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Cardiff Council Strategic Flood Consequences Assessment - Proposed Extension to Rover Way Gypsy and Traveller Site

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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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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.

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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 the 'Rover Way Gypsy and Traveller site', 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	Rover Way Gypsy and Traveller Site
Site ID	N/A
Site Area	3ha
Existing Land Use	Greenfield
Purpose of Development	Residential
OS NGR	321951 176903
Access Location	Rover Way

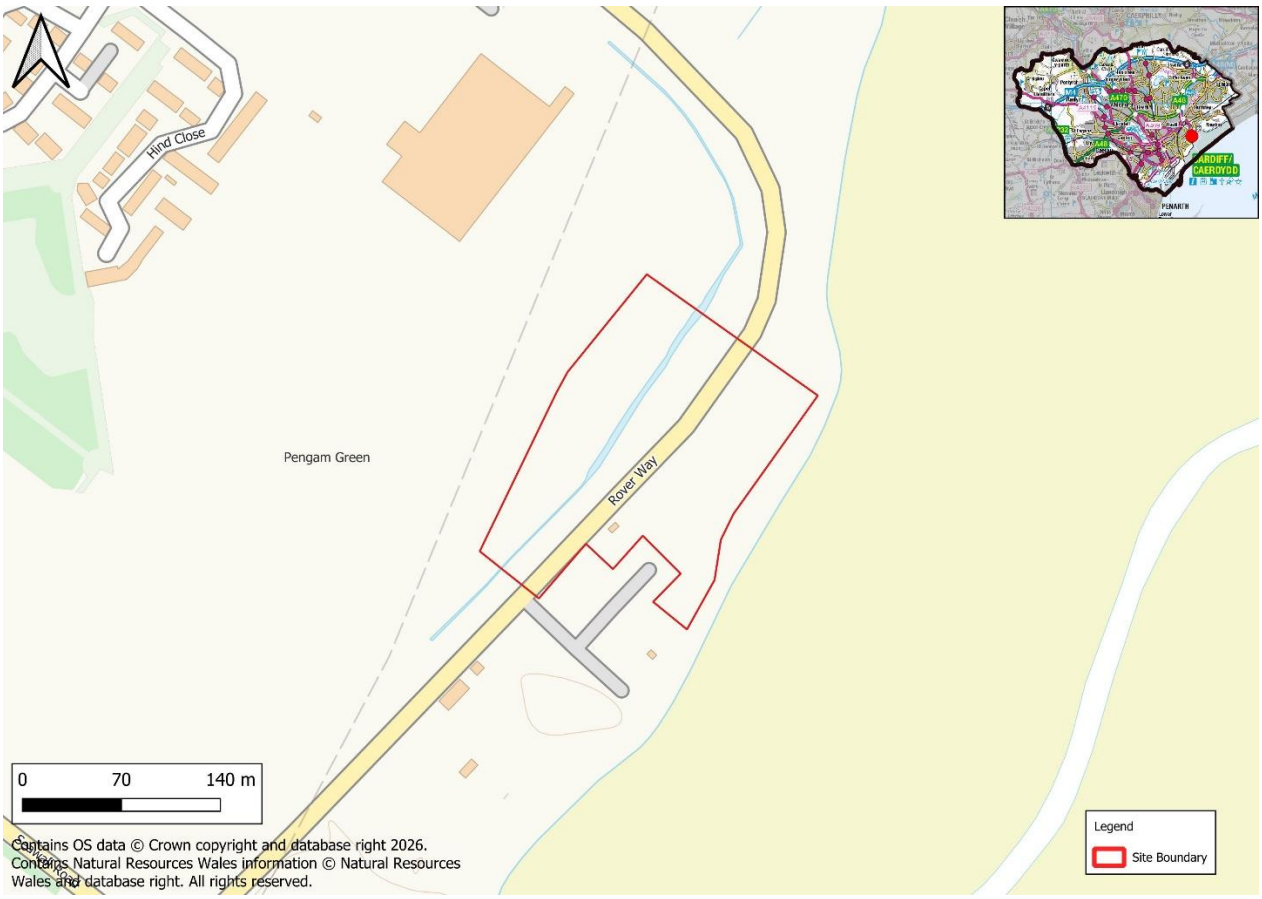

Figure 2-1 Site Location

2.1 Development Proposals

The proposed development at this site is for an extension to the existing Gypsy and Traveller site to provide more available pitches. The proposed development is therefore classed as residential use. The site comprises greenfield land and the development is classed as a Highly Vulnerable.

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 LiDAR data shows that the proposed development site has varying topography. The site is split into two extents, west and east of Rover Way. Rover Way has an approximate elevation of 7.65mAOD.

The western extent comprises of an ordinary watercourse and raised embankment. The crest of the embankment is approximately 9.26mAOD, whilst ground levels beyond are shown in the region of 6.81mAOD. A small, ordinary watercourse runs adjacent to the embankment.

The eastern extent of the site lies relatively flatter, with levels ranging from 8.37mAOD to 9.36mAOD.

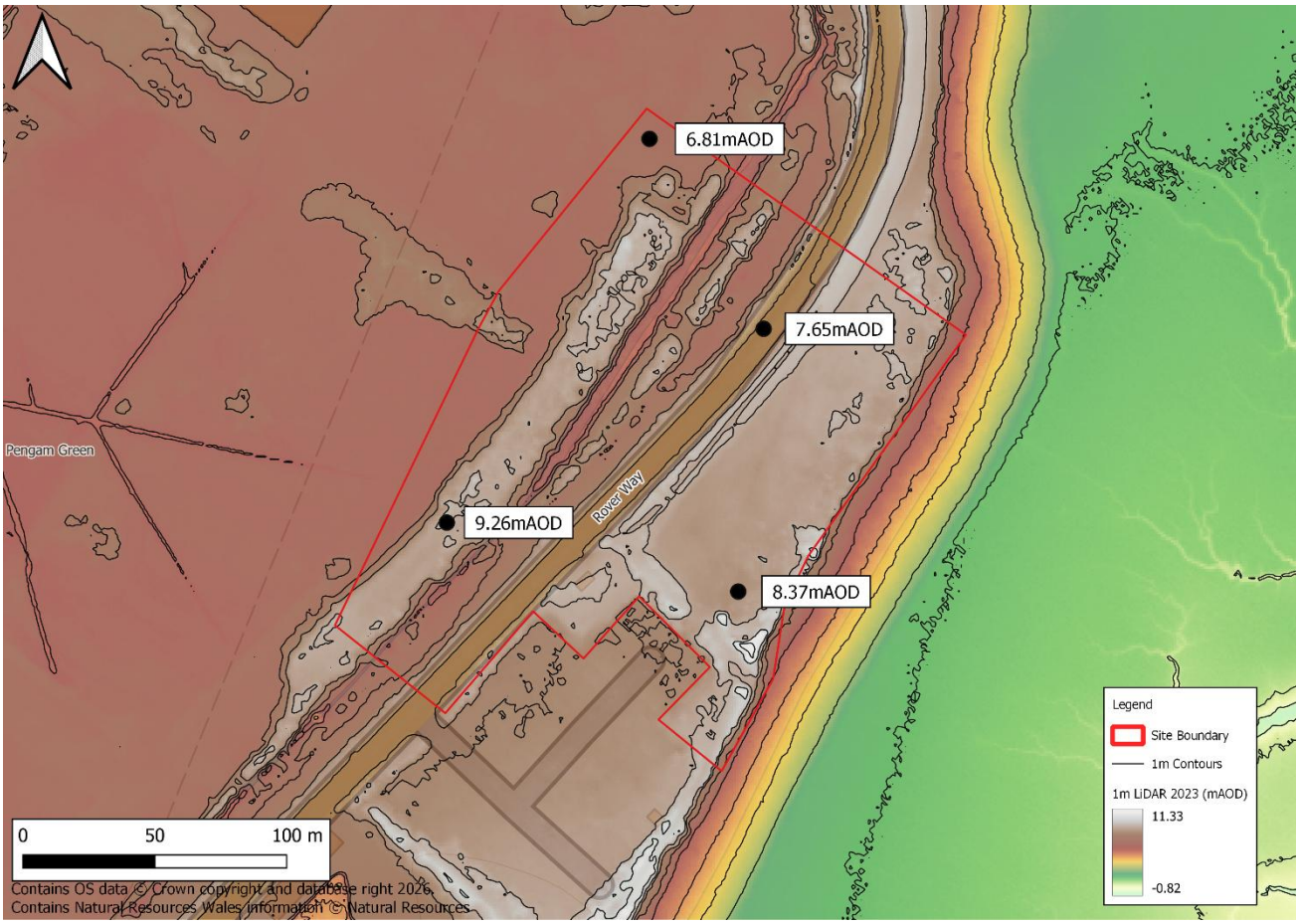

Figure 2-2 Site Topography

2.3 Watercourses and Flood Defences

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

An unnamed ordinary watercourse is present within the western parcel of land flowing from south-west to northeast, near to Rover Way. The unnamed ordinary watercourse flows into the Rhymney River north of the site.

The western parcel of land is located within an area benefiting from flood defences. The eastern parcel of land does not fall under this designation.

The Rhymney River outfalls into the Severn Estuary, passing through the Cardiff Mudflats, approximately 250m to the north of the proposed site at its closest point.

Flood defences are present along the banks of the River Rhymney and the Severn Estuary and comprise the remnants of rock armour revetments along the Severn Estuary; and a sheet-pile wall, earth embankment, and a section of severely eroded block stone defences along the western bank of the River Rhymney. These flood defences have a standard of protection of 75 to 150 years. Tidal and fluvial erosion of these defences and the associated

coastline has taken place to the extent that extensive sections of defences have either been completely lost or are in very poor condition and are at significant risk of failure shortly.

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. Construction of these flood defences commenced in 2024. Upon completion, the line of defence will change from that shown in Figure 2-2 from being along Rover Way, to being along the banks of the Severn Estuary, at the southern boundary of the eastern parcel of land.

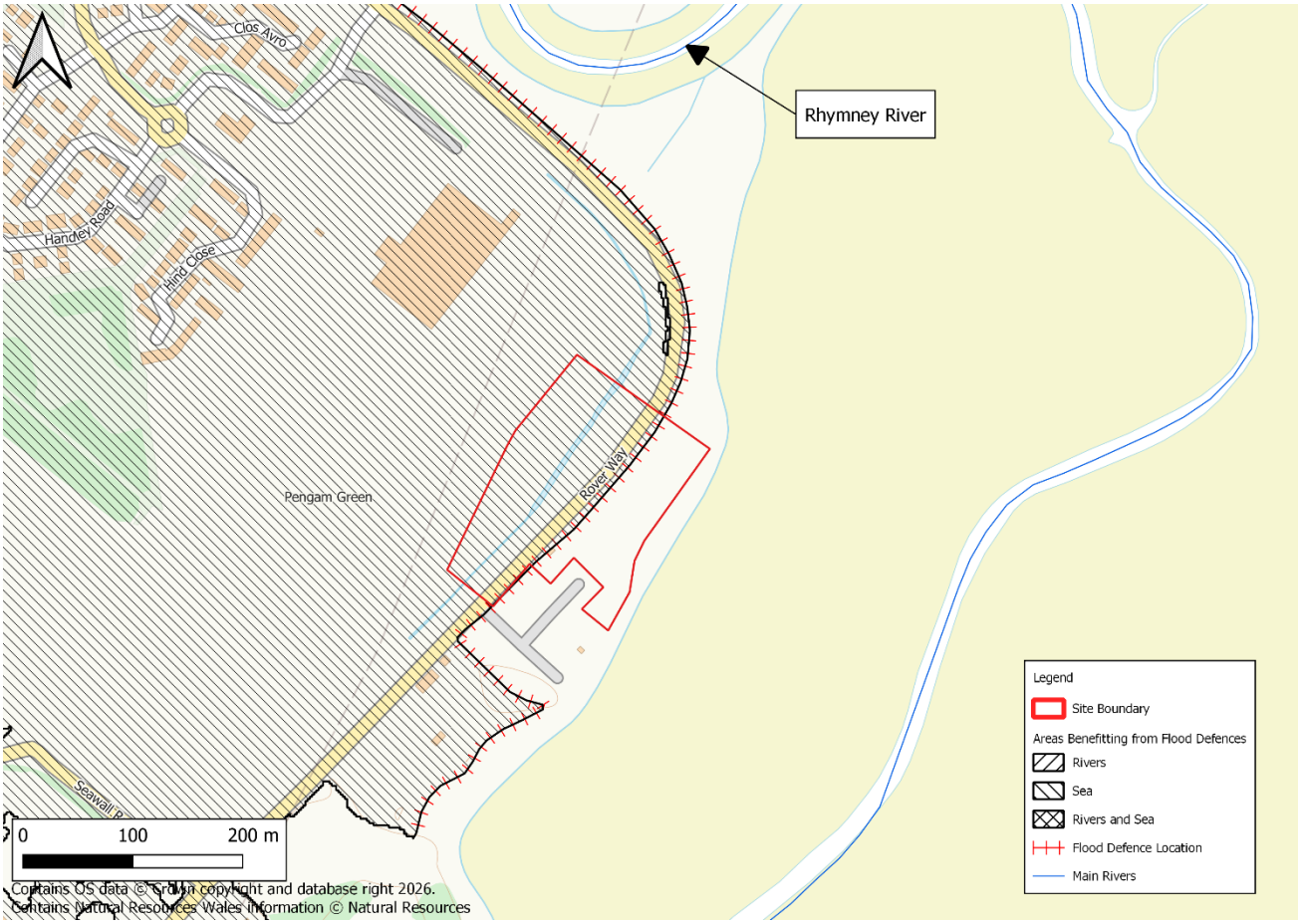

Figure 2-3 Watercourses and Flood Defences

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	Residential Development
Form of Development	New development
Vulnerability Classification	Highly Vulnerable Development
Flood Map for Planning - Rivers	Flood Zone 1
Flood Map for Planning - Sea	Flood Zones 2 and 3, partly within the TAN-15 Defended Zone for the Sea.
Flood Map for Planning - Surface Water and Small Watercourses	Flood Zone 2

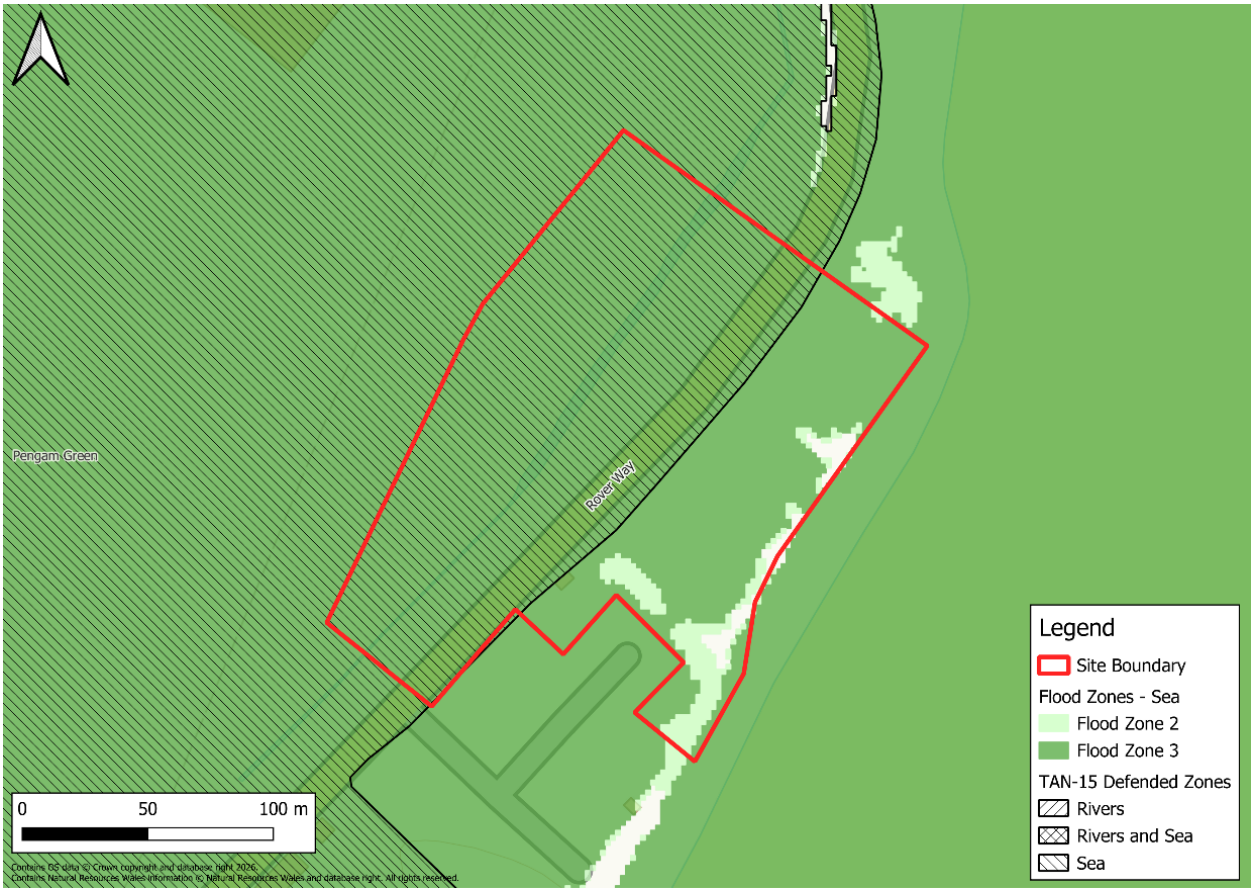

Figure 3-1 Flood Map for Planning - Flood Risk from the Sea

Figure 3-2 Flood Map for Planning - Flood Risk from Surface Water and Small Watercourses

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 **very low** risk of fluvial flooding.
Flood Risk from the Sea	×	The western parcel's location within the TAN-15 Defended Zone for the Sea indicates that the site is at a **low** risk of fluvial flooding. The eastern parcel is located in Flood Zone 2, indicative of 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 Zones 2 and 3 of the FMfP for Surface Water and Small Watercourses indicated that the site is at a **moderate to high** risk of flooding from this source. **Surface Water and Small Watercourse flood risk is further assessed in Section 4.2**.
Flood Risk from Groundwater	✓	JBAs Groundwater Risk of Emergence map indicates the site as **very low** risk, with the entire site deemed as having a negligible risk from groundwater flooding.
Flood Risk from Reservoirs	×	The NRW Flood Map for Planning shows that the site is not located in an area at risk of reservoir flooding. Therefore, it is concluded that the risk of flooding is **very low**.

Source of Flooding	Onsite Presence	Description
Flood Risk from Sewers	×	The DCWW sewer flood history data shows that there have been 174 sewer flooding events within the Splott electoral ward. However, there are no known public sewerage assets crossing the proposed development site. Therefore, it is concluded that the risk of flooding is **low**. Any future drainage strategy should ensure that surface water generated on site is adequately managed to mitigate the impact to both the proposed development, and third parties.

4.1 Flood Risk from the Sea

As shown in Figure 3-1, The Flood Map for Planning (FMfP) indicates that the eastern parcel of the site is located in Flood Zone 3 whilst the western parcel is located in the TAN-15 Defended Zone for the Sea. TAN-15 Defended Zones shows areas that benefit from flood defence infrastructure maintained by a Risk Management Authority (RMA), which has a minimum, present-day level of protection of 0.5% AEP for sea (plus climate change and freeboard).

4.1.1 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 both 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 the scheme in 2024.

As the proposed development is residential, it is assumed that this development would have a lifetime of 100 years, in line with TAN-15 guidance. As the model was last updated in 2022, it does not model exactly 100 years from now (2126), and the 2122 scenario is the closest available modelled epoch to the end of the development lifetime and is therefore considered a representative output. Additionally, the four-year difference between 2122 and 2126 is negligible within the context of the future multi decadal climate change projections.

The Welsh Government have since updated the climate change allowances in April 2026[1]. The updated climate change allowances did not provide updates for sea level rise and therefore result in little to no change in the predicted tidal flood risk to the site.

1 Climate change allowances and flood consequence assessments

4.1.2 Model results

Figure 4-1 shows the 2122 0.5% AEP event. The eastern half of the site is predicted to flood, to depths of 15mm to 240mm. Areas of deeper flood depths are located in the southeastern corner with depths between 300mm and 600mm.

Further assessment of the modelling suggests that this is associated with wave overtopping of the proposed defences (in the form of spray) and is therefore unlikely to occur in actuality. Due to limitations associated with hydraulic and tidal modelling, proposed drainage systems and the representation of the rock armour revetment proposed at this location does not simulate the receding of wave spray from the area. This results in an overestimation of flood risk. Consequently, it is considered that the eastern parcel of land is likely to be flood free in the design event due to wave spray being able to drain back to the seaward side of the defence through the rock armour revetment.

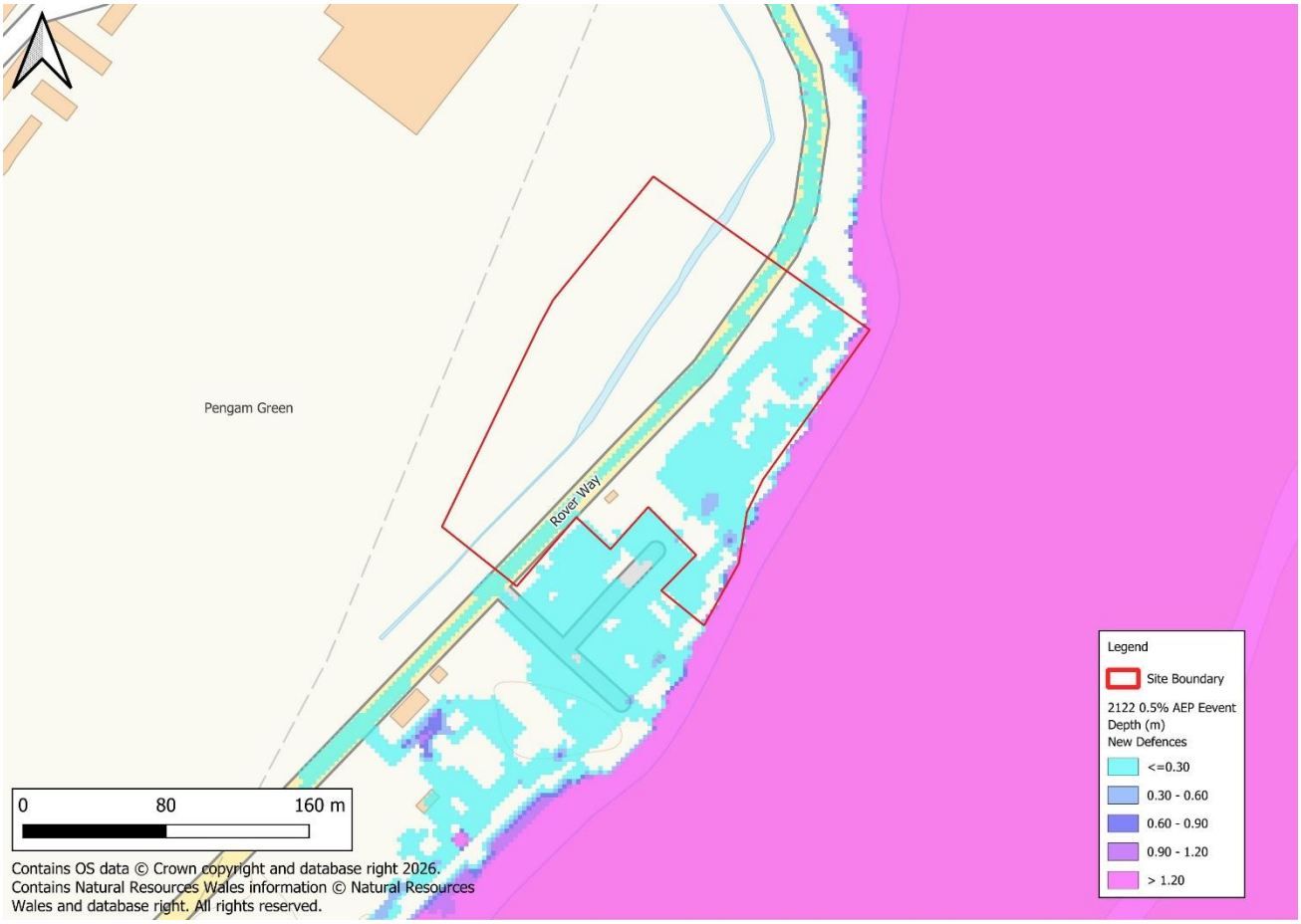

Figure 4-1 Flood Risk from the Sea - 0.5% AEP plus Climate Change Event

Figure 4-2 shows the post-development scenario of the 0.1% tidal event with climate change (2122). Most flood depths across the flooded area remain below 300mm, typically ranging from 40m to 260mm. Small areas with depths between 300mm and 600mm are located in the eastern area of the site. As within the 0.5% plus climate change event, the

shallow flooding predicted by this model is likely associated with overtopping from spray caused by waves.

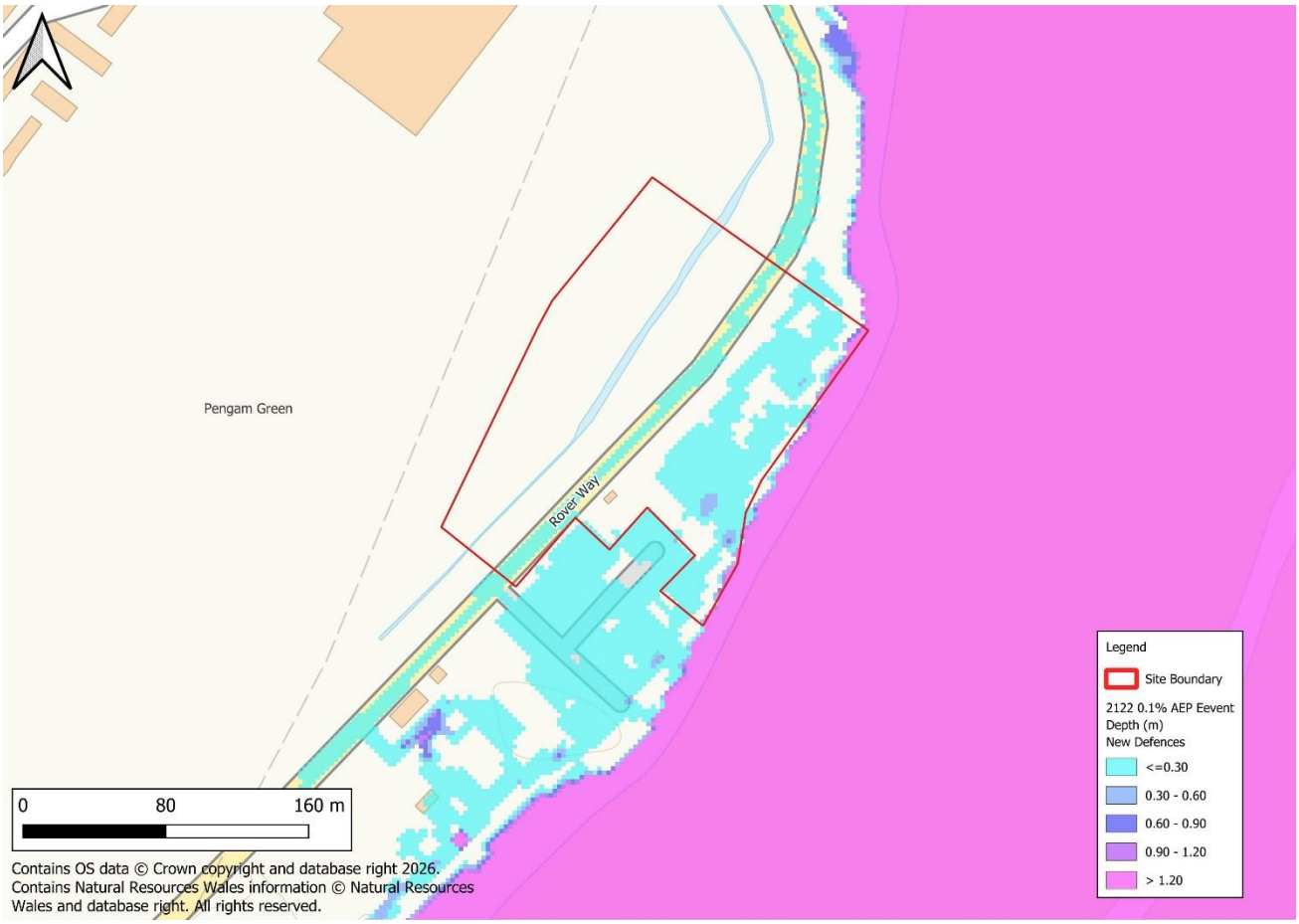

Figure 4-2 Flood Risk from the Sea - 0.1% AEP plus Climate Change Event

4.1.3 Breach

Breach and blockage guidance published by NRW in March 2026 details that breach events should be considered the 'design event' against which new developments should be assessed. In order to inform this SFCA and site appraisals, JBA undertook engagement with NRW in April 2026 to determine their requirements for breach for the site assessments. The NRW breach guidance states that once a defence is overtopped, the greater the risk of failure of that defence, particularly for earth embankments. The modelling presented above demonstrates that the defences will not be overtopped in all design events. The defences do not comprise an earth embankment, rather a rock revetment, and given their recent construction, the likelihood of breach is considered very low. As such, modelling of a breach scenario is not considered necessary for this defence. This approach has been agreed with NRW.

4.2 Flood Risk from Surface Water and Small Watercourses

As shown in Figure 3-2, FMfP for surface water and small watercourses identifies the site is predominantly in Flood Zone indicating a very low risk of flooding from this source.

However, isolated areas of the site are located within Flood Zone 2. The extent of flooding on the site is minimal, with flood water confined to the existing watercourse channel and a small, localised area of ponding on Rover Way.

In the absence of detailed modelling, the National Flood Hazard Mapping (NFHM) has been used the further assess surface water and small watercourse flood risk at the site.

The site is flood free in the 1% AEP plus climate change event, thus a figure has not been provided.

As shown in Figure 4-3, a small extent of surface water flooding occurs during the 0.1% AEP plus climate change event. The flood extent is shown to be retained in the watercourse channel in the western extent of the site. Localised ponding on Rover Way results in flood depths of up to 200mm.

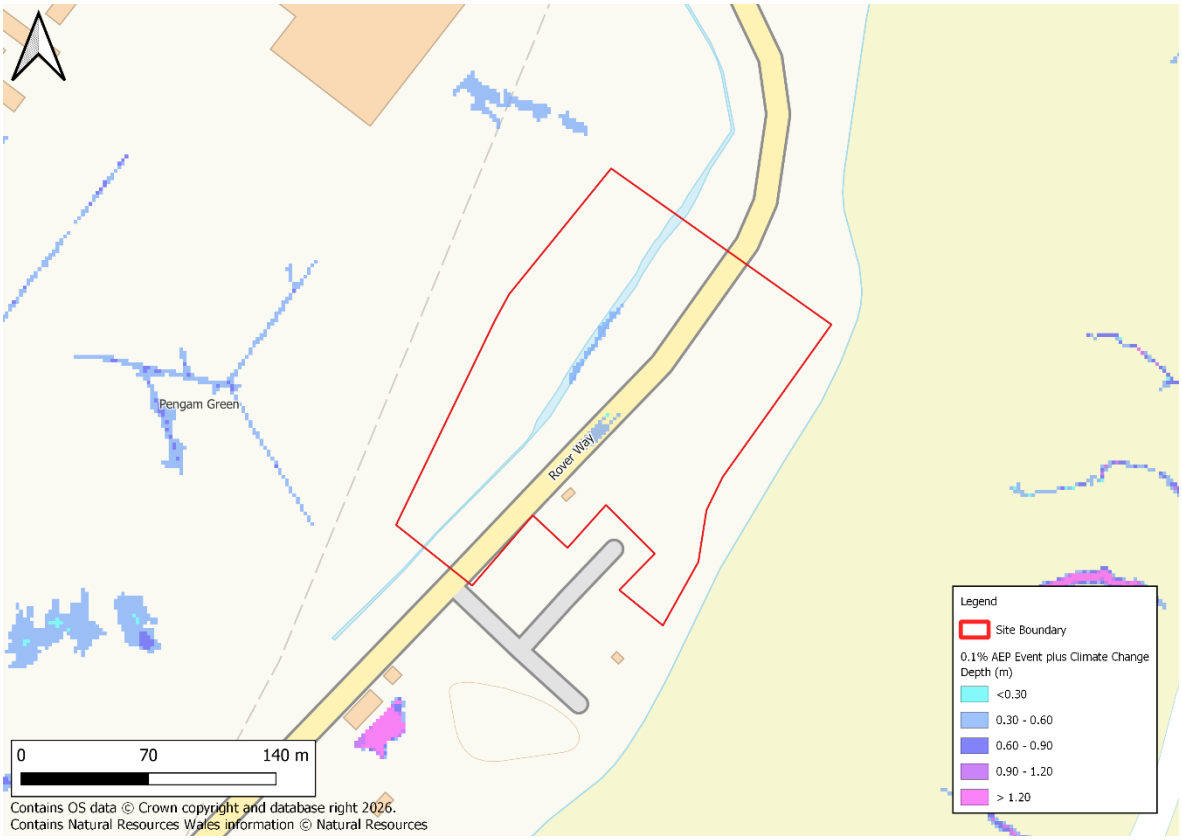

Figure 4-3 NFHM 0.1% AEP plus Climate Change event

5 Application of Flood Zones to Development Management Decisions

5.1 Flood Risk from the Sea

When considering a site for development, Sections 10 and 11 of TAN-15 outline the requirements for the type of development permitted in any given flood zone.

The western extent of the site is located within the TAN-15 Defended Zone, whilst the eastern extent of the site is located within Flood Zone 3. No Highly Vulnerable development shall be permitted within Flood Zone 3.

However, on completion of the Cardiff Coastal Defence Scheme, it is expected that the entirety of the site shall be located within the TAN-15 Defended Zone. Completion of the coastal defence scheme is anticipated for 2027, and the site is therefore likely to be designated as the Defended Zone well within the Plan period.

The site is located on greenfield land and is therefore considered a new development.

TAN-15 states the following for new development within the TAN-15 Defended Zone:

"The allocation of sites for new development in Defended Zones needs careful consideration as the failure of flood defences can lead to catastrophic flooding for areas behind those defences. Greenfield sites can provide important flood attenuation opportunities and have the ability to store a manage water in the event of flooding, they should not be built on unless they are replaced by suitable alternative sites which clearly contribute to flood management enhancement".

As discussed in Section 4.1.3, the Cardiff Flood model incorporates the new coastal defence scheme which is considered highly unlikely to breach over the lifetime of the development. Consequently, it could be considered that locating new development within the Defended Zone in this instance has negligible impact on the flood attenuation across the wider floodplain.

5.2 Flood Risk from Surface Water and Small Watercourses

While the site is predominantly located within Flood Zone 1 for surface water and small watercourses, Flood Zone 2 is present in minor, isolated areas on the site. These areas are associated with an ordinary watercourse and a small topographical depression along Rover Way.

Sections 10 and 11 of TAN-15 outline the requirements for the type of development permitted in any given flood zone. However, Section 10 and Figures 5 (flood frequency) and 6 (tolerable conditions) of Section 11 do not explicitly apply to the surface water and small watercourse zones in which this proposed development site lies.

It is recommended that the watercourse on site be retained and that development within its associated floodplains be avoided, with the exception of crossing points. Any crossings over an ordinary watercourse are likely to require Ordinary Watercourse Consent and

should be designed to minimise the impact on the watercourse and risks associated with a potential blockage.

Access and egress via Rover Way is considered acceptable.

Given the scale and nature of the surface water and small watercourse risk to the site, it is likely that a standalone FCA for surface water and small watercourses shall not be required. Instead, flood risk can be appropriately addressed through a comprehensive Flood Risk and Surface Water Drainage Strategy to support the planning application.

With respect to the subject site, it is likely that the proposals shall meet the aims and objectives of TAN-15 with regard to surface water and small watercourse risk.

6 Summary and Recommendations

The eastern extent of the site located in Flood Zone 3, while the western extent of the site is located in the TAN-15 Defended Zone of the FMfP for the Sea. However, on completion of the Coastal defence Scheme, anticipated to be in 2027, the entirety of the site is expected to be designated within the TAN-15 Defended Zone for the Sea. Therefore, the requirements for the TAN-15 Defended Zone will be applied to the entirety of the site. Flood Zone 2 of the FMfP - surface water and small watercourses is also present on site. As the site is located within these flood zones, it triggers the requirement for an FCA.

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.
- Any watercourse within the site should be retained and development within their associated floodplains avoided, with the exception of crossing points and water-compatible development.
- Any FCA for the site should demonstrate considerations for appropriate access and egress to the site in all surface water and small watercourse design events.
- The surface water drainage strategy should demonstrate how surface water shall be managed on site, in line with the Statutory Standards for SuDS in Wales, and TAN-15.

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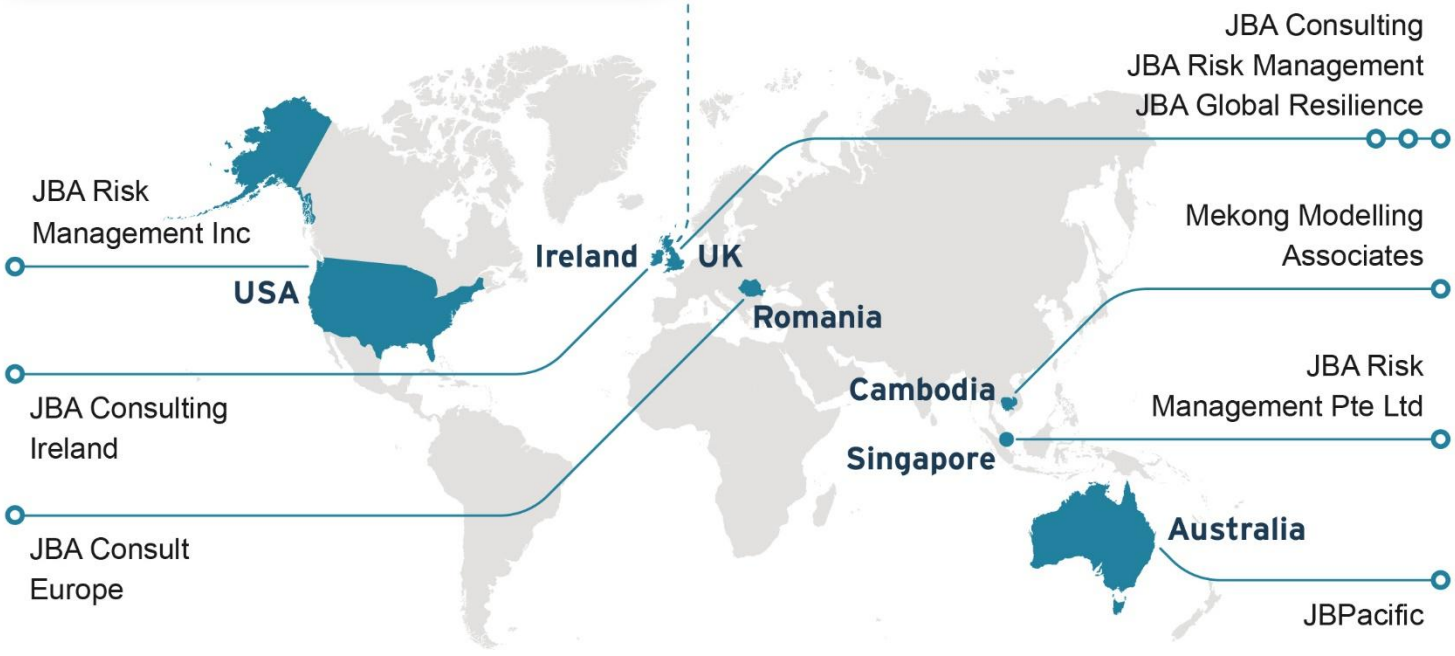

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