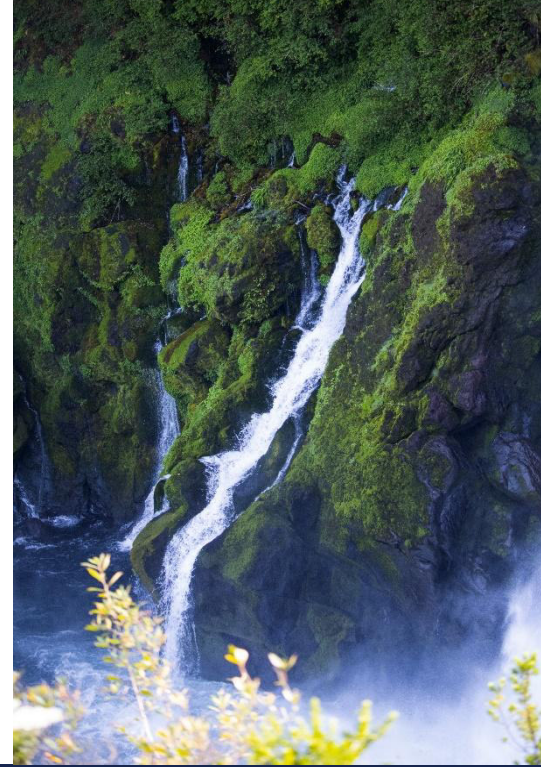




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Flood Consequence Assessment AEG9849_NP19_Newport_01

Site Address: 11 Coverack Road
Newport
NP19 0DS

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

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Document Issue Record

Project: Flood Consequence Assessment

Prepared for: Ekaterina Zvala

Reference: AEG9849_NP19_Newport_01

Site Location: 11 Coverack Road, Newport, NP19 0DS

Issue	Date	Author	Check	Auth.	Comments
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Summary

Development Description	Existing	Proposed
Development Type	A residential dwelling	A change of use from C3 dwelling house to a C4 5no. Bedroom House of Multiple Occupation (HMO), with 2 new bedrooms located on the ground floor.
NRW Vulnerability Classification	Highly Vulnerable	No change - Highly Vulnerable
Ground Floor Level	Ground floor finished floor levels (FFL) estimated using NRW LiDAR data. The estimated ground floor FFL is approx. 7.51m AOD.	No change – no proposed changes to ground floor level.
Level of Sleeping Accommodation	First floor level (approx.10.21m AOD)	Two bedrooms are proposed on the ground floor at 7.51m AOD.
Surface Water Drainage	N/A ¹	There is no proposed increase in built footprint, therefore SAB approval note needed.
Site Size	Approximately 150m ²	No change
Risk to Development	Summary	Comment
NRW Flood Zone	Flood Zone 3 (Rivers and Sea)	
Flood Source	Fluvial/tidal	The site is unaffected in present day defended 1 in 200 year and 1 in 1000 year fluvial/tidal flood events. The site is within the modelled extent of the defended 1 in 200 year (2126 epoch) tidal event, with a flood level of 7.68m AOD (shallow flooding of around 0.17m). The first floor level is approximately 2.5m above the flood level. The model indicates flood depths of approximately 0.41m along Coverack Road.
SFCA Available	South East Wales - Strategic Flood Consequence Assessment (Stage 1) (South East Wales, 2022)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	Yes	The site is unaffected in the modelled present day 1 in 1000 year fluvial/tidal

Safe Access/Egress Route Flood Resilient Design Site Drainage Plan Flood Warning and Evacuation Plan		flood event (modelled 'worst-case' scenario). The site is within the modelled extent of the defended 1 in 200 year (2126 epoch) tidal event, with a flood level of 7.68m AOD (shallow flooding of around 0.17m).
	Yes	Flooding of approx. 0.41m on Coverack road is above tolerable conditions. It is noted, however, flooding in this location is predominantly tidal in nature and is expected to be slow-onset, with advance warning available through the NRW flood warning service.
	Yes	Refer to Section 5.
		There is no proposed increase in built footprint, therefore SAB approval note needed.
	Yes	Recommended to sign up to the Usk Estuary at Maindee, North Liswerry and Spyttly Pill Natural Resources Wales flood warning service.
Offsite Impacts	Summary	Comment
Displacement of floodwater	Negligible	The proposed development will not increase the built footprint on-site; thus, not increase flood risk elsewhere through water displacement.
Increase in surface run-off generation	Negligible	There is no proposed increase in built footprint, therefore SAB approval note needed.
Impact on hydraulic performance of channels	Negligible	The site is located approximately 250m from the nearest watercourse.

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Ekaterina Zvala to undertake a Flood Consequence Assessment (FCA) to facilitate a planning application for the proposed development. This FCA has been prepared in accordance with the requirements set out in the Technical Advice Note 15 (TAN15).
- 1.2. This FCA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.3. The site of the proposed development is 11 Coverack Road, Newport, NP19 0DS (Figure 1). The site currently comprises a residential dwelling in the west, and associated garden area in the east.



Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors)

- 1.4. It is understood that the proposal is the change of use from C3 dwelling house to a C4 5no. Bedroom House of Multiple Occupation (HMO), with 2 new bedrooms located on the ground floor (refer to Appendix A for proposed development plans).
- 1.5. In the absence of a topographical survey, a NRW Light Detection and Ranging (LiDAR) data Digital Terrain Model has been used to review the topography of the site. The NRW LiDAR data shows the ground

elevation of the site varies between approximately 7.27 m AOD (metres Above Ordnance Datum) in the south-east and 7.36m AOD in the north-west (Figure 2). Analysis of topographic levels indicates that the site generally slopes with a fall to the south-east.

- 1.6. A detailed topographic survey was not available for the site at the time of this assessment. Ground floor finished floor levels (FFL) has therefore been estimated using NRW LiDAR data. The LiDAR data indicates that the external ground level at the front entrance, is approximately 7.36m AOD. In accordance with typical building regulation practice, ground floor thresholds are generally set approximately 0.15m above external ground level. On this basis, the estimated ground floor finished floor level (FFL) of the existing building is approximately 7.51m AOD.
- 1.7. For the purposes of this assessment, and in the absence of surveyed internal levels, a typical floor-to-floor height of approximately 2.7m has been assumed between the ground floor and first floor. On this basis, the estimated first floor level is approximately 10.21m AOD.

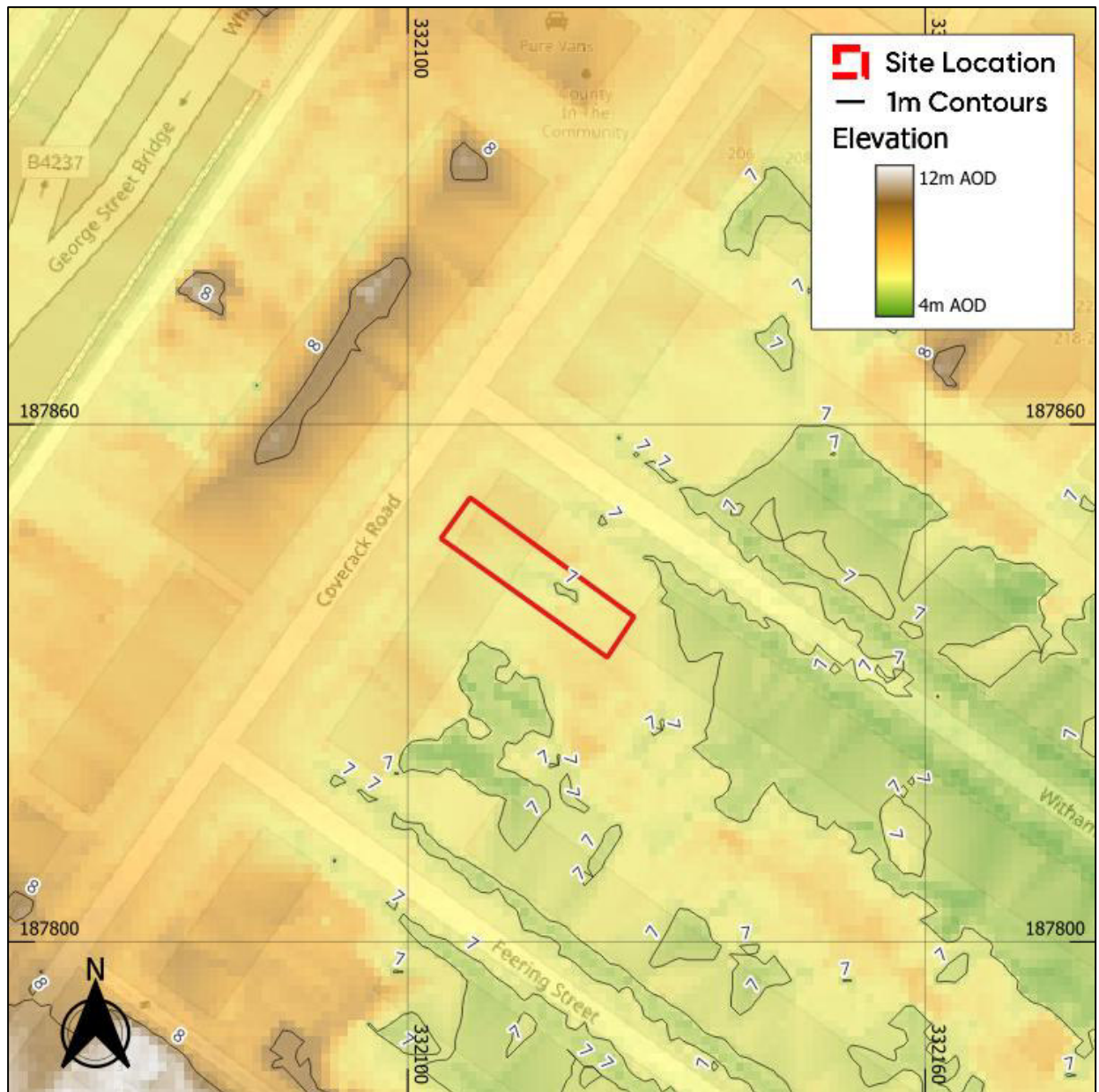


Figure 2: Site Topography (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.8. Newport City Council is the Local Planning Authority (LPA) for the site and also the designated Lead Local Flood Authority (LLFA). The site sits within the Natural Resources Wales's South East Wales region.

2. Planning Policy

- 2.1. Inappropriate development in a flood risk area could pose significant risk in terms of personal safety and damage to property for the occupiers of the development or for people elsewhere. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional, and local planning policy and associated guidance. This section summarises the key policies and guidance relevant to the proposed development.
- 2.2. Technical Advice Note 15 (TAN15), in conjunction with Planning Policy Wales (PPW) and any local planning documentation forms the basis for assessment of flood risk in Wales and its risk mitigation and development control.
- 2.3. The NRW Flood Map for Planning (FMfP), officially replaces the Development Advice Map (DAM) and is the primary tool for the assessment of flood risk in all planning applications submitted after March 2025.
- 2.4. For a development application to be acceptable in a flood risk area, it must satisfy both the Justification Test and the Acceptability of Consequences Test. As set out in TAN15, the overall aim is as follows
 - Direct new development away from those areas which are at high risk of flooding (FMfP Zones 2 and 3).
 - Where development must be considered in flood risk areas, ensure that only development that can be justified on the basis of local need, and that can demonstrate the consequences of flooding are acceptable, is located within such areas.
- 2.5. Flood Zones in Wales are defined as follows:

Table 1: Flood Map for Planning (FMfP) Zone Classifications

FMfP Zone	Description of Flood Risk	Role within Precautionary Framework
1	Less than 1 in 1000 (0.1%) (plus climate change) chance of flooding in a given year	Applications for all types of development, change of use or conversion are acceptable in principle. Informed by a Strategic Flood Consequences Assessment, planning authorities should develop locally specific planning policies for areas at risk of flooding against which applications can be assessed.
2	Less than 1 in 100 (1%) or 1 in 200 (0.5%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.	Planning applications in Zone 2 require careful consideration and must be consistent with the acceptability considerations set out in section 11. They must also be accompanied by a FCA which clearly describes the flood risk and the risks must be acceptable. Applications for new highly vulnerable development on greenfield land are only appropriate where the site has been allocated in adopted Development Plans. Proposals for redevelopment on brownfield land of any vulnerability will need to assist, and be consistent with, the Development Plan strategy to regenerate an existing settlement or achieve key economic or environmental objectives. Where proposals for redevelopment include residential use, local authorities should ensure that such uses do not occur at ground floor level, they will also need to be compatible with the

		tolerable conditions set out in section 11 and exhibit resilient flood design as described in section 13 of TAN.
3	A greater than 1 in 100 (1%) or 1 in 200 (0.5%) chance of flooding in a given year, including climate change.	Planning applications in zone 3 require the strongest justification. No new highly vulnerable development on greenfield land should be permitted in zone 3 regardless of the conclusion of any Flood Consequences Assessments and NRW will not consider these conclusions. Welsh Ministers must be notified of any such proposal a planning authority intends to approve. Other proposals will only be appropriate if they are essential to the Development Plan Strategy to regenerate an existing settlement or achieve key economic or environmental objectives. Any redevelopment proposal must be consistent with the acceptability considerations in section 11. In addition, proposals which include residential development must ensure that such uses do not occur at ground floor level.
Defended Zones	Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from rivers of 1 in 100 or 1 in 200 from the sea (plus climate change and freeboard).	Applications for new development on Greenfield sites are not appropriate in Defended Zones unless they are allocated in development plans. On brownfield sites redevelopment proposals should not over intensify use neither should they reduce the area's ability to absorb flood water nor cause problems with flooding elsewhere. All applications should consider opportunities to incorporate flood resilient design as appropriate and any proposal involving highly vulnerable development must be compliant with the tolerable conditions set out in section 11 of TAN.

2.6. The land use vulnerability classifications are presented in Table 2.

Table 2: Land Use Vulnerability Classifications

Development Category	Type
Highly vulnerable development	All residential premises (including hotels and caravan parks), schools and childcare establishments, colleges and universities, hospitals and GP surgeries, especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites. Emergency services, including ambulance stations, fire stations, police stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood
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, public buildings including libraries, community centres and leisure centres (excluding those identified as in Highly Vulnerable category and emergency shelters), places of worship, cemeteries, equipped play areas, renewable energy generation facilities (excluding hydro generation).
Water compatible development	Boatyards, marinas and essential works required at mooring basins, development associated with canals, flood defences and management

Development Category	Type
	infrastructure, open spaces (excluding equipped play areas) and hydro renewable energy generation.

Assessment/Acceptability of Flooding Consequences Test

2.7. Paragraph 11.3 of TAN15 states:

Whether a development should proceed or not will depend upon whether the consequences of flooding can be safely managed, including its effects on flood risk elsewhere.

2.8. Paragraph 10.17 of TAN15 states:

*Applications for new development on Greenfield sites are not appropriate in Defended Zones unless they are allocated in development plans. On brownfield sites redevelopment proposals should not over intensify use neither should they reduce the area's ability to absorb flood water nor cause problems with flooding elsewhere. All applications should consider opportunities to incorporate flood resilient design as appropriate and **any proposal involving highly vulnerable development must be compliant with the tolerable conditions set out in section 11.***

2.9. Tolerable Conditions as set out in Section 11.9-11.15 of TAN15 are detailed below:

Tolerable conditions: managing consequences in an extreme flood event

11.9 The flood free thresholds outlined above relate to very serious but not the most extreme flood events (with the exception of thresholds for emergency services). During extreme flood events there is recognition that it may not be possible to keep all development flood-free. In these circumstances it is imperative that flooding does not endanger life, therefore it needs to be demonstrated that conditions within the development during an extreme event will be tolerable.

11.10 Figure 6 below indicates the tolerable flood depth and velocity conditions for highly vulnerable and less vulnerable development when assessed against the 0.1% extreme flood event, including an allowance for climate change.

11.11 Mitigation and flood resilience measures are not sufficient justification to permit a development if the tolerable conditions are exceeded during an extreme flood event. High velocities and/or depths of floodwater pose a potential risk to life, may cause structural damage to buildings and could impact on human health and wellbeing.

Types of new development	Maximum depth of flooding (mm)	Maximum velocity of flood waters (metres/sec)
Highly vulnerable development	600	0.15
Less vulnerable development Infrastructure associated with highly vulnerable development e.g. car parks, access, paths and roads Water compatible development (limited to those built elements of development that may be occupied by people)	600	0.3

11.12 The above figures are tolerances below which new development may be acceptable. Each site, however, must be considered individually, and a judgement taken in the context of the circumstances which could prevail at that site. Emergency services developments are not shown because they must be flood-free in a 0.1% event, as set out in Figure 5. For emergency services developments other than command centres or hubs, the conditions for highly vulnerable development should be applied.

11.13 When deciding if the consequences of an extreme flood event can be acceptably managed, planning authorities should refer to relevant policies and actions identified in their Development Plan and by Risk Management Authorities in local contingency plans. This is of particular relevance to emergency access and evacuation requirements.

11.14 Flooding causes danger when either the water is deep or it is moving quickly. It is particularly dangerous when both occur at the same time. The flood hazard matrix at Figure 7 below can help planning authorities assess how hazardous a flood event may be to different people. The matrix can be used to assess the levels of danger inside and outside buildings located in flood risk areas, by plotting the expected water depths and velocities during the flood event.

11.15 The planning authority should consider all potential and likely users of any proposed development when assessing whether the development can be considered to provide a safe environment during an extreme flood event. If a safe environment cannot be provided, the planning application should be refused. The matrix shows that flood events involving deep and fastmoving water are dangerous to all, including the emergency services. It would not be appropriate to approve any type of development that could experience this degree of danger during an extreme flood event.

- 2.10. The site is located within Flood Zone 3 (Rivers and Sea) on the NRW Flood Map for Planning and within a TAN15 Defended Flood Zone, benefitting from formal flood defences that provide a minimum standard of protection against tidal flooding up to the 1 in 200 year event. Review of NRW datasets identifies tidal flood defences along the River Usk.
- 2.11. The proposed development comprises the conversion of an existing residential building to a House in Multiple Occupation (HMO) and is therefore classified as Highly Vulnerable development in accordance with the TAN15 vulnerability classification. The proposal represents redevelopment of existing brownfield land and does not involve an increase in built footprint or loss of floodplain storage. As such, the development will not increase flood risk elsewhere.
- 2.12. The FCA demonstrates that the site is flood free in present day 1 in 200 year and 1 in 1,000 year fluvial/tidal flood events.
- 2.13. When assessed over the lifetime of the development to 2126, the site is affected by the defended 1 in 200 year tidal flood event. Application of an additional climate change allowance beyond the 2121 model epoch indicates shallow flooding of approximately 0.17m at ground floor level (flood level of 7.68m AOD). The first floor of the property is located at an estimated level of approximately 10.21m AOD, providing a vertical clearance of around 2.5m above the design flood level.
- 2.14. In accordance with TAN15, these results have been assessed against the defined tolerable conditions. As the site is flood free during the defended 1 in 1000 year scenario, the assessment of tolerable conditions focuses on the defended 1 in 200 year tidal event. The predicted internal flood depth of approximately 0.17m is well below the maximum tolerable threshold for property flooding (0.6m), confirming that internal flooding remains within tolerable conditions.
- 2.15. Flood depths of up to approximately 0.41m are predicted along Coverack Road, which provides access to the site, when assessed over the lifetime of the development to 2126. As the road has been demonstrated to remain flood free during the defended 1 in 1,000 year event, the assessment of tolerable conditions for access and egress focuses on the defended 1 in 200 year tidal flood scenario.
- 2.16. For Highly Vulnerable development, TAN15 identifies tolerable flood depths of up to 0.6m for access and egress. The predicted depth of 0.41m is significantly below this maximum threshold. Consequently, the access and egress route meets the requirements for tolerable conditions.
- 2.17. In accordance with Section 11.4 of TAN15, the assessment demonstrates that
- the development will not increase flooding elsewhere;
 - occupiers will be aware of flood risk through flood warning registration;
 - escape and evacuation routes can be managed through a Flood Warning and Evacuation Plan;
 - flood resistance and resilience measures will be incorporated within the development design.
- 2.18. Regarding the nature of flooding, predicted flood depths, access and egress conditions, and the proposed mitigation strategy set out in Section 5, the FCA demonstrates that the risks associated with flooding can be appropriately managed over the lifetime of the development.
- 2.19. On this basis, the overall consequences of flooding are considered within tolerable conditions as set out in TAN15.

3. Consultation and Review

Consultation

- 3.1. Aegaea requested model data from NRW in December 2025. A response was received in December 2025, including outputs from the updated Newport model (2022). This has been analysed in Section 4, in order to determine the fluvial/tidal flood risk to the site.

Documents and Online Mapping

- 3.2. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FCA, these documents have been reviewed for relevant information, and any relevant data is discussed within the appropriate sub heading of this report.
- 3.3. The following sources of information have been reviewed for this assessment:
- Flood Map for Planning on the Natural Resources Wales website <https://naturalresources.wales/flooding/flood-map-for-planning>
 - The Technical Advice Note 15¹ (TAN15) (2025).
 - British Geological Survey - Geology of Britain Viewer (British Geological Society, 2017)².
 - Geoindex Onshore (British Geological Survey, 2024)³
 - Local Development Plan 2011-26 (Newport City Council, 2015)⁴
 - Update to the preliminary flood risk assessment report (Newport City Council, 2017)⁵ and Preliminary Flood Risk Assessment (Newport City Council, 2011)⁶
 - South East Wales - Strategic Flood Consequence Assessment (Stage 1) (South East Wales, 2022)⁷

¹ <https://www.gov.wales/sites/default/files/publications/2025-03/technical-advice-note-15-development-flooding-and-coastal-erosion.pdf>

² <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/>

³ <https://www.bgs.ac.uk/geological-data/map-viewers/>

⁴ <https://www.newport.gov.uk/sites/default/files/media/media-documents/Adopted%20Local%20Development%20Plan%202011-2026.pdf>

⁵ <https://www.newport.gov.uk/documents/Council-and-Democracy/Civil-Contingencies/Addendum-PRFA-Review-2017.pdf>

⁶ <https://naturalresources.wales/evidence-and-data/research-and-reports/flooding-reports-evidence-and-data/river-basin-district-preliminary-flood-risk-reports/>

⁷ https://rctcbc.oc2.uk/docfiles/8/Strategic%20Flood%20Consequences%20Assessment%20SFCA%202022_1.pdf

- Local Flood Risk Management Strategy (Newport City Council, 2014)⁸

Preliminary Flood Risk Assessment (PFRA)

- 3.4. The PFRA, published in 2011 and 2017, is a high-level appraisal of flood risk across Lead Local Flood Authority Newport City Council. The flood risk from all sources, including fluvial, surface water, groundwater, and surcharged sewers is evaluated. It is the basis upon which the Local Flood Risk Management Strategy is produced.
- 3.5. The PFRA summarises historical flood incidents in Newport City Council. The site is not recorded as having been affected by any flood event.

Strategic Flood Consequence Assessment (SFCA)

- 3.6. The SFCA, published in 2022, provides the evidence base for the Local Planning Authority Newport City Council Local Plan and guidance for consideration when determining planning applications. The SFCA seeks to place new development into areas of lower flood risk taking into account current flood risk, future flood risk, and the effect a proposed development would have on the risk of flooding.
- 3.7. The SFCA mapping provided by Newport City Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents.

Local Flood Risk Management Strategy (LFRMS)

- 3.8. The Local Flood Risk Management Strategy sets out roles and responsibilities for flood risk management, assesses the risk of flooding in the area, where funding can be found to manage flood risk, and the policies, objectives, and actions of the Lead Local Flood Authority.
- 3.9. The Newport City Council LFRMS is used within this report to identify any flood management infrastructure and historical incidences of flooding.

⁸ <https://www.newport.gov.uk/sites/default/files/media/media-documents/Easy%20read%20version%20-%20Newport%20Local%20Flood%20Risk%20Management%20Strategy%20v5.pdf?>

4. Sources of Flood Risk

Fluvial/Tidal

- 4.1. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.
- 4.2. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the riverbank or river defences when tide levels are high.

Main Rivers and Ordinary Watercourses

- 4.3. The nearest main river is the River Usk which flows approximately 250m west of the site.
- 4.4. There are no ordinary watercourses within 1km of the site according to OS mapping.
- 4.5. The River Usk through Newport is subject to tidal influence from the Severn Estuary. The tidal reach extends upstream through the city and is generally taken to terminate at Newbridge-on-Usk, located to the north of Newport⁹.
- 4.6. Therefore, flood risk in the vicinity of the site is considered to be tidally influenced.

NRW Flood Map for Planning

- 4.7. According to the Natural Resources Wales Flood Map for Planning, the site is located within Flood Zone 3 – Rivers and Sea, indicating a high probability of flooding arising from the combined interaction of fluvial and tidal processes. Flood Zone 3 represents areas with an annual probability of flooding of greater than 0.5% (1 in 200 year) from the sea (Figure 3).
- 4.8. The site is also located within a TAN15 defended flood zone, meaning it benefits from flood defences that provide protection up to a 1 in 200 year standard of protection.
- 4.9. Review of NRW's Flood Defence Structures dataset indicates that there are flood defences in the form of a tidal embankment present along the banks of the River Usk. The crest height, condition and standard of protection are not recorded.

⁹ <https://naturalresources.wales/media/3214/usk-management-catchment.pdf>



Figure 3: NRW Flood Map for Planning – Rivers and Sea (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Historical Fluvial Flooding

- 4.10. According to NRW's Recorded Flood Extents dataset, the site has not been impacted by historic flood events (Figure 4).

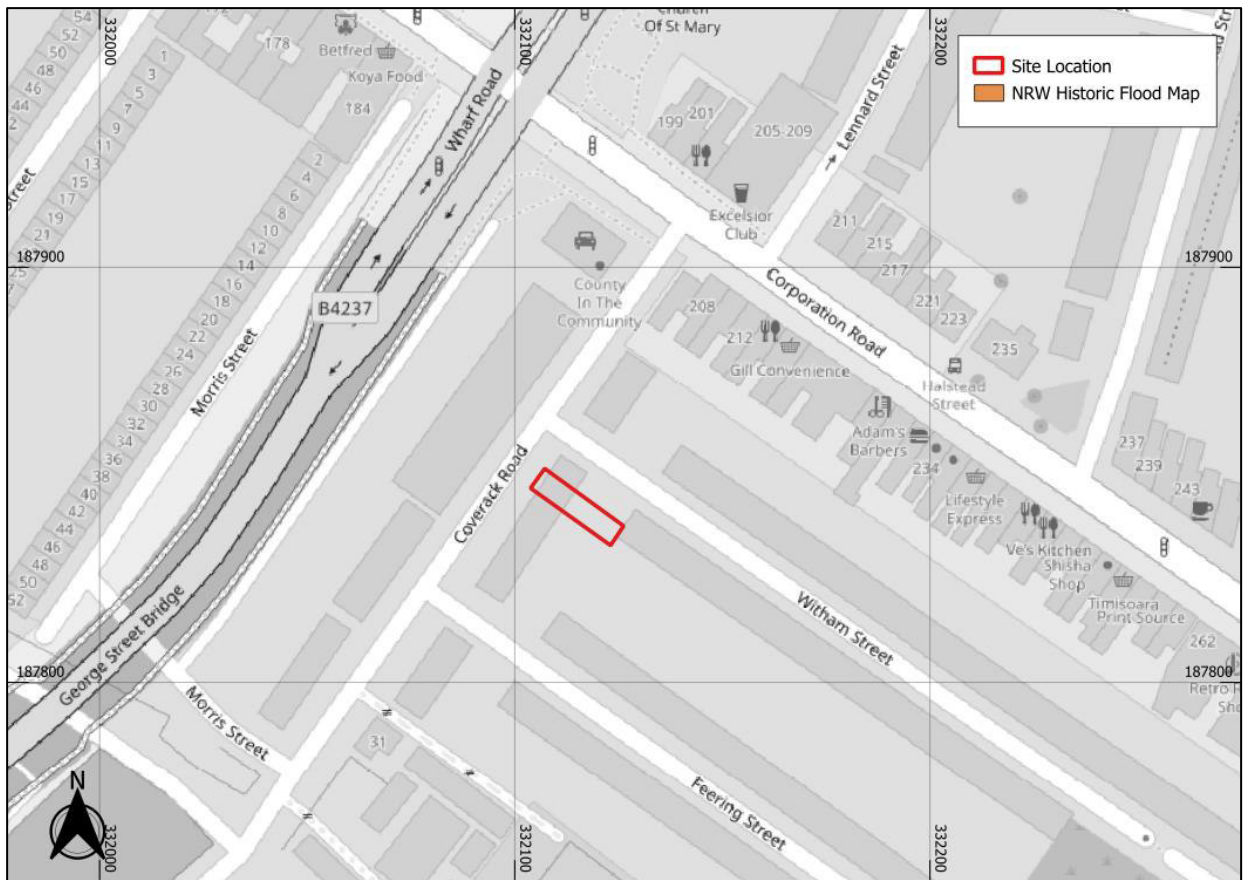


Figure 4: NRW Historic Flood Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Newport Hydraulic Model (2022)

- 4.11. The Newport Hydraulic model includes a range of defended and undefended scenarios and return periods, extending up to the defended 1 in 1,000 year (0.1% AEP) tidal event for present-day conditions.
- 4.12. The Newport model has been updated to a 2021 baseline and incorporates formal flood defences across Newport, including the Crindau and Caerleon defence schemes. This is considered the most appropriate data available to assess the flood risk to the development.

Present Day Scenarios

- 4.13. According to the Newport Model, the site will remain unaffected in the present day modelled 1 in 200 year and 1 in 1000 year defended tidal events (Figure 5).

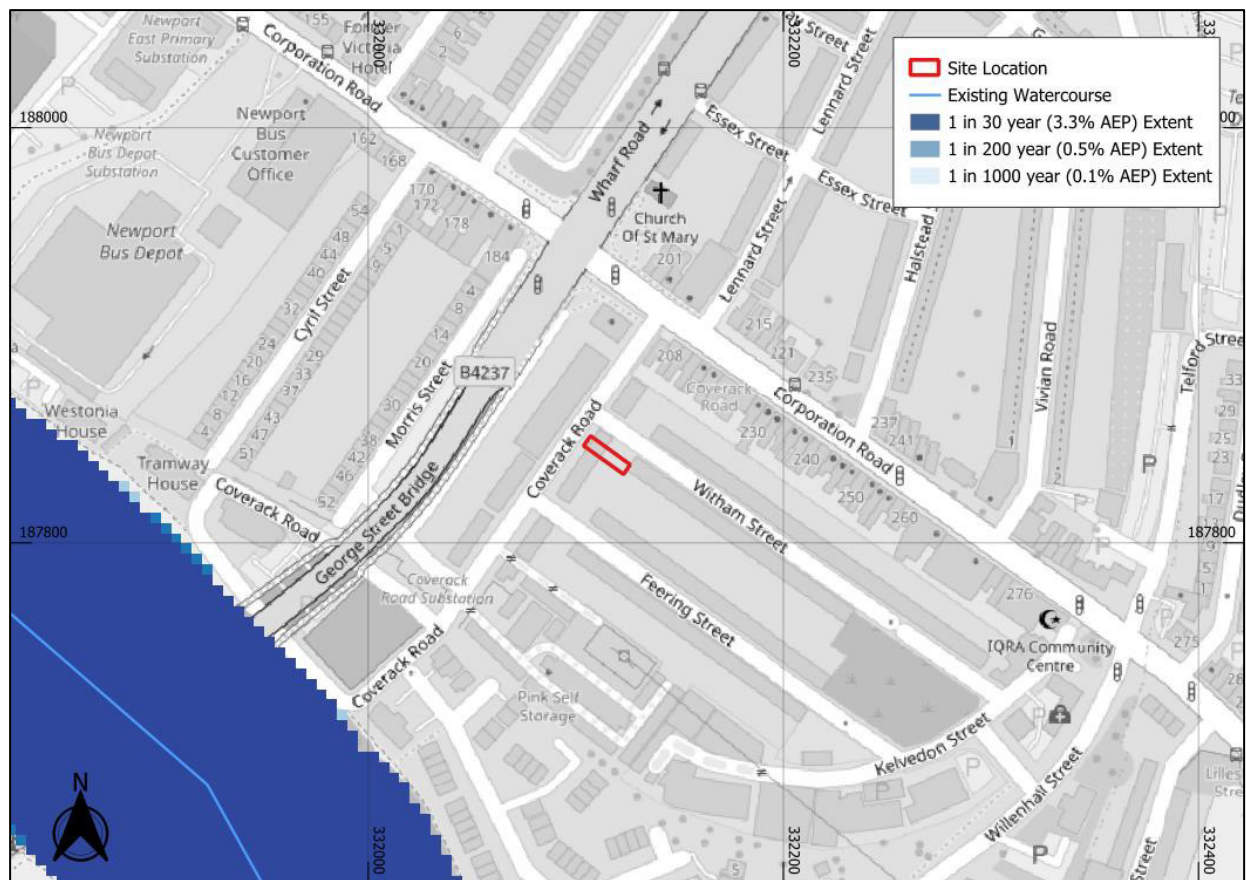


Figure 5: Newport Model (2022) present day flood extents (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Climate Change Scenarios

- 4.14. Climate change within the Newport model is represented through future epochs. Two future time horizons are provided: 75 years (2096) and 100 years (2121) beyond the 2021 baseline.
- 4.15. As the proposed development is residential in nature, a 100 year development lifetime has been assumed for the purposes of this FCA. Accordingly, the defended 100 year climate change epoch outputs from the Newport model have been adopted as the future flood risk scenario.
- 4.16. The model includes climate change sea level rise allowances up to the 2121 epoch. However, the assessment requires consideration of flood risk over the full lifetime of the development (to 2126). As the model output does not extend to 2126, an additional allowance has been applied to extend the sea level rise estimate from 2121 to 2126. This has been calculated by applying the average annual incremental sea level rise over the final five years of the UKCP18 dataset for the relevant location (2094–2099) under the RCP8.5 scenario, consistent with the approach used to derive the published FCA climate change allowances beyond 2100.
- 4.17. For the Newport administrative area, the average annual incremental increase over 2094–2099 is 0.013m/year. Applying this rate for the additional five years from 2121 to 2126 gives an extra allowance

of 0.065m, which has been added to the modelled 2121 design water levels to derive design flood levels for 2126.

- 4.18. Based on the defended outputs from the Newport model, the site is shown to fall within the modelled extent of the 1 in 200 year tidal flood event under the 2121 climate change epoch (Figure 6). Model results indicate a maximum predicted flood level of approximately 7.61m AOD at the site. As the assessment period extends to 2126, an additional sea level rise allowance of 0.065m has been applied to the 2121 modelled flood level, giving a derived design flood level of approximately 7.68m AOD.

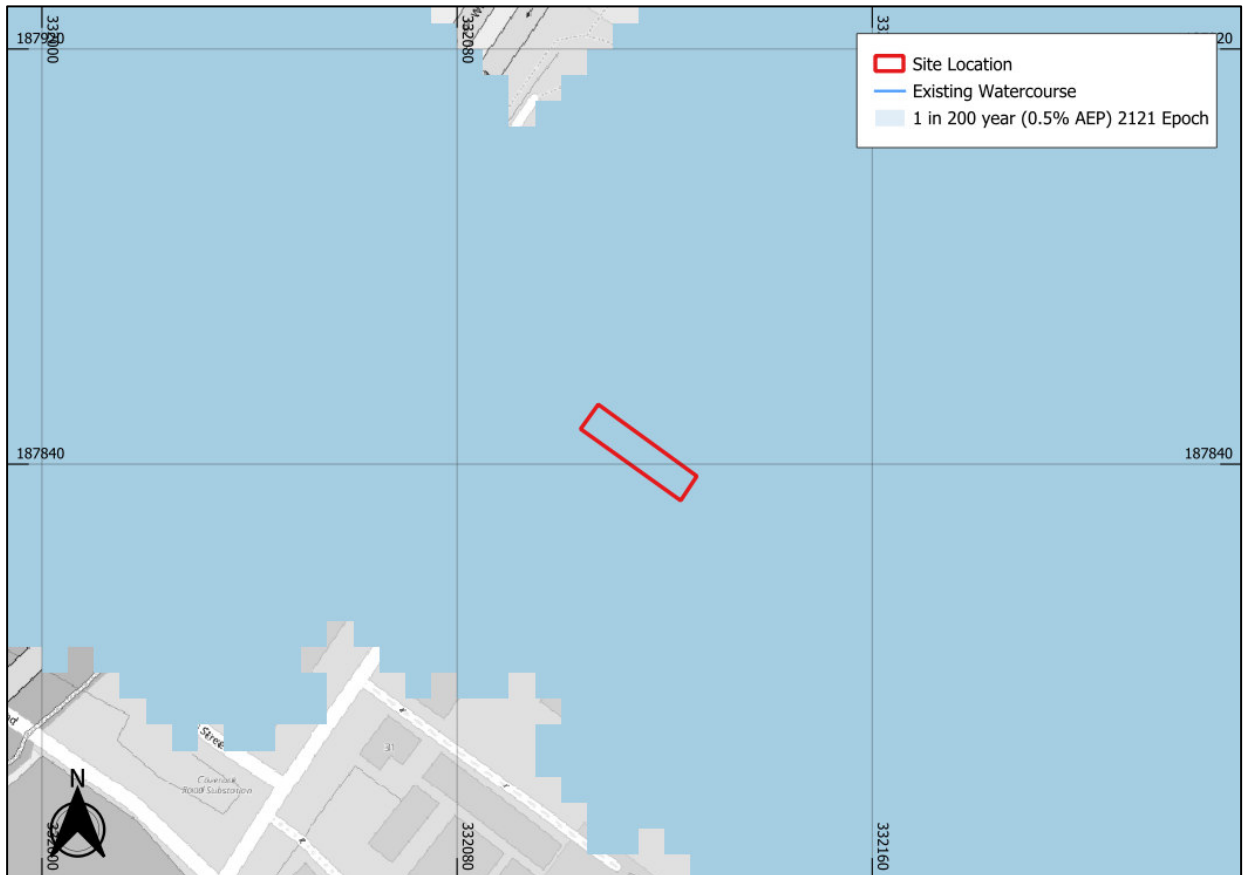


Figure 6: Newport Model (2022) climate change 2121 epoch flood extents (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.19. The estimated ground floor finished floor level (FFL) of the existing building is approximately 7.51m AOD. When compared with the derived design flood level of approximately 7.68m AOD for the 1 in 200 year tidal event (2126 lifetime), this indicates that shallow flooding of approximately 0.17m may occur at ground floor level under this scenario.
- 4.20. Model outputs indicate flood depths of up to approximately 0.34m along Coverack Road, which provides access to the site, under the 1 in 200 year tidal flood event for the 2121 climate change epoch. Applying the additional 0.065m allowance to extend the assessment to 2126 indicates access route flood depths of up to approximately 0.41m. For More Vulnerable development, TAN15 identifies tolerable flood depths of up to approximately 0.6m for access and egress. Flood depths along the access route therefore are within tolerable conditions.

- 4.21. The first floor of the property is located at an estimated level of approximately 10.21m AOD, which is around 2.54m above the derived design flood level.
- 4.22. It is noted, however, that flooding in this location is predominantly tidal in nature and is expected to be slow onset, with advance warning available through the NRW flood warning service.
- 4.23. The assessment indicates that predicted flooding at ground floor level is shallow under the modelled climate change scenario. As such, proportionate flood risk mitigation measures are recommended in Section 5 to reduce the potential for water ingress.
- 4.24. In combination with registration to the NRW flood warning service and the implementation of a Flood Warning and Evacuation Plan, these measures provide a proportionate and effective approach to managing the residual risk associated with the marginal exceedance of tolerable access depths during peak conditions.
- 4.25. On this basis, the predicted flood depths on site are within tolerable conditions, and the overall consequences of flooding are considered manageable and acceptable in accordance with TAN15.

Fluvial/Tidal Summary

- 4.26. The site lies within Flood Zone 3 and a TAN15 defended flood zone. Hydraulic modelling indicates no flooding during present day defended tidal flood events.
- 4.27. When assessed over the lifetime of the development to 2126, shallow tidal flooding of approximately 0.17m is predicted at ground floor level during the 1 in 200 year (2126) tidal flood event. Flooding in this location is tidal in nature and is expected to be slow onset and predictable, with advance warning available via the NRW flood warning service.
- 4.28. On this basis, while the site is affected by tidal flooding under future climate change conditions, the predicted depths are within tolerable conditions and overall flood consequences are considered manageable and acceptable in accordance with the principles of TAN15. Proportionate mitigation measures to manage flood risk and limit water ingress are set out in Section 5.
- 4.29. Based on the information reviewed, and subject to implementation of the recommended mitigation and management measures, the residual risk of fluvial and tidal flooding to the development is considered to be low.

Canals

- 4.30. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders, and boreholes and manages water levels by transferring it within the canal system.
- 4.31. There are no canals in the vicinity of the site and therefore the risk of flooding from canals is considered low.

Surface Water and Small Watercourses

- 4.32. Pluvial flooding (surface water flooding) can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 4.33. According to the Flood Map for Planning published by NRW, flood zones are defined based on the annual exceedance probability (AEP) of flooding from fluvial and tidal sources:
- Flood Zone 1 (Low Probability): Land having a less than 0.1% annual exceedance probability (AEP) of flooding from surface water or small watercourses (less than 1 in 1000 annual chance), including an allowance for climate change.
 - Flood Zone 2 (Medium Probability): Land having a 0.1% to 1.0% AEP of flooding from surface water or small watercourses (between a 1 in 1000 and 1 in 100 annual chance), including an allowance for climate change.
 - Flood Zone 3 (High Probability): Land having a greater than 1.0% AEP of flooding from surface water or small watercourses (greater than a 1 in 100 annual chance), including an allowance for climate change.
- 4.34. According to NRW's Flood Map for Planning, the site is located within Flood Zone 1 for surface water and small watercourses, which represents a very low probability of flooding (Figure 7).
- 4.35. The Surface Water and Small Watercourses dataset includes an allowance for the potential effects of climate change and therefore indicates areas that are not expected to be at risk of surface water flooding over the lifetime of the development.
- 4.36. On this basis, the site is not anticipated to be impacted by surface water flooding, either under present-day conditions or as a result of future climate change.
- 4.37. Based on the information reviewed, the site is considered to be at low risk from flooding from surface water and small watercourses.



Figure 7: NRW Surface Water and Small Watercourses Flood Zones (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.38. The proposed development does not include any external alterations to the existing building and therefore the development would not impede the drainage of surface water.
- 4.39. The 2022 SFCA indicates that no historical surface water incidents have been recorded in the vicinity of the site.
- 4.40. Based on the information reviewed, the site has a low risk of flooding from surface water and small watercourses.

Reservoirs

- 4.41. Large waterbodies or reservoirs that have walls built above the surrounding ground level pose a risk of flooding. Walls could fail due to old age, accident, or because excess flood water has been added to the reservoir. Although a breach is unlikely the consequences would be significant, leading to rapid inundation of the downstream floodplain
- 4.42. The NRW Flood Risk Assessment map indicates that the site is located within the modelled breach extent of the Llandegfedd Reservoir.

- 4.43. All large reservoirs must be inspected and supervised by reservoir panel engineers as detailed by the Reservoirs Act 1975 in England and Wales. NRW are responsible to ensure that reservoirs are regularly inspected, and essential safety work carried out. As reservoirs are highly managed the maximum flood extent provided in the NRW Risk of Flooding from Reservoirs mapping is considered a worst-case scenario.
- 4.44. Therefore, the risk of flooding from reservoirs is considered to be low.

Groundwater

- 4.45. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.
- 4.46. The British Geological Survey's (BGS) mapping shows superficial deposits of tidal flat deposits, comprising clay and silt. The bedrock underlying the site is Freshwater West Formation, comprising interbedded argillaceous rocks and sandstone. There are no historical BGS boreholes within 100m of the site. The tidal flat deposits are generally of low permeability and may promote shallow perched groundwater and waterlogging following prolonged rainfall.
- 4.47. A review of the 2022 SFCA confirms that no mapped groundwater flood risk datasets are available for the study area. The SFCA identifies groundwater flooding as a localised and generally minor flood risk across Newport. The SFCA notes limited recorded evidence of groundwater flooding and does not identify groundwater as a significant or controlling flood risk mechanism within the area.
- 4.48. Given the absence of historic groundwater flood incidents, groundwater flooding is not considered a significant source of flood risk. Furthermore, there are no proposed basements or changes to the foundations or fabric of the existing building.
- 4.49. Based on the information reviewed, the risk from groundwater to the development is considered to be low.

Sewers

- 4.50. Foul or surface water sewers can be a cause of flooding if the drainage network becomes overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.51. The Newport PFRA (2011) shows records of historic flooding events from surface water incidents and sewer flooding provided by Dwr Cymru Welsh Water (DCWW).
- 4.52. Data provided indicates a total of 78 locations across the council area that have suffered from historical sewer flooding. The PFRA indicates that the site has not been historically impacted by sewer flooding. Furthermore, the 2011 PFRA states that 'none of the records suggests flooding from sewer sources has significant consequences at this strategic scale'.
- 4.53. The development is therefore considered to be at low risk of flooding from sewers.

5. Flood Risk Mitigation

Fluvial/Tidal

- 5.1. The site is located within NRW Flood Zone 3 (Rivers and Sea) and within a TAN15 defended flood zone.
- 5.2. The Newport hydraulic model (2022) indicates that the site is unaffected in present day defended 1 in 200 year and 1 in 1000 year fluvial/tidal flood events.
- 5.3. When assessed over the lifetime of the development to 2126, the site falls within the modelled extent of the defended 1 in 200 year tidal flood event. The maximum modelled flood level under the 2121 climate change epoch is approximately 7.61m AOD. Application of an additional climate change allowance of 0.065m to extend the assessment to 2126 results in a flood level of approximately 7.68m AOD.
- 5.4. When compared with the estimated ground floor finished floor level of approximately 7.51m AOD, this indicates shallow flooding of approximately 0.17m may occur at ground floor level. The first floor level is estimated to be approximately 10.21m AOD, providing a vertical clearance of around 2.5m above the derived design flood level.
- 5.5. Flood depths of up to approximately 0.41m are predicted along Coverack Road, which provides access to the site, when assessed over the lifetime of the development to 2126. For More Vulnerable development, TAN15 identifies tolerable flood depths of up to approximately 0.6m for access and egress. The flood depths on Coverack Road are therefore within tolerable conditions.
- 5.6. In accordance with TAN 15's consequences-based approach, the management of fluvial/tidal flood risk at the site will rely on flood warning awareness and an appropriate flood warning and evacuation plan, setting out procedures for responding to flood warnings and identifying actions to be taken during and following a flood event. Appropriate property-level flood resilience and resistance measures are recommended below to manage the shallow flooding on the ground floor.
- 5.7. In accordance with the CLG guidance *Improving the Flood Performance of New Buildings: Flood Resilient Construction* (2007)¹⁰, the owner may wish to consider proportionate and reversible measures to help manage residual flood risk at the property such as:

- *Demountable flood protection measures to external door thresholds and other low level openings, which can be deployed in response to flood warnings to help reduce the ingress of floodwater.*
- *Any units within the ground floor of the proposed development to be raised on legs above plinth and not sit directly onto the flooring.*

¹⁰ https://assets.publishing.service.gov.uk/media/602d673ee90e0709e8d085d8/Improving_the_Flood_Resilience_of_Buildings_Through_Improved_Materials_Methods_and_Details_Technical_Report.pdf

- *Where possible sockets should be lifted to a height above the maximum flood level as per UK electrical safety standards.*
- *Special care should be taken to ensure adequate sealing of any PVC window/door sills to the fabric of the outbuilding.*
- *Non-return valves should be installed around the property. Maintenance of these valves is important to ensure their continued effectiveness so should be maintained in line with manufactures recommendations.*
- *Any internal finishes should be water-resistant; sacrificial linings can be used where appropriate to minimize flood damage.*

Flood Warnings

- 5.8. The site is located in an area covered by the Usk Estuary at Maindee, North Liswerry and Spyttly Pill Flood Warning area. This service allows occupants to register an address along with contact details so that, in the event of a flood being forecast, they are sent an alert. As a further precaution and risk reduction, the site management should sign up.
- 5.9. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides occupants some notice before a flood event. The amount of time afforded before a flood occurs depends on the site-specific location (e.g. proximity to the source of flooding, topography of the surrounding area) and the flood mechanism (e.g. bank over topping versus a breach event). Flood alerts and warnings provide site managers with time to take necessary action, e.g. communication of the risk of flooding to occupants etc, evacuation of occupants offsite or to a safe level, removal of valuable items out of reach of flooding and the mounting of site-specific flood defences.

Flood Warning and Evacuation Plan

- 5.10. A Flood Warning and Evacuation Plan (FWEP) should be prepared for the development and made available to occupants.
- 5.11. The plan should set out clear triggers for action based on NRW flood alerts and warnings, identify safe refuge at ground floor level, and outline evacuation procedures where necessary.

Pluvial, Canals, Reservoirs, Groundwater and Sewers

- 5.12. Flood risk from other sources is deemed to be low, therefore further mitigation is not required.

Increase to Flood Risk Elsewhere

- 5.13. The proposal is the change of use from C3 dwelling house to a C4 5NO Bedroom HMO, with no external alterations to the property. The proposed development will not increase the built footprint on-site; thus, not increase flood risk elsewhere through water displacement.

- 5.14. Furthermore, as there is no increase in built footprint, there is no requirement for a SAB approval note for the development.

6. Conclusions

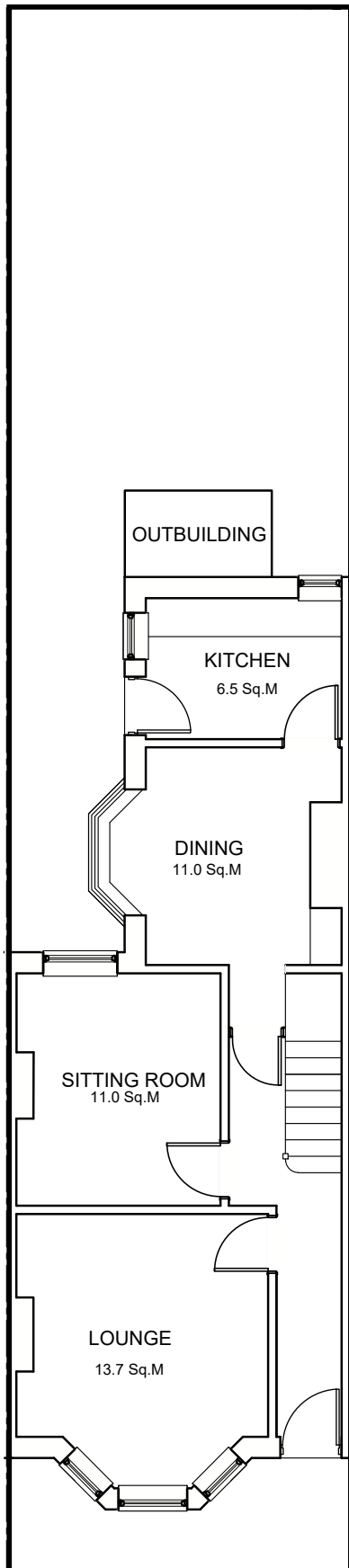
- 6.1. This FCA has been undertaken with reference to the requirements of TAN 15 and Welsh Planning Guidance with respect to the development at 11 Coverack Road, Newport, NP19 0DS. It has been written to support a planning application and prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. An assessment of the risk of flooding from all sources has been undertaken and is summarised in the table below:

Source of Flooding	Flood Risk Summary
Fluvial/tidal	The site is located within Flood Zone 3 (Rivers and Sea) and within a TAN15 defended flood zone. The Newport hydraulic model (2022) indicates that the site is unaffected during present day defended 1 in 200 year and 1 in 1000 year fluvial and tidal flood events. When assessed over the lifetime of the development to 2126, the site falls within the modelled extent of the defended 1 in 200 year tidal flood event. Application of an additional climate change allowance beyond the 2121 model epoch indicates shallow flooding of approximately 0.17m at ground floor level. The first floor of the property is located at an estimated level of approximately 10.21m AOD, providing a freeboard of around 2.5m above the design flood level. Flood depths of up to approximately 0.41m are predicted along Coverack Road. Management of fluvial and tidal flood risk at the site will rely on advance flood warning via the NRW flood warning service, implementation of a Flood Warning and Evacuation Plan, and the incorporation of proportionate property-level flood resilience and resistance measures at ground floor level. On this basis, while the site is affected by tidal flooding under future climate change conditions, the flood depths on site are within tolerable conditions and overall flood risk and consequences are considered acceptable in accordance with the principles of TAN15.
Pluvial Reservoirs Groundwater Sewers Canals	The site is considered to be at low risk from other sources.

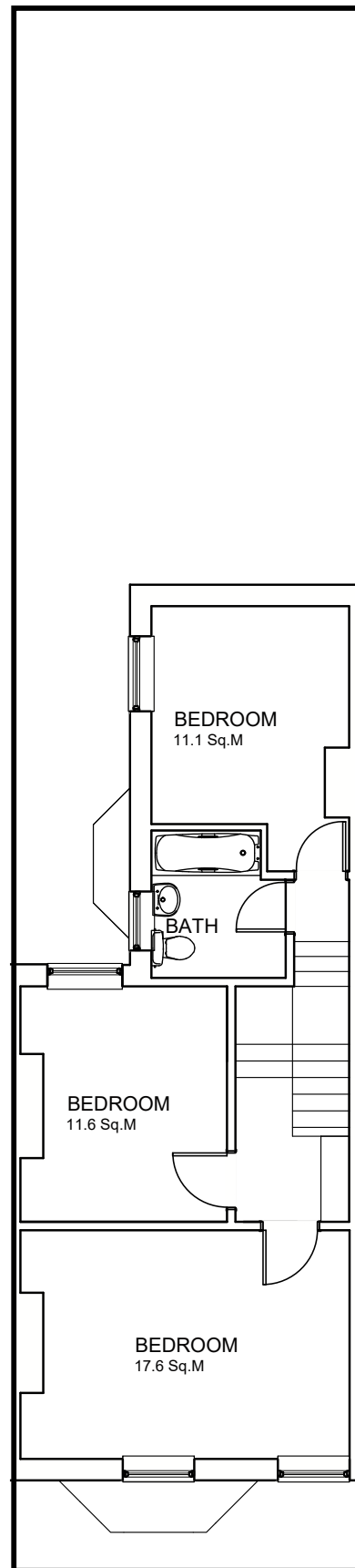
- 6.3. This Flood Consequence Assessment should be submitted as part of the planning application to satisfy the requirements under TAN 15. The proposal is considered consistent with TAN 15 for redevelopment within Defended Flood Zone 3, as:
- the redevelopment on brownfield land constitutes no increase in vulnerability compared to existing with no increase in built footprint (and therefore increase in flood risk elsewhere)

- consequences are within tolerable conditions and can be safely managed the lifetime of the development; and
- shallow flooding on the ground floor finished floor level can be managed with flood mitigation measures.

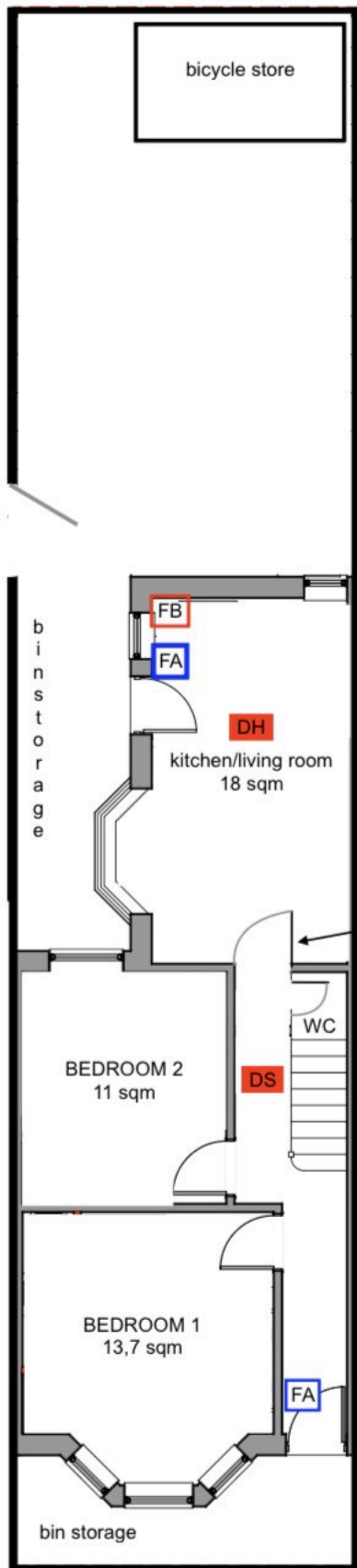
Appendix A - Development Proposals



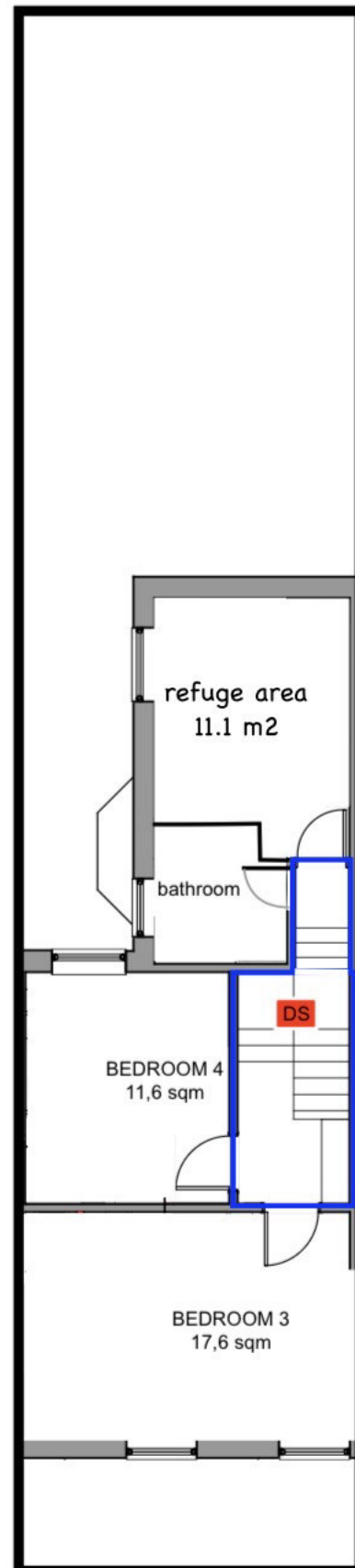
GROUND FLOOR PLAN AS EXISTING



FIRST FLOOR PLAN AS EXISTING



GROUND FLOOR PLAN AS PROPOSED



FIRST FLOOR PLAN AS PROPOSED

DS mains wired interlinked smoke detector
 DH mains wired interlinked heat detector
 FB fire blanket
 FA flood alarm

Scale 1:75 @ A3