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Cardiff Council Strategic Flood Consequences Assessment - Bute East Dock

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Contract

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This report describes work commissioned by Cardiff Council, by an instruction dated 23rd of January 2026. The Client's representative for the contract was Stuart Williams of Cardiff Council. Ella Courtney of JBA Consulting carried out this work.

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1 Introduction

JBA Consulting has been commissioned by Cardiff Council to prepare an independent Flood Risk Appraisal as part of a Stage 2 Strategic Flood Consequences Assessment (SFCA) for sites considered for allocation in its replacement Local Development Plan.

This assessment will evaluate the risk of flooding from all sources to "Bute East Dock", the proposed development site, as well as the appropriateness of development at the site in accordance with Welsh Government Policy, as outlined in Technical Advice Note 15 (TAN15). Furthermore, recommendations will be provided to mitigate the risk of flooding at the proposed development site as well as recommendations for further works.

2 Site Description

The key characteristics of the site are summarised in Table 2-1 and the location and site boundary are shown in Figure 2-1 below.

Table 2-1 Site Summary

Site Name	Bute East Dock
Site ID	10
Site Area	9.64ha
Existing Land Use	Dock
Purpose of Development	Mixed-use
OS NGR	319282 175542
Access Location	Schooner Way

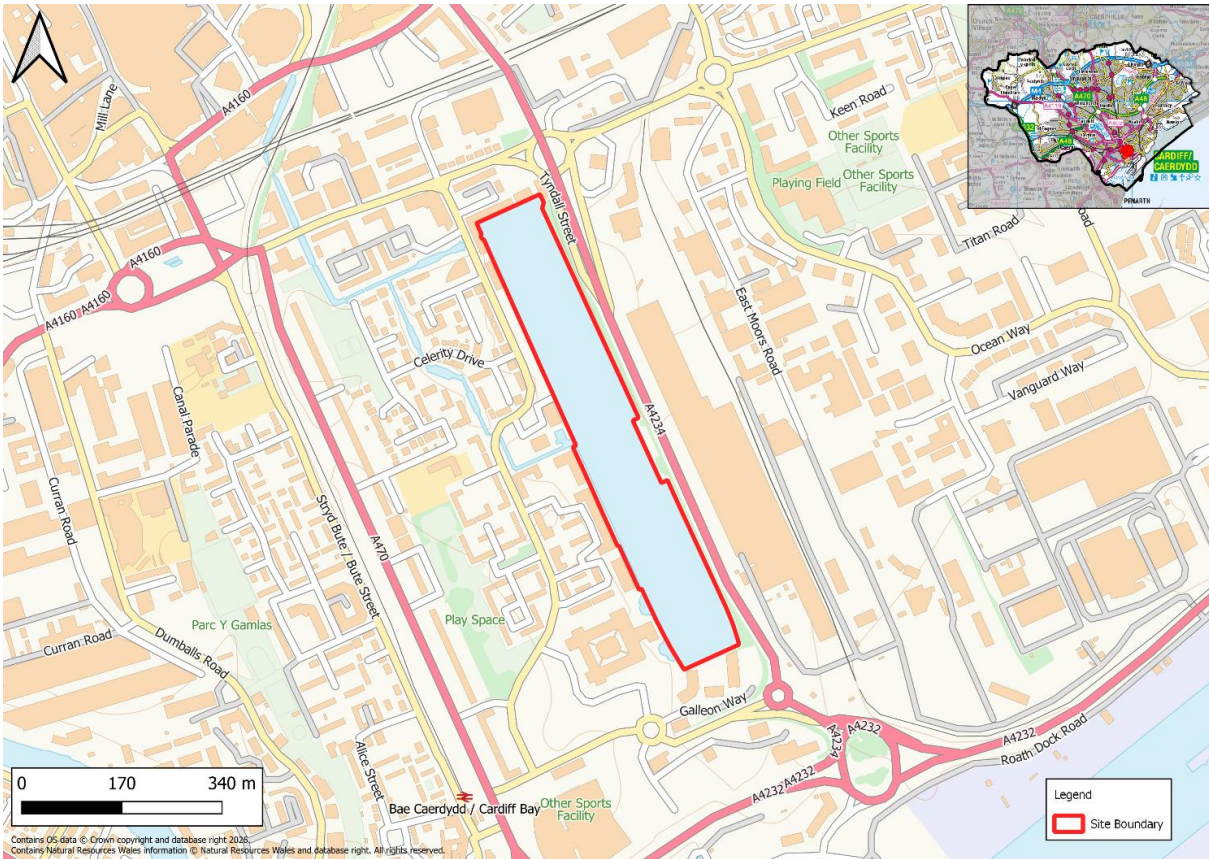


Figure 2-1 Site Location

2.1 Development Proposals

The site is proposed for a mixed-use development. However, it's currently unknown what form this will take. Options could include the development of a mixed-use water-compatible development i.e. marinas or boating areas, or the dock could be partially filled to allow for non-water compatible developments such as commercial, residential, leisure and tourism uses. It is thought that the Bute East Dock could be seen as an additional development zone for the expansion of the Atlantic Wharf masterplan area.

No indicative site layout is available for this assessment.

2.2 Topography

The Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data across the site has been reviewed and is shown in Figure 2-2.

The site's historic use as a dock means that its topography cannot be assessed in the conventional way. Dock wall elevations have therefore been used to understand the site's level relative to the surrounding area. Based on NRW's 2023 LiDAR data, the dock walls are approximately 8.52m AOD. As LiDAR does not provide a reliable indication of water level within the dock, this level remains unknown. The dock basin forms a local topographical low point, with the A4234 along the eastern boundary ranging from

9.84mAOD to 16.23mAOD, and surrounding developments ranging from approximately 8.83mAOD to 10.35mAOD.



Figure 2-2 Site Topography

2.3 Watercourses and Flood Defences

Figure 2-3 shows the locations of the nearest NRW Main Rivers and ordinary watercourses.

The site is an artificial waterbody and due to its historic use is situated close to a number of watercourses and waterbodies. It lies approximately 905m east of the River Taff, an NRW Main River that flows north-south through Cardiff City Centre before discharging into Cardiff Bay and ultimately the Severn Estuary. The site located around 780m northeast of Cardiff Bay.

Although the site is not within an Area Benefiting from Flood Defences it is still likely to receive protection from the Cardiff Bay tidal barrage, which provides coastal defence for much of central Cardiff by actively managing water levels in the harbour.

Bute East Dock is fed by the Dock-Feeder canal, from two locations: one being on the northwestern boundary and the other on the central western boundary. Discharges from the Dock-Feeder canal occur twice daily and only for short durations. The outfall is located in the southern extent of the dock and connects to the dock feeder canal south of the A4232. The dock feeder canal then continues southwards before discharging into Roath Lock.

3 Planning Policy and Flood Risk

TAN-15 provides a framework within which flood risk arising from rivers, the sea and surface water can be assessed. TAN-15 adopts a risk-based approach, which emphasises the ability to avoid or minimise risk depending on the type of development proposed.

The following table identified the form of development, vulnerability classification and Flood Map for Planning classification (as defined in TAN-15) for the proposed development site.

Table 3-1 TAN-15 Development Classification Summary

TAN-15 Classification	Classification
Development Proposal	Mixed-Use
Form of Development	Unknown. Discussed further in Section 5.
Vulnerability Classification	Unknown. Discussed further in Section 5.
Flood Map for Planning - Rivers	Flood Zone 1
Flood Map for Planning - Sea	Flood Zone 3.
Flood Map for Planning - Surface Water and Small Watercourses	Flood Zone 1

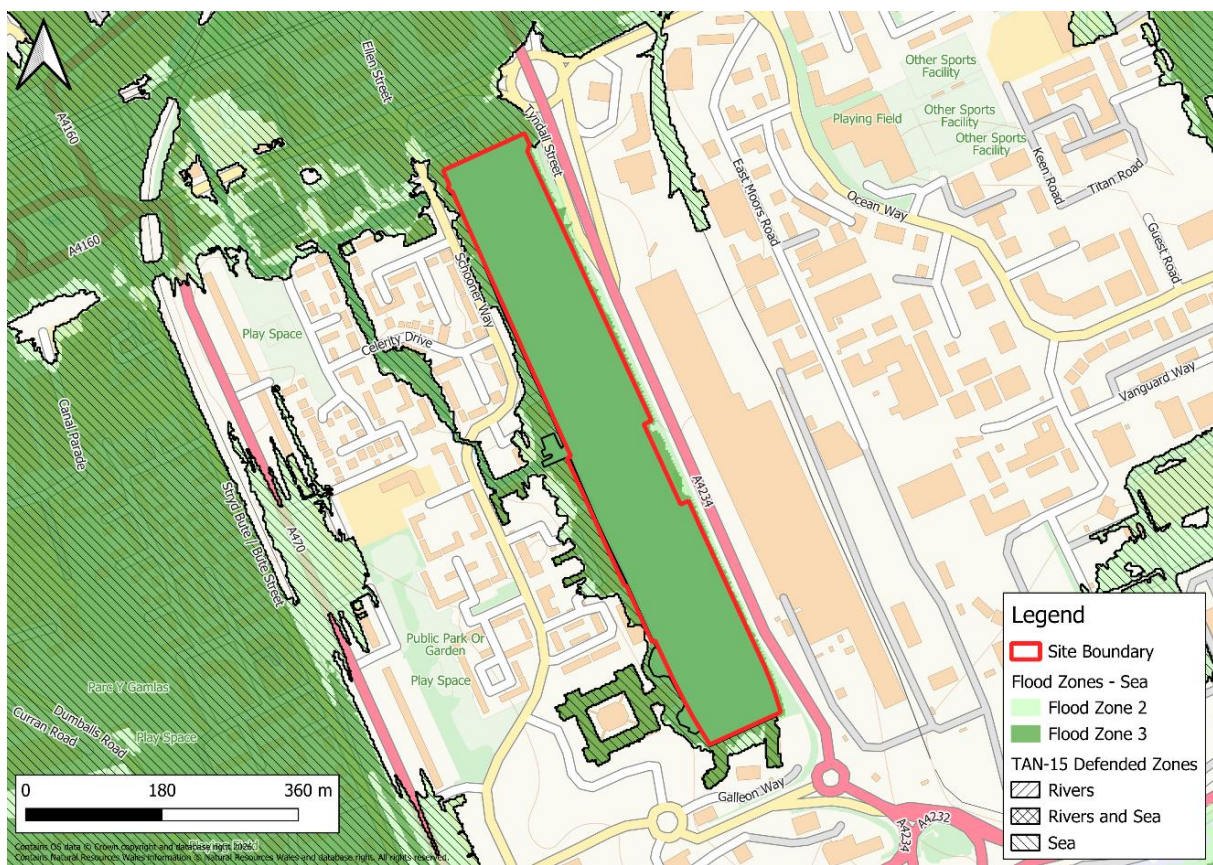


Figure 3-1 Flood Map for Planning - Sea

4 Assessment of Flood Risk

The latest available information on flood risk at the site, published by Natural Resources Wales (NRW) and datasets used in the SFCA 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's location within Flood Zone 1 of the FMfP for rivers indicates that the site is at a low risk of fluvial flooding.
Flood Risk from the Sea	✓	The site's location within Flood Zone for the Sea indicates that the site is at a high risk of tidal flooding. Tidal flood risk is further assessed in Section 4.1.
Flood Risk from Surface Water and Small Watercourses	✘	The site's location within Flood Zone 1 of the FMfP for Surface water and Small Watercourses indicates that the site is at a low risk of flooding from this source.
Flood Risk from Groundwater	✘	The JBA Groundwater Risk of emergence map shows that the site has a very low risk of groundwater emergence.
Flood Risk from Reservoirs	✘	The NRW FMfP shows that the site is located in an area at risk of reservoir flooding from the Pontsticill Reservoir. 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 .
Flood Risk from Sewers	✘	The DCWW sewer flood history data shows that there have been no sewer flooding events within the site's area. Therefore, it is concluded that the risk of flooding is low .

4.1 Flood Risk from the Sea

As shown in Figure 3-1, mapping shows that the site is at High risk of flooding from the sea. This means that there is a greater than 0.5% (1 in 200 year) AEP chance of tidal flooding at the site.

The site is not located within an area benefitting from defences. However, it is thought that the site will benefit from the presence of the Cardiff Bay tidal barrage that offers protection to much of Cardiff to a minimum standard of protection of 1 in 200 years for the sea as per NRW defences.

There is no detailed modelling available that covers this area of Cardiff. The Flood Map for Planning and accompanying National Flood Hazard Mapping dataset is based on broadscale modelling derived from projections of sea level estimates. Projection mapping highlights areas at risk based on topography and modelled flood level, often highlighting areas at risk that have no flood flow path towards them. Consequently, projection mapping should be used with caution, and further consideration should be given to the actual risk of tidal flooding to the site. This is likely the explanation for the omission from the TAN-15 Defended Zone, and the sites' location in Flood Zone 3 on the FMfP dataset.

5 Application of Flood Zones to Development Management Decisions

The proposed development at East Bute Dock, Cardiff, is intended for mixed-use purposes. Exact proposals are unknown, and it is currently unclear whether proposals shall comprise 'water compatible development' or the infilling of the Dock.

Based on NRW's FMfP the site is located within Flood Zone 3 for the sea. Sections 10.20 and 10.21 of TAN-15 state:

"In Zone 3 allocations for highly vulnerable new development must not be made as the risks and consequences of flooding are not considered acceptable for these types of development. Allocations for less vulnerable new development should only be made in exceptional circumstances. Allocations for redevelopment in zone 3 should be avoided and may only be made in exceptional circumstances where it is essential to the strategy of an LDP or where it addresses national security or energy security needs, or public health or it mitigates the impacts of climate change."

It is not clear as to whether any development of the dock would be considered 'redevelopment' under TAN-15. However, no highly vulnerable developments shall be permitted at the site, and less vulnerable new developments will only be allocated in exceptional circumstances. Water compatible development shall likely be more favorable across the proposed candidate site. Water compatible developments are acceptable, in principle, in all flood zones.

Any built element of the water compatible development that may be occupied by people must meet the Acceptability Criteria as set out in Section 11 of TAN-15. Development of this site must be supported by a Flood Consequences Assessment.

TAN15 does not provide sufficient clarity on the potential to develop artificial waterbodies. Further information is likely required to demonstrate suitability of development proposals. Given the current understanding of flood risk, in some instances it may be preferable for additional flood risk information to be brought forward to challenge the flood map to enable a wider variety of land uses to be permissible.

6 Summary and Recommendations

The site is located in Flood Zone 3 of the FMfP for the Sea. As the site is located within Flood Zones 3 it triggers the requirement for an FCA to be undertaken.

Exact development proposals are currently unknown. However, no highly vulnerable developments shall be permitted at the site, and less vulnerable new developments will only be allocated in exceptional circumstances. Water compatible development shall likely be more favorable.

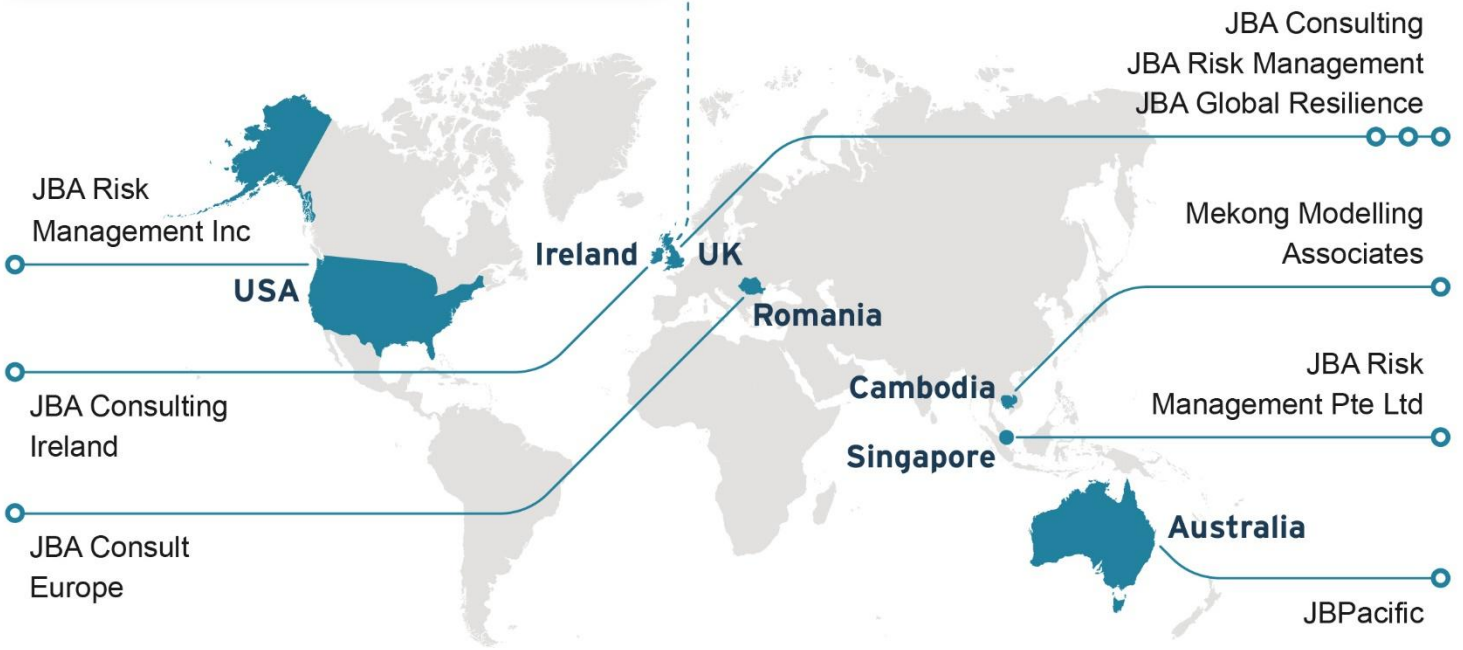
It is therefore considered that the site is likely to satisfy the requirements of TAN-15 subject to the following recommendations:

- Any planning application for the site should be accompanied by an FCA which demonstrates how the proposals meet the requirements of TAN-15.
- It may be possible, subject to additional flood risk assessment, to challenge the FMfP at this location, widening the variety of permissible land uses to the site.
- Development proposals comprising water compatible uses, with associated infrastructure occupied by people, should assess the development against the Acceptability Criteria as set out in Section 11 of TAN-15 .



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