

# The New Fleurs - Flood Consequences Assessment

**Version 1**

**Date October 2024**

**Prepared for:**

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This report describes work commissioned by Ashley Rees on behalf of Cardiff Community Housing Group (CCHG) by an instruction dated the 3rd of September 2024. George Williams of JBA Consulting carried out this work.

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## Abbreviations

AEP	Annual Exceedance Probability
BGS	British Geological Survey
C1	Benchmarking system using GPS
DTM	Digital Terrain Model
FCA	Flood Consequence Assessment
FMfP	Flood Map For Planning
LDP	Local Development Plan
LiDAR	Light Detection And Ranging
NGR	National Grid Reference
NRW	Natural Resources for Wales
OS	Ordnance Survey
OS NGR	Ordnance Survey National Grid Reference
PPW	Planning Policy Wales
TAN-15	Technical Advice Note 15: Development and Flood Risk

# 1 Introduction

## 1.1 Terms and References

JBA Consulting were commissioned by Cardiff Community Housing Group (CCHG) to prepare a Flood Consequences Assessment (FCA) to support the development proposals at the former East Fleurs Social Club, Portmanmoor Road, Cardiff. 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 and Flood Risk (TAN-15). Where appropriate, the following aspects of flood risk should be addressed in all planning applications over its expected lifetime in flood risk areas:

- The likely mechanism of flooding
- The likely source of flooding
- The depths of flooding through the site
- The speed of inundation at the site
- The rate of rise of flood water through the site
- Velocities of floodwater across the site
- Overland flow routes
- The effect of access and egress and infrastructure, for example. Public sewer outfalls
- Combined sewer outflows, surface water sewers and effluent discharge pipes from wastewater treatment works
- The impacts of the development in terms of flood risk on neighbouring properties and elsewhere on the floodplain.

## 2 Site Description

### 2.1 Site Summary

The site is located on Portmanmoor Road, in the Splott area of Cardiff. The site is approximately 1.8km from Cardiff City Centre. The 0.053ha site is currently a disused sports and social club with access from Portmanmoor Road. Figure 2-1 below depicts the site location.

The site is bounded to the north by East Tyndall Street / Walker Road, to the east by Portmanmoor Road, to the south by industrial/ commercial units and to the west by Portmanmoor Road Lane. The site has a secondary access from Walker Road. A summary of site details is contained in Table 2-1.

The development site predominantly contains the building footprint. The structure of the existing building forms the boundary of the site, with an open courtyard to the centre, accessed via a gate to Walker Road.

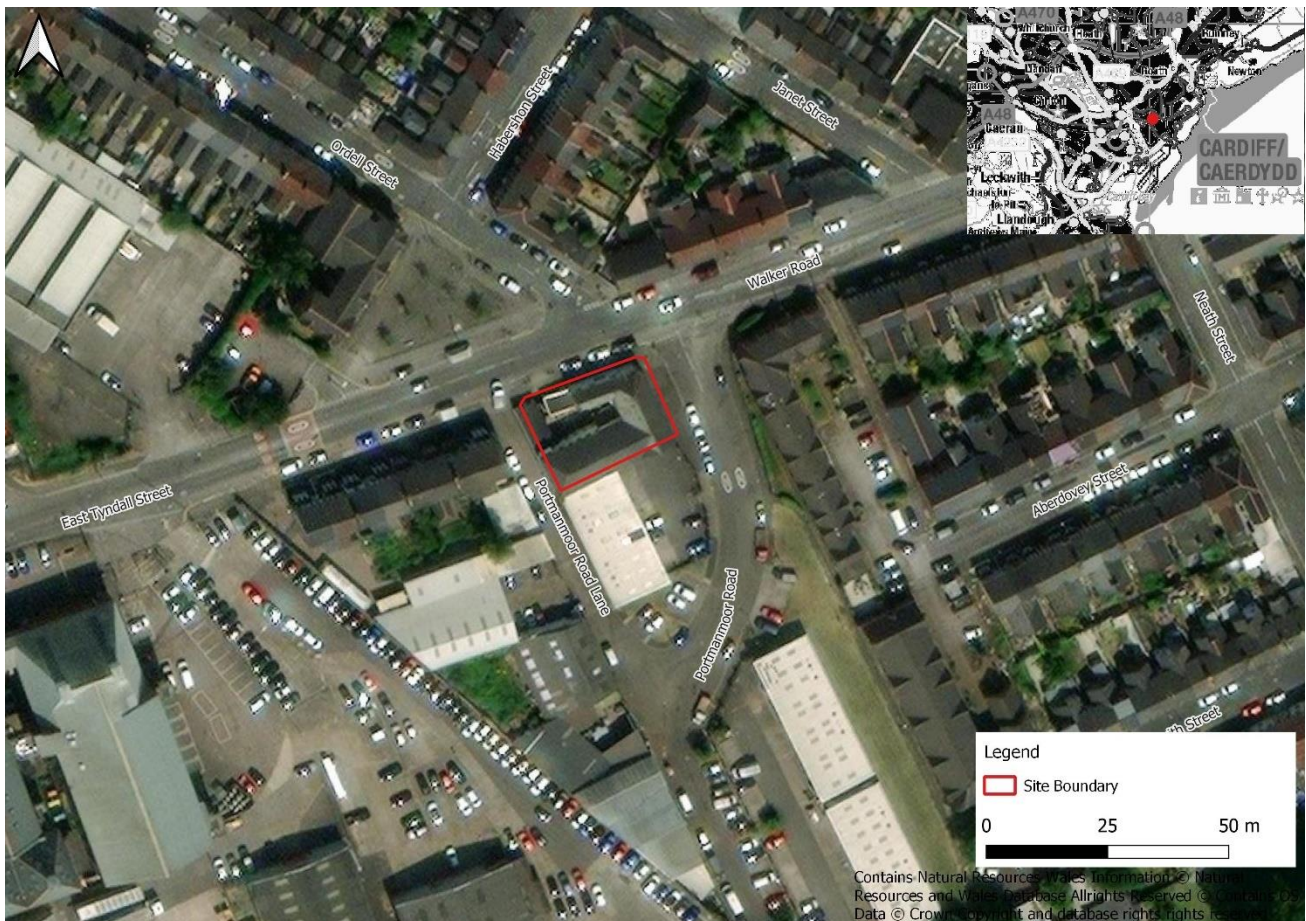


Figure 2-1 Site Overview

Table 2-1 Site Summary

Site Name	The New Fleurs
Site area (ha)	0.053
Existing land use	The New Fleurs Social Club
Purpose of development	Residential Flats
OS NGR	ST 20122 76344
Local Planning Authorities	Cardiff Council

## 2.2 Site Topography

A topographic survey of the site was undertaken by Zenith Land Surveys LTD in August 2024, and is contained in Appendix A. The development site predominantly contains the building footprint. The structure of the existing building forms the boundary of the site, with an open courtyard to the centre. The topographic survey shows that levels across the courtyard are relatively flat with levels ranging from 7.84mAOD to 7.99mAOD.

Ground levels of the external footprint of the building are also relatively flat, with ground levels along Portmanmoor Road Lane ranging from 7.22mAOD to 7.83mAOD at the northern extent of the building. Along Portmanmoor Road, ground levels range from .88mAOD to 7.98mAOD, again with a shallow rise from south to north.

The topographic survey does not provide Finished Floor Levels (FFLs) but does provide threshold levels at a number of locations. The rear access to the building, on Walker Road, has a threshold level of 8.05mAOD. The main entrance, on Portmanmoor Road has a level of 7.91mAOD. In addition, the property has a basement which is accessed via steps down from the courtyard. The threshold of the basement entrance is 5.95mAOD.

Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data has been used to provide a visual summary of the site levels and is shown in Figure 2-2 below. The NRW LiDAR data is consistent with the values shown on the topographic survey.

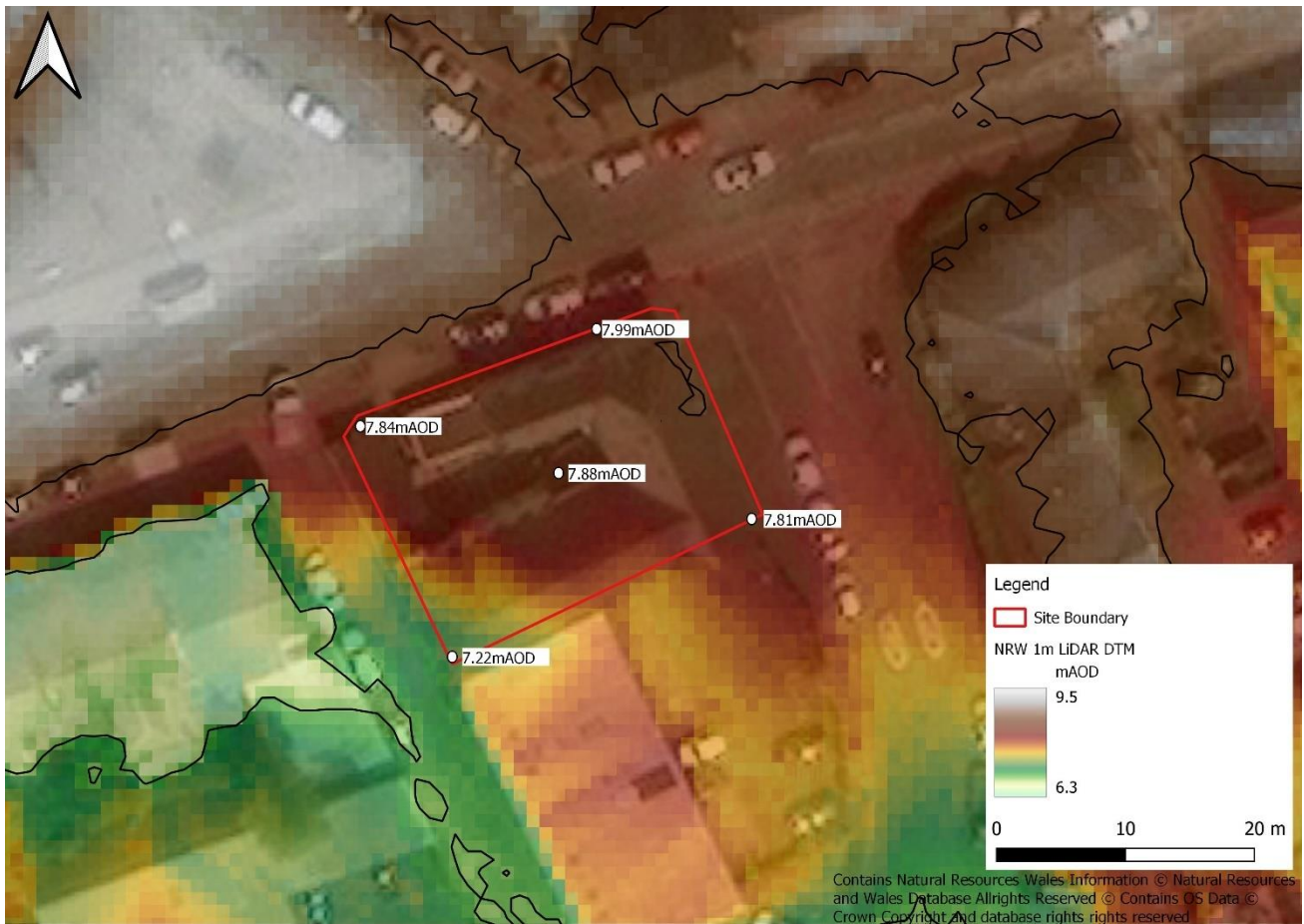


Figure 2-2 NRW 1m LiDAR DTM

### 2.3 Watercourses and Flood Defences

No watercourses cross the proposed development site, as shown in Figure 2-3 below. The nearest Main River is the River Rhymney, located approximately 1.8km to the east of the proposed development site. The River Taff is located approximately 2.0km to the west of the site. The site is not located in an area that currently benefits from the presence of flood defences.

Planning permission (planning reference-21/02138/MJR) was granted in September 2021 for the Cardiff Coastal Flood Defence scheme. This scheme will provide improved flood defences along the banks of the River Rhymney and the Severn Estuary. The coastal defences comprise four main sections and will enhance the standard of protection across this area to increase resilience to climate change for much of eastern Cardiff including the area of Splott, in which the site is located.

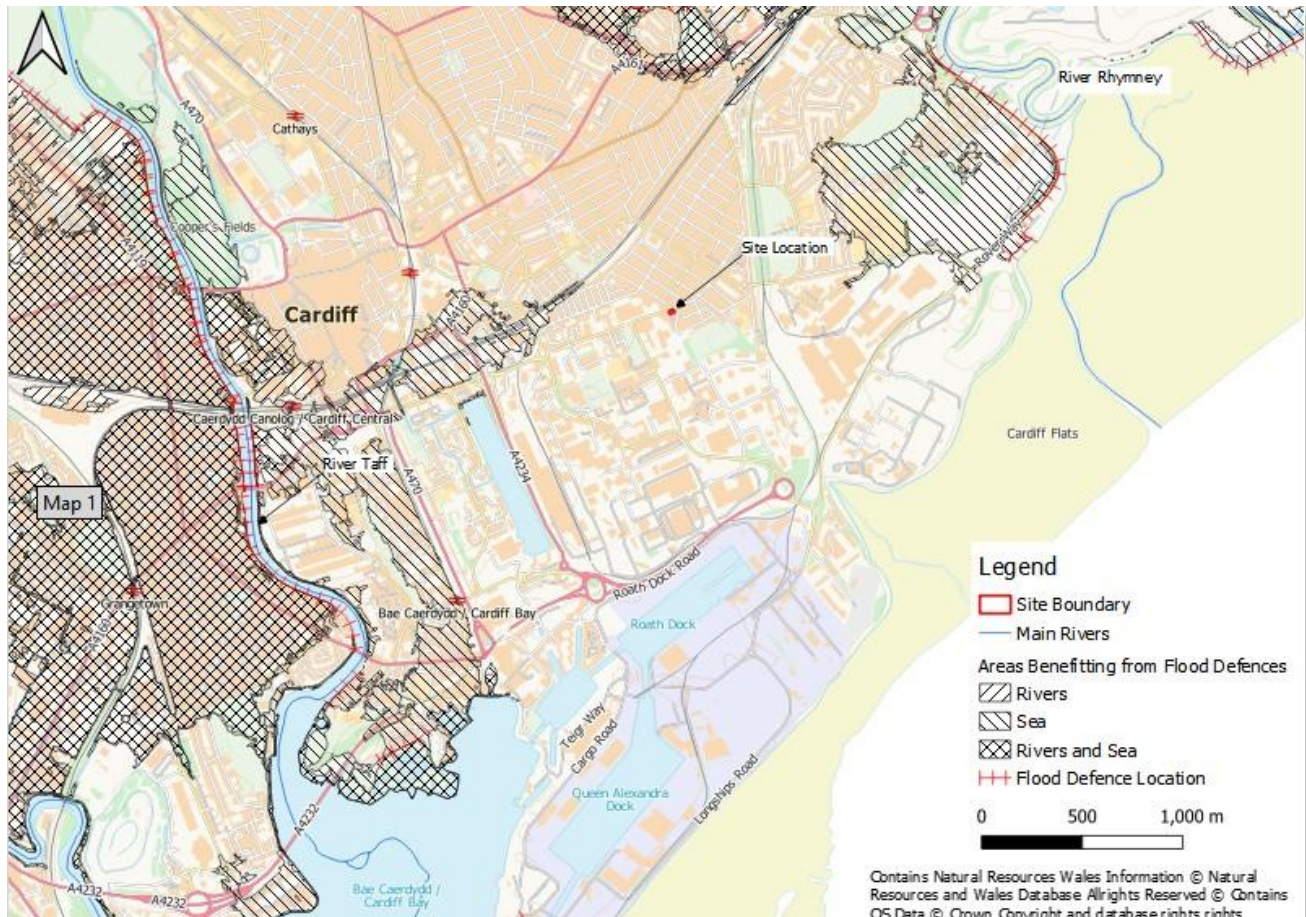


Figure 2-3 Watercourses and Flood Defence Location

## 2.4 Soils and Geology

The geology of the site has been assessed using the BGS GeoIndex<sup>1</sup>. The bedrock geology is shown to comprise of Mercia Mudstone bedrock with superficial deposits of Tidal Flat Deposits (TFD) comprised of clay, silt and sand.

The soils on site have been assessed on the Cranfield University Soilscales Viewer<sup>2</sup>. The underlying soils are shown to be freely draining acid soils.

## 2.5 Proposed Development

Development proposals are for the demolition of the existing New Fleurs Social Club and the construction of a new four-story apartment block. The apartment block will be built to Welsh Development Quality Guidance (WDQG) standard with the aim of providing quality residential apartments within the Splott area of Cardiff.

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

<sup>2</sup> Soilscales soil types viewer - Cranfield Environment Centre. Cranfield University ([landis.org.uk](http://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 have the aim that all development in Wales is 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), introduced by the Welsh Government in 2004, provides technical guidance relating to development planning and flood risk in Wales. The initial requirements of TAN-15 are to identify the vulnerability classification(s) and flood zones relevant to the proposed development and to apply this information to the application of the justification test.

An update for TAN-15 was released in October 2021 and was due to come into force on the 1<sup>st</sup> of December 2021. However, the Welsh Government subsequently suspended the implementation of the new TAN-15 and it is uncertain as to when this shall now come into force. Although the new TAN-15 is not a material consideration, the Welsh Government and NRW advise that some consideration is given to the draft Flood Map for Planning (FMfP) as the best available information. Therefore, where a site is located in an FMfP flood risk zone it is recommended that an FCA is carried out.

As a result of the above, both the DAM and the FMfP are considered as part of this FCA.

### 3.2 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 development and is consequently classified as **Highly Vulnerable Development**.

Table 3-1 TAN-15 Vulnerability Classification

Development category	
Emergency services	Hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood.
Highly vulnerable development	<b>All residential premises</b> (including hotels and caravan parks), public buildings, (e.g., schools, libraries, leisure centres), especially vulnerable industrial development and waste disposal sites.

Development category	
Less vulnerable development	General industrial, <b>employment, commercial</b> and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites.

### 3.3 Lifetime of Development

The Welsh Government's latest technical guidance for climate change states:

When considering new development proposals, Technical Advice Note 15: Development, Flooding and Coastal Erosion (TAN-15) states that it is necessary to take into account of the potential impact of climate change over the lifetime of development. A rule of thumb is that residential development has a lifetime of 100 years while a lifetime of 75 years is assumed for all other developments.

As the proposals are for a residential development a 100-year lifetime of development has been considered in this assessment, in line with Welsh Government Guidance.

### 3.4 Development Advice Map Classification

The DAM zone classification is used to trigger different planning actions based on a precautionary assessment of flood risk.

Figure 3-1 shows that the site is located entirely within Zone C2. Zone C2 is described as “areas of the floodplain without significant flood defence infrastructure”.

Highly vulnerable developments within Zone C2 are not permitted with clear guidance on this. However, as the DAM is somewhat dated it's suggested that the Flood Map for Planning (FMfP) is used as the best available information. However, the sites' location within DAM Zone C2 triggers the requirement for an FCA with the site to be tested against the Justification Test (JT) and Acceptability Criteria (AC).



Figure 3-1 Development Advice Map

### 3.5 Flood Map for Planning Classification

As discussed above in Section 3.1, the new TAN-15 will replace the DAM with the Flood Map for Planning (FMfP), which will then be used to trigger different planning actions. Whilst the new TAN-15 is not a material consideration until implemented, it does illustrate the current policy thinking of the Welsh Government and in some cases, the FMfP may constitute the best available information. Consequently, information on the FMfP is provided for information only. Importantly, the FMfP includes the predicted effects of climate change, whereas the DAM does not.

#### 3.5.1 Flood Map for Planning - Flood Risk from Rivers

The site is shown to be in Flood Zone 1 for the FMfP - Flood Risk from Rivers as shown in Figure 3-2. This represents a less than 0.1% AEP (1 in 1000 year) chance of flooding from fluvial mechanisms in any given year including the effects of climate change. Flood Zone 1 is shown as transparent on the FMfP.



Figure 3-2 FMfP- Flood Risk from Rivers

### 3.5.2 Flood Map for Planning - Flood Risk from the Sea

The site is shown to be in Flood Zone 3 for the FMfP- Flood Risk from the Sea as shown in Figure 3-3. Flood Zone 3 represents those areas that have a greater than 0.5% AEP (1 in 200 years) chance of flooding from coastal/ tidal mechanisms in any given year. The site is also shown to be within a TAN-15 Defended Zone. Areas within a TAN-15 Defended Zone are areas that benefit from Risk Management Authority flood defences with the following minimum Standard of Protection of 1 in 200 years (present day) for the sea. For flood defences built from 2016 onwards, there must be allowance for climate change and design freeboard.

Whilst the current TAN-15 Defended Zone shall not reflect the climate change uplift and freeboard as the defences were not constructed post-2016, it is envisaged that the TAN-15 Defended Zone designation shall be retained and shall reflect these allowances post-construction of the new Cardiff Coastal Defence Scheme.



Figure 3-3 FMfP- Flood Risk from the Sea

### 3.6 Cardiff Council Local Development Plan

The Local Development Plan<sup>3</sup> is a land use document in which Cardiff Council sets out its land use development aspirations for a 20-year period. The current LDP was adopted in 2016 and expires in 2026 with work already begun on the development of the new LDP.

KP1 of the LDP states Cardiff Council's intention of making '*provision of 45,415 new dwellings to deliver a housing requirement of 41,415 new dwellings in Cardiff between 2006-2026*'. The proposed development at this site would aid the Cardiff Council's objective of meeting this housing need.

### 3.7 Justification Test

In line with the requirements of TAN-15 (2004) the application of the Justification Test is required for less vulnerable development in Zone C2. Highly vulnerable development is not permitted in this zone and therefore the Justification Test is not strictly applicable. However, consideration has also been given to the draft revision of the forthcoming update of TAN-15 which, whilst not a material consideration, provide insight into current policy thinking. The draft TAN-15 enables resilient development with the TAN-15 Defended Zone, subject to the

<sup>3</sup> Final-Adopted-Local-Development-Plan-English.pdf (cardiffldp.co.uk)

Justification Test, and the potential consequences of flooding as stipulated in the TAN-15 Acceptability Criteria.

Consequently, this report assesses the site against the Justification Test (of the extant TAN-15) in Table 3-2, with further information on the Acceptability Criteria in Section 6.

TAN-15 (2004) states that development will be justified if it can be demonstrated that:

*Its location in zone C is necessary to assist, or be part of, a local authority regeneration initiative or a local authority strategy required to sustain an existing settlement.*

**or**

*Its location in zone C is necessary to contribute to key employment objectives supported by the local authority, and other key partners, to sustain an existing settlement or region;*

**and**

*It concurs with the aims of Planning Policy Wales and meets the definition of previously developed land;*

**and,**

*The potential consequences of a flooding event for the particular type of development have been considered and found to be acceptable.*

The proposed development has been assessed against the requirements of the Justification Test, with the results summarised in Table 3-2. All the criteria have been satisfied with regard to the proposed development.

Table 3-2 TAN-15 Justification Test

TAN 15 Justification Criteria	Comments	TAN-15 Justification Criteria
Its location is necessary to assist a local authority regeneration initiative or strategy <b>or</b> contribute to key employment objectives, necessary to sustain an existing settlement or region.	The proposed development will assist with Cardiff Council meeting KP1 of the LDP as mentioned in Section 3.6.	✓
The site meets the definition of previously developed land (i.e. it is not a Greenfield site) and concurs with the aims of Planning Policy Wales (i.e. the presumption in favour of sustainable development)	The proposed development site meets the criteria of previously developed land.	✓
The potential consequences of a flooding event for the particular type of development have been considered and found to be acceptable.	Detailed flood modelling has been undertaken to demonstrate the acceptability of the proposed development. See sections 4 & 5.	✓

## 4 Flood Risk Assessment

### 4.1 Review of Existing Flood Risk Data

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✗	<b>Very Low</b> - Located in an area of very low risk of flooding from Rivers.
Flood Risk from the Sea	✗	<b>Low</b> - Located in an area that is of low risk of flooding. However, as the site is located within FZ 3 of the FMfP further assessment has been carried out in section 5.
Flood Risk from Surface Water and Small Watercourses	✗	<b>Very Low</b> - Located in an area of very low risk of surface water or small watercourse flooding.
Flood Risk from Groundwater	✗	<b>Low</b> - it has been documented that groundwater flood risk in Cardiff is low
Flood Risk from Reservoirs	✓	<b>Low</b> - The risk of reservoir failure is low
Flood Risk from Sewers	✗	<b>Low</b> - Limited information available with the current location of sewers unknown

### 4.2 Historical Flood Risk

NRW's map of recorded flood extents does not show any historic record of flooding on the site. Furthermore, the Cardiff Local Flood Risk Management Strategy<sup>4</sup> does not mention any previous flood events for this area of the city.

### 4.3 Flood Risk from Rivers

NRW's Flood Risk Assessment Wales (FRAW) Flood Risk from Rivers mapping indicates that the proposed development site is at **very low** risk of fluvial flooding. This means there is less than a 0.1% AEP chance of fluvial flooding in any given year. This is shown by a transparent layer on the FRAW mapping, as shown in Figure 4-1.

<sup>4</sup> Cardiff Council (2014) Local Flood Risk Management Strategy. Available at: <<https://www.cardiff.gov.uk/ENG/Your-Council/Strategies-plans-and-policies/Local-flood-risk-management-strategy/Pages/default.aspx>>

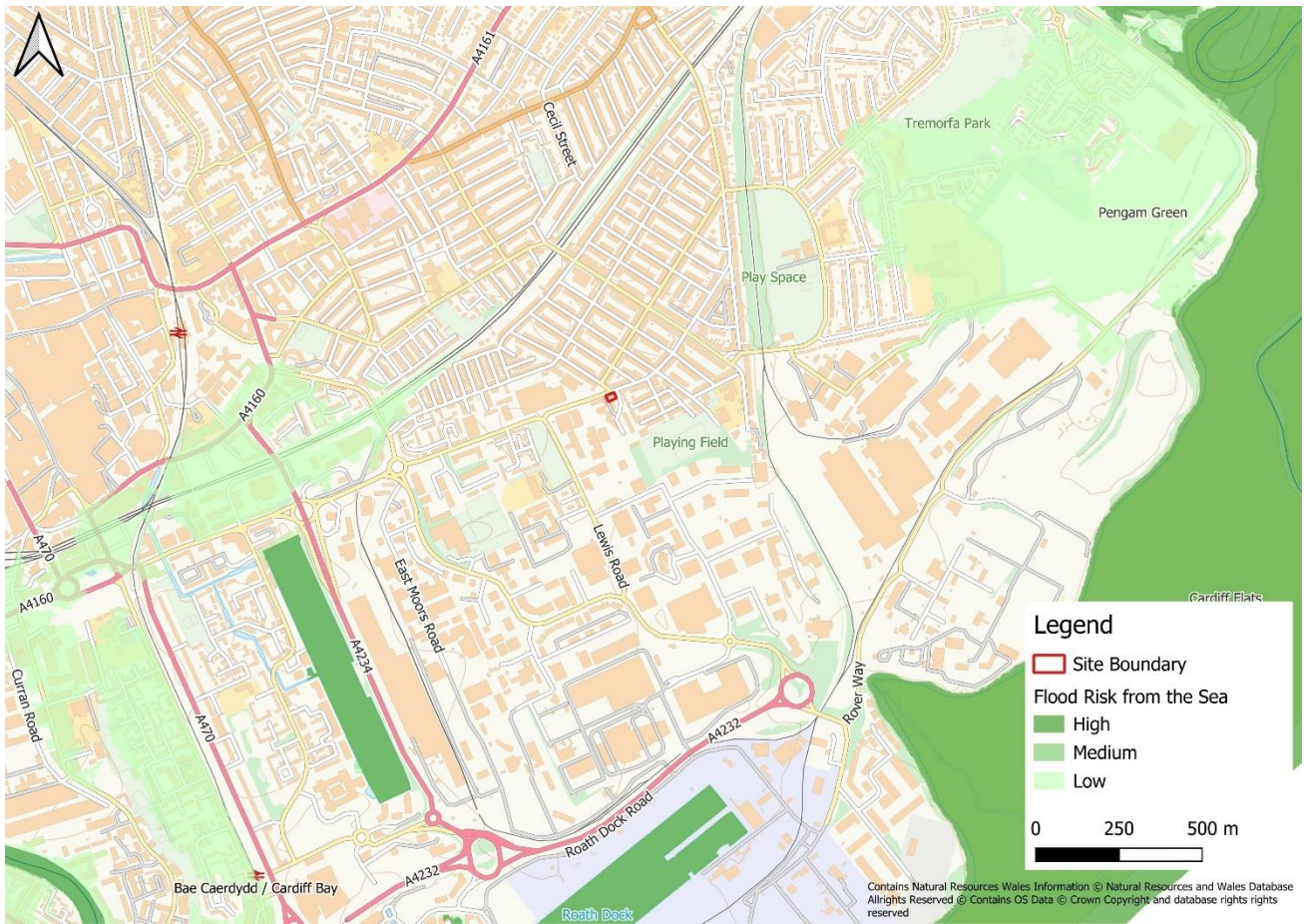


Figure 4-1 FRAW - Flood Risk from Rivers

#### 4.4 Flood Risk from the Sea

NRW's Flood Risk Assessment Wales (FRAW) Flood Risk from Seas mapping indicates that the proposed development site is at **very low** risk of tidal/coastal flooding. This means there is less than a 0.1% AEP chance of coastal/ tidal flooding in any given year. This is shown by a transparent layer on the FRAW mapping, as shown in Figure 4-2.

As the site is within Flood Zone 3 of the FMfP, which includes the application of climate change, further detailed assessment of the flood risk from tidal sources has been carried out in Section 5.



### Figure 4-2 FRAW- Flood Risk from the Sea

#### 4.5 Flood Risk from the Surface Water and Small Watercourses

NRW's Flood Risk Assessment Wales (FRAW) Flood Risk from surface water and small watercourses mapping indicates that the proposed development site is at **very low** risk of flooding from these sources, as shown in Figure 4-3. This means there is less than a 0.1% AEP chance of flooding from surface water or small watercourses in any given year.

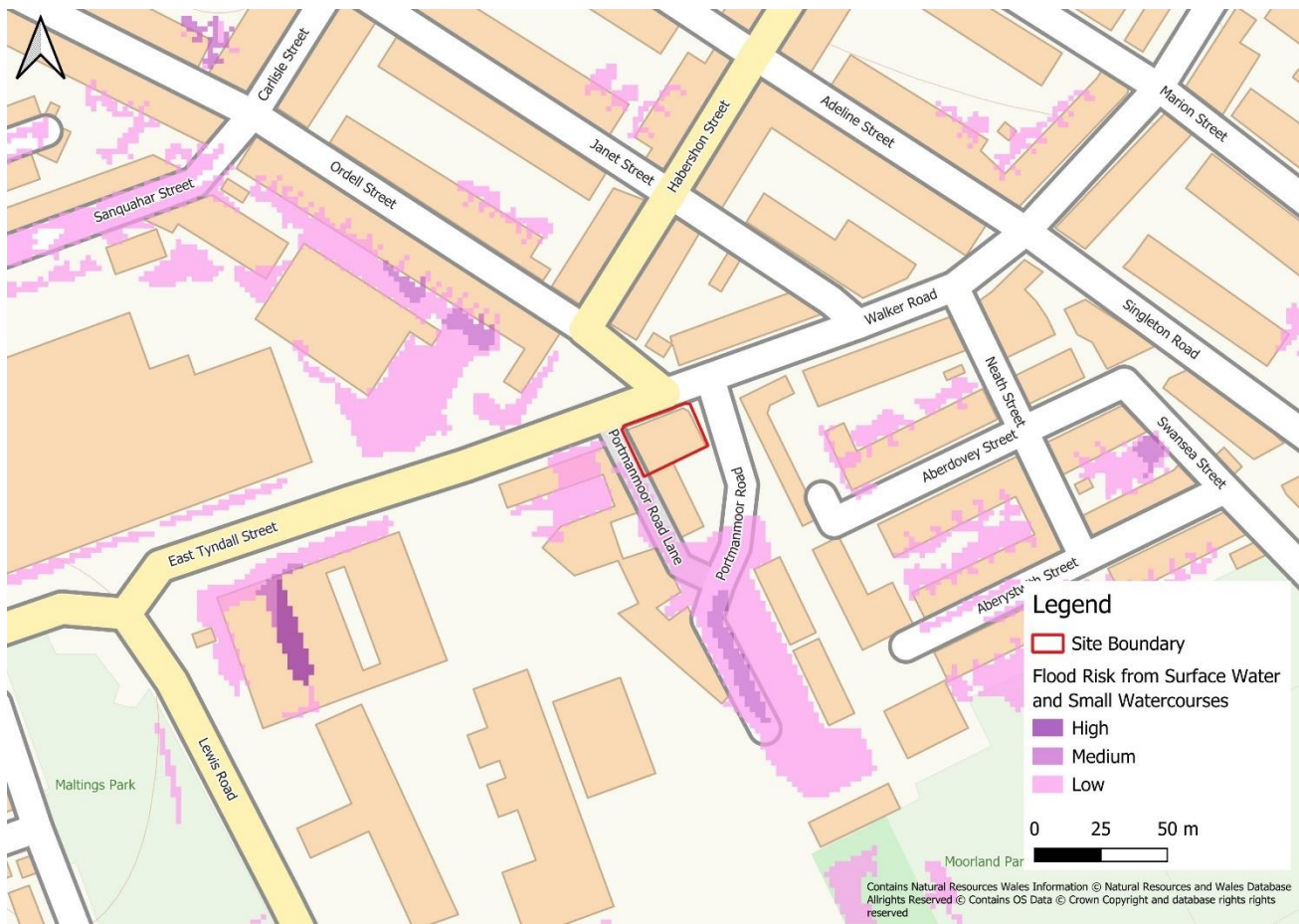


Figure 4-3 FRAW- Flood Risk from Surface Water and Small Watercourses

#### 4.6 Flood Risk from Groundwater

The Cardiff Local Flood Risk Management Strategy<sup>5</sup> also states that “there is little documented evidence of groundwater flooding in Cardiff and therefore the risk of flooding from this source is considered to be small”. Therefore, the site is assessed to be at **low** risk of groundwater flooding.

#### 4.7 Flood Risk from Reservoirs

The NRW FRAW mapping shows that the site is at risk of flooding in the event of reservoir failure, as seen in Figure 4-4.

However, it is worth noting that reservoir flooding is extremely unlikely to occur as all large reservoirs must be inspected and supervised by reservoir panel engineers under the Reservoirs Act 1975. In Wales, NRW ensure that reservoirs are inspected regularly, and essential safety work is carried out. Therefore, the risk of flooding from reservoir failure has been assessed to be **low**.

<sup>5</sup> Cardiff Council (2014) Local Flood Risk Management Strategy. Available at: <<https://www.cardiff.gov.uk/ENG/Your-Council/Strategies-plans-and-policies/Local-flood-risk-management-strategy/Pages/default.aspx>>



Figure 4-4 NRW Reservoir Flood Risk Map

#### 4.8 Flood Risk from Sewers

The current location of existing public sewers is unknown. However, with the site's previous use as a sports and social club it is assumed that the site is served by a connection for both foul and surface water drainage, likely in a combined system. There has been no mention of historic sewer flood incidents at the site within the Cardiff Local Flood Risk Management Strategy. Furthermore, the Level 1 Strategic Flood Consequences Assessment (SFCA) is currently not publicly available to further assess the risk. Therefore, based on the information we have available the site has been assessed to have a **low** risk of sewer flooding.

## 5 Detailed Tidal Flood Risk Assessment

### 5.1 Hydraulic Model Availability

A detailed tidal flood model for Cardiff and the River Rhymney was developed by JBA Consulting in 2020 and updated in 2022. The updated model was used to simulate results for a 100-year lifetime of development, to the year 2122. Furthermore, the model simulated the risk of flooding with and without the Cardiff Coastal Flood Defence Scheme. For this assessment, only the defended scenario with the new defences has been used due to the commencement of construction works for the defences in 2024.

### 5.2 Model Results

Figure 5-1 and Figure 5-2 indicate that the site is predicted to be flood free in both the 2121 0.5% AEP and 2121 0.1% AEP events.

As the new defences that are currently under construction offer an improved level of protection to the site that results in the site being flood free in all design events, it is likely that the site will continue to be located within a TAN-15 Defended Zone as a result of the improved level of protection offered by the new defences.

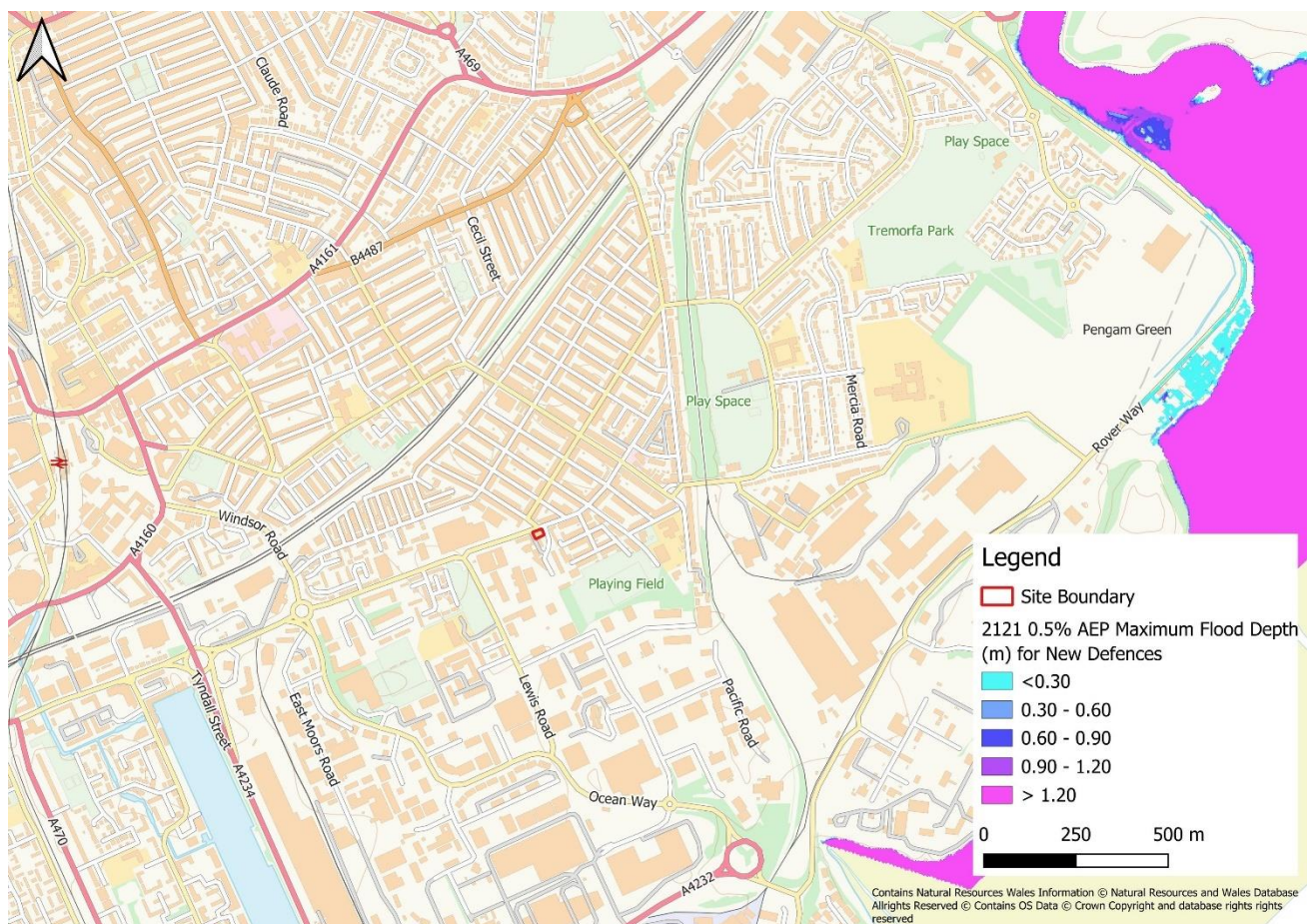


Figure 5-1 2121 0.5% AEP Event Maximum Flood Depth (m)

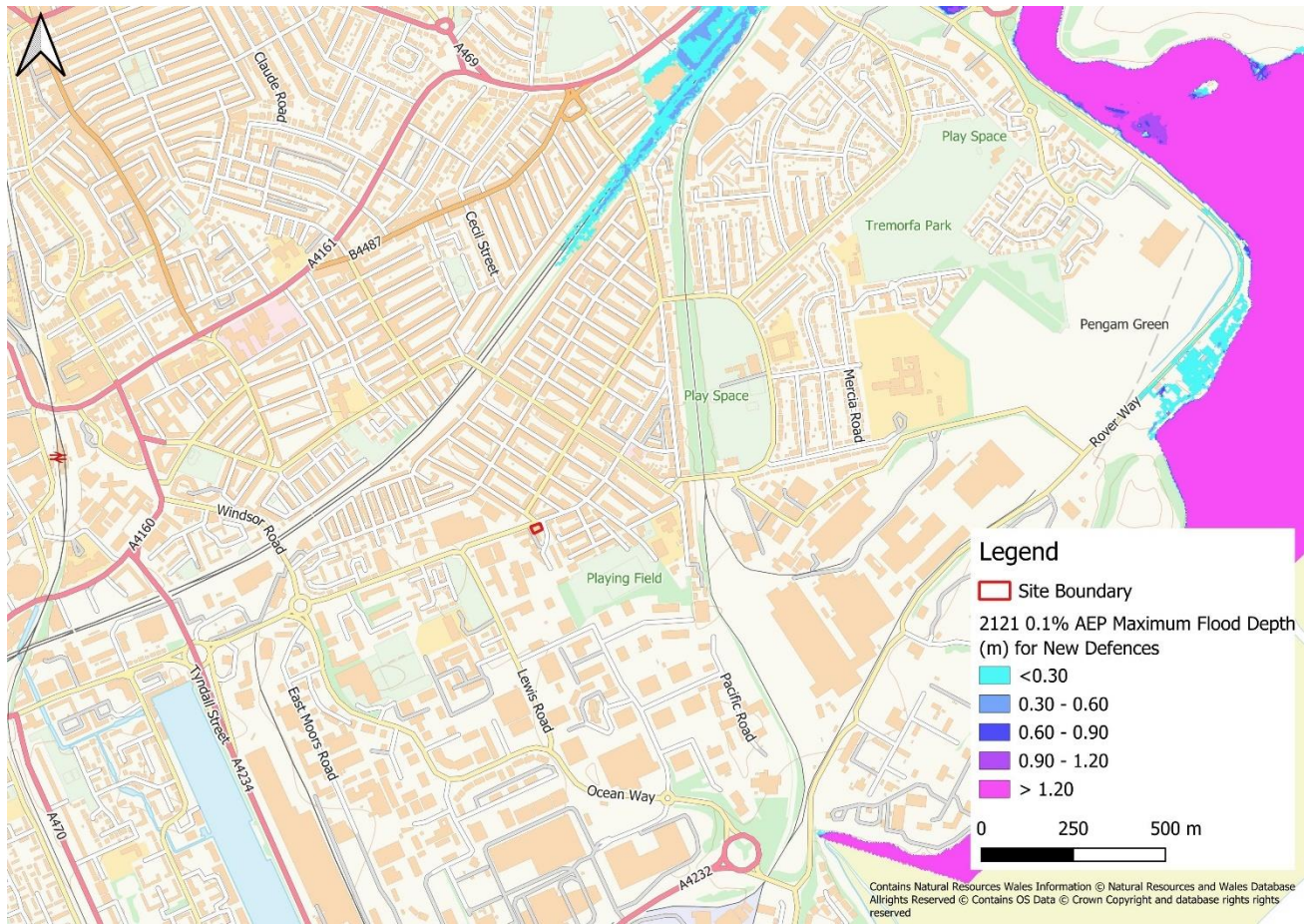


Figure 5-2 2121 0.1% AEP Event Maximum Flood Depth (m)

## 6 Assessment of Acceptability Criteria

The site has been assessed against the Acceptability Criteria, as shown in Table 6-1 below.

Table 6-1 Assessment of Acceptability Criteria

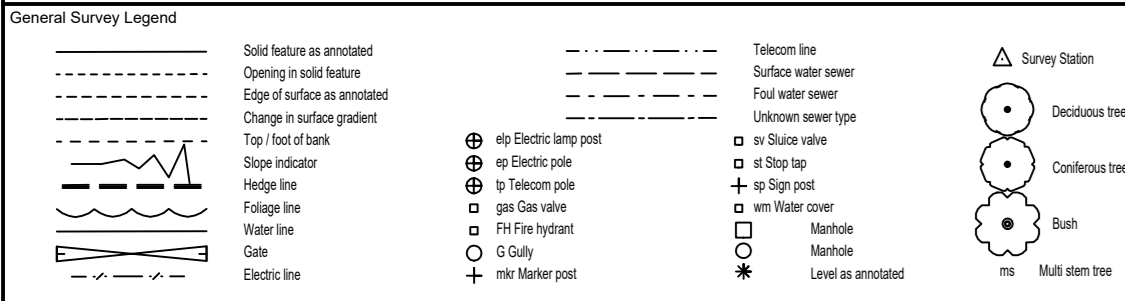
TAN- 15 Justification Criteria	Comments	Achieved
The developer is required to demonstrate that the site is designed to be flood free for the lifetime [Ref: TAN-15 A1.5] of development for a 1 in 100 (1%) chance (fluvial) and 1 in 200 (0.5%) chance (tidal) flood event including an allowance for climate change in accordance with TAN-15 table A1.14.	The site is predicted to be flood free during the 0.5% AEP event, plus an allowance for climate change, as discussed in Section 5.	Yes
The development should be designed so that in an extreme (1 in 1000 chance) event there would be less than 600mm of water on access roads and within the property.	The site is predicted to be flood-free during the 0.1% AEP event, plus an allowance for climate change, as discussed in Section 5.	Yes
No flooding elsewhere.	As the site is predicted to be flood-free there will be no impact on flooding elsewhere as a result of the proposals.	Yes
Flood defences must be shown by the developer to be structurally adequate, particularly under extreme overtopping conditions (i.e. that flood with a 1 in 1000 chance of occurring in any given year).	The site shall be defended from flooding from the construction of the Cardiff Coastal Defence Scheme. The defences have been designed to offer a minimum level of protection up to the 1 in 200-year event plus an allowance for climate change. Due to the strategic nature of the defences, they will likely be maintained to remain adequate for their lifetime.	Yes
The developer must ensure that future occupiers of development are aware of the flooding risks and consequences.	N/A- The site is shown to be flood-free for the duration of its lifetime.	Yes
Effective flood warnings are provided at the site.	N/A- The site is shown to be flood-free for the duration of its lifetime.	Yes
Escape/evacuation routes are shown by the developer to be	N/A- The site is shown to be flood-free for the duration of its lifetime.	Yes

TAN- 15 Justification Criteria	Comments	Achieved
operational under all conditions.		
The development is designed by the developer to allow the occupier of the facility for rapid movement of goods/possessions to areas away from flood waters.	N/A- The site is shown to be flood-free for the duration of its lifetime.	Yes
Development is designed to minimise structural damage during a flooding event and is flood proofed to enable it to be returned to its prime use quickly in the aftermath of the flood.	N/A- The site is shown to be flood-free for the duration of its lifetime.	Yes

## 7 Conclusion and Recommendations

- JBA Consulting were commissioned by Cardiff Community Housing Group (CCHG) to prepare a Flood Consequences Assessment (FCA) to support a proposed residential development at the former New Fleurs Social Club, Cardiff.
- Development proposals are for the demolition of the existing New Fleurs Social Club and the construction of a new four-story apartment block. The apartment block will be built to Welsh Development Quality Guidance (WDGG) standard to provide quality residential apartments within the Splott area of Cardiff.
- The proposal is considered as highly vulnerable under TAN-15 and has a development lifetime of 100 years.
- The site is located within DAM Zone C2. Zone C2 is described as “areas of the floodplain without significant flood defence infrastructure”. Generally, new residential development is not permitted within Zone C2.
- However, consideration has been given to the Flood Map for Planning, on which the site is located within the TAN-15 Defended Zone. Whilst not a material consideration, the 2023 draft of the revised TAN-15 suggests current policy thinking. As a result, proposals demonstrating increased flood resilience may be permissible within the TAN-15 Defended Zone subject to the Justification Test, and acceptability of the consequences.
- As a result, the proposals have been assessed against the Justification Test of Tan-15 (2004) and shown to meet the requirements.
- Flood risk from rivers, surface water, groundwater, reservoir failure and sewers is shown to be low across the site.
- Further consideration has been given to the risk of tidal flooding to the site.
- Planning permission (planning reference-21/02138/MJR) was granted in September 2021 for the Cardiff Coastal Flood Defence scheme. This scheme will provide improved flood defences along the banks of the River Rhymney and the Severn Estuary. The coastal defences will enhance the standard of protection across this area to increase resilience to climate change for much of eastern Cardiff including the Splott area of Cardiff.
- Detailed modelling from the Cardiff Coastal Defence scheme has been reviewed to demonstrate risk to the proposed development site. Detailed modelling showed the site to be flood free during both the 2121 0.5% AEP event and the 2121 0.1% AEP Event, complying with the requirements of A1.14 and A1.15 of TAN-15 (2004).
- Consequently, It can be concluded that on the grounds of flood risk, the proposed redevelopment meets the requirements set out in TAN-15 and the aims of Planning Policy Wales.

# Appendix A



Title
Description

Client	Cardiff Community Housing Association	
Scale	1:100 @ A0	Surveyed IMM
Date	7 August 2024	Drawn IMM & SC

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