

22 Chepstow Road - FCA

Version 1

June 2025

Prepared for:
Elementum Surveying Ltd
7 Bell Yard
London
WC2A 2JR

www.jbaconsulting.com

Document Status

Issue date	June 2025
Issued to	Daniel John
BIM reference	PTF-JBA-XX-XX-RP-Z-0001-S0-P01-22_Chepstow_Road_FCA
Revision	P01
Prepared by	George Williams BSc (Hons) MSc Flood Risk Analyst
Reviewed by	Faye Tomalin BSc (Hons) MSc MCIWEM C.WEM Principal Analyst
Authorised by	Faye Tomalin BSc (Hons) MSc MCIWEM C.WEM Project Director

Carbon Footprint

The format of this report is optimised for reading digitally in pdf format. Paper consumption produces substantial carbon emissions and other environmental impacts through the extraction, production and transportation of paper. Printing also generates emissions and impacts from the manufacture of printers and inks and from the energy used to power a printer. Please consider the environment before printing.

Contract

JBA Project Manager	George Williams
Address	Kings Chambers, 7-8 High Street, Newport, NP20 1FQ
JBA Project Code	2025s0659

This report describes work commissioned by Elementum Surveying Ltd, by an instruction dated 30th April 2025. The Client's representative for the contract was Daniel John of Elementum Surveying Ltd. George Williams of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Elementum Surveying Ltd and its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to Elementum Surveying Ltd for the purposes for which it was originally commissioned and prepared.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by JBA has not been independently verified by JBA, unless otherwise stated in the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. JBA specifically does not guarantee or warrant any estimates or projections contained in this Report.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Copyright

© Jeremy Benn Associates Limited 2025

Contents

1	Introduction	7
1.1	Terms of Reference	7
1.2	FCA Requirements	7
2	Site Description	8
2.1	Site Summary	8
2.2	Site Topography	9
2.3	Watercourse and Flood Defences	10
2.4	Soils and Geology	10
2.5	Proposed Development	11
3	Planning Policy and Flood Risk	12
3.1	Planning Context	12
3.2	Form of Development	12
3.3	Vulnerability Classification	12
3.4	Lifetime of Development	15
3.5	Flood Map for Planning	15
3.6	Newport City Council Local Development Plan	18
3.7	Severn Estuary Shoreline Management Plan	19
4	Flood Risk Assessment	20
4.1	Review of Existing Flood Risk Data	20
4.2	Historical Flooding	20
4.3	Flood Risk from Rivers	20
4.4	Flood Risk from Surface Water and Small Watercourses	21
4.5	Flood Risk from Groundwater	21
4.6	Flood Risk from Reservoirs	21
4.7	Flood Risk from Sewers	22
5	Detailed Flood Risk Assessment	23
5.1	Hydraulic Model Availability	23
5.2	Detailed Tidal Flood Risk Results	24
5.3	Access and Egress	26
6	Flood Resilience	27

6.1	Realignment	27
6.2	Resistance and Resilience	28
6.3	Response	28
7	Flooding and the Plan Led System	30
7.1	Application of Flood Zone to Development Management Decisions	30
7.2	Acceptability Criteria	30
7.3	Frequency Thresholds: Designing Development To Be Flood Free	31
7.4	Tolerable Conditions: Managing Consequences in an Extreme Flood Event	32
8	Conclusions and Recommendations	33

Appendix A 35

List of Figures

Figure 2-1	Site Overview	8
Figure 2-2	Site Topography	9
Figure 2-3	Watercourses and Flood Defences	10
Figure 2-4	Development Proposals	11
Figure 3-1	Flood Map for Planning - Flood Risk from Rivers	16
Figure 3-2	Flood Map for Planning - Flood Risk from the Sea	17
Figure 3-3	Flood Map for Planning - Flood Risk from Surface Water and Small Watercourses	18
Figure 3-4	Theme Areas - Severn Estuary Shoreline Management Plan	19
Figure 4-1	Flood Risk from Reservoirs	22
Figure 5-1	2123 0.5% AEP plus Climate Change Event	25
Figure 5-2	2123 0.1% AEP Plus Climate Change Event	26

List of Tables

Table 2-1	Site Summary	8
Table 3-1	From of Development	12
Table 4-1	Summary of Flood Risk	20

Table 5-1 Sea level rise uplifts and peak tide levels	23
Table 7-1 Assessment of Acceptability Criteria	31

Abbreviations

1D	One Dimensional (modelling)
2D	Two Dimensional (modelling)
AEP	Annual Exceedance Probability
AOD	Above Ordnance Datum
BGS	British Geological Survey
CFB	Coastal Flood Boundary
CIRIA	Company providing research and training in the construction industry
CIWEM	The Chartered Institution of Water & Environmental Management
FCA	Flood Consequence Assessment
FMfP	Flood Map For Planning
LFRMS	Local Flood Risk Management Strategy
LiDAR	Light Detection And Ranging
NGR	National Grid Reference
NRW	Natural Resources for Wales
OS	Ordnance Survey
OS NGR	Ordnance Survey National Grid Reference
PFR	Property Flood Resilience
PFRA	Preliminary Flood Risk Assessment
PPW	Planning Policy Wales
RCP	Representative Concentration Pathway
SMP	Shoreline Management Plan
TAN-15	Technical Advice Note 15: Development and Flood Risk
TUFLOW	Two-dimensional Unsteady FLOW (a hydraulic model)
UKCP	United Kingdom Climate Projections

1 Introduction

1.1 Terms of Reference

JBA Consulting were commissioned by Elementum Surveying Ltd to prepare a Flood Consequences Assessment (FCA) to support the development proposals at 22 Chepstow Road, Newport. This FCA demonstrates the suitability of the proposed development in terms of flood risk.

1.2 FCA Requirements

This FCA follows the Welsh Government guidance on development and flood risk set out in the Technical Advice Note 15: Development, Flood Risk and Coastal Erosion (TAN-15). TAN-15 states that:

'The prime objective of a Flood Consequences Assessment is to develop a full appreciation of:

- The risks and consequences of flooding on the development; and
- The risk and consequences (i.e the overall impacts) of the development on flood risk elsewhere.'

To achieve this, the FCA should establish if suitable avoidance and mitigation measures can be incorporated, in a manner compatible with the placemaking aims of Planning Policy Wales, within the site design to ensure that development is safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property; and
- Minimal disruption to the sustainable management of natural resources.

2 Site Description

2.1 Site Summary

The site is located off Chepstow Road (B4591), Newport NP19 8EA. The site is approximately 1km from Newport City Centre. The 0.042ha site is currently being used as a commercial building but was previously a residential property. Access is from Chepstow Road. Figure 2-1 below depicts the site location.

The site is bounded to the north by Chepstow Road, to the east and west by residential buildings and commercial buildings from former residential properties. To the south, the site is bounded by a motor garage. A summary of site details is contained in Table 2-1.

The development site predominantly contains the building footprint.

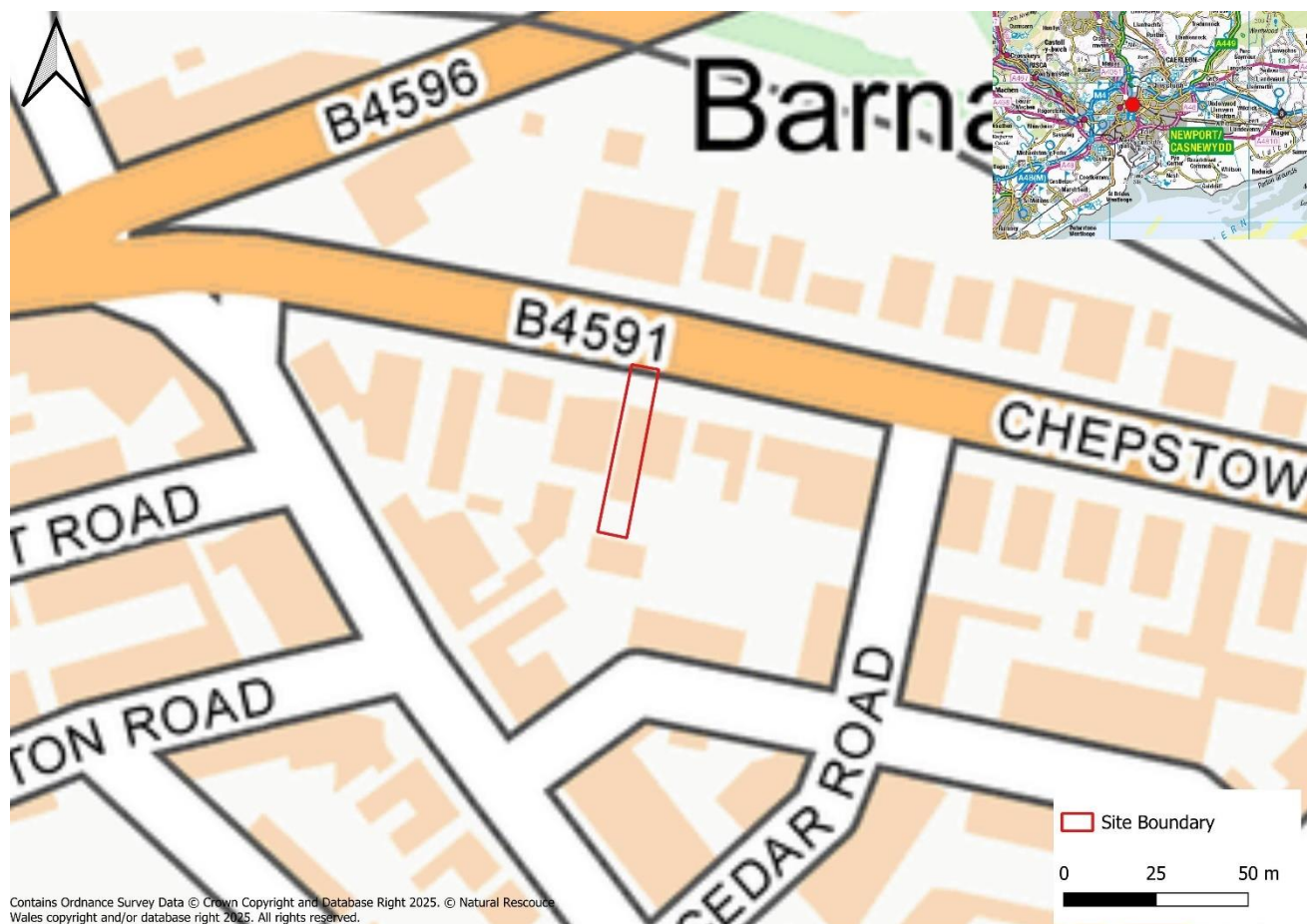


Figure 2-1 Site Overview

Table 2-1 Site Summary

Site Name	The New Fleurs
Site area (ha)	0.042
Existing land use	Commercial Property
Purpose of development	Supported Care Accommodation

Site Name	The New Fleurs
OS NGR	ST 31651 88472
Local Planning Authorities	Newport City Council

2.2 Site Topography

The site comprises an existing building with site levels that have likely remained unchanged since construction. No internal threshold survey or topographic survey within the building has been undertaken, therefore, site levels have been inferred from NRW Open Source LiDAR Data.

Figure 2-2 shows Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data, highlighting that the site is shown to be relatively flat with a slight fall in a northerly direction towards Chepstow Road. Site levels range from 7.39 in the south to 6.94 in the north, adjacent to Chepstow Road.

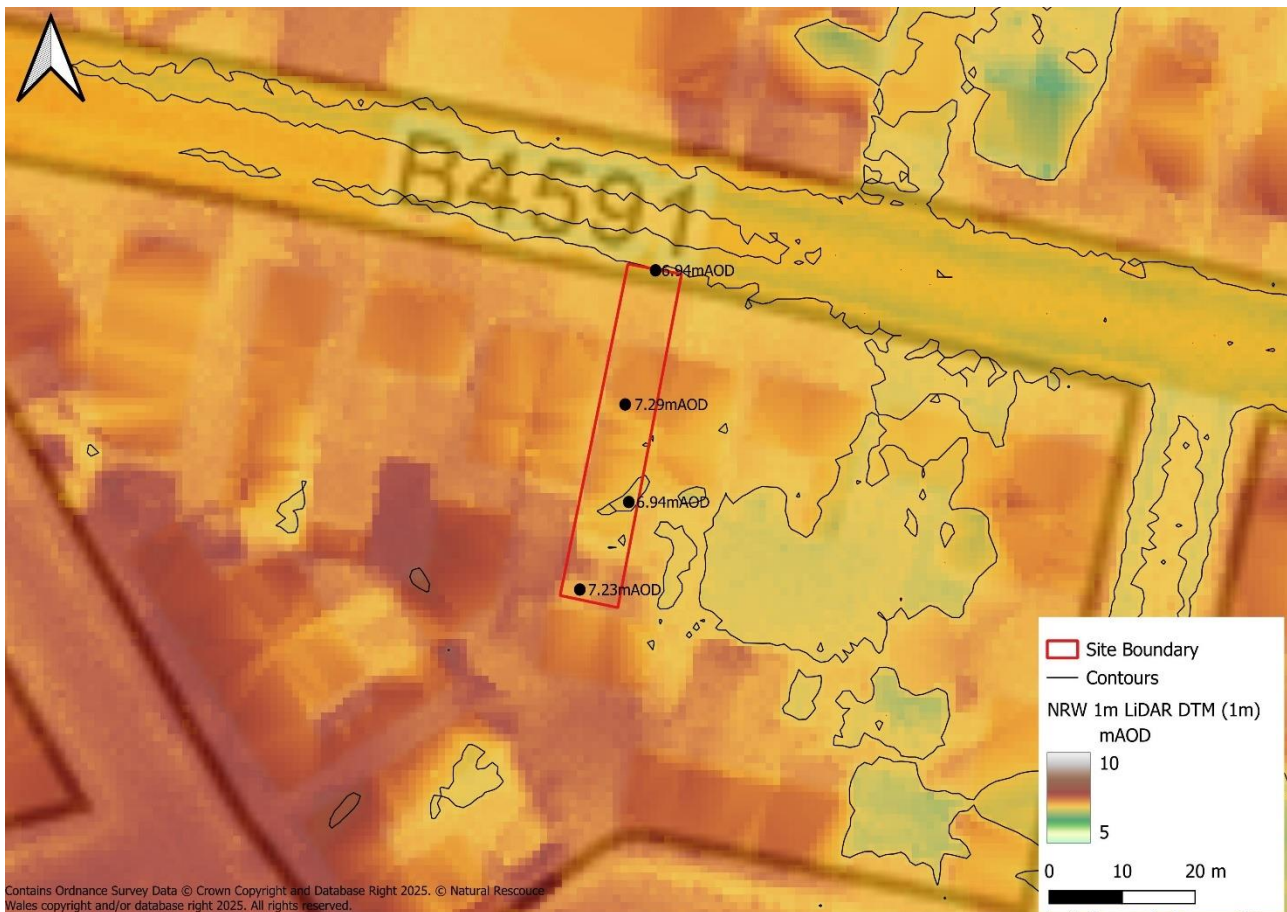


Figure 2-2 Site Topography

2.3 Watercourse and Flood Defences

No watercourses cross the proposed development site. As shown in Figure 2-3. The nearest Main River is the River Usk, located approximately 400m to the west of the proposed development site.

The site is located in an area that currently benefits from the presence of flood defences. The site benefits from tidal/coastal flood defences located along the Caldicot levels, located approximately 6km to the south of the site. The defences are owned and maintained by NRW and as such, are regularly inspected.

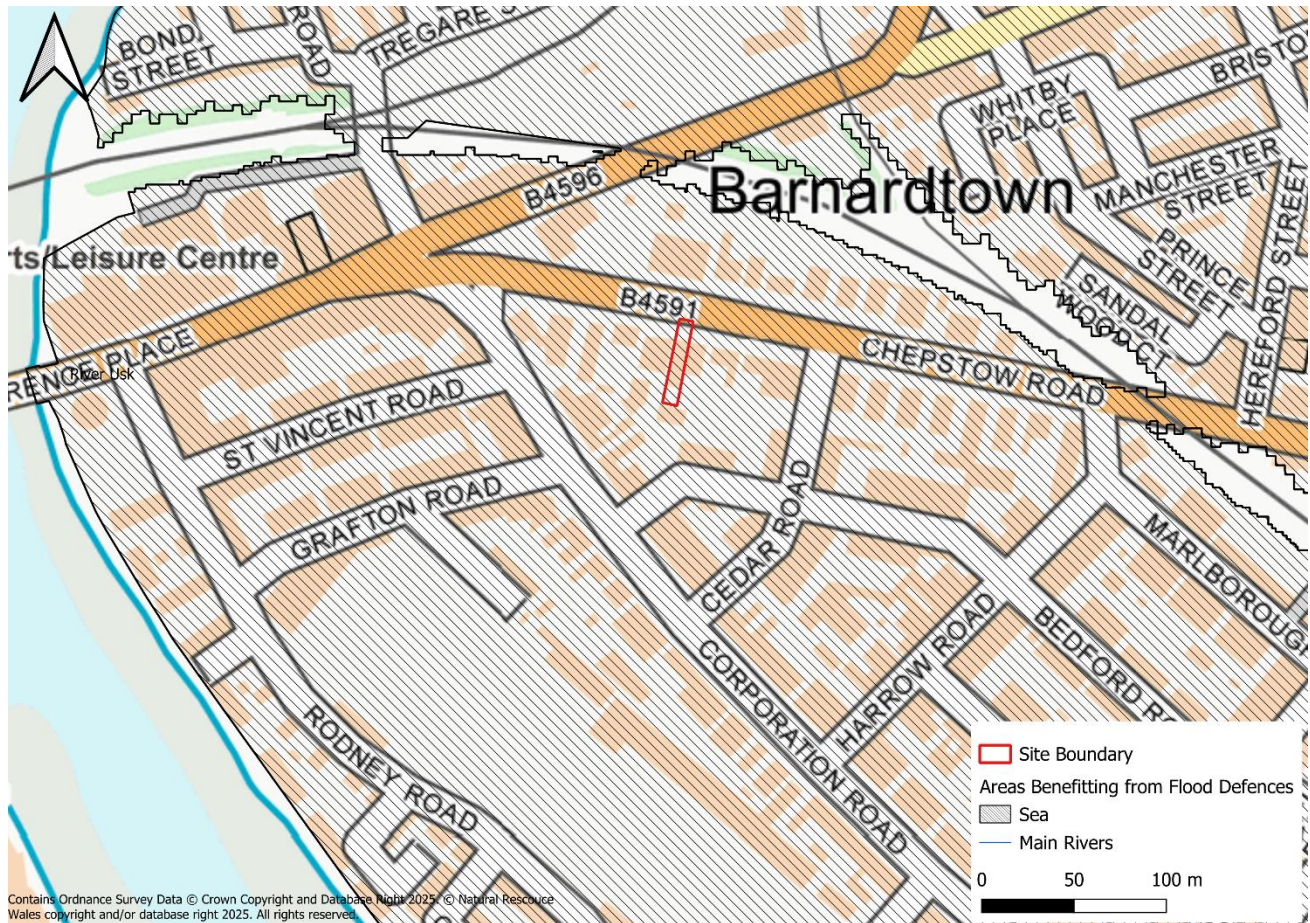


Figure 2-3 Watercourses and Flood Defences

2.4 Soils and Geology

The geology of the site has been assessed using the BGS GeoIndex¹. The bedrock geology is shown to comprise of the St Maughans Formation - Argillaceous rocks and sandstone bedrock with superficial deposits of Tidal Flat Deposits (TFD) comprised of clay, silt and sand.

¹ <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

The soils on site have been assessed on the Cranfield University Soils Vues Viewer² The underlying soils are shown to be loamy and clayey soil of coastal flats with naturally high groundwater.

2.5 Proposed Development

The development proposals are for the conversion of the existing commercial property at 22 Chepstow Road into supported care accommodation, with 10 living apartments, communal kitchen and lounge with ancillary staff accommodation, office/reception area and staffroom.

Figure 2-4 below provides an overview of the development plans, with additional plans located within Appendix A.



Figure 2-4 Development Proposals

² Soils Vues soil types viewer - Cranfield Environment Centre. Cranfield University (landis.org.uk)

3 Planning Policy and Flood Risk

3.1 Planning Context

Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which, together with PPW, provide the national planning policy framework for Wales. These policies aim to make all development in Wales sustainable and improve the social, economic, environmental, and cultural wellbeing of Wales as set out in the Wellbeing of Future Generations Act 2015.

Technical Advice Note 15 (TAN-15), originally introduced by the Welsh Government in 2004 and most recently updated in March 2025, provides technical guidance relating to development planning and flood risk in Wales. TAN-15 provides a framework within which the flood risks arising from rivers, the sea and surface water, and the associated risk of coastal erosion can be assessed. The approach set out in the most recent update to TAN-15 ensures flooding and coastal erosion are accorded appropriate consideration in plan-making and development management decisions.

3.2 Form of Development

TAN-15 assigns one of three flood risk vulnerability classifications to developments, as shown in Table 3-1.

Table 3-1 Form of Development

Form of Development	Definition
New Development	Any Development on greenfield land
Redevelopment	Any Development on previously developed land as defined in Planning Policy Wales

As detailed in Section 2, development proposals are for the conversion of the existing commercial property at 22 Chepstow Road into supported care accommodation, with 10 living apartments, communal kitchen and lounge with ancillary staff accommodation, office/reception area and staffroom. The site has previously been used as a commercial property. As such, the proposed development is classified as **Redevelopment**.

3.3 Vulnerability Classification

TAN-15 assigns one of three flood risk vulnerability classifications to developments, as shown in

Table 3-2. The proposed development is for residential development and is consequently classified as a **Highly Vulnerable Development**.

Table 3-2 TAN-15 Vulnerability Classification

Development category	
Highly vulnerable development	All residential premises (including hotels, Gypsy and Traveller sites, caravan parks and camping sites). Schools and childcare establishments, colleges and universities. Hospitals and GP surgeries. Especially vulnerable industrial development (e.g. power generating and distribution elements of power stations, transformers, chemical plants, incinerators), and waste disposal sites. Emergency services, including ambulance stations, fire stations, police stations, command centres, and emergency depots. 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 infrastructure. Open spaces (excluding equipped play areas). Hydro renewable energy generation.

3.4 Lifetime of Development

An FCA should help the planning authority determine whether the risk and consequences of flooding are acceptable over the lifetime of development. TAN-15 states:

'Generally, it is appropriate to think of new dwellings as having a lifetime of 100 years. Lifetimes for other types of development will vary, but 75 years is considered a reasonable rule of thumb'.

As the proposals are for a residential development a 100-year lifetime of development has been considered in this assessment.

3.5 Flood Map for Planning

The Flood Map for Planning (FMfP) is the starting point for consideration of flood risk. The map uses flood zones to indicate the degree to which land is at risk of flooding from rivers, the sea, surface water and small watercourses. The main zones are Zone 1, Zone 2, Zone 3 and the Defended Zone. The FMfP displays predicted future flood risk with an allowance made for climate change over a 100 year lifetime of development.

Proposals for development located partially or wholly in Flood Zone 2 or 3 must be supported by a Flood Consequences Assessment (FCA).

3.5.1 Flood Map for Planning - Rivers

As shown in Figure 3-1, the proposed development site is located within Flood Zone 1 of the Flood Map for Planning for the Rivers. Flood Zone 1 represents areas which have less than a 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.

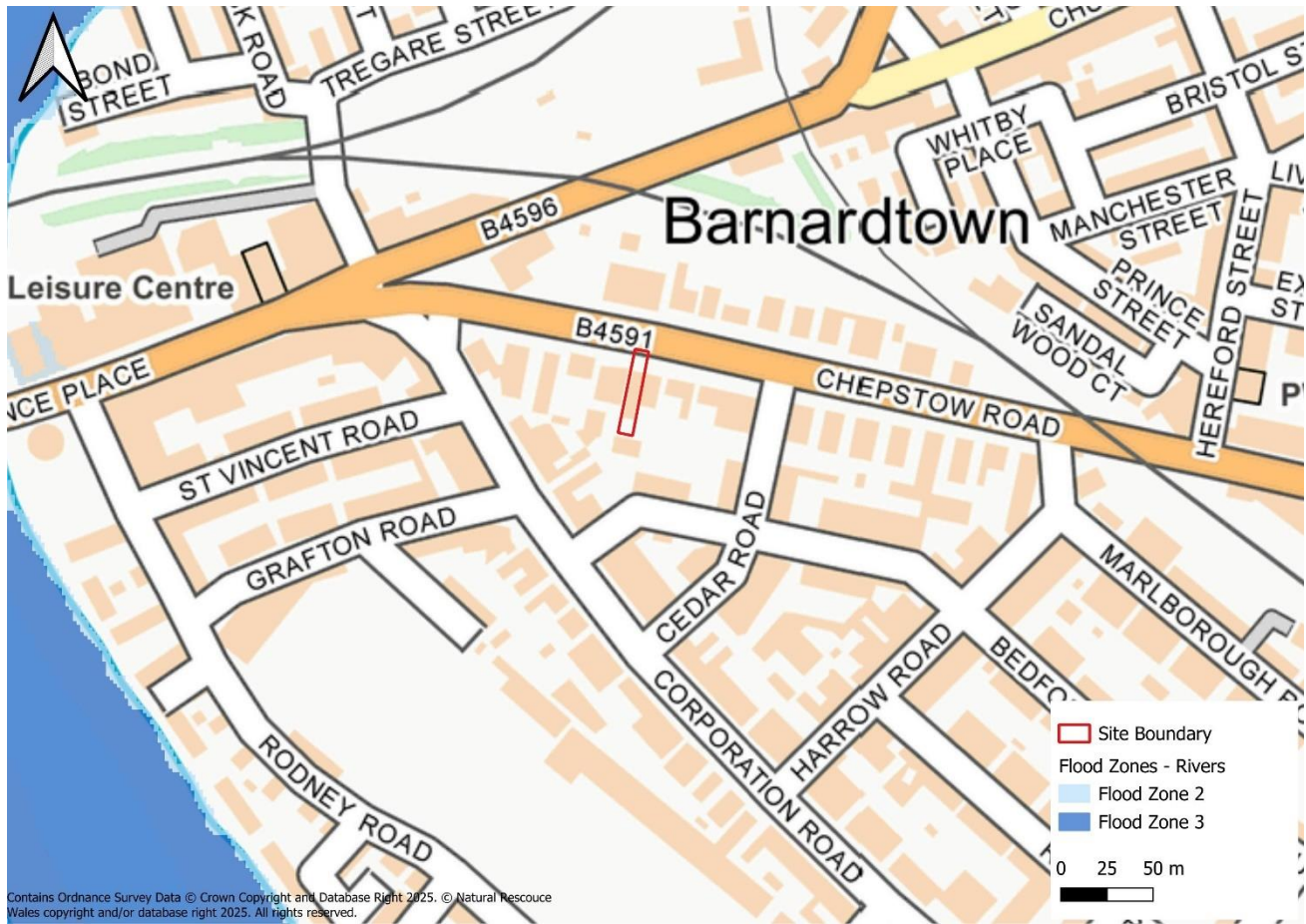


Figure 3-1 Flood Map for Planning - Flood Risk from Rivers

3.5.2 Flood Map for Planning - Sea

The Site is shown to be in Flood Zone 3 of the Flood Map for Planning - Flood Risk from the Sea as shown in Figure 3-2. Flood Zone 3 represents those areas that have a greater than 0.5% AEP (1 in 200 year) chance of flooding in any given year with an allowance made for climate change.

Furthermore, the site is located within a TAN-15 Defended Zone. TAN-15 Defended Zone are areas that benefit from Risk Management Authority flood defences which provide a minimum Standard of Protection.

A detailed flood risk assessment of coastal/ tidal flood risk is detailed in Section 5 of this FCA.

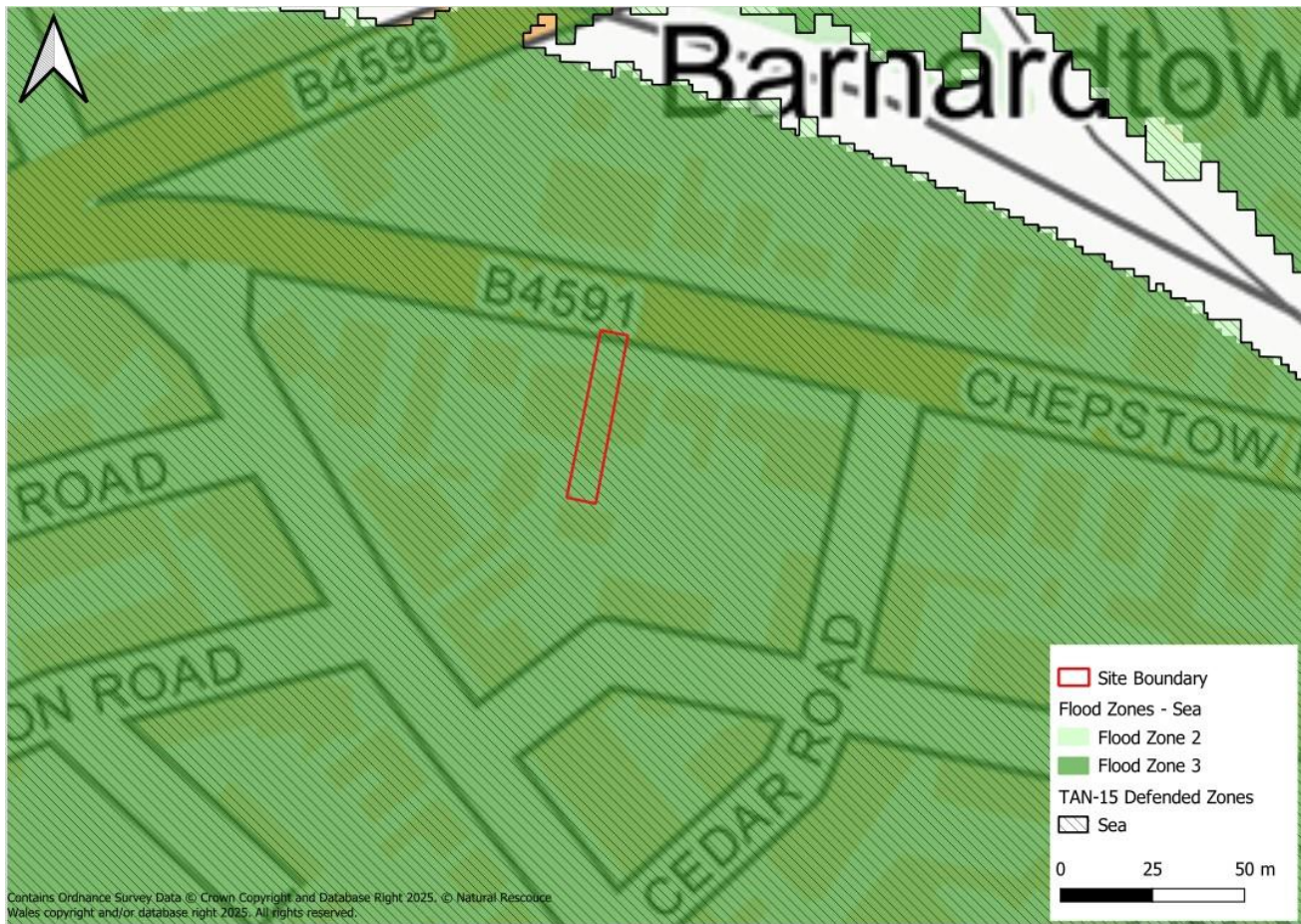


Figure 3-2 Flood Map for Planning - Flood Risk from the Sea

3.5.3 Flood Map for Planning - Surface Water and Small Watercourses

Figure 3-3 shows that most of the site is located within Flood Zone 1 of the Flood Map for Planning for Surface Water and Small Watercourses. Flood Zone 1 represents areas with less than a 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.

However, the north of the site, next to the site entrance from Chepstow Road, is shown to be within Flood Zone 2 of the Flood Map for Planning for Surface Water and Small Watercourses. This represents a range between 0.1% AEP (1 in 1000 year) and 1.0% (1 in 100 years chance of flooding in any given year, including an allowance for climate change).

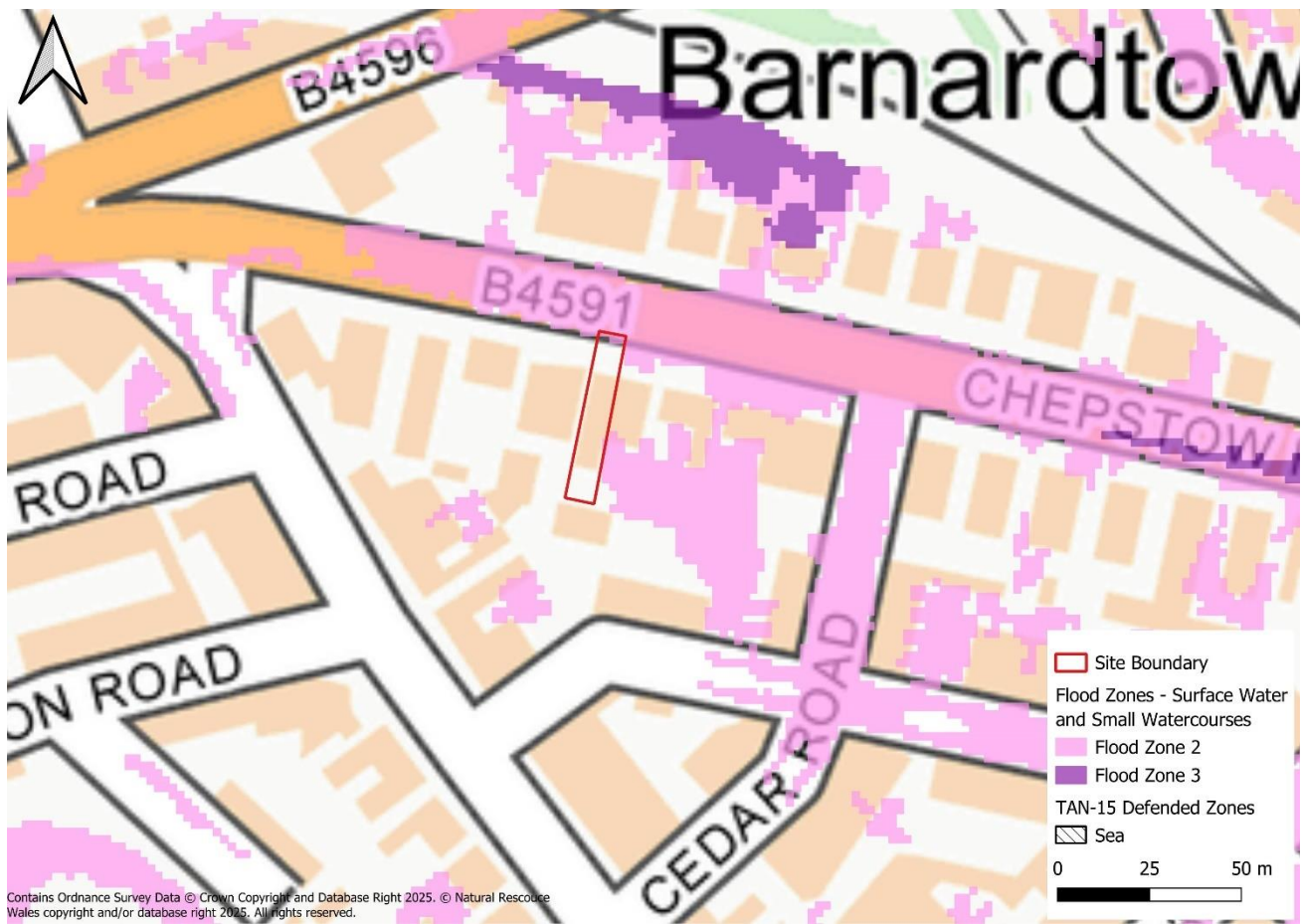


Figure 3-3 Flood Map for Planning - Flood Risk from Surface Water and Small Watercourses

3.6 Newport City Council Local Development Plan

The Newport Local Development Plan 2011 - 2026³ is designed to guide development within Newport up to 2026. The plan's vision is to make Newport "a centre of regeneration that celebrates its culture and heritage, while being a focus for varied economic growth that will strengthen its contribution to the region". The plan has ten detailed objectives to achieve this vision.

Objective 1 is the "Sustainable Use of Land". This objective plans to ensure that "development makes the most efficient use of natural resources by seeking to locate development in the most sustainable locations". Specifically, Newport City Council wants to make use of the numerous brownfield / redevelopment sites that exist around the city, such as this site

Objective 4 sets out plan for housing provision "to ensure there is an adequate supply of land for housing in the most sustainable locations, and to ensure that the quantity, and quality and variety of housing provision meets the needs of the population". It has also

³ <http://www.newport.gov.uk/documents/Planning-Documents/LDP-2011-2026/LDP-Adopted-Plan-January-2015.pdf>

provided a target to deliver approximately 10,350 new homes by 2026, to cope with the population increase of Newport.

3.7 Severn Estuary Shoreline Management Plan

The development site falls within the Newport, River Usk and surrounding area Theme Area of the Severn Estuary SMP (SMP) as seen in Figure 3-4.

The site lies within Management Unit NEW 4 - River Usk (East bank) This management unit has a Hold the Line policy for the 50-100-year epoch (year 2105).

Hold the line is defined as “keeping the line of defence in approximately its current location. This may mean repairing or replacing defences”.

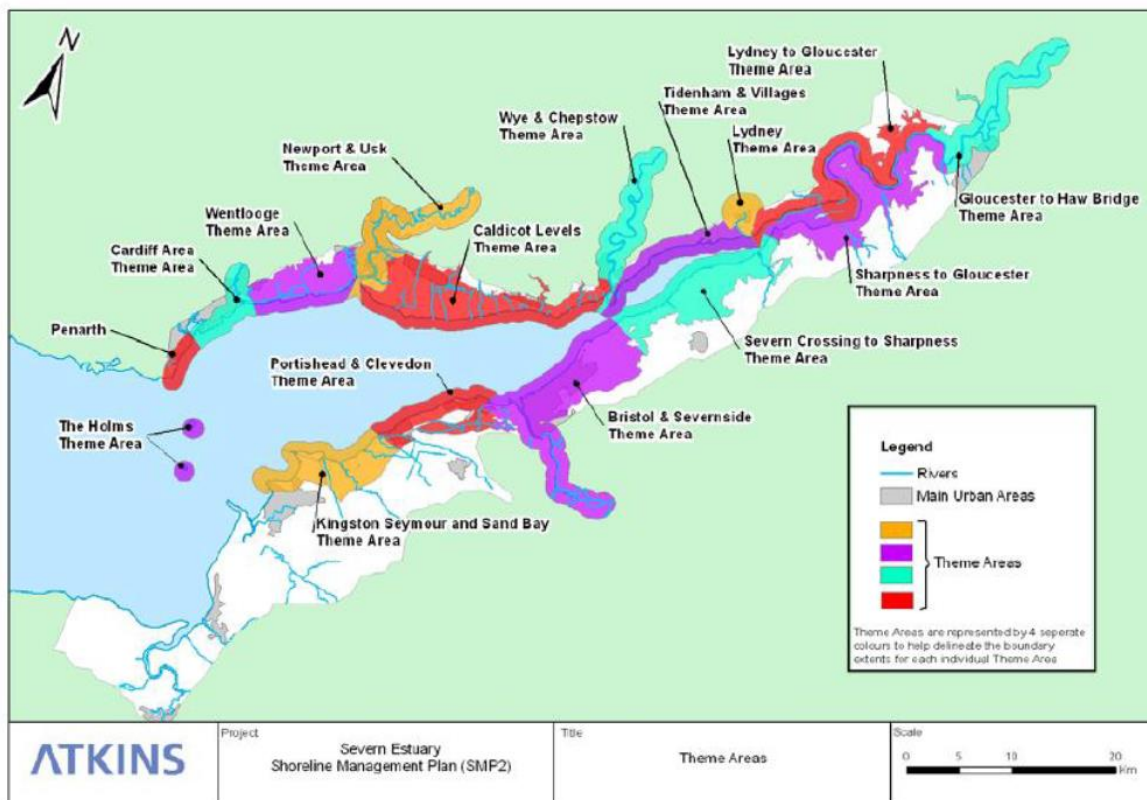


Figure 3-4 Theme Areas - Severn Estuary Shoreline Management Plan

4 Flood Risk Assessment

This section assesses the risk to the proposed development from all sources of flooding, the risk of increased flooding to others, and how flood risks can be managed.

4.1 Review of Existing Flood Risk Data

The latest available information on flood risk at the site, published by Natural Resources Wales (NRW) is summarised in Table 4-1 below.

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✖	The site is at very low risk of river flooding.
Flood Risk from the Sea	✓	Refer to Section 5 for a detailed assessment of flood risk from the sea.
Flood Risk from Surface Water and Small Watercourses	✓	The site is at low risk of surface water flooding.
Flood Risk from Groundwater	✖	The site is at very low risk of flooding from groundwater.
Flood Risk from Reservoirs	✓	The site is at low risk of flooding from reservoirs.
Flood Risk from Sewers	✖	The site is at low risk of flooding from sewers.

4.2 Historical Flooding

NRW's map of recorded flood extents does not show any evidence of historic flooding on the site. Newport Council's Preliminary Flood Risk Assessment⁴ (PFRA) and Local Flood Risk Management Strategy⁵ (LFRMS) identified no records of historic flooding at the site.

4.3 Flood Risk from Rivers

As shown in Figure 3-1 the Flood Map for Flood Risk from Rivers shows that the proposed development site is at **very low risk** of flooding from these sources (ie. Flood Zone 1). This means that there is a less than 1 in 1000 (<0.1% AEP) chance of flooding in any given year, including with an allowance with climate change.

4 <https://www.newport.gov.uk/documents/Planning-Documents/Flood-risk/Preliminary-Flood-Risk-Assessment-Report-April-2011.pdf>

5 <https://www.newport.gov.uk/documents/Policies/Newport-LFRMS-Report-Issue-Rev.pdf>

4.4 Flood Risk from Surface Water and Small Watercourses

As shown in Figure 3-3, the Flood Map for Planning Surface Water and Small Watercourses mapping shows that the proposed development site is predominantly at very low risk of flooding from these sources (ie. Flood Zone 1). This includes the entire building footprint. This means that there is a less than 1 in 1000 (<0.1% AEP) chance of flooding in any given year, including with an allowance with climate change.

However, the north of the site, next to the site entrance via Chepstow Road, is shown to be within Flood Zone 2 of the Flood Map for Planning for Surface Water and Small Watercourses. This represents a range between 0.1% AEP (1 in 1000 year) and 1.0% (1 in 100 years chance of flooding in any given year, including an allowance for climate change.

As the flood extent of Flood Zone 2 only slightly encroaches on the site and surface water flooding cannot be entirely ruled out, it is concluded that the risk of surface water flooding at the site is **low**, but not negligible.

4.5 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerges at the ground surface or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and can result in damage to property. The risk of groundwater flooding depends on the nature of the geological strata underlying the site and the local topography.

Newport City Council's Local Flood Risk Management Plan (2015)⁶ states that groundwater flooding is not considered to be a significant flood risk, and there are very few instances of groundwater flooding in Newport. Therefore, the groundwater flood risk to the proposed development site is considered to be **very low**.

4.6 Flood Risk from Reservoirs

NRW flood maps indicate that the proposed development site is located within an area at risk of reservoir flooding, as shown in Figure 4-1. The site is shown to be at risk of flooding from Llandegfedd Reservoir, located approximately 10km north of the site.

However, as a result of regular inspections covered by the 1975 Reservoir Act, it is extremely unlikely that a reservoir would fail, and due to the location of the reservoirs in relation to the site, substantial warning time would be available. Therefore, the risk of reservoir flooding is considered to be **low**.

⁶ <https://www.newport.gov.uk/documents/Council-and-Democracy/Consultations/Newport-Flood-Risk-Management-Plan-Report-Issue-for-Consultation.pdf>

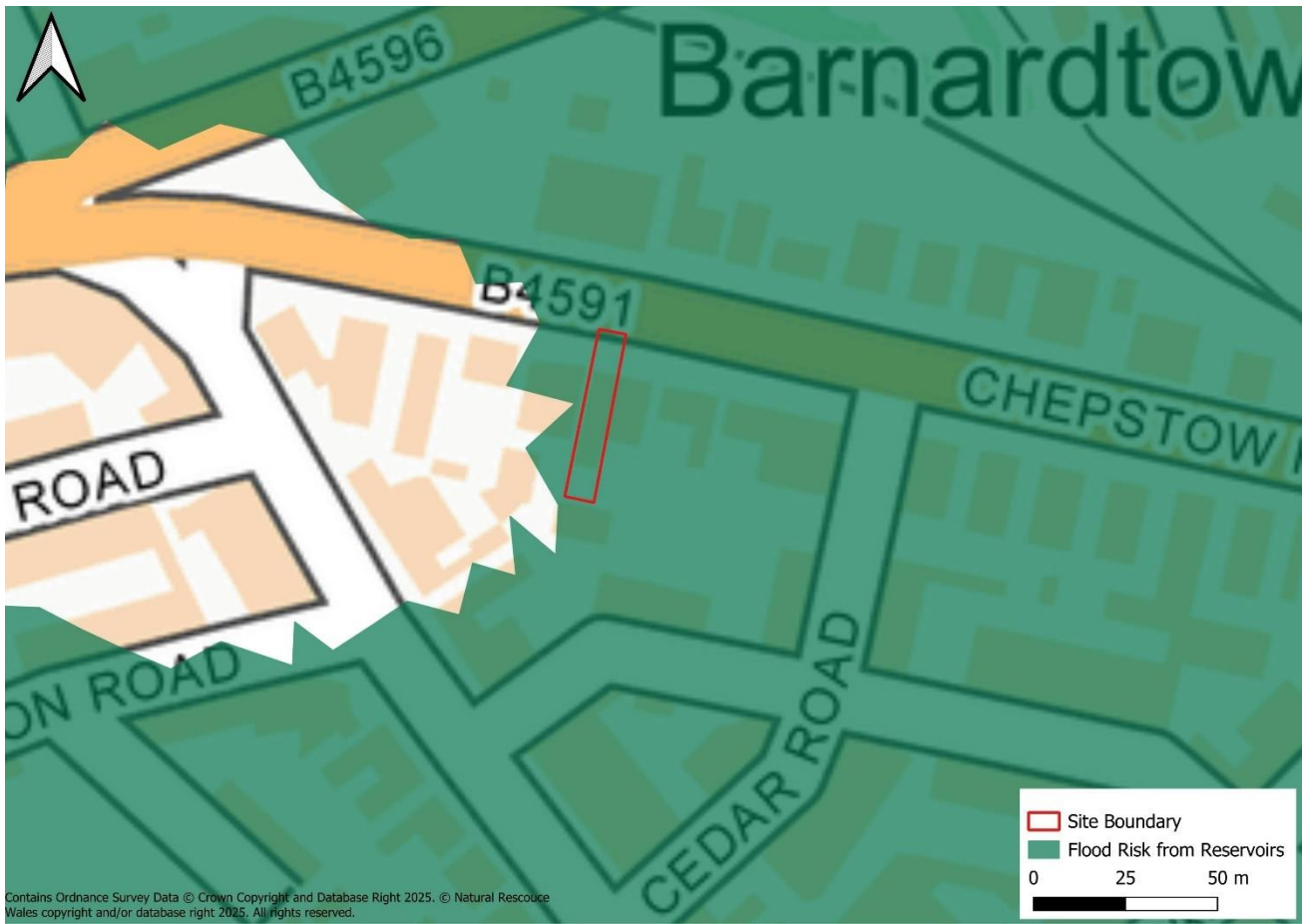


Figure 4-1 Flood Risk from Reservoirs

4.7 Flood Risk from Sewers

Newport's PFRA⁴ states that 'Data provided by DCWW indicates a total of 78 locations across the council area that have suffered from historical sewer flooding.' However, there is no evidence to suggest previous flooding at the development site. The report also concluded that flooding from sewers does not have significant consequences at a strategic scale, so it can be concluded that the risk of sewer flooding at the site is **low**.

5 Detailed Flood Risk Assessment

As identified in Sections 3 and 4, the flood risk to the site appears to be low from all sources, with the exception of flooding from coastal/ tidal mechanisms (the sea). Therefore, to better understand the risk of flooding from the sea and the potential implications of climate change, further assessment using detailed hydraulic modelling is provided in this section.

5.1 Hydraulic Model Availability

The detailed assessment of tidal flood risk is based on Version 7.0 of the Newport Tidal Flood Model (June 2020). This is a 1D-2D ESTRY-TUFLOW tidal model of Newport, which JBA Consulting prepared for a successful Flood Map Challenge at that time. Further to the model updates contained in the Flood Map Challenge, the Newport Tidal model (Version 7.0) was further updated by JBA Consulting in 2022 and 2023 to include several further model improvements.

The latest JBA model of Newport was updated to include the recently completed Crindau flood defences, and the ESTRY-TUFLOW version was updated to 2020-10-AD -iSP-w64. In addition, the tidal boundary conditions were updated in line with the latest (September 2021) Welsh Government climate change guidance for Flood Consequence Assessments⁷ to consider flood risk for the lifetime of development (100 years).

To represent the present-day (2023) scenario, the tidal boundary conditions were uplifted to the current year, from the CFB dataset base year of 2017, using the Higher Central allowance (70th percentile) of the UK Climate Projections (UKCIP 18) for 2100 for Representative Concentration Pathway 8.5 (RCP 8.5).

To account for the impact of sea level rise over the lifetime of the development (100 years), a further uplift was calculated for the 2123 scenario based on the Higher Central allowance (70th percentile) of the UKCP 18 for 2100, RCP 8.5 dataset. The uplift for the 23 years of additional climate change beyond 2100 was applied based on the dataset's average increase in the last five years. Table 5-1 summarises the sea level rise uplifts applied to the tidal boundary conditions and the resulting peak tide levels.

Table 5-1 Sea level rise uplifts and peak tide levels

Scenario	Sea level rise uplift (m)	Peak tide level (m AOD)	
		0.5% AEP	0.1% AEP event
2017 (CFB dataset base year)	N/A	8.33	8.67
2023	0.032	8.36	8.70
2123	1.062	9.39	9.73

⁷ https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf

The Newport tidal flood model has a coarse grid size of 10m and features below 10m in size may not be fully represented. However, the 10m grid size provides a balance between representing sufficient detail of the floodplain/flow routes across the mainly rural catchment and model run times, whilst also limiting the computational size of model outputs and has been previously accepted by NRW as part of the Flood Map Challenge circa June 2020.

5.2 Detailed Tidal Flood Risk Results

22 Chepstow Road benefits from comprehensive NRW flood defences along the River Usk. These typically provide a good standard of flood protection for the next 50 years, after which they will need to be further upgraded to keep pace with rising sea levels. Detailed flood modelling undertaken by JBA shows that the site will remain flood free in the 0.5% AEP plus Climate Change event up to 2097. Notwithstanding the significant age of the building, as noted in Section 3.4, the FCA is based on an assumed lifetime of development of 100 years.

5.2.1 2123 0.5% AEP Plus Climate Change Event

Detailed flood modelling shows that site floods during the 2123 0.5% AEP plus Climate Change event, as shown in Figure 5-1. The maximum flood depth on site during this event is 1.2m and can be found by the site entrance from Chepstow Road. Typically, flood depths do not exceed 1.0m, including the footprint of the building with a depth of 0.86m found towards the south of the site.

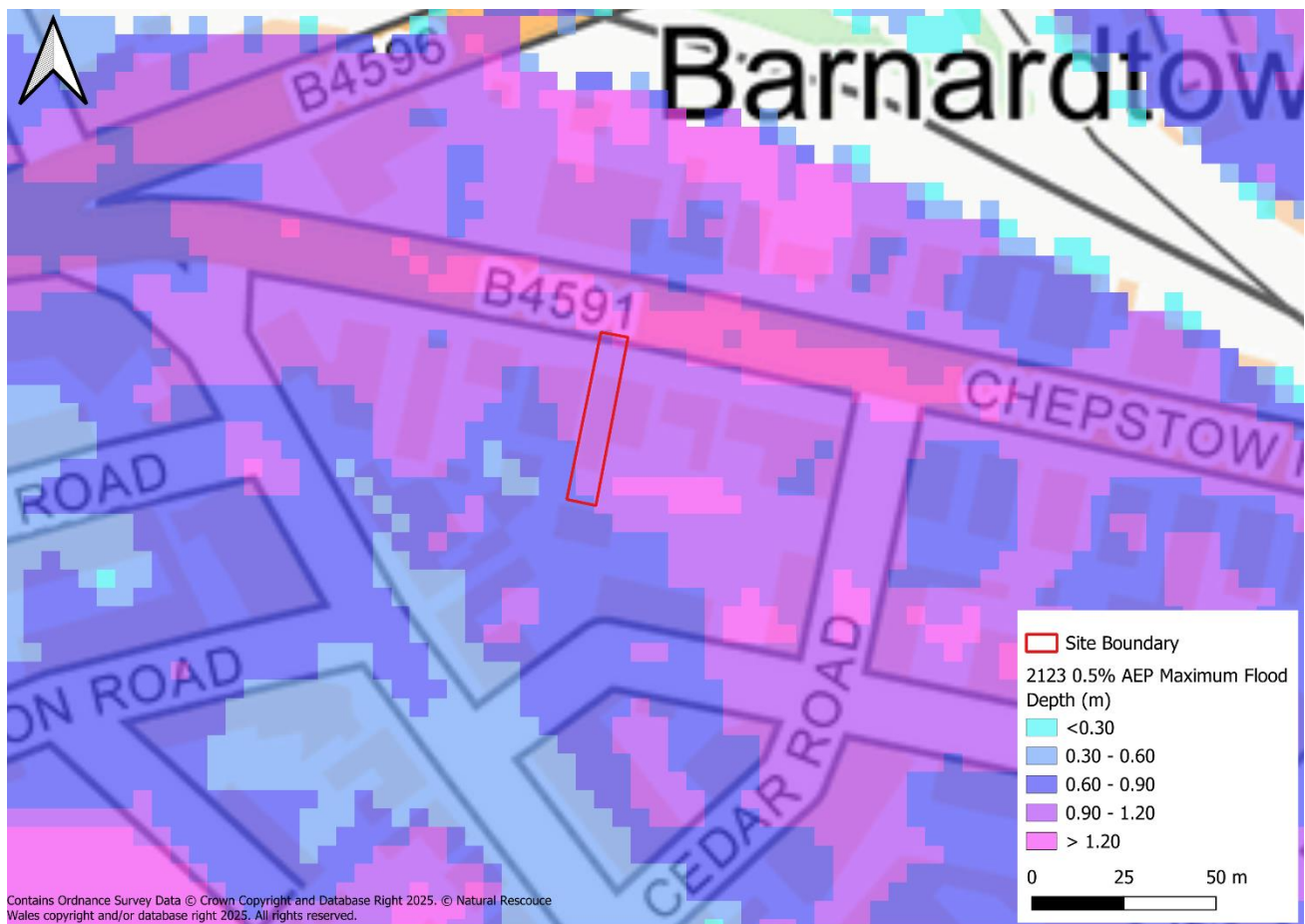


Figure 5-1 2123 0.5% AEP plus Climate Change Event

5.2.2 2123 0.1% AEP plus Climate Change Event

The flood modelling shows that site floods during the 2112 0.1% AEP plus Climate Change event, as shown in Figure 5-2. During this event, the maximum flood depths exceeded 2.0m across the site. The greatest depth of 2.5m is found close to the northern boundary with Chepstow Road. Maximum flood depths within the existing building are predicted to reach an average depth of 2.3m.

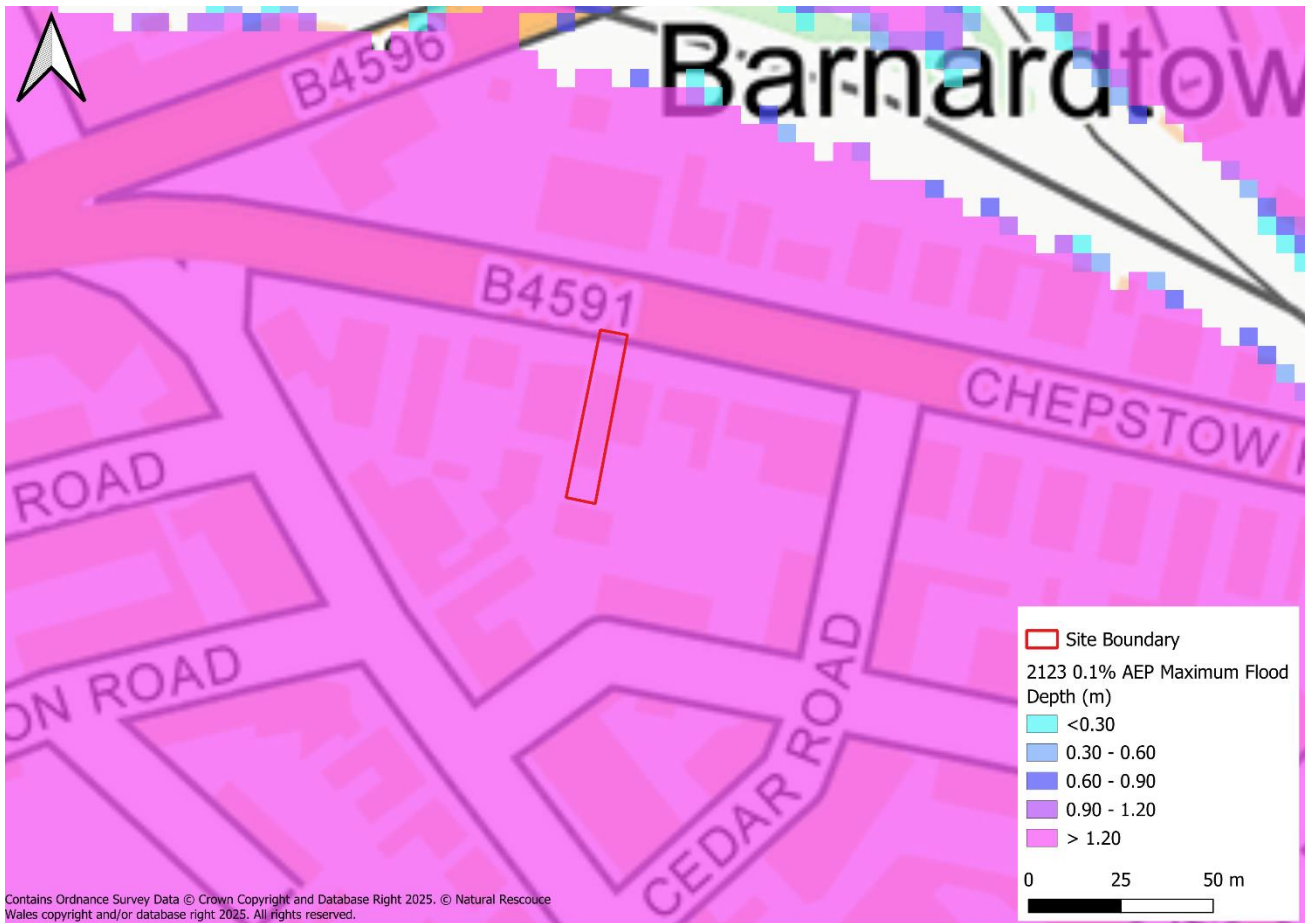


Figure 5-2 2123 0.1% AEP Plus Climate Change Event

5.3 Access and Egress

Access and egress to and from the proposed development site would be restricted due to the flood depths present across the site in both the 0.5% AEP plus climate change and 0.1% AEP plus climate change scenario, as shown in Figure 5-1 and Figure 5-2.

Assuming flood defences are not improved in the future, access to dry land will be unavailable at the site during a tidal event. However, this will be in the context of widespread flooding across large areas of Newport and movement around the city will be extremely limited. It is therefore advisable that residents evacuate the site in advance of flooding or make preparations to shelter in place.

Refer to Section 6 for flood resilience recommendations.

6 Flood Resilience

TAN-15 promotes the flood resilience of existing communities and the incorporation of flood resilience measures for redevelopment sites where there remains an element of flood risk. The redevelopment site is shown to be at risk of tidal flooding during the 0.5% AEP and 0.1% AEP plus climate change events, and flood resilience is therefore integral to whether the consequences of flooding can be safely managed at a site.

Section 13.6 of TAN-15 guides assessments to industry-standard advice on incorporating resistance and resilience into development through design. This section has therefore been prepared in accordance with the CIWEM Code of Practice for Property Flood Resilience and the Ciria Code of Practice for Property Flood Resilience. The code of practice sets out recommendations for mitigation in categories defined as: realignment, resistance, resilience and response. Mitigation in relation to each category and how it can be applied to the proposed development is considered below.

6.1 Realignment

Opportunities to realign the flood receptor (i.e. the proposed development) and realign the flood pathways are set out in **Error! Reference source not found.** Given the predicted extent of flooding to the site in the most extreme design event, there are limited opportunities for realignment.

Table 6-1 Realignment Mitigation

Measure	Description	Feasibility
Realign flood receptor	Sequential approach in layout	The redevelopment proposes that only x2 bedrooms are to be located on the ground floor. These bedrooms will be occupied by support staff on a rolling basis and will not be permanent. By locating these here and allowing the rest of the ground floor space for the less vulnerable and more resilient aspects of the development, the site has been designed to reduce the impacts of flooding as much as possible.
	Raise finished floor levels	It is not practical to change the existing FFL as the building as the building is being retained largely in its current form and format.
	Locate vulnerable elements to first floor	The most vulnerable aspects of this development, i.e the permanent accommodation is located on the first and second floors.

Measure	Description	Feasibility
	Restrict use of building	Flooding occurs at this site but with sufficient lead times to enable Flood Response Plans to be enacted, if required.
Realign flood pathway	Redirect flow pathway	Given the extensive nature of flooding to the site and wider Newport area in the extreme event, no opportunities arise to redirect flow paths to and around the site. To do so may result in detriment to third parties.
	Change ground levels	Not feasible as the existing building footprint is not proposed to change. Additionally, any changes in ground level would potentially increase the risk of flooding elsewhere.
	Sustainable Drainage Systems (SuDS)	Given the nature of flooding to the site and wider Newport area in the extreme event, SuDS would not alter flood flows/volumes.

6.2 Resistance and Resilience

Further to the consideration of realignment measures, it is recommended that the development should adopt flood resistance measures in accordance with the CIRIA Property Flood Resilience Code of Practice.

Flood resistance measures (i.e. keeping water out of the building) are generally feasible for flood depths less than 0.6m. In some instances, it may be feasible to increase these depths, subject to structural design and sign off by a structural engineer.

Resilience measures should be included alongside flood resistance, as keeping water out of the building is unlikely to be 100% effective.

Resistance and resilience measures could include (but not limited to):

- using flood-resistant and resilient materials to above the flood level;
- flood doors or barriers on external entrances;
- raising sensitive equipment, wiring and sockets above the flood level (where practicable);
- locate service entry points above the flood level or seal to avoid creating points of entry for flood water (where practicable);
- ensure access to all spaces internally to enable drying and cleaning; and
- fit non-return valves to drainage pipework for backflow protection against sewer flooding.

6.3 Response

Preparation in how to respond in the event of a flood is a critical mitigation measure.

The site/ building managers should sign up to the NRW's flood warnings to allow the evacuation of the site before a flood event if sufficient warning is provided. The site is located within the Usk Estuary flood alert and the Usk Estuary at Maindee, North Liswerry and Spyttty Pill flood warning area. Flood Warning lead times for tidal flooding are currently around 48 hours.

It is recommended that a Flood Response Plan (FRP) is prepared to inform the management company, staff and residents of the risk of flooding and detail actions before, during and after a flood event. At a minimum, the Flood Response Plan should cover adequate flood warning, evacuation and access/egress routes in the event of flooding for the lifetime of the development. NRW provide guidance⁸ for the production of flood emergency plans. This guidance should be used to inform flood response procedures at the site.

⁸ <https://naturalresources.wales/flooding/preparing-for-a-flood/?lang=en>

7 Flooding and the Plan Led System

7.1 Application of Flood Zone to Development Management Decisions

When considering a site for development, TAN-15 sets out the requirements for the form of development in any given flood zone.

For a proposed redevelopment site within a Defended Zone, such as this one, Section 10.17 of TAN-15 states that;

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.

When considering the requirements of Section 10.17 of TAN-15, the application and use of the site in terms of *over* intensification of use is difficult to determine. The site is located within an urban and predominantly residential area of Newport, surrounded by existing commercial and residential development. The proposed development is unlikely to result in a change of flood risk to the site in comparison to its existing use, with no predicted change in flood depths, extents or frequency as a result of the proposals. However, the proposals will result in the reuse of an existing site within a well-established area of Newport, promoting development in a sustainable location and utilising existing infrastructure. The development would contribute to LPA objectives for the provision of housing and restore the property to its original residential function.

TAN-15 suggests that development proposals on brownfield sites should be considered more favourable where opportunities arise to increase the resilience of a site. Increased resilience can be considered in the form of PFR, flood warnings, and Flood Response Plans. Further information is contained in Section 6 of this report. Resilient design should be incorporated into the masterplanning of the site, in line with the aims and objectives of TAN-15.

In accordance with Section 10.17, Highly Vulnerable Development within the Defended Zone must be compliant with the tolerable conditions set out within Section 11 of TAN-15, which is discussed below.

7.2 Acceptability Criteria

Whether a development should proceed or not will depend on whether the consequences of flooding can be safely managed, including its effects on flood risk elsewhere. TAN-15 sets out the key conditions that should be met to demonstrate that development is appropriate for its location. Therefore, the site has been assessed against the acceptability criteria as set out in section 11 of TAN-15 as required for a redevelopment site located within a TAN-15 Defended Zone.

The site has been assessed against the Acceptability Criteria of Section 11 of TAN-15, as shown in Table 7-1 below.

Table 7-1 Assessment of Acceptability Criteria

TAN-15 Acceptability Criteria	Comments	Achieved
No increase in flooding elsewhere.	As there is no change in the proposed	Yes
Occupiers are aware of the flood risk	The developer shall provide future occupiers with information on the flood risk in the form of this report. Furthermore, it is suggested that the developer encourages future occupants to sign up for NRW Flood Warnings to prevent any access and egress issues during times of flooding.	Yes
Escape/evacuation routes present	Considerable flood warning lead time (>24hrs) should provide plenty of time to evacuate the site safely. This would be dependent on the future occupiers signing up to the NRW Flood Warnings.	Yes
Flood emergency plans and procedures are agreed and in place	A flood response plan will be beneficial to highlight actions to evacuate/stay put in the event of a flood.	Yes
Flood-resistant and resilient design	The site should be carefully designed to provide enhanced flood resilience to the most vulnerable elements of the site.	Yes
Acceptable consequences for the type of use	Detailed in Sections 6.2 and 6.3	Yes

7.3 Frequency Thresholds: Designing Development To Be Flood Free

The required design standard for new development is to be flood free during the 2123 0.5% AEP tidal event, plus an allowance for climate change over the lifetime of development.

This site does not meet this criterion as it's predicted to flood during the 2123 0.5% AEP tidal flooding event. However, in accordance with Section 11.8, this threshold may be applied with more flexibility for redevelopment, and the thresholds are to be used as a guide.

Detailed flood modelling undertaken by JBA shows that the site will remain flood free in the 0.5% AEP plus Climate Change event up to 2097. Therefore, the proposals will comply with requirements of TAN15 for the at least the next 50 years, giving opportunity for flood defences in Newport to be improved in order to keep pace with climate change.

As the development proposal represents no change to the footprint of the existing building, the predicted flood frequency has not changed from that of its current use and represents no intensification of the flood frequency at this site.

Applying the threshold more flexibly, accounting for the fact that there is no change to the risk from its current use and that there will be no flood risk for another 50yrs, it could be argued that improving flood resilience at the property and managing the consequences of any future flooding is more important than the frequency with which it is predicted to flood in 100 years' time.

7.4 Tolerable Conditions: Managing Consequences in an Extreme Flood Event

The flood free thresholds relate to very serious but not the most extreme flood extents. During extreme flood events, there is recognition that it may not be possible to keep development flood-free. Figure 6 of TAN-15 provides indicative tolerable flood depth and velocity conditions for the 0.1% AEP event, including an allowance for climate change. Up to 600mm of flooding is considered tolerable within Highly and Less Vulnerable Developments. In keeping with Section 11.8, some flexibility may be applied to these tolerable conditions if they cannot be reasonably met.

As the proposed developments is for a change of use from commercial to residential, it would not be possible to raise the site or drastically alter the finished floor levels of the site.

The site is located within the tidal flood extent for the 2123 0.5% AEP and the 2123 0.1% AEP events. Maximum flood depths are predicted to be 1.2m and 2.5m, respectively, for the events. Flooding during both events would cause significant flooding within the property, which could not be reduced by flood resilience measures such as PFR.

The proposals will result in no change in flood conditions at the site. Extensive flooding is predicted across Newport during these flood events, which will impact many similar properties. Redevelopment proposals offer an opportunity to increase awareness of flood risk and incorporate appropriate plans and responses to increase the safety of staff and residents, with flood resilience measures being outlined within Section 6.

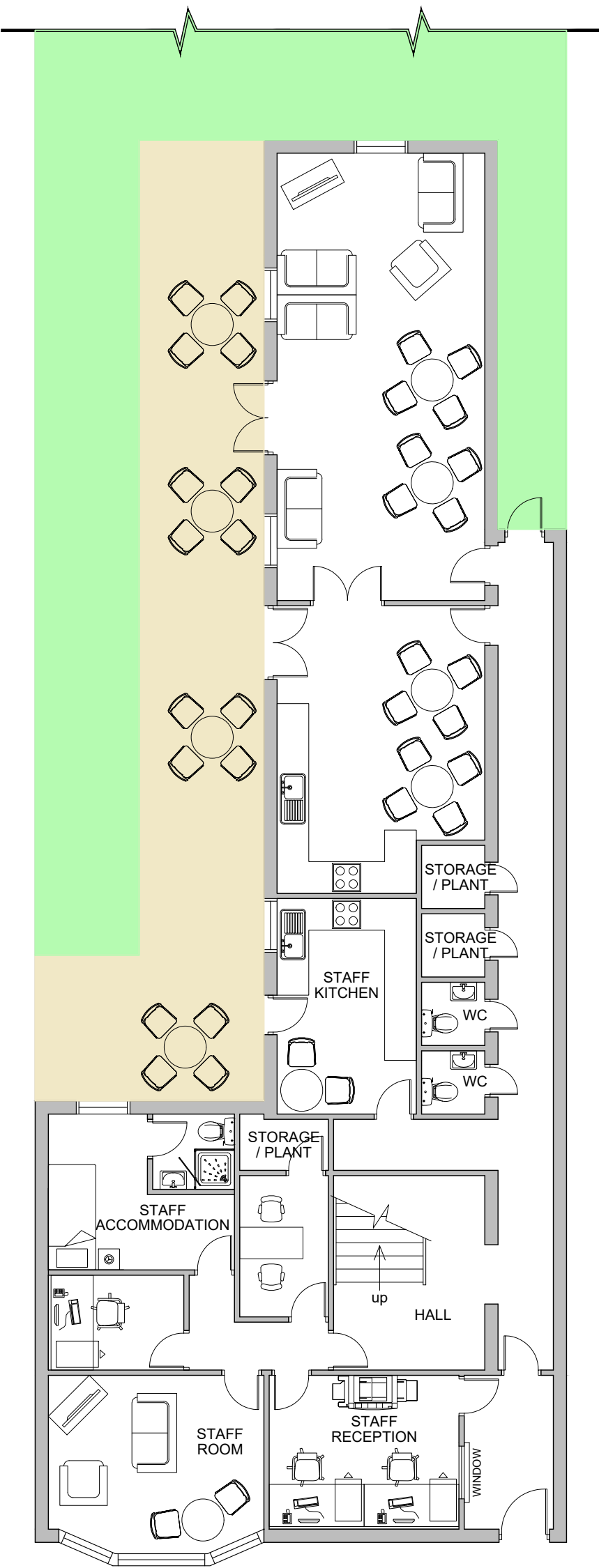
Given the justified flexibility afforded to redevelopment sites, and the proposed flood resilience measures, it is considered that the proposals align with the aims and objectives of the Tolerable Conditions as set out in TAN-15.

8 Conclusions and Recommendations

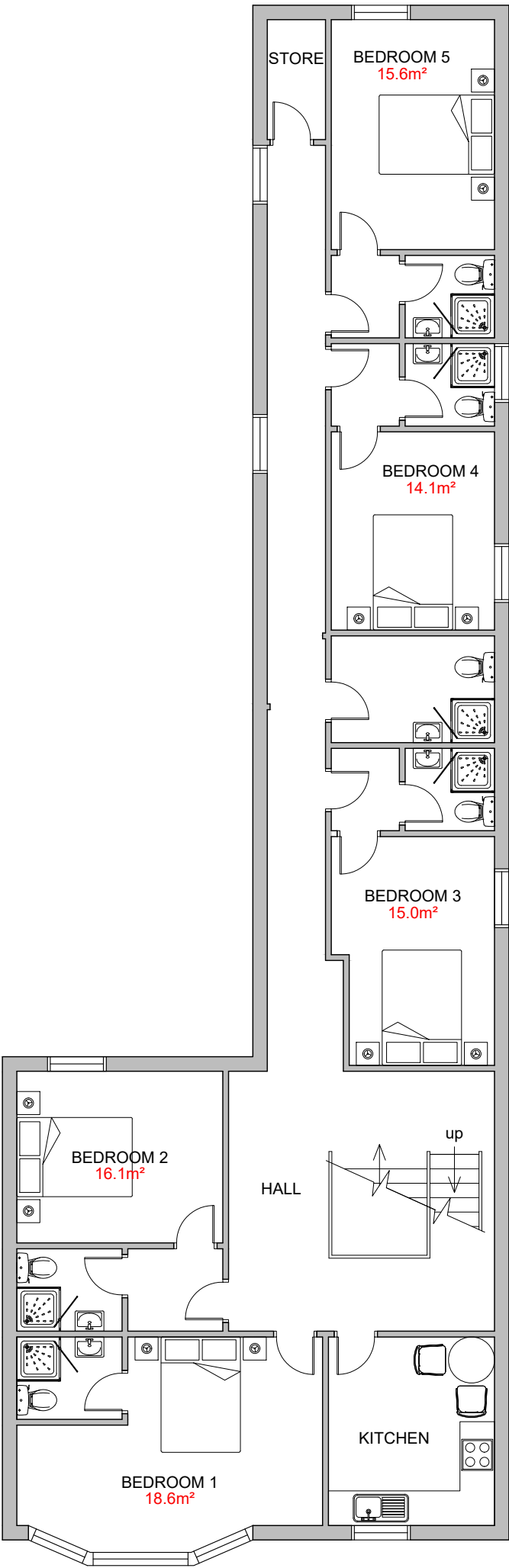
- JBA Consulting were commissioned by Elementum Surveying Ltd to produce a Flood Consequences Assessment (FCA) in support of a planning application. The development proposals are for the conversion of the existing commercial property at 22 Chepstow Road into supported care accommodation.
- The site is approximately 0.042ha in area.
- The site is currently being used as a commercial building, but was previously a residential property.
- Proposal at the site are for the conversion of the property into supported care accommodation, with 10 living apartments, communal kitchen and lounge with ancillary staff accommodation, office/reception area and staffroom.
- As a residential development this is classified as highly vulnerable development under TAN-15 and has an assumed lifetime of development of 100 years.
- The flood risk from rivers, surface water, groundwater, reservoir failure, and sewer are shown to be low/very low across the site.
- The site is shown to be within a TAN-15 Defended Zone for Flood Risk from the Sea. Consequently, a detailed assessment of the tidal flood risk at the site has been undertaken.
- The site benefits from comprehensive NRW flood defences along the River Usk. These typically provide a good standard of flood protection for the next 50 years, after which they will need to be further upgraded to keep pace with rising sea levels. Detailed flood modelling undertaken by JBA shows that the site will remain flood free in the 0.5% AEP plus Climate Change event up to 2097. Notwithstanding the significant age of the building, the FCA is based on an assumed lifetime of development of 100 years.
- By 2123 the site is predicted to flood during the 0.5% AEP plus climate change event and the 0.1% AEP plus climate change event, with maximum predicted flood depths of 1.2m and 2.5m, respectively. The proposals shall result in no change in flood risk in comparison to the existing site use.
- It is recommended that future operators, staff and residents of the site sign up to the NRW flood Warning service for the area and that a comprehensive flood response plan is produced. This, incorporated with other resilient design options as mentioned within Section 6 will reduce the impacts of flooding and increase the resilience of the development.
- The site is located within the TAN-15 Defended Zone. Redevelopment proposals within the TAN-15 Defended Zone are justified provided that they are consistent with the acceptability considerations set out in Section 11 of TAN-15.

- Given the justified flexibility afforded to redevelopment sites, and the proposed flood resilience measures, it is considered that the proposals align with the aims and objectives of the acceptability criteria.
- Consequently, it can be concluded that on the grounds of flood risk, the proposed development meets the requirements set out in TAN-15 and the aims of Planning Policy Wales.

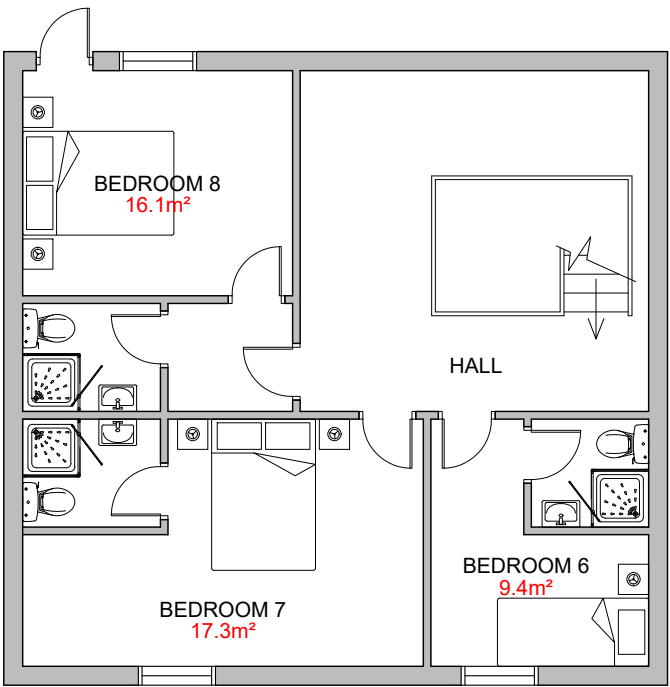
Appendix A



GROUND FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN

PROPOSED LAYOUTS - OPTION B1 - ROOMS WITH EN-SUITES (Averaging 14m² per Room inc en-suite)



Location Plan - Scale 1:1250
Produced on 02 July 2024 from the Ordnance Survey National Geographic Database and incorporating surveyed revision available at this date.
This map shows the area bounded by 331599 188413, 331699 188413, 331699 188513, 331599 188513, 331599 188413
Crown copyright and database rights 2024. OS 100054130. Supplied by mapbox tile trading as UKPlanningMaps.com
a licensed Ordnance Survey partner (OS 100054130)
Data licence expires 02 July 2025. Unique plan reference: v15/1119162/1505856

Notes
Do not scale. All dimensions to be checked on site.
Errors to be reported to supervising officer.



Rev	Drawn	Date
Project : CHEPSTOW ROAD NEWPORT		
Drawing : FLOOR LAYOUT PROPOSALS OPTION B1 - ROOMS WITH EN-SUITES		
Scale at A2:	1:100	Drawn by: S.B.
Des:	D.J.	Checked by:
Date:	JULY 2024	Revision:
Drawing No: ELM-2 / CHEP-RD / 06		



www.elementumsurveying.co.uk
hello@elementumsurveying.co.uk

Offices at

Bristol
Coleshill
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Isle of Man
Leeds
Limerick
Newcastle upon Tyne
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington

Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0)1756 799919
info@jbaconsulting.com
www.jbaconsulting.com
Follow us:  

Jeremy Benn
Associates Limited
Registered in England
3246693

JBA Group Ltd is
certified to:
ISO 9001:2015
ISO 14001:2015
ISO 27001:2022
ISO 45001:2018