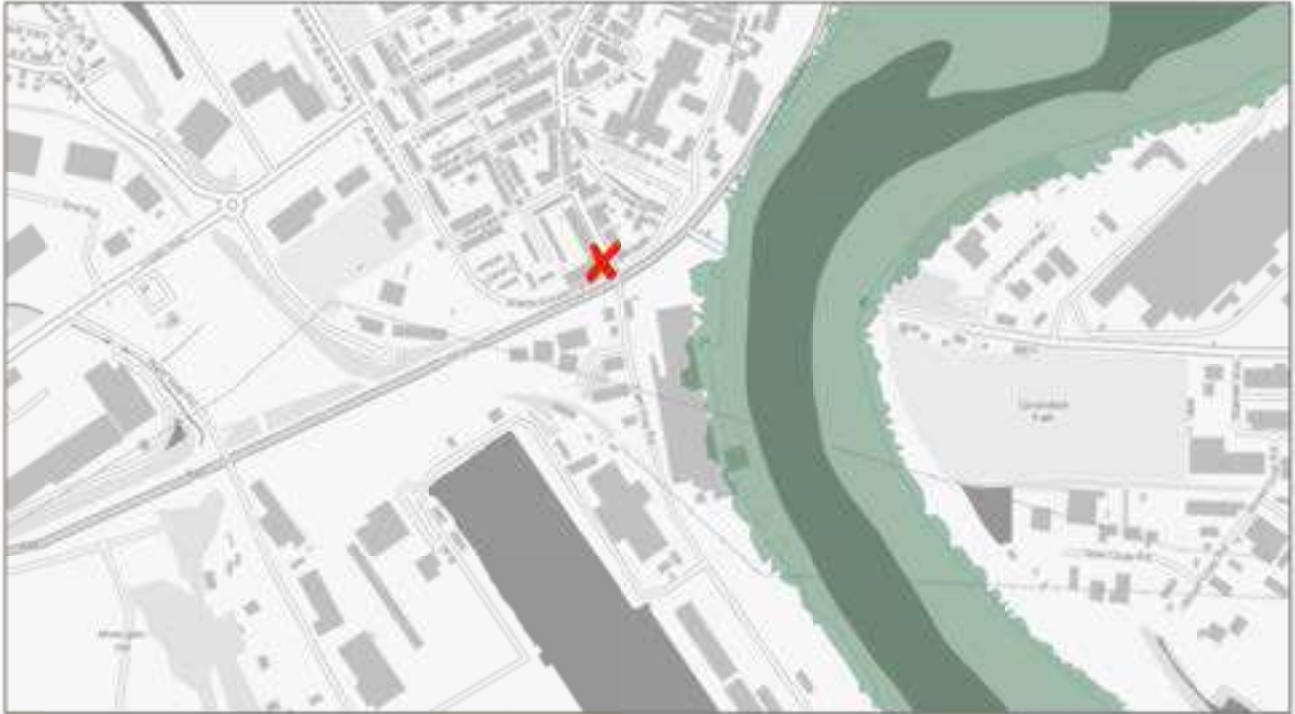


FIGURE 8. NRW FLOOD RISK FROM RESERVOIRS MAP (FLOOD-MAP-FOR-PLANNING.NATURALRESOURCES.WALES, 2025)

According to NRW's flood mapping, the site lies outside all mapped extents of flooding from reservoir breach scenarios. This is consistent across all national datasets and confirms that the site is not at risk from any upstream impoundment or storage facility in the event of failure.

NRW's 2025 Flood Map for Planning and the Flood Risk Assessment Wales dataset both indicate that there are no identified reservoirs or high-risk retained water bodies within the local catchment that could affect the site. Given the flat local topography and the distance to any known reservoirs, the risk is further reduced.

Although the consequences of a reservoir breach could be significant in terms of depth and velocity, the residual likelihood of such an event remains extremely low. Reservoir flood mapping is primarily provided to inform emergency planning and is not normally a determining constraint in development planning.

Accordingly, the risk of flooding from reservoir failure is considered to be negligible, and no further assessment or mitigation is required.

Detailed Flood Risk Assessment

This chapter presents the flood levels, depths, and hazard classifications for the site at 116 Alexandra Road, based on the latest site-specific outputs from the Newport_5_V8.0_2022 tidal model, maintained by Natural Resources Wales (NRW). The model was last updated on 22 May 2025. The datasets used include both defended and undefended scenarios, and distinguish between present-day (2021 epoch) and future climate change (2121 epoch) events.

Site-Specific Model Results Summary

Flood levels, depths, and hazard classifications have been extracted for Grid Reference ST 31535 86226. A summary of all relevant datasets is presented below.

2021 Epoch – Present Day Conditions

Scenario	Dataset Feature Name	Value	Interpretation
0.1% AEP (Defended)	NewportPARs_DEF_023_2021_T1000_F002_h_Max	No data	No flooding
0.1% AEP (Undefended)	NewportPARs_UND_023_2021_T1000_F002_h_g005_Max	No data	No flooding
0.5% AEP (Undefended)	NewportPARs_UND_023_2021_T0200_F002_h_g005_Max	No data	No flooding
0.5% AEP (Undefended, depth)	NewportPARs_UND_023_2021_T0200_F002_d_g005_Max	No data	No flooding (depth raster confirms)

No flood hazard (ZUK_0) values are provided for 2021 epoch events. These results confirm that the site remains entirely flood-free under all present-day return periods in both defended and undefended conditions.

2121 Epoch – Future Climate Change Conditions

Scenario	Dataset Feature Name	Value	Interpretation
0.1% AEP (Defended, level)	NewportPARs_DEF_023_2121_T1000_F002_h_Max	9.817 m	Flood level
0.1% AEP (Defended, depth)	NewportPARs_DEF_023_2121_T1000_F002_d_Max	0.906 m	Flood depth
0.1% AEP (Defended, hazard)	NewportPARs_DEF_023_2121_T1000_F002_ZUKO_Max	1.576	“Danger for Most” classification
0.5% AEP (Defended, level)	NewportPARs_DEF_023_2121_T0200_F002_h_Max	9.470 m	Flood level
0.5% AEP (Defended, hazard)	NewportPARs_DEF_023_2121_T0200_F002_ZUKO_Max	1.347	“Danger for Some” to “Danger for Most”

Scenario	Dataset Feature Name	Value	Interpretation
0.1% AEP (Undefended, level)	NewportPARs_UND_023_2121_T1000_F002_h_g005_Max	9.8382 m	Flood level
0.1% AEP (Undefended, depth)	NewportPARs_UND_023_2121_T1000_F002_d_g005_Max	0.540 m	Flood depth – design event
0.5% AEP (Undefended, level)	NewportPARs_UND_023_2121_T0200_F002_h_g005_Max	9.4854 m	Flood level
0.5% AEP (Undefended, depth)	NewportPARs_UND_023_2121_T0200_F002_d_g005_Max	0.5399 m	Flood depth

These results confirm that flooding only occurs under the 2121 climate change scenarios, with the 0.1% AEP undefended event representing the design basis for this FCA. This event predicts a flood depth of 0.540 m, which is within the internal tolerable threshold but avoided entirely through raised design.

The proposed development responds directly to the predicted 2121 tidal flood conditions. All residential finished floor levels (FFLs) will be set at or above 9.485 m AOD, which is equal to or above the modelled flood level in the 0.1% AEP (undefended, 2121) scenario. This ensures that all sleeping and habitable accommodation remains dry under all future tidal flood conditions.

Flood hazard has been assessed using NRW's ZUK_0 raster. In the defended 0.1% AEP (2121) event, the site falls within the "Danger for Most" category, based on a hazard score of 1.576. No velocity raster was provided with the dataset, so full compliance with velocity tolerability thresholds (TAN15 Figure 6) cannot be assessed. However, since no part of the residential use is located at ground level, and FFLs are raised above the maximum modelled flood level, there is no reliance on depth or velocity tolerability criteria for life safety.

Ground floor areas will be constructed using flood-resilient materials and services. A site-specific Flood Response and Evacuation Plan (FREP) will also be implemented to support safe refuge during extreme tidal events.

This approach ensures full compliance with TAN15 Sections 6, 11, and 13, providing a policy-compliant response to predicted future flood risks at the site.



FIGURE 9. NEWPORT_5_V8.0_2022 - 1 IN 200 YEAR TIDAL FLOOD LEVEL (MAOD) - DEFENDED 2121 EPOCH

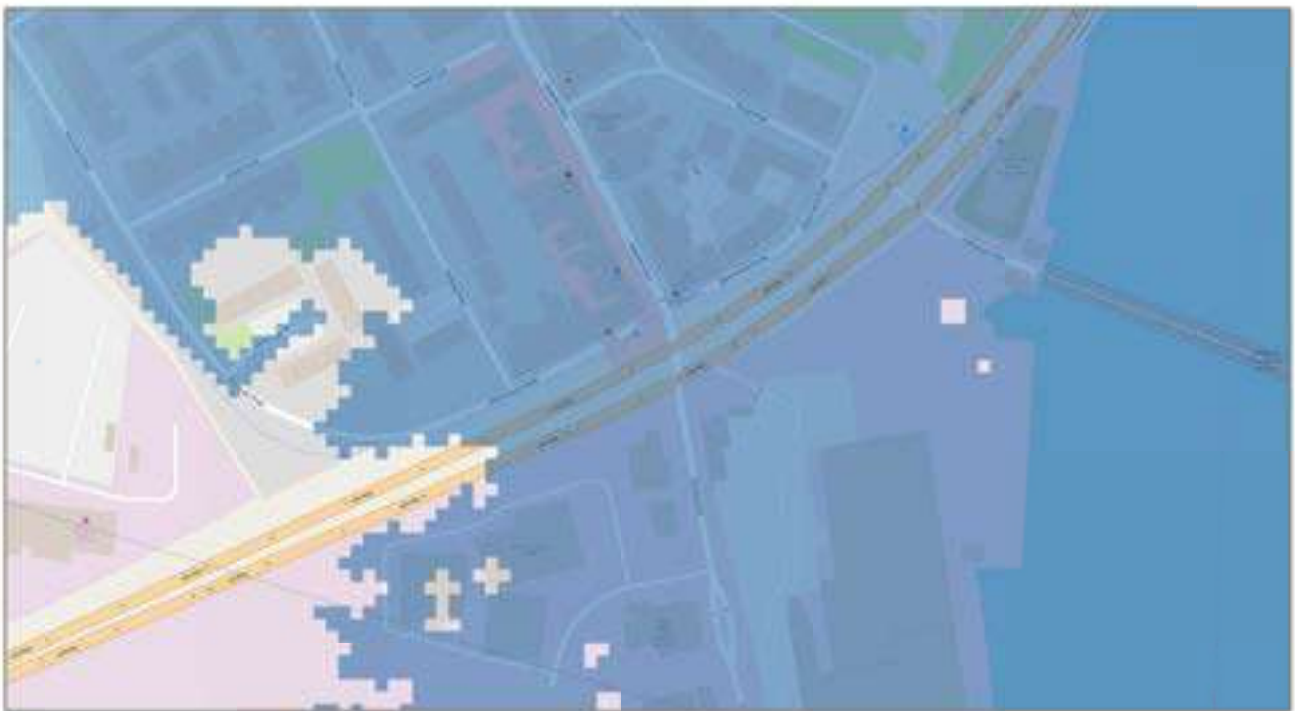


FIGURE 10. NEWPORT_5_V8.0_2022 - 1 IN 200 YEAR TIDAL FLOOD DEPTHS - UNDEFENDED 2121 EPOCH

Third party flood risk

TAN15 (March 2025) requires that development in flood risk areas must demonstrate that it will not cause or increase flood risk elsewhere. This includes the potential for displacement of floodwater, obstruction of overland flow paths, or loss of floodplain storage. These considerations apply to both present-day and future scenarios, and must be addressed irrespective of whether the development is located within a defended or undefended floodplain.

The proposed development at 116 Alexandra Road involves the internal conversion of an existing two-storey building, with no extension to the footprint and no changes to external ground levels. The building sits entirely within a previously developed, impermeable urban plot, and all external works are minor in nature. There are no open flow routes, culverts, or flood storage areas within or adjacent to the site that would be affected.

Site-specific flood modelling confirms that no flooding occurs in any present-day (2021 epoch) tidal scenario, whether defended or undefended. Flooding at this location only arises under future climate change conditions, specifically the 0.1% AEP (2121 epoch) scenarios. The modelled flood depths are confined to the curtilage of the existing plot, and there is no extension into any active floodplain corridor or overland route that would require mitigation or compensation.

Given that the development does not involve landraising, embankment, or infilling of any kind, and the finished floor levels will be raised above all predicted flood levels, there is no displacement of floodwater and no increase in risk to adjacent land or property.

Accordingly, the proposal is fully compliant with the requirements of TAN15 Section 6.8 and Figure 2, which require that the consequences of flooding must be managed without transferring risk off-site. The scheme preserves the existing hydrological behaviour of the plot and does not compromise the function of surrounding infrastructure during flood conditions.

Access and Egress

In accordance with TAN15 (March 2025), highly vulnerable development (HVD) must demonstrate that safe access and egress can be provided during the 0.1% annual exceedance probability (AEP) flood event with climate change. TAN15 Figure 6 sets out tolerable thresholds for access routes:

- Maximum depth: 600 mm
- Maximum velocity: 0.3 m/s

Flood model outputs from the Newport_5_V8.0_2022 dataset confirm that no flooding occurs at the site or on adjacent access routes under any present-day (2021 epoch) tidal scenario, whether defended or undefended. All flooding at this location is driven by climate change effects and is confined to the 2121 epoch outputs.

In the 0.1% AEP defended (2121 epoch) scenario, the access route along Alexandra Road is predicted to flood to a maximum depth of 0.906 m, based on LiDAR-derived topography and NRW's modelled water levels. This exceeds the 600 mm threshold for safe access. In the undefended 0.1% AEP scenario, the flood depth at the building frontage is lower, at 0.540 m, which falls within the tolerable range for internal safety but would still affect external access during the design event.

The exceedance is localised and reduces significantly over a short distance. Dry ground is reached within approximately 130 m of the site, along the highway network, providing a viable point of external refuge or emergency service access once floodwaters have receded.

In accordance with TAN15 Section 11.4, where safe dry access cannot be maintained for the full extent of the route, a permanent, flood-free internal refuge is required. The development satisfies this requirement by raising all residential finished floor levels to 9.485 m AOD, above the predicted flood level in the 0.1% AEP (undefended, 2121) scenario. This ensures that occupants will remain dry and safe within the building during extreme tidal events.

A site-specific Flood Response and Evacuation Plan (FREP) will support this refuge-led strategy by setting out clear procedures for monitoring flood alerts, remaining safely in place, and recovering once waters recede. The nature of tidal flooding—short in duration and predictable—makes this approach suitable and manageable for the development.

Accordingly, while continuous dry access cannot be maintained during the most extreme future scenarios, the proposed development provides compliant and proportionate life safety measures, in line with TAN15.

Flood Response and Evacuation Plan

Although the site is identified as lying within Flood Zone 3 (Sea) on the Flood Map for Planning, detailed model outputs confirm that no flooding occurs under any present-day (2021 epoch) tidal scenarios. Flood risk at this location is driven exclusively by future climate change scenarios, with the first instance of flooding occurring in the 0.1% annual exceedance probability (AEP) tidal event under the 2121 epoch.

As such, while no immediate operational flood response is currently required, a Flood Response and Evacuation Plan (FREP) is still considered appropriate in accordance with TAN15 Section 11.4. The FREP will provide a formal framework for ensuring occupant safety in the event of a future flood event and will support the refuge-led strategy embedded within the building's design.

The FREP will include the following core elements:

- Confirmation that residents should remain indoors at first floor level during extreme tidal events, with residential finished floor levels set at or above 9.485 m AOD.
- Procedures for monitoring and responding to Natural Resources Wales (NRW) flood alerts, even though present-day warnings may not directly relate to this site until future conditions materialise.
- Internal refuge guidance, setting out how and where residents should shelter during a flood event, including safe areas above the modelled flood level.
- Information on tidal flood durations, which are typically short and predictable, allowing for planned and time-limited refuge.
- Contact details for emergency services, building management, and post-flood inspection requirements to support safe reoccupation.

Responsibility for maintaining the FREP will lie with the site's managing agent or appointed operator. A copy of the FREP will be issued to all occupants and reviewed periodically to ensure that it remains relevant and up to date with any future revisions to NRW's model outputs or climate guidance.

The FREP provides a proportionate and robust response to the site's long-term flood risk exposure. When implemented in conjunction with raised finished floor levels and resilient construction, it ensures that the site can be occupied safely without reliance on external evacuation during design events, consistent with the objectives of TAN15.

Approach to Flood Risk from Change of Use|Conversion

The proposed development involves the conversion of an existing two-storey building on previously developed land to form residential flats. As such, it falls within the policy context set out in paragraphs 10.20 to 10.23 of TAN15 (March 2025), which provide a specific framework for considering highly vulnerable development (HVD) resulting from change of use.

TAN15 acknowledges that conversion proposals differ from new-build schemes in their ability to avoid flood risk altogether. In paragraph 10.23, it is explicitly stated that:

“Change of use proposals involving buildings already present within a defended flood zone may be acceptable where it can be demonstrated that the consequences of flooding are manageable over the lifetime of development.”

While this site is not within a formally defended area, the principle still applies: the building is existing, the plot is brownfield, and there is no new development or footprint increase. The risk is addressed through raised floor levels, refuge-based design, and site-specific flood risk analysis.

The flood risk management strategy aligns with the TAN15 policy tests as follows:

- All residential accommodation is located at or above 9.485 m AOD, which is the predicted flood level in the 0.1% AEP + climate change (undefended) scenario.
- Ground floor sleeping or habitable uses have been excluded, removing the need to rely on internal depth tolerability thresholds.
- The development provides permanent refuge within the building, consistent with TAN15 Section 11.4.
- There is no impact on the functional floodplain, no displacement of floodwater, and no change in third-party flood risk.

The proposed reuse of the building provides long-term resilience and avoids introducing flood-sensitive uses into vulnerable areas of the site. The scheme demonstrates that the consequences of flooding can be effectively managed for the lifetime of the development without reliance on speculative or unproven mitigation.

In this context, the proposed change of use is compliant with TAN15 and is considered acceptable from a flood risk perspective.

Flood Mitigation Measures

The primary mitigation is the elevation of all residential finished floor levels to or above 9.485 m AOD. Flat 1 achieves this through a raised ground floor finished floor level, 690 mm above external ground levels, ensuring internal areas remain dry. The other flats are located above ground floor level and therefore unaffected. Ground floor commercial uses will be finished with flood-resilient materials as they are classified as Less Vulnerable.

The proposed development incorporates a range of mitigation measures designed to ensure that the flood risk to future occupants is minimised and that the consequences of flooding remain acceptable in accordance with TAN15 (March 2025). The primary mitigation is the elevation of all residential finished floor levels to at or above 9.485 m AOD. This level corresponds to the predicted flood level in the 0.1% AEP tidal event with climate change, based on the undefended scenario from the Newport_5_V8.0_2022 model. By locating all sleeping and habitable accommodation above this threshold, the design ensures that residents will not be exposed to internal flooding under any modelled future condition. This approach fully satisfies the requirement in TAN15 Section 11.9 for highly vulnerable development to remain dry during the design flood event.

In addition to elevated floor levels, the development adopts a refuge-led life safety strategy. All residential units are designed so that occupants can remain safely in place above the design flood level throughout the duration of a tidal flood event. This is consistent with TAN15 Section 11.4, which supports the use of internal refuge where access routes are subject to depth or hazard exceedance. The nature of tidal flooding in this area, which is typically predictable and of short duration, supports this approach.

The ground floor areas of the building will be constructed using flood-resilient materials to reduce the extent of damage should water ingress occur during extreme events. Finishes and linings will be selected for water tolerance, and services such as electrical outlets, heating controls, and data cabling will be located above anticipated flood levels. Where practical, flood-compatible joinery and tanking measures will be used in low-level rooms. These measures will not be relied upon for life safety but will enhance the speed and cost-effectiveness of post-flood recovery.

No part of the development involves raising external ground levels, enlarging the building footprint, or introducing obstructions that could displace floodwater or redirect flow. The topography and layout of the site will remain as existing, maintaining the current floodplain function and ensuring no adverse effects on flood risk elsewhere.

Any new hardstanding introduced as part of the scheme will be constructed using permeable surfacing or positively drained in accordance with Building Regulations. Site thresholds will be set above surrounding ground levels, and surface gradients will be designed to direct runoff away from doorways. These measures will help manage any surface water accumulation and reduce the potential for nuisance flooding at entrances.

Finally, a site-specific Flood Response and Evacuation Plan will be prepared to support long-term safety. This will include procedures for flood warning sign-up, internal refuge guidance, emergency contact information, and post-flood recovery instructions. The FREP will be issued to all occupants and maintained as part of the site's management arrangements.

Taken together, these mitigation measures demonstrate that the development is appropriately designed to manage residual risk. They reduce the likelihood and consequences of flooding, support life safety, and ensure compliance with the key policy objectives of TAN15.

Conclusions

This Flood Consequence Assessment has demonstrated that the proposed conversion of the existing building at 116 Alexandra Road, Newport, is acceptable in planning policy terms with respect to flood risk. The site lies within Flood Zone 3 (Sea) on the Flood Map for Planning and is located in an undefended tidal floodplain as defined by the latest NRW modelling. However, the proposed development qualifies as a change of use within an existing structure on previously developed land and is therefore assessed against the exception criteria set out in TAN15 (March 2025), specifically paragraphs 10.20 to 10.23. The scheme ensures that all residential accommodation is located at or above the predicted 0.1% AEP + climate change flood level. Flat 1, although located at ground floor, is raised internally by 690 mm above external ground, providing protection against tidal flooding. The other flats are at first floor level, and remaining ground floor areas are in commercial use, which is Less Vulnerable.

Tidal flood risk has been assessed using the Newport_5_V8.0_2022 model. The predicted flood level in the 0.1% AEP + climate change (undefended) scenario is 9.485 m AOD. All proposed residential floor levels will be set at or above this elevation, ensuring that habitable and sleeping accommodation remains dry during all relevant future flood events. The development therefore satisfies the requirement in TAN15 Section 11.9 for highly vulnerable development to remain flood-free.

Although part of the site's access route is affected by flood depths exceeding 600 mm in the defended 0.1% AEP scenario, this exceedance is localised and of limited extent. Dry ground is reached within 130 m of the site. In accordance with TAN15 Section 11.4, a refuge-led strategy has been adopted, with all critical accommodation located above the design flood level and supported by a site-specific Flood Response and Evacuation Plan.

There is no flood risk at this location from rivers, surface water, groundwater, reservoirs, or sewer surcharge. The site does not lie within the functional floodplain, and the development does not result in any landraising, obstruction of flow paths, or displacement of floodwater. Third-party flood risk is therefore unaffected.

The proposal is not subject to referral under the Flood Risk Area Development Notification Direction (Circular 002/2025), as it does not involve new dwellings on previously undeveloped land. It is a conversion of an existing building on brownfield land and qualifies for assessment under the exception criteria.

In summary, the development is fully compliant with the relevant tests set out in TAN15, and the consequences of flooding are considered to be acceptable when assessed against the national tolerability criteria. The proposal can therefore be supported from a flood risk perspective.

Note:

This report has been prepared for the purposes of issuing to the respective approving authorities, including Natural Resources Wales in relation to the associated flood risk, and uses the most up-to-date information available to us at the time. It should not be relied upon by anyone else or used for any other purpose. This report is confidential to our Client; it should only be shown to others with their permission. We retain copyright of this report which should only be reproduced with our permission.

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Date	10 September 2025	10 September 2025	10 September 2025

Appendix A - Architectural Drawings