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This report describes work commissioned by Tai Hedyn Ltd by an instruction dated 1st December 2025. The Client's representative for the contract was Peter Page of Tai Hedyn Ltd. Hannah Booth of JBA Consulting carried out this work.

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1 Introduction

1.1 Terms of Reference

JBA Consulting (JBA) was commissioned by Tai Hedyn Ltd to undertake a Flood Consequences Assessment (FCA) to support a Section 73 planning application for the redevelopment of a site at Usk Way, Newport. This FCA assesses and demonstrates the suitability of the proposed development and describes the flood mitigation measures recommended to appropriately manage flooding at the site.

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;
- Minimal impact of the proposed development on flood risk generally; and
- Minimal disruption to the sustainable management of natural resources.

2 Site Description

2.1 Site Summary

The proposed development site is located at Usk Way in Newport, as shown in Figure 2-1. The site is located to the east of the A4042 Usk Way in Newport and is 0.86ha. It comprises of brownfield land and has previously been used for temporary car parking.

The site is bounded to the north by a residential building, to the east and south by the River Usk and a footpath, and to the west by the A4042 Usk Way.

The site is accessed from the A4042 Usk Way to the west of the site.

A summary of site details is contained in Table 2-1.



Figure 2-1 Site Overview

Table 2-1 Site Summary

Parameter	Description
Site name	Land at Usk Way
Site area (ha)	0.86
Existing land use	Brownfield land

Parameter	Description
Purpose of development	Residential development
OS NGR	ST 31855 87531
Lead Local Planning Authorities	Newport City Council
Lead Local Flood Authority	Newport City Council

2.2 Site Topography

A topographic survey undertaken by ALT Surveying in January 2021 has been used to assess the site topography. The Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data has been used to provide an alternative visual illustration of the site topography, as shown in Figure 2-2.

Ground levels across the site are generally flat with an average ground level of 9.05mAOD. Site levels are slightly elevated in the north and northwestern areas, with levels up to 9.35m. A lower topographic area is present in the western part of the site, with levels marginally lower than the rest of the site, reaching a low of 8.82mAOD.



Figure 2-2 NRW 1m LiDAR DTM

2.3 Watercourses and Flood Defences

Figure 2-3 and Figure 2-4 shows the locations of the nearest waterbodies and watercourses. The River Usk, an NRW designated main river is located approximately 12m east of the site and is tidally influenced by the Severn Estuary, which is located approximately 5.1km to the south of the site, as shown in Figure 2-4.

No flood defences are present on the western bank of the River Usk, and the site does not benefit from the presence of any flood defences.

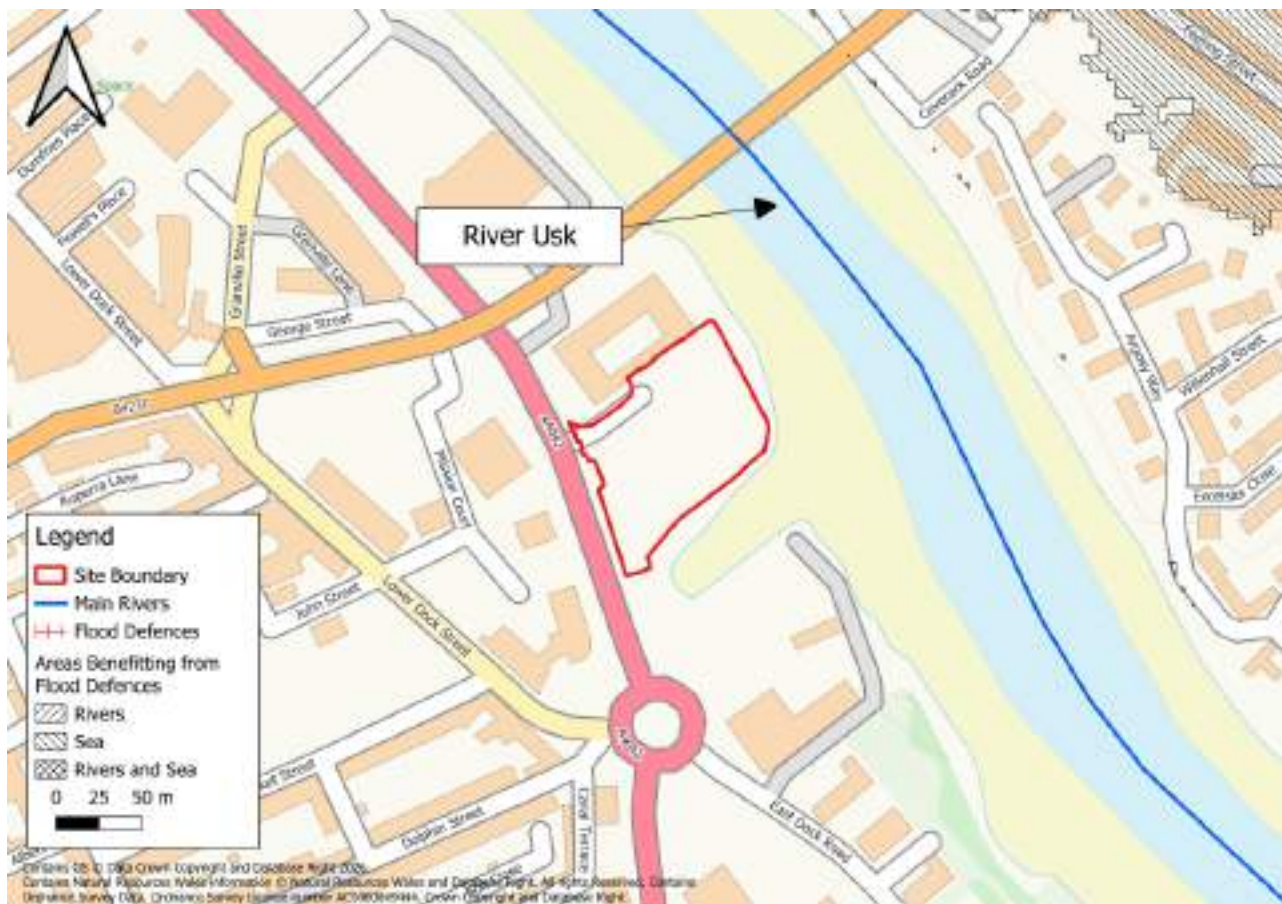


Figure 2-3 Watercourses and Flood Defences

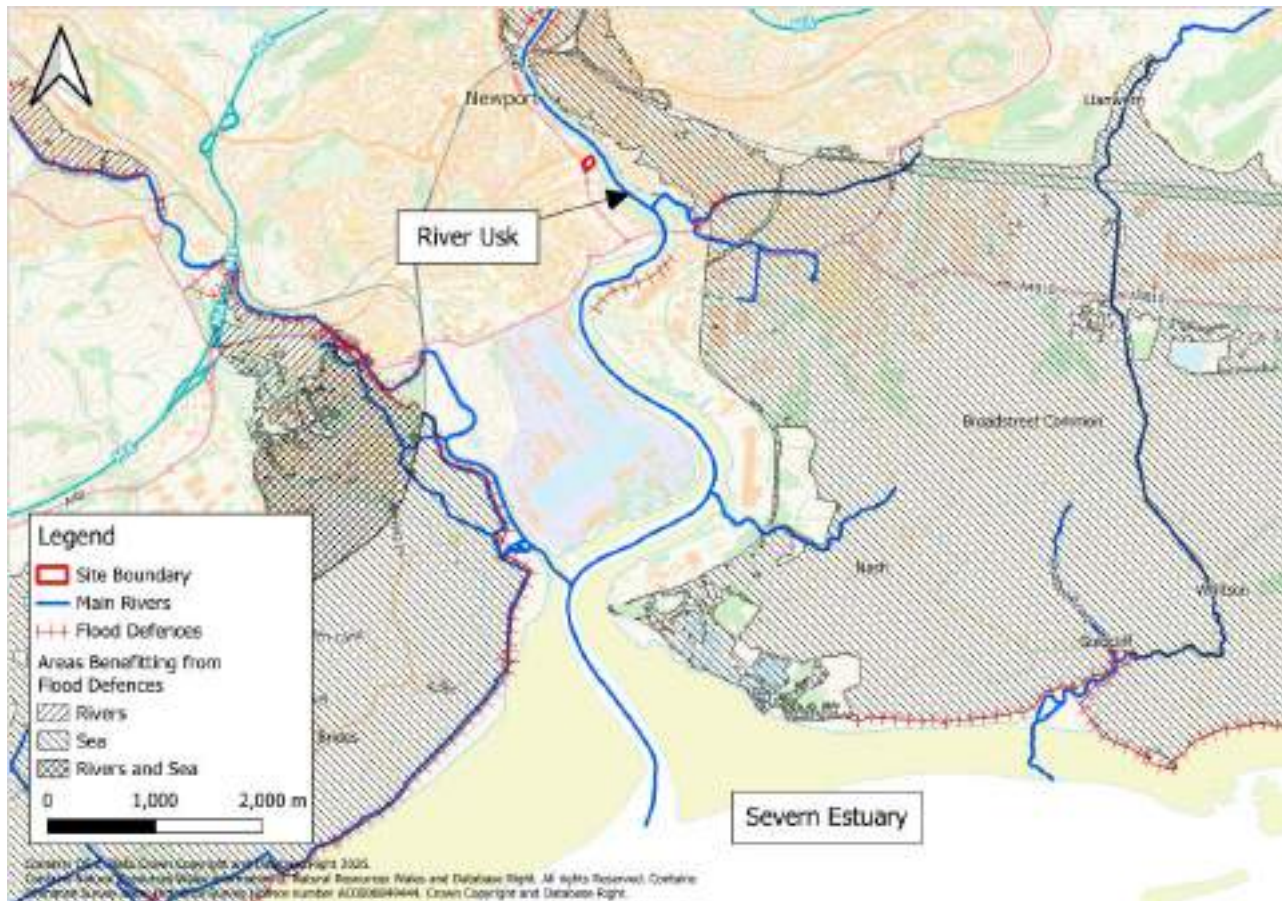


Figure 2-4 Watercourses and Flood Defences- Wider View

2.4 Soils and Geology

The geology of the site has been assessed using the BGS GeoIndex¹. The bedrock geology is shown to be the Freshwater West Formation, comprising interbedded argillaceous rocks and sandstone. The superficial deposits are identified as Tidal Flat Deposits comprising clay and silt.

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

2.5 Planning History

Planning permission under planning reference 21/0983 was granted in 2021 for the development of 122 dwellings, two commercial units (A1 and A3 use classes), and associated works, including landscaping, sustainable drainage, and car and cycle parking. The development will comprise of five blocks, labelled A-E, as shown in Figure 2-6. The

¹ GeoIndex - British Geological Survey

² LandIS - Land Information System - Soilsmap soil types viewer

conditions for approval included that the development would be built in accordance with the submitted drawings.

As part of this application, a Flood Consequences Assessment was prepared by PHG Consulting Engineers in July 2021. To mitigate future flood risk, the ground and Finished Floor Levels (FFL) on the site will be raised to the levels shown in

Table 2-2. NRW did not object to the FCA, as it was shown that the proposed buildings would be flood free and compliant with TAN-15 criteria.



Figure 2-5 Approved development proposals from previous planning application

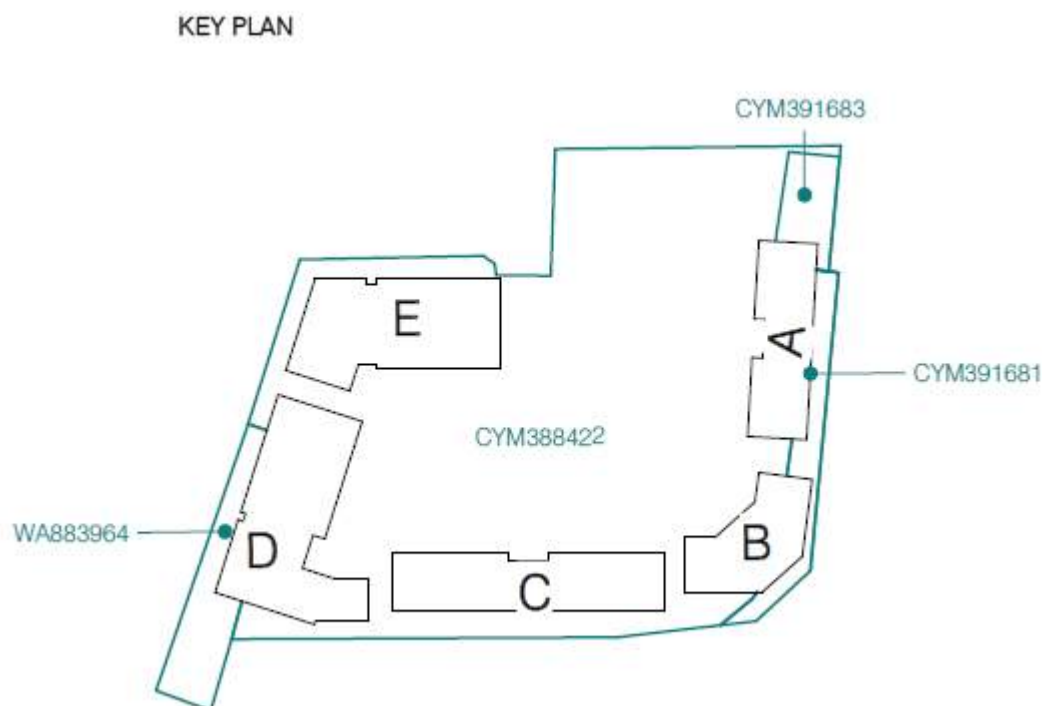


Figure 2-6 Block locations

Table 2-2 Proposed Development Levels

Development Area	Proposed Finished Floor/ Ground Level (mAOD)
Building Ground Floor Level (Blocks A-E)	10.00
Building Patios	9.85
Car Parking	9.85
Access	8.95-9.85

2.6 Development Proposal

It is intended to submit a Section 73 planning application, with a minor alteration of the plans for planning application 21/0983. The proposed levels will remain the same as those previously, with the following changes proposed:

- Apartment Block A- Two maisonettes on ground and first floor replaced with four 1 bed apartments.
- Apartment Block B- Removal of the proposed sixth floor
- Apartment Block C- Three maisonettes on ground and first floor replaced with six 1 bed apartments.
- Apartment Block D- Removal of proposed sixth floor and ground floor commercial unit split into two commercial units. Adjacent Bike Store has been changed to Plant Room.

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 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

"The National Strategy is clear that risk needs to be managed appropriately, and the TAN requires a proportionate response depending upon that risk. It is evident that many communities are located in areas at higher risk from flooding, but these communities must be allowed to adapt, change, and regenerate in the knowledge of what the science is showing." TAN15 8.3

Consequently, TAN15 recognises two key forms of development; New Development and Redevelopment. The definition of both terms is provided 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 2.5, development proposals are for the construction of residential and commercial buildings on a previously developed site; therefore, 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 a residential and commercial development and is consequently classified as a **Highly and Less Vulnerable Development**.

Table 3-2 Vulnerability Classifications

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 are used to provide emergency shelter in times 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 residential and commercial development, the 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 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 - Flood Risk from Rivers

The proposed development site is located entirely within Flood Zone 1 of the NRW Flood Map for Planning - Flood Risk from the Rivers, as shown in Figure 3-1. Flood Zone 1 represents areas that have a less than 0.1% AEP (1 in 1000 year) chance of flooding from fluvial sources. Flood Zone 1 is shown as transparent on the FMfP.



Figure 3-1 FMfP - Flood Risk from Rivers

3.5.2 Flood Map for Planning - Flood Risk from the Sea

The site is entirely located within Flood Zone 3 of the Flood Map for Planning for the Sea, as shown in Figure 3-2. Flood Zone 3 represents areas that have a greater than a 0.5% AEP chance of flooding in a given year, including climate change.

This source of flood risk is assessed in detail in Section 5 of the FCA.



Figure 3-2 FMfP - Flood Risk from the Sea

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

The proposed development site is located entirely within Flood Zone 1 of the NRW Flood Map for Planning - Flood Risk from Surface Water and Small Watercourses.

Flood Zone 1 represents areas that have a less than 0.1% AEP (1 in 1000 year) chance of flooding from surface water and small watercourses and is shown as a transparent layer in Figure 3-3.



Figure 3-3 FMfP Flood Risk from Surface Water and Small Watercourses

3.6 Newport City Council Local Development Plan

The Local Development Plan (LDP) is a land-use strategy document in which the council outlines its development objectives over a 15-year period. The current Newport City Council LDP³ covers the years 2011 to 2026 and was formally adopted in January 2015.

The proposed development aligns well with the objectives of the Newport Local Development Plan (LDP) 2011–2026, specifically Policy SP10, which aims to deliver 10,350 new homes. Policy H1 identifies how the requirement in Policy SP10 will be met and the main sources of housing land. The proposed development site is among the identified sites that will meet this requirement.

The proposed development further aligns with Policy R8 Small Scale Retail Proposals as it would serve the proposed residential development and surrounding residential and commercial buildings.

Additionally, the development is in line with SP18 of the LDP where it is stated:

³ LDP-Adopted-Plan-January-2015

"Proposals will be favoured which assist the regeneration of the urban area, particularly where they contribute to:

- i) The vitality, viability and quality of the environment of the city centre
- ii) The provision of residential and business opportunities within the urban area
- iii) Re-use of vacant, underused or derelict land
- iv) Encourage the development of community uses where appropriate

The proposed development aligns with point 3 of SP18, which encourages the reuse of vacant, underutilised, or derelict land. In this case, the site is being redeveloped from a brownfield site, which is currently unused, contributing to the regeneration of vacant land.

The development offers a high-density residential and commercial solution that efficiently utilises land, particularly on a brownfield site, supporting the LDP's emphasis on sustainability and regeneration.

4 Flood Risk Assessment

This section assesses the risk to the proposed development site from all data sources of flooding, based solely on a desk-based analysis of existing flood risk data.

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 River	✗	Very Low - The site is located in an area that is at a very low risk of fluvial flooding.
Flood Risk from the Sea	✓	See section 5 for a detailed tidal risk assessment.
Flood Risk from Surface Water and Small Watercourses	✗	Very Low - The site is located in an area that is at very low risk of flooding from surface water and small watercourses.
Flood Risk from Groundwater	✗	Low - The site is located in an area at a low risk of flooding from groundwater.
Flood Risk from Reservoirs	✓	Low - The site is located in an area that is at low risk of flooding from reservoirs.
Flood Risk from Sewers	✗	Low - The site is located in an area that is at low risk of flooding from sewers.

4.2 Historical Flooding

The NRW's map of recorded flood extents does not show any evidence of historic flooding on the site. Furthermore, the Newport City Council's Preliminary Flood Risk Assessment (PFRA)⁴ identified no past flooding events at the site.

4.3 Flood Risk from Rivers

The Flood Map for Planning for Rivers mapping shows that the proposed development site is at very low risk from fluvial flooding (i.e. Flood Zone 1). This means there is a less than 1 in 1000 chance of flooding in any given year (<0.1% AEP), including an allowance for climate change. Therefore, the site is considered to be at a **very low** risk for fluvial flooding.

⁴ Preliminary Flood Risk Assessment Report April 2011

4.4 Flood Risk from Surface Water and Small Watercourses

The Flood Map for Planning for Surface Water and Small Watercourses mapping shows that the proposed development site is at very low risk from surface water and small watercourse flooding (i.e. Flood Zone 1). This means there is a less than 1 in 1000 chance of flooding in any given year (<0.1 % AEP), including an allowance for climate change. Therefore, the site is considered to be at **very low** risk for surface water and small watercourses flooding.

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. This risk of groundwater flooding depends on the nature of the geological strata underlying the site and the local topography.

Newport City Council Flood Risk Management Plan⁵ states that 'groundwater is not considered a significant flood risk' in Newport. The site can therefore be considered of having a **low risk** flooding from groundwater.

4.6 Flood Risk from Reservoirs

The NRW FMFP Flood Risk from Reservoirs map illustrates that the proposed redevelopment site is at risk of flooding from reservoirs, as shown in Figure 4-1.

The site is located within the flood risk extent from the Llandegfedd reservoir, located 22km to the 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**.

⁵ Newport Flood Risk Management Plan Report_Issue for Consultation



Figure 4-1 FMfP Flood Risk from Reservoirs

4.7 Flood Risk from Sewers

Newport City Council's PFRA suggests there is no evidence of historic sewer flooding at the site. The PFRA 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 Tidal Risk Assessment

As identified in Sections 3 and 4, the predominant source of flood risk to the site is tidal. Therefore, to better understand the risk of tidal flooding posed to the site and the potential implications of climate change, further assessment using detailed hydraulic modelling is provided in this section.

5.1 Hydraulic Modelling 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 2025 to incorporate several improvements.

The latest JBA model of Newport has been updated to include the recently completed Crindau flood defences. The ESTRY-TUFLOW version was updated to 2025.1.0-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 Assessments⁶ to consider flood risk for the lifetime of development (100 years).

Table 5-1 summarises the coastal flood boundary data used for updating the tidal boundary conditions in the Newport Tidal Flood Model.

Table 5-1 Coastal flood boundary (CFB) data

Highest Astronomical Tide (HAT) Location	Surge Donor Location	CFB dataset point chainage
Newport	22, Newport	_396

To represent the present-day 2025 scenario, the tidal boundary conditions were uplifted 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 2125 epoch based on the Higher Central allowance (70th percentile) of the UKCIP 18 for 2100, RCP 8.5 dataset. The uplift for the 25 years of additional climate change beyond 2100 was applied based on the dataset's average increase in the last five years. Table 5-2 summarises the sea level rise uplifts applied to the tidal boundary conditions and the resulting peak tide levels for the 2025 model update.

⁶ https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf

Table 5-2 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
2017 (CFB dataset base year)	N/A	8.33	8.67
2025	0.044	8.37	8.71
2125 (70th)	1.087	9.42	9.76
2125 (95th)	1.469	9.80	10.14

Further to the above updates, model performance has been reviewed. This has found that within the updated flood model, 1D negative depths were observed in the 1D domain for the River Usk at cross-section USK08125. Its location is approximately 3km upstream of the proposed development site. Upon further examination, these 1D negative depths occur twice in the simulations for very short periods at low water levels in tidal troughs around 11.75 hours and 48.9 hours and therefore do not impact peak water level results in the 2D domain, which in the area of the proposed development site occurs at around 17.5 hours. 1D negative depths were also observed in the Crindau Pill tributary, also around periods of low water levels in tidal troughs. Again, these do not impact peak water levels in the 2D domain.

The Newport tidal flood model has a coarse grid size of 10m and features below 10m in size may not be fully represented. The 10m grid size, however, 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.

The model was simulated for the higher central allowance (70th percentile) and the upper end allowance (95th percentile) with a lifetime of development of 100 years (year 2125).

5.2 Model Results

5.2.1 2125 0.5% AEP Event

During the 2125 0.5% AEP tidal event, flooding originates from the River Usk and Severn Estuary, flooding a significant area of Newport, and the proposed development site. Figure 5-1 shows the predicted maximum flood depths prior to the development of the site (the baseline scenario) for this event.

Flood depths on the site are up to 0.61m, with the most significant flooding occurring within the western area of the site. The predicted flood level in this event is 9.47mAOD.

As noted in Table 2-2, the ground and Finished Floor Levels of the development site will be raised to mitigate flood risk to the site. To more accurately define predicted flood depths at the redevelopment site in the post-developed scenario, the predicted water level of 9.47

mAOD has been compared with the proposed development levels. These have been summarised in Table 5-3.



Figure 5-1 2125 0.5% AEP Event

Table 5-3 2125 0.5% AEP predicted flood depths at the proposed development site

Development Area	Finished Floor/ ground Levels (mAOD)	Maximum Flood Level (mAOD)	Maximum Flood Depth (m)
Building Ground Floor Level (Blocks A-E)	10.00	9.47	Flood free
Building Patios	9.85		Flood free
Car Parking	9.85		Flood free
Access	8.95-9.85		0.52- Flood free

In the 0.5% AEP plus climate change event, the majority of the site is predicted to be flood-free, with all built elements and car parking areas expected to remain flood-free.

Flood depths of up to 520mm are predicted on the site access where it joins the highway. This flooding is unavoidable to provide a connection to the existing highway.

The change in height to blocks B and D, proposed as part of the section 73 planning application, will not alter the predicted flood depths or the risk of flooding at the site.

5.2.2 2125 0.5% AEP Event with higher end estimate

Section 4.3 of TAN-15 advises that an FCA is required to consider a range of climate change scenarios, including the upper end estimates, making reference to the Welsh Government guidance on climate change allowances for planning purposes.

Figure 5-2 shows the predicted maximum flood depths prior to the development of the site for this event. The 0.5% AEP plus climate change flood event with the higher end estimate applied will have a flood level of 9.88mAOD. The buildings are predicted to remain flood-free in this event.



Figure 5-2 2125 95th percentile 0.5% AEP Event

5.2.3 2125 0.1% AEP Event

Figure 5-3 shows the predicted maximum flood depths prior to the development of the site for the 2125 0.1% AEP flood event. In this event, pre-development, flood depths across the site are predicted to be up to 0.95m. The maximum flood level for this event is 9.82mAOD.

To more accurately define predicted flood depths following the redevelopment of the site, the modelled water level has been compared to the proposed development levels, detailed in Section 2.5. These have been summarised in Table 5-4 and discussed below.



Figure 5-3 2125 0.1% AEP Event

Table 5-4 2125 0.1% AEP predicted flood depths at the proposed development site

Development Area	Finished Floor Level (mAOD)	Maximum Flood Level (mAOD)	Maximum Flood Depth (m)
Building Ground Floor Level	10.00	9.89	Flood free
Building Patios	9.85		0.04
Car Parking	9.85		0.04
Access	8.95-9.85		0.04 - 0.94

The proposed buildings will have an FFL of 10.00mAOD and will therefore be flood-free in this event. The building patios will flood to a depth of 40mm.

The car parking area is predicted to flood with a depth of 40mm. This is extremely shallow, and cars are unlikely to be affected by these depths.

Flood depths of between 40mm to 940mm are predicted to occur in the access road. Levels have been set to allow a connection to the highway, and therefore, depths match those of the surrounding area.

The proposed change in height for blocks B and D, as part of the section 73 planning application, will not alter the predicted flood depths or the risk of flooding at the site.

5.3 Access and Egress

Access to and from the proposed development site may be restricted due to the significant flood depths present across Newport in both the 2125 0.5% AEP and 0.1% AEP events, as shown in Figure 5-3 and Figure 5-4. Access to dry land will be restricted due to the extreme scale of flooding. It is therefore recommended that residents and users of the commercial units sign up for NRW flood warnings, which typically provide 48 hours' advance notice of tidal flooding. Furthermore, the developers are advised to prepare and share a Flood Response Plan for both the residential and commercial elements of the site. This should encourage residents and users of the commercial space to evacuate site prior to a flood event. If residents or users of the site were unable or unwilling to evacuate the site, then it is recommended that they shelter in the buildings, which are predicted to remain flood-free in all design events, until flooding recedes to a safe level. Given the proposed flood mitigation measures, the site will provide dry refuge to residents.

Flooding is likely to be short-lived as tidal water will begin to recede rapidly after the peak of high tide. Further guidance on mitigating the risk of flooding to the proposed development is provided in Section 6 below.

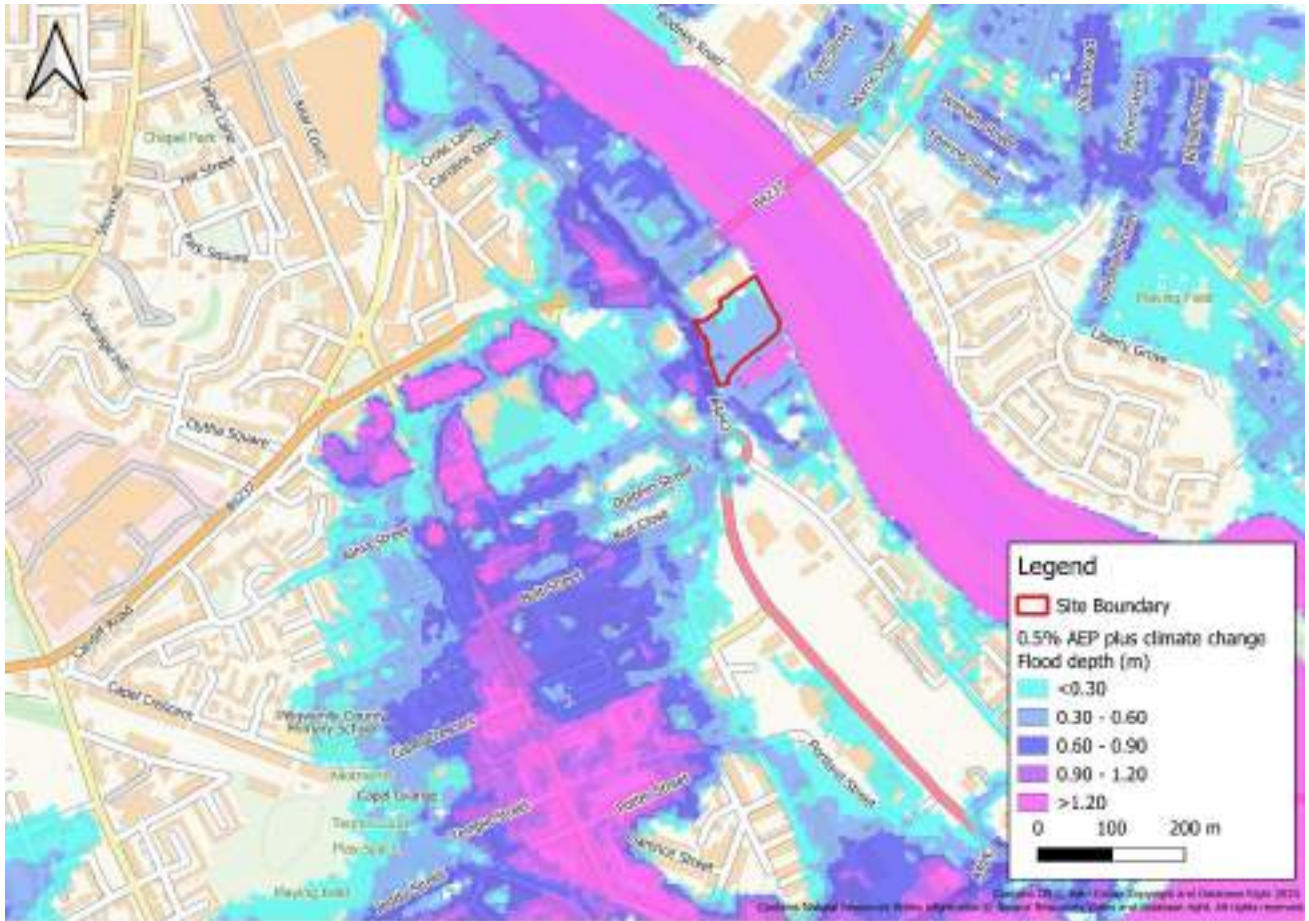


Figure 5-3 2125 0.5% AEP Event - Wider View

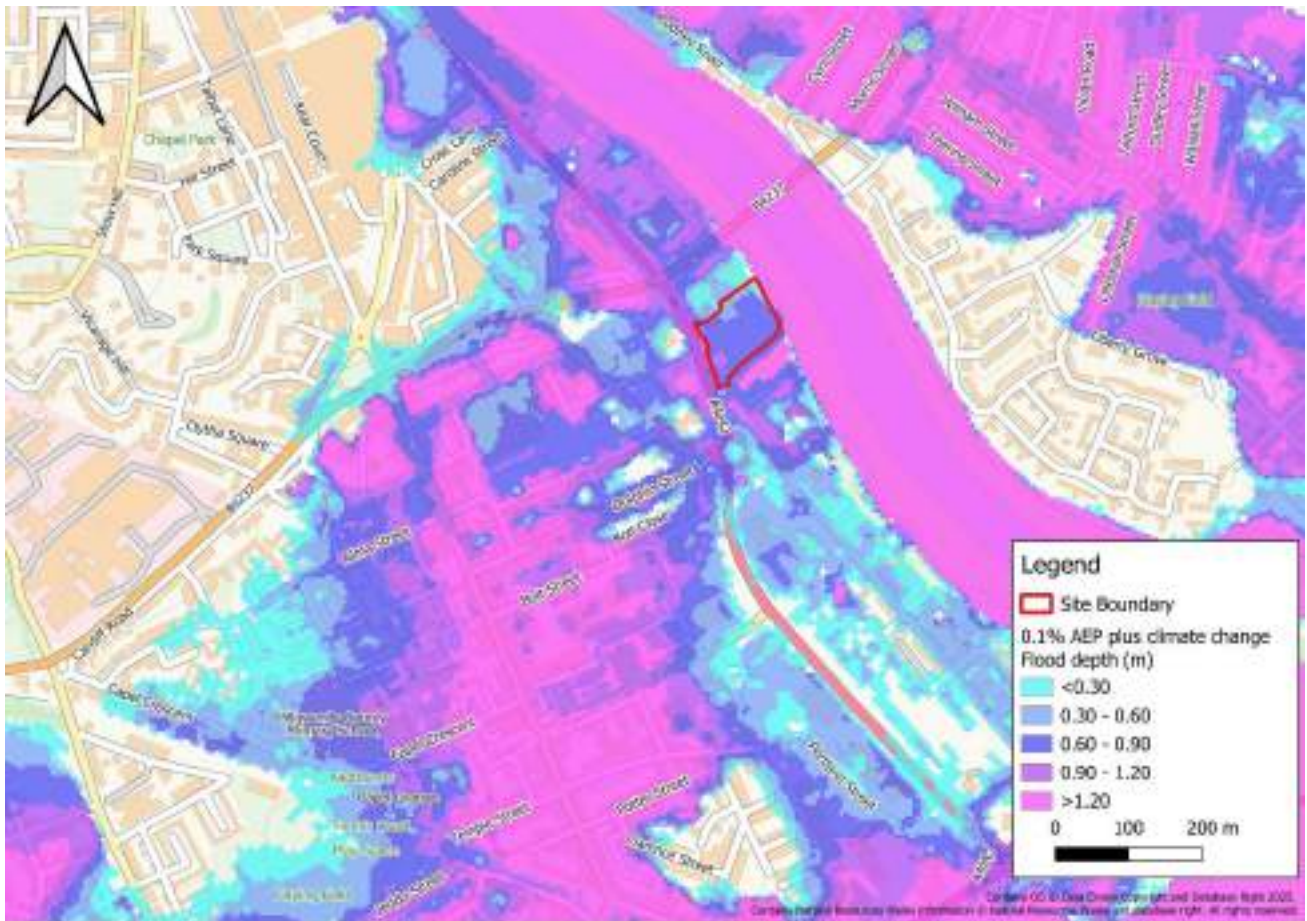


Figure 5-4 2125 0.1% AEP Event - Wider View

6 Flood Risk 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 0.1% AEP plus climate change event, 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 proposed development and realign the flood pathways are set out in Table 6-1. Given the predicted extent of flooding to the site in the most extreme event, there are limited opportunities for realignment, through sequential approach to the proposals have been followed.

Table 6-1 Realignment Mitigation

Measure	Description	Feasibility
Realign proposed development	Sequential approach in layout	The development buildings have been placed on the highest area of the site to ensure the most vulnerable elements are not at risk of flooding.
	Raise finished floor levels	The finished floor levels have been raised in the buildings to protect them from flooding, and the buildings are predicted to be flood free in all events.
	Locate vulnerable elements to the first floor	Highly vulnerable aspects of the development are already located on elevated finished floor levels.
	Restrict use of building	Flooding occurs in the most extreme events, with marginal flooding predicted across the wider site. Sufficient lead times to enable the Flood Response Plan to be enacted. It is recommended that the use of the commercial units be restricted if a flood warning occurs.

Measure	Description	Feasibility
Realign flood pathway	Redirect flow pathway	Given the extensive nature of flooding to the site and wider 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	Ground levels have been altered to ensure they are as high as possible, resulting in very minimal flooding on the site.
	Sustainable Drainage Systems (SuDS)	Given the extensive nature of tidal flooding, SuDS are unlikely to be sufficient to manage flood flows/volumes.

6.2 Resistance and Resilience

Further to the consideration of realignment measures, it is normally recommended that developments should adopt flood resistance measures, where applicable, in accordance with the CIRA Property Flood Resilience Code of Practice. However, the buildings are predicted to be flood-free in all flood events and therefore flood resistance measures are not required.

6.3 Response

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

The site management, commercial unit users and residents of the residential buildings 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 covered by the 'Usk Estuary at Uskmouth and Old Town Docks' Flood Warning Area and the 'Usk Estuary' Flood Alert Area.

NRW flood warnings for tidal surge events are typically provided >48 hours in advance of a flood event. Flood warnings give notice that “flooding is expected” and “immediate action is required”. Such significant lead times provide ample time for residents, site management and users of the commercial units to prepare and respond to a flood warning. On the receipt of a flood warning, residents and users of the commercial units would be advised to evacuate or very closely monitor the situation around high tide; following the advice of the emergency services.

In the event that insufficient warning is provided, residents and users of the commercial units should enact a 'stay put' strategy, remaining in their apartments until the flood event has passed.

The effectiveness, accuracy and lead-in time for flood warnings can reasonably be expected to improve over time and may be significantly improved when the site's flood risk becomes more significant.

It is recommended that a Flood Response Plan (FRP) is prepared to inform the occupants and site users 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 guidance⁹ for the production of flood emergency plans. This guidance should be used to inform flood response procedures at the site.

7 Flooding and the Plan Led System

7.1 Application of Flood Zones to Development Management Decisions

When considering a site for development, TAN15 sets out the requirements for the form of development in any given flood zone:

For a proposed Redevelopment site within Flood Zone 3, Section 10.23 of TAN15 states:

"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."

The proposed development site is situated in an established residential and commercial area of Newport. As noted in Section 3.6, the development proposals contribute to Policy SP10, Policy H1, Policy R8 and Policy SP18. The development site is allocated in the Local Plan for residential development and provides commercial buildings which will serve the building. The redevelopment proposal will result in the re-use and re-vitalisation of an existing site within a well-established residential and commercial area of Newport, promoting development in sustainable locations, where it aligns with the existing uses of the area. It is therefore concluded that the development is essential to the aims of the LDP.

The site has been carefully designed to provide enhanced flood resilience to the most vulnerable elements of the site. This includes ensuring that all residential buildings are flood free in the 0.5% AEP plus climate change and 0.1% AEP plus climate change flood events.

Development must also be compliant with the tolerable conditions set out within Section 11 of TAN15, which is demonstrated in Section 7.2.

7.2 Acceptability of Flood Consequences

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. TAN-15 sets out key conditions that should be met to demonstrate that development is appropriate for its location.

The site has been assessed against the acceptability criteria of Section 11 of TAN-15 as shown in Table 7-1.

Table 7-1 Assessment of Acceptability Criteria

TAN-15 Acceptability criteria	Comments	Achieved
No increase in flooding elsewhere	Given the tidal nature of flood risk to the site, the development is unlikely to result in detriment to third parties. The proposals result in a betterment	Yes

TAN-15 Acceptability criteria	Comments	Achieved
	to flood risk to the site compared to the existing scenario.	
Occupiers aware of flood risk	The building owners will be provided with information on the risk to the site in the form of this report. It is recommended that a Flood Response Plan be prepared to inform future occupiers and users of the risk and to enable them to act safely in the event of a flood.	Yes
Escape/evacuation routes present	As the risk to the site is from tidal flooding, there would be flood warnings with large lead times which would allow people to evacuate the site. The flooding is also likely to be of short duration due to the change in tide levels. Alternatively, the properties themselves can provide safe refuge in a stay put scenario.	Yes
Flood emergency plans and procedures agreed and in place	It is recommended that a Flood Response Plan is developed and put in place prior to occupation of the development.	Yes
Flood resistant and resilient design	The properties FFL's have been raised, meaning that they are shown to be flood-free in all flood events.	Yes
Acceptable consequences for type of use	Detailed in Section 7.2.1 and 7.2.2.	Yes

7.2.1 Frequency thresholds: designing development to be flood free

The required design standard for new development is to be flood-free during the 0.5% AEP tidal event, plus an allowance for climate change over the lifetime of development, as stated in Section 11.7 of TAN-15.

The proposed buildings and the majority of the site are predicted to be flood-free during this event. However, as detailed in Section 5.2.1, the access road is predicted to flood as a consequence of the access road needing to tie into existing highway levels adjacent to the site. TAN-15 affords some flexibility to the frequency thresholds for redevelopment proposals, and it is considered that the risks and consequences of flooding on the site have been acceptably managed.

Consequently, it is considered that the proposals meet the flood frequency requirements of TAN-15.

7.2.2 Tolerable conditions: managing consequences in an extreme flood event

The flood-free thresholds relate to very serious but not extreme flood events. 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 More and Less Vulnerable Developments (such as residential and commercial).

The proposed buildings are predicted to be flood free in this event, and are therefore within the tolerable conditions set out in TAN-15. The building patios and car parking are predicted to flood up to 4mm and are also within these tolerable conditions. Some areas of the site, including the road access are predicted to flood to greater depths, which is unavoidably required to provide access and egress to the site and surrounding infrastructure. Again, TAN-15 affords some flexibility to redevelopment proposals with regards to the tolerable conditions, and it is considered that the risks and consequences of flooding on the site have been acceptably managed.

It is therefore concluded that the proposals meet the tolerable conditions, as outlined in Figure 6 of TAN-15.

8 Conclusions

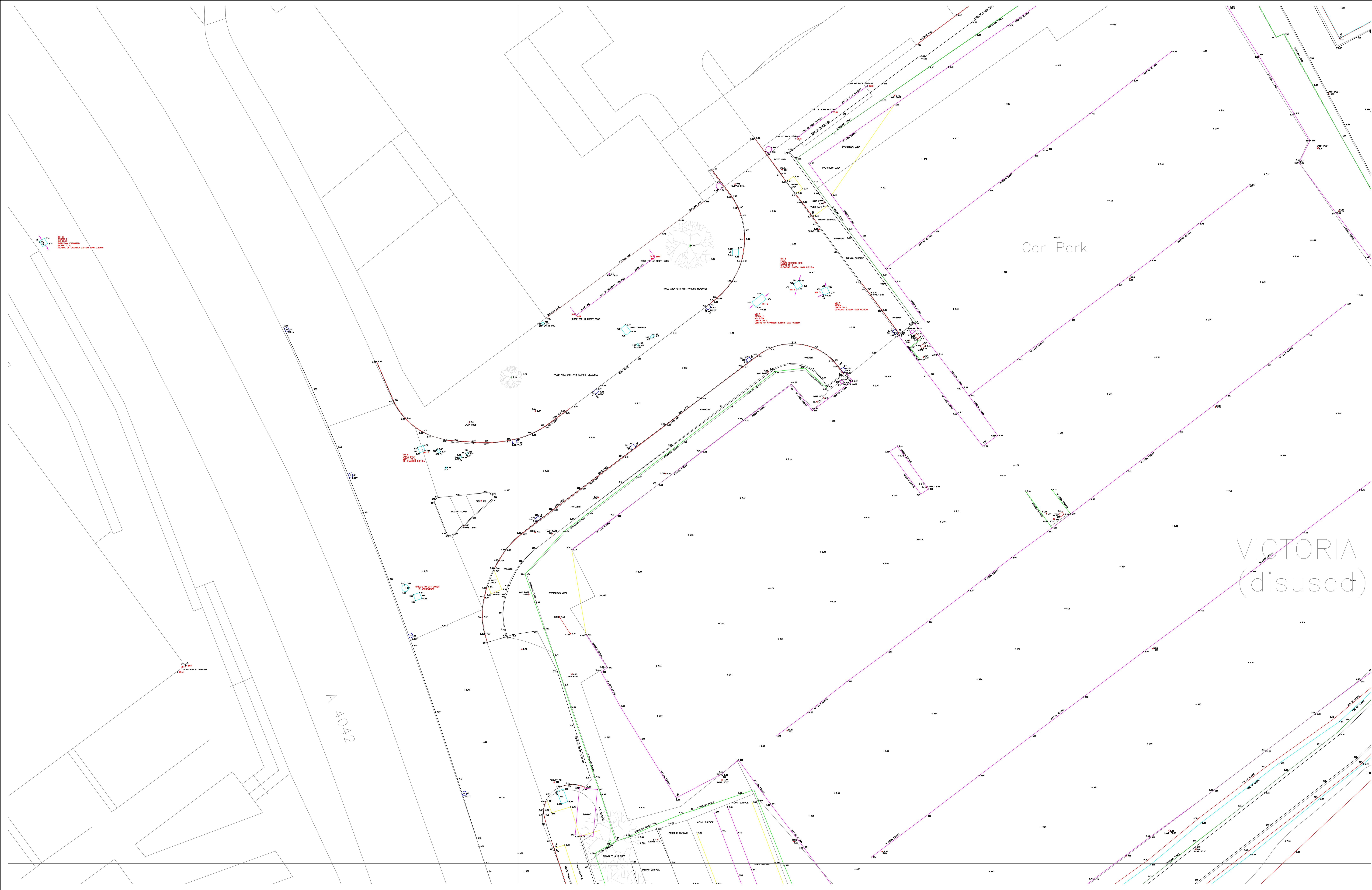
- JBA Consulting (JBA) was commissioned by Tai Hedyn Ltd to undertake a Flood Consequences Assessment (FCA) to support a Section 73 planning application for the redevelopment of a site at Usk Way, Newport.
- The proposed development site is located at Usk Way in Newport and is 0.86ha.
- Planning permission under planning reference 21/0983 was granted in 2021 for the development of 122 dwellings, two commercial units (A1 and A3 use classes), and associated works, including landscaping, sustainable drainage, and car and cycle parking. The development will comprise five blocks. The conditions for approval included that the development would be built in accordance with the submitted drawings. As part of this application, a Flood Consequences Assessment was prepared by PHG Consulting Engineers in July 2021. To mitigate future flood risk, the ground and FFL on the site were proposed to be raised.
- This FCA supports the submission of a Section 73 planning application, with a minor alteration of the plans for planning application 21/0983. The proposed levels will remain the same, with changes proposed to the number of apartments, split of the commercial space in Block D to two units, and removal of the sixth floor for blocks B and D.
- The site is located in Flood Zone 3 of the Flood Map for Planning for the Sea.
- There is little to no risk of fluvial, surface water, groundwater, sewer or reservoir flooding.
- The JBA Usk Tidal flood model has been used to assess the tidal flood risk. Updates have been made to tidal conditions applied to the model to align with the latest climate change guidance. This modelling has provided detailed information on flood levels and depths for the full range of TAN15 design events.
- Following development, in the 0.5% AEP plus climate change event, all blocks and the car parking areas are predicted to be flood-free. The site access is predicted to flood to depths of 520mm where it joins the public highway. This flooding is unavoidable to provide a connection to the existing road network.
- In the most extreme event, the proposed buildings will be flood-free. The building patios and car park are predicted to flood to a depth of 40mm. Flood depths of between 40mm to 940mm are also predicted to occur on the access road.
- Given the potential risk of tidal flooding across the site, it is recommended that a Flood Plan be developed for future occupants. At a minimum, this plan should address flood warnings, evacuation procedures, and safe access and egress routes for the lifetime of the development.

- Both the development plans already submitted by and approved under planning application 21/0983 and the proposed alterations to these plans proposed as part of the Section 73 planning application meet the requirements set out in TAN-15 and aims of Planning Policy Wales.

A Topographic Survey



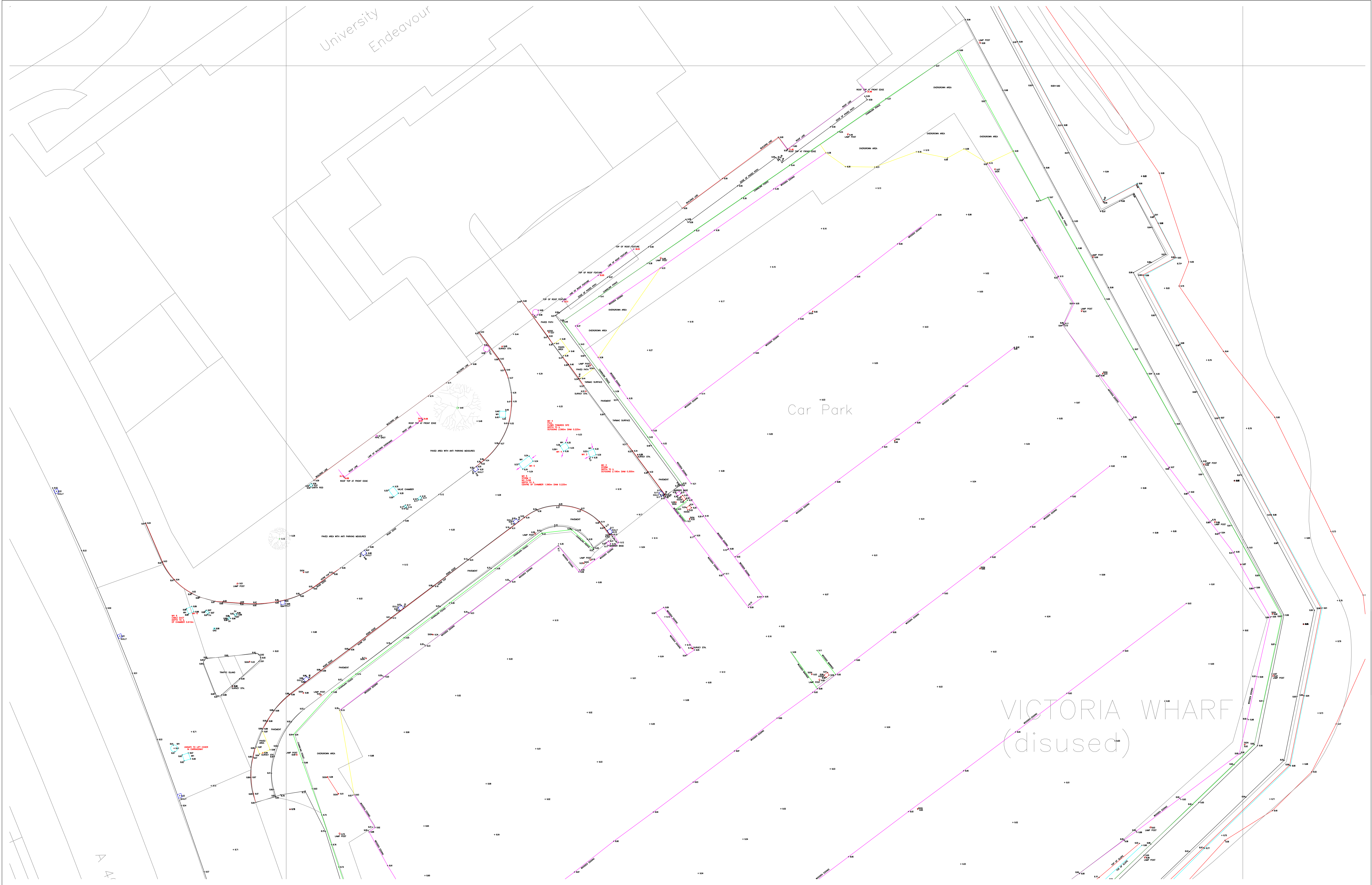
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										Title SITE SURVEY						
					Scale (A0) 1:125		Datum NEWLYN				Project Code		Drawing No. 163061		Issue 1	



1	FIRST ISSUE	AA			01-21
Issue	Description	Auth.	Ctd.	Appd.	Date

Notes					

Client PENTAN		Project USK WAY NEWPORT			
Scale (A0) 1:125		Title SITE SURVEY			
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B Development Proposals



-  Norm. 550mm Raised Planters
-  1100mm Metal Railings
-  1100mm Brick Wall
-  Knee-rail fencing
-  Grass
-  Block paving
-  Bench / seating
-  1100mm high PPC mild steel gate

Schedule of Accommodation

5 x 3 Bed Maisonettes
68 x 2B Flats
49 x 1B Flats

Total Unit numbers: 122

Commercial

A3 Commercial 02: 79.4m²

Vehicle Parking:

Car Parking Spaces: **55**
Wheelchair Accessible Spaces: **3**
Electric Vehicle Parking Spaces: **7**
Motorcycle Parking Spaced: **3**
Long stay cycle parking spaces: **110**
Short stay cycle parking spaces: **18**

P1	Issued for approval	BD	AL	10.06.26
Rev.	Description	Drawn	Check	Date

FOR APPROVAL

pentan
architects

22 Cathedral Road
Cardiff CF11 9LJ
t. 029 2030 9010
info@pentan.co.uk

Project
Usk Way, Newport

Client

Drawing Title

Proposed Site Plan

Job no.	Org.	Zone	Level	Type	Role	Description	Status	Rev.
4211	- PEN	- ZZ	- ZZ	- DR	- A	- 1101	S4	P1

As indicated @ A1

Jun' 26

NOTES: Do not scale. All dimensions are in millimetres unless stated otherwise



Secured by Design Notes

The external Bike Store (adjacent to Block B) will need to be supplied by a Secured by Design Certified company.

Pedestrian paths between apartment blocks leading to the courtyard to be well lit.

CCTV coverage of the site is highly recommended.



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