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Cardiff City Council Flood Consequences Assessment - Land at Rover Way

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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 'Land at Rover Way', 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	Land at Rover Way
Site ID	66
Site Area	22ha
Existing Land Use	Greenfield
Purpose of Development	Business, Industrial, Storage and Distribution
OS NGR	321653 176778
Access Location	Seawall Road, Rover Way

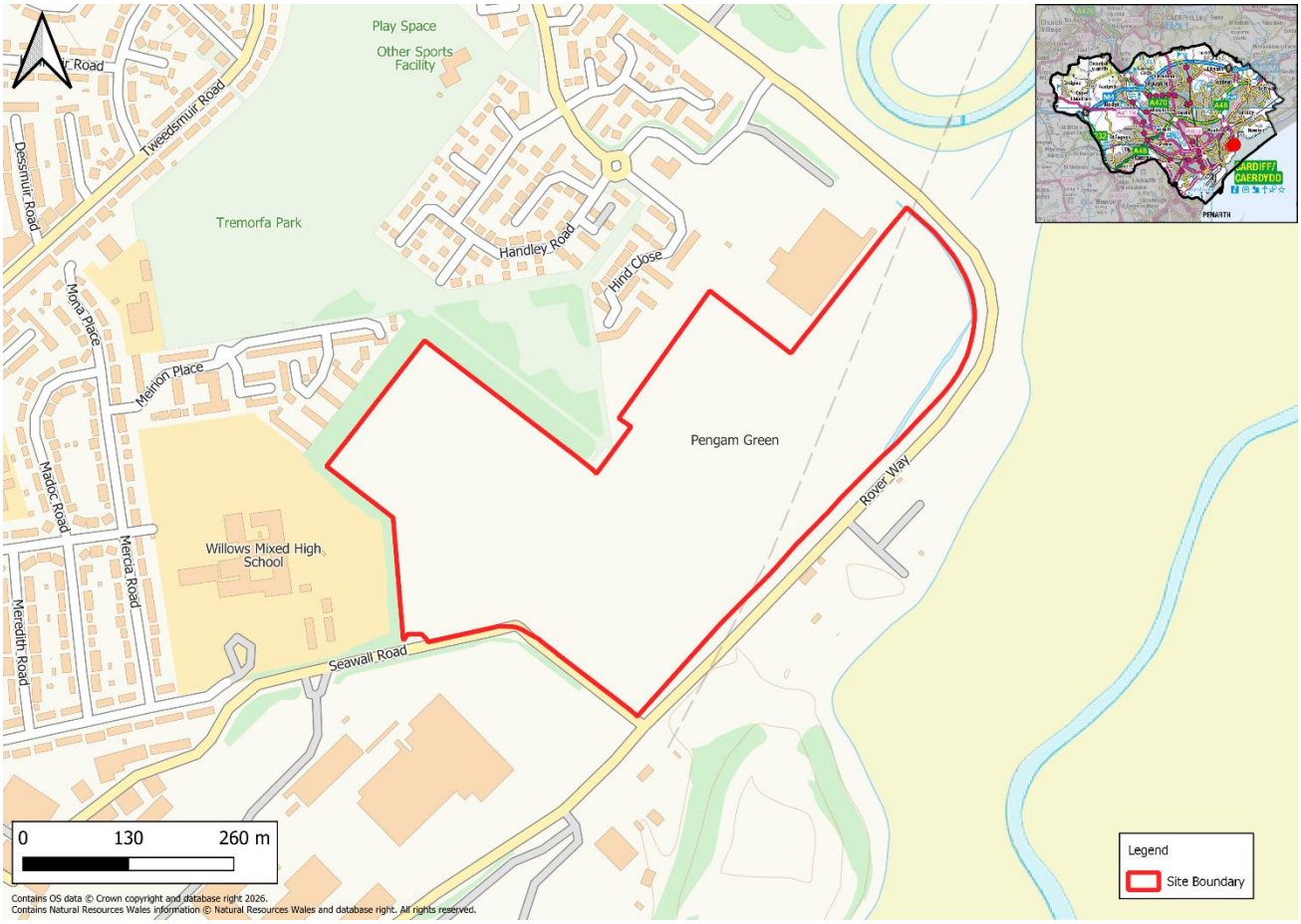

Figure 2-1 Site Location

2.1 Development Proposals

The proposed development is for business and industrial use on greenfield land and is classed as a Less Vulnerable development.

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.

Levels across the site are mostly flat with localised areas of higher elevation. The central area of the site has an elevation of approximately 6.5mAOD. The western extent of the site sits at a higher elevation of 7.5mAOD, with the southeastern corner located at a level of 8.5mAOD. A small embankment is evident along the eastern boundary, the crest level of which lies at approximately 8.8mAOD.

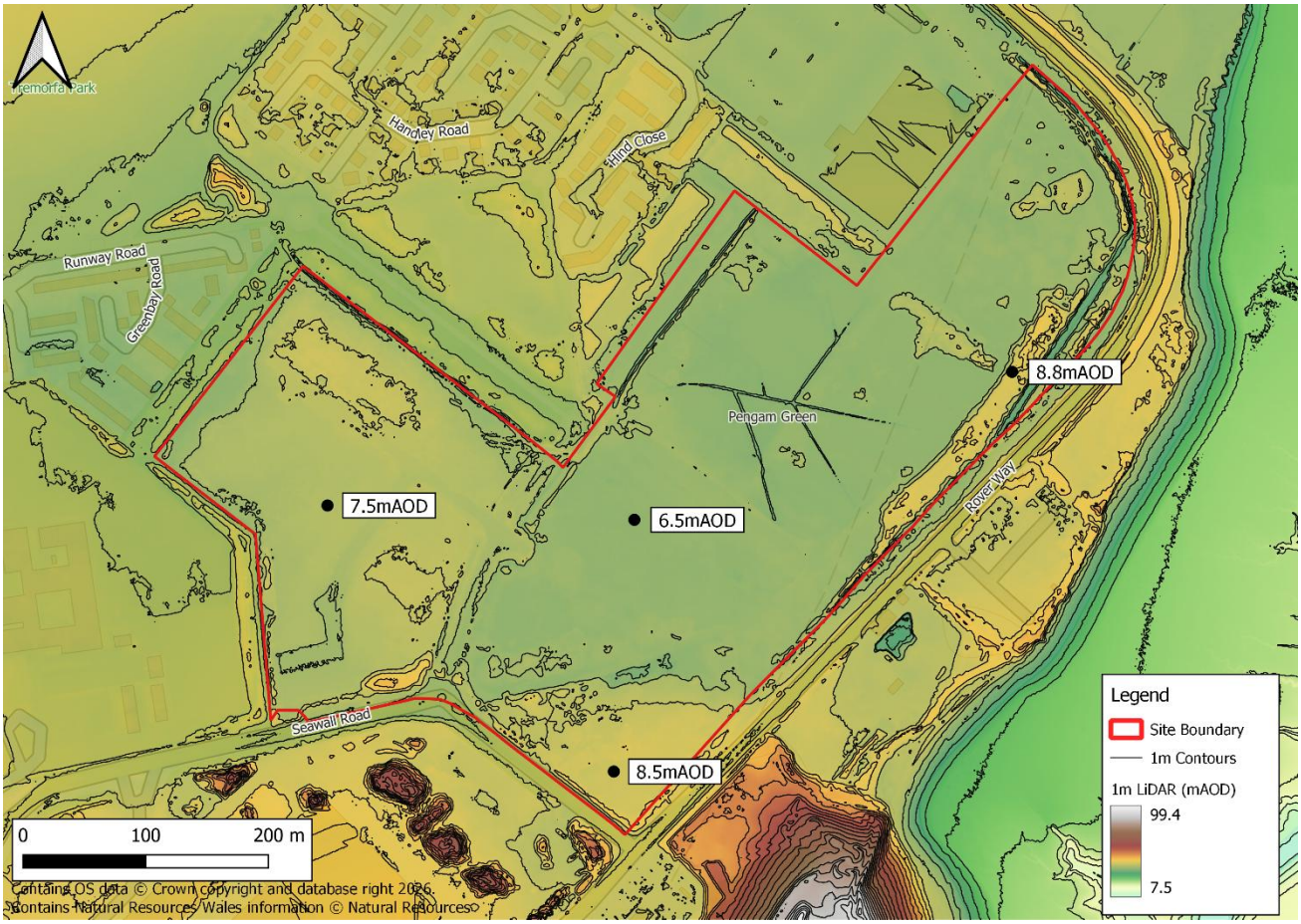

Figure 2-2 Site Topography

2.3 Watercourses and Flood Defences

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

The Rhymney River outfalls into the Severn estuary and it passes through the Cardiff Mudflats, which is approximately 100m to the east of the proposed site at its closest point. An ordinary watercourse (watercourse A) is present along the western part of the site, extending across the central western area. Another ordinary watercourse (watercourse B) is situated along the northwestern boundary, and a third watercourse (watercourse C) is positioned along the eastern boundary stretching from the north to the central eastern boundary. The downstream routes are unknown; however, it is likely to outfall to the Severn Estuary or Rhymney River.

The proposed candidate site is within an area benefitting from defences. Flood defences are present along the banks of the River Rhymney and the Severn Estuary. Along the Severn Estuary, defences comprise the remnants of rock armour, whilst along the River Rhymney defences are revetments, a sheet-pile wall, earth embankment, and a section of severely eroded block stone defences along the western bank. 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 in the near future.

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.

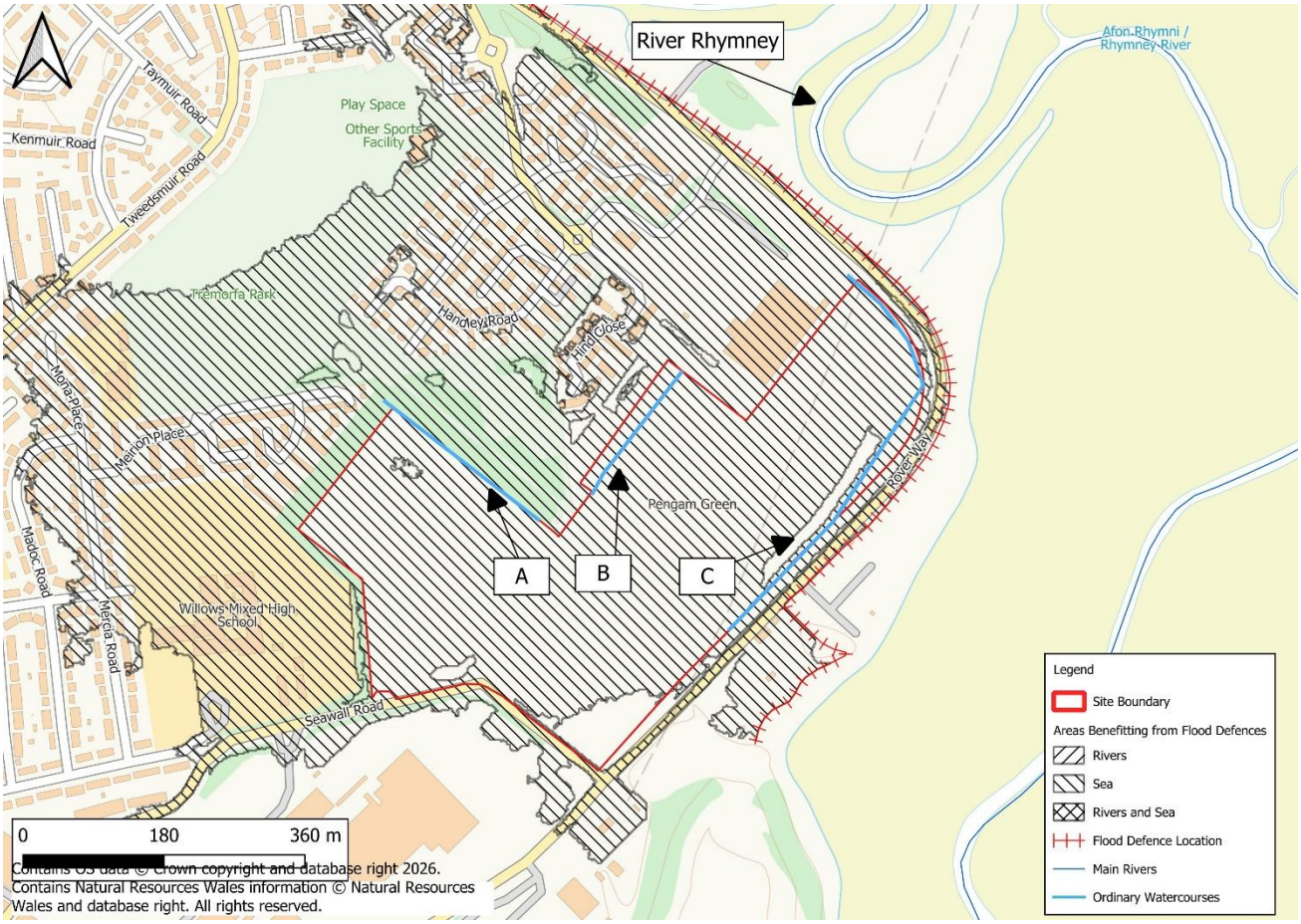

Figure 2-3 Watercourses and Flood Defences

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 identifies 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	Commercial and Industrial
Form of Development	New Development
Vulnerability Classification	Less Vulnerable Development
Flood Map for Planning - Rivers	Flood Zone 1
Flood Map for Planning - Sea	Flood Zone 3, TAN-15 Defended Zone for the Sea - as shown in Figure 3-1
Flood Map for Planning - Surface Water and Small Watercourses	Flood Zones 1, 2 and 3 - as shown in Figure 3-2

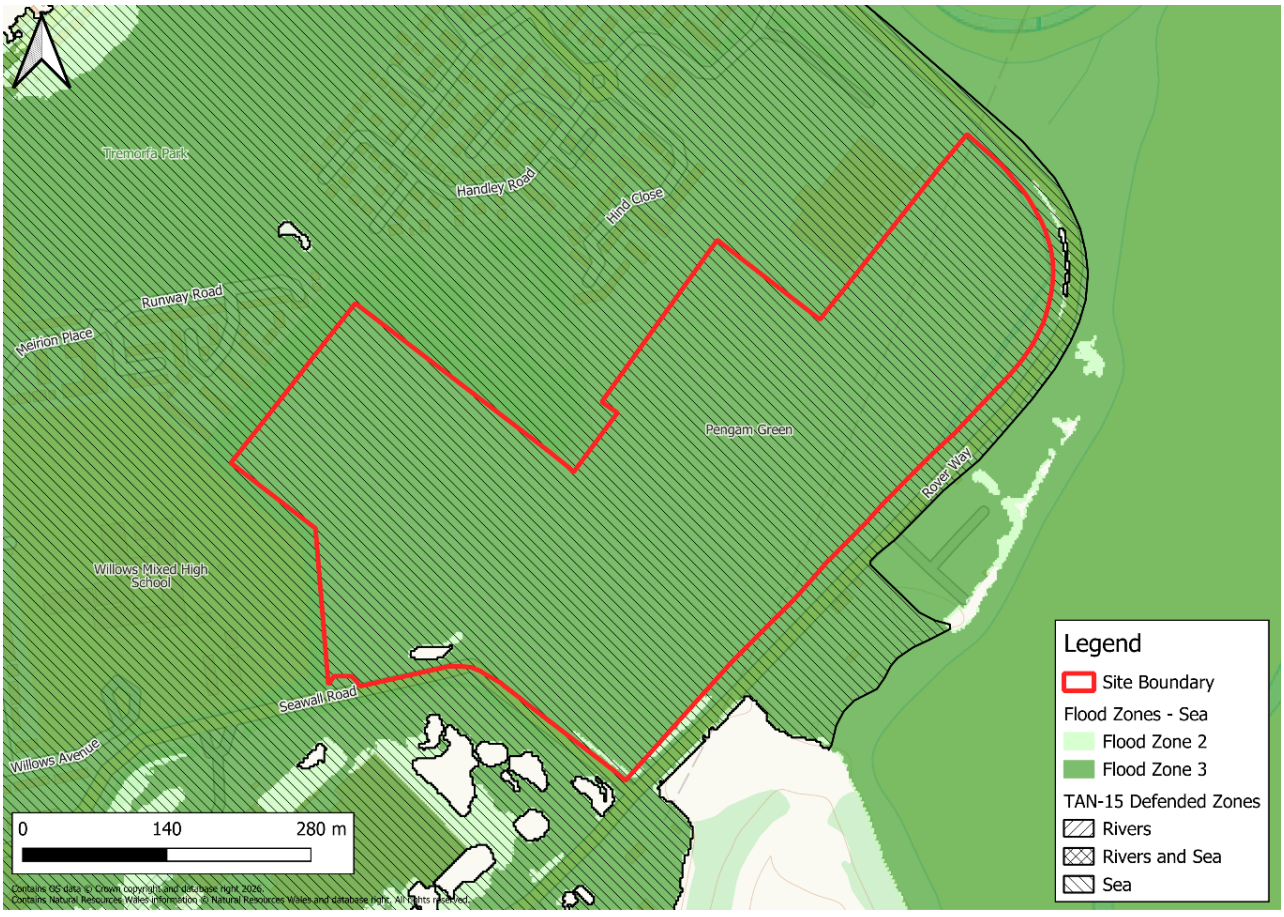

Figure 3-1 Flood Map for Planning - Sea

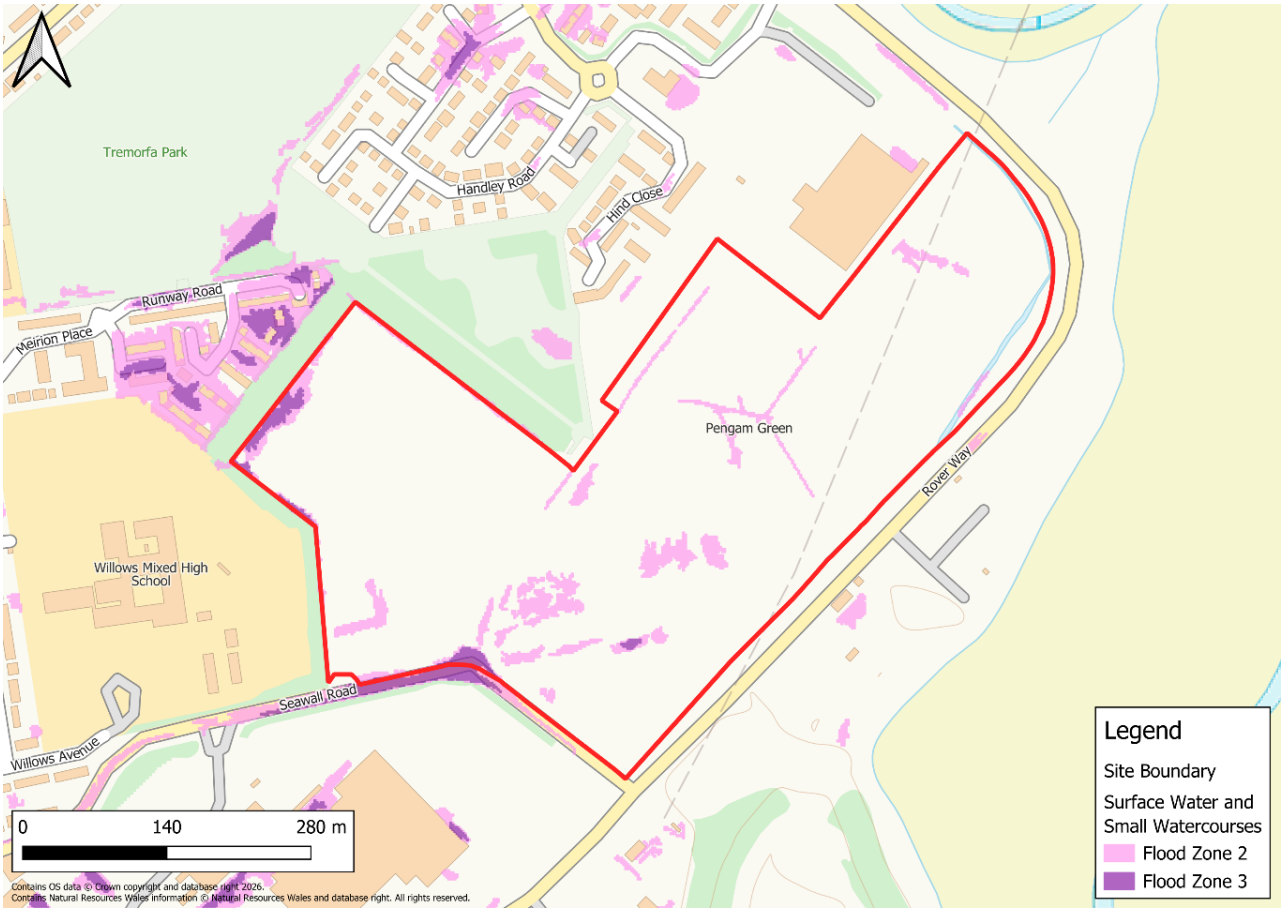

Figure 3-2 Flood Map for Planning - Surface Water and Small Watercourses

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 a **low** risk of fluvial flooding.
Flood Risk from the Sea	✓	The site's location within the TAN-15 defended Zone indicates that the site is at a **low** risk of flooding from this source. **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 indicates 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 4.1**.
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 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**.
Flood Risk from Sewers	×	The DCWW sewer flood history data shows that there have been 174 sewer flooding events within the Splott electoral ward in which this site is located. 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 site is located in Flood Zone 3 and 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% (1 in 200) AEP for sea (plus climate change and freeboard). The presence of the site within the TAN-15 Defended Zone triggers the requirement for an FCA.

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.

Despite the modelling assessing a 100-year lifetime of development, it is assumed that this development would have a lifetime of 75 years in line with TAN-15 guidance for non-residential developments. Therefore, any results are precautionary as they assess the site beyond the lifetime of the development.

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.

4.1.2 Model Results

Figure 4-1 and Figure 4-2 demonstrate that the proposed candidate site is predicted to be flood-free in both the 2122 0.5% AEP and the 2122 0.1% AEP events. As the model results are for 2122 they assume a lifetime of development of 100 years, this is greater than the intended lifetime of development of 75 years that is typical of industrial or business use developments.

1 Climate change allowances and flood consequence assessments

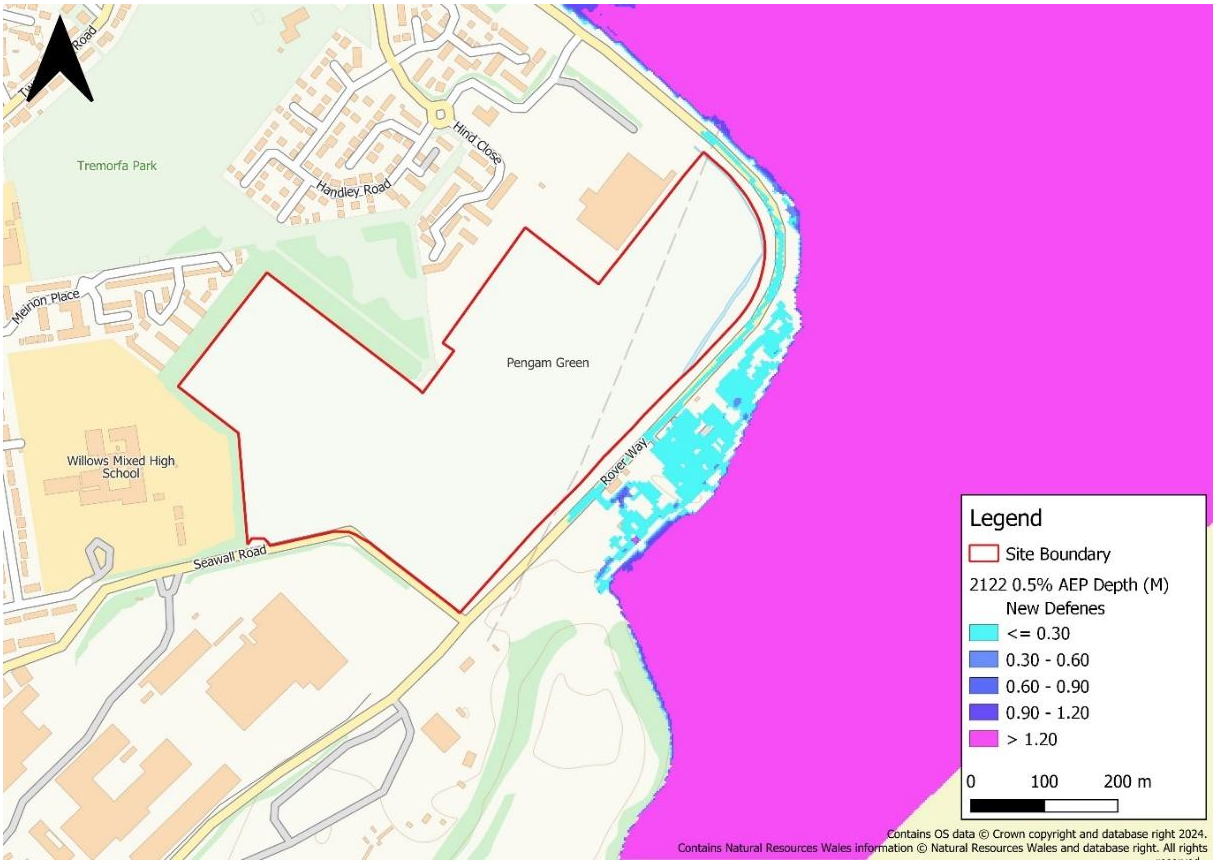

Figure 4-1 2122 0.5% AEP event (Defended)

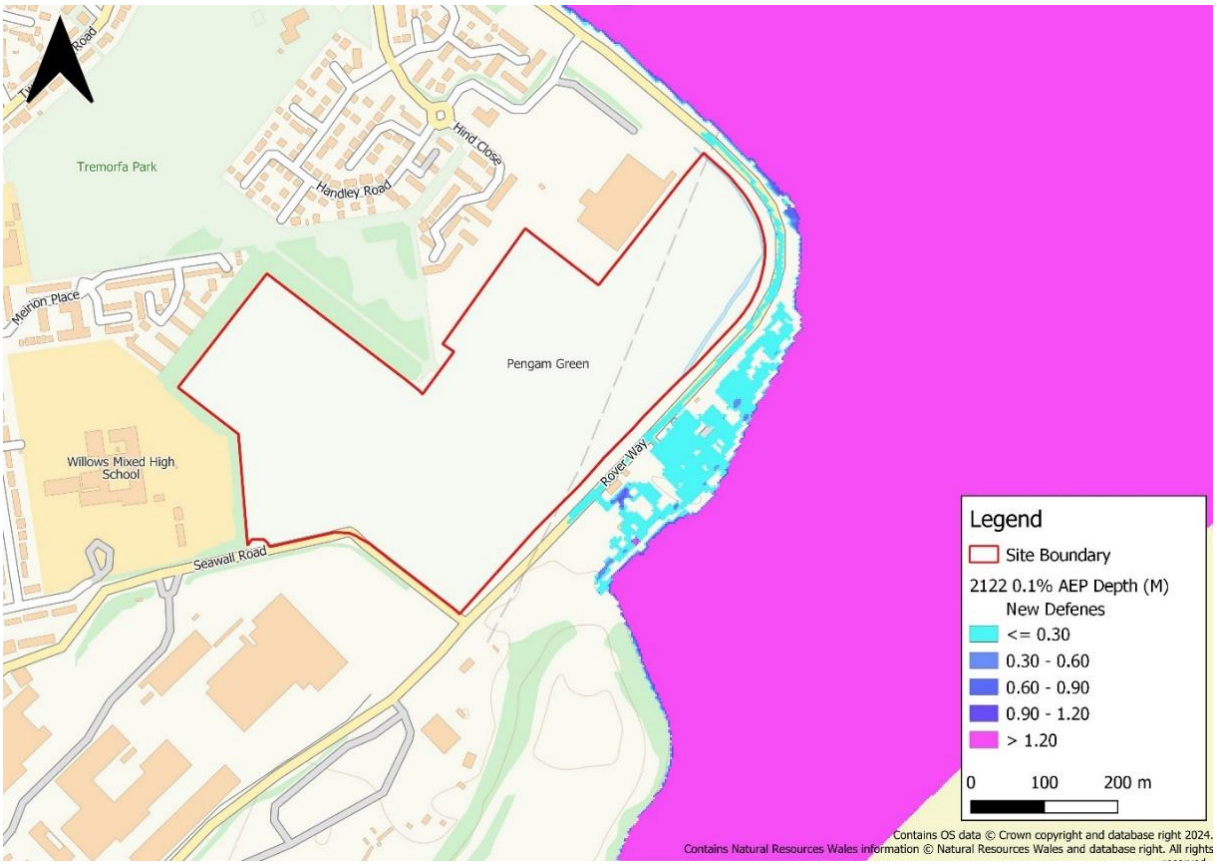

Figure 4-2 2122 0.1% AEP event (Defended)

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

The FMfP - Surface Water and Small Watercourses (Figure 3-2) shows that most of the site is within Flood Zone 1 and it at a very low risk of flooding. This means that there is a less than 0.1% AEP chance (with an allowance for climate change) of surface water and small watercourse flooding at the site.

However, there are isolated areas of Flood Zones 2 and 3 present within the site.

The largest area of the site within Flood Zone 3 is present along the southwestern and western boundaries of the site, associated with surface water ponding along Seawall Road, encroaching into the southern boundary of the site and accumulating within a topographical depression.

Along the western boundary, ponding occurs within a topographical depression that lies within Flood Zones 2 and 3. Further south along this boundary, additional surface water accumulates in a separate topographical depression, which is also located within Flood Zones 2 and 3.

Flood Zone 2 is present within Watercourses A, B and C. Further areas of Flood Zone 2 are found within localised topographic depressions and areas of uneven ground surface.

In the absence of detailed modelling, the NRW National Flood Hazard Mapping (NFHM) has been used to provide a further assessment of flooding on the site.

As shown in Figure 4-3, during the 1% AEP plus climate change event, ponding in the south of the site reaches depths of up to 350mm. Ponding along the western and southwestern boundary reaches depths up to 390mm.

One small, isolated area of surface water flooding is present in the southeast of the site, showing predicted depths up to 309mm.

As shown in Figure 4-4, during the 0.1% AEP plus climate change event, ponding in the south of the site reaches depths of up to 620mm, with additional ponding of around 600mm along the western and southwestern site boundaries. Isolated pockets of ponding across the southern extent of the site reach depths of up to 400mm.

Watercourse A is predicted to have in-channel depths of up to 680mm, while Watercourse B has depths of up to 330mm. Watercourse C has depths below 200mm. Flood water remains within the channel across all of these watercourses.

In the 0.1% AEP plus climate change event, Seawall Road is predicted to flood to depths of 540mm, with the flooding extent stretching further west along Seawall Road. Rover Way is predicted to experience one small area of ponding with depths below 200mm predicted.

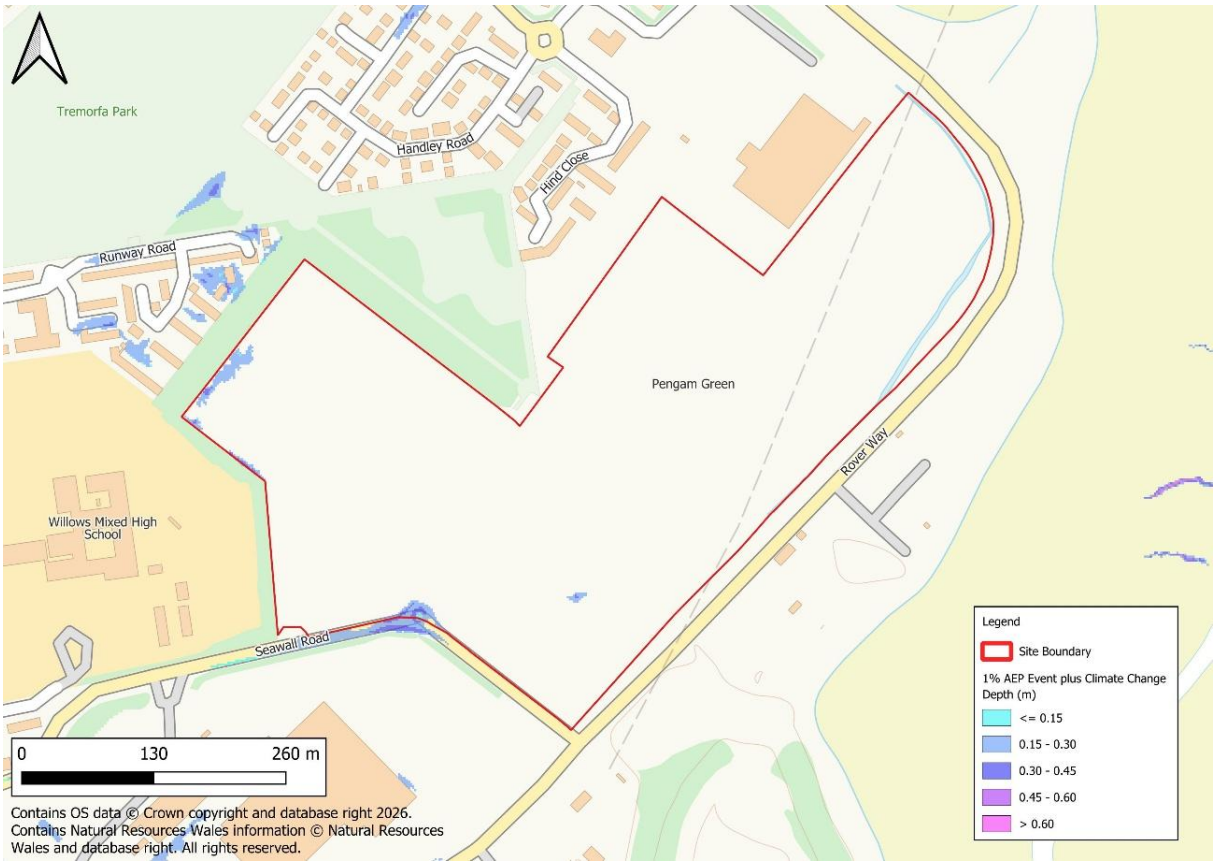

Figure 4-3 Flood Risk from Surface Water and Small Watercourses - 1% AEP plus Climate Change

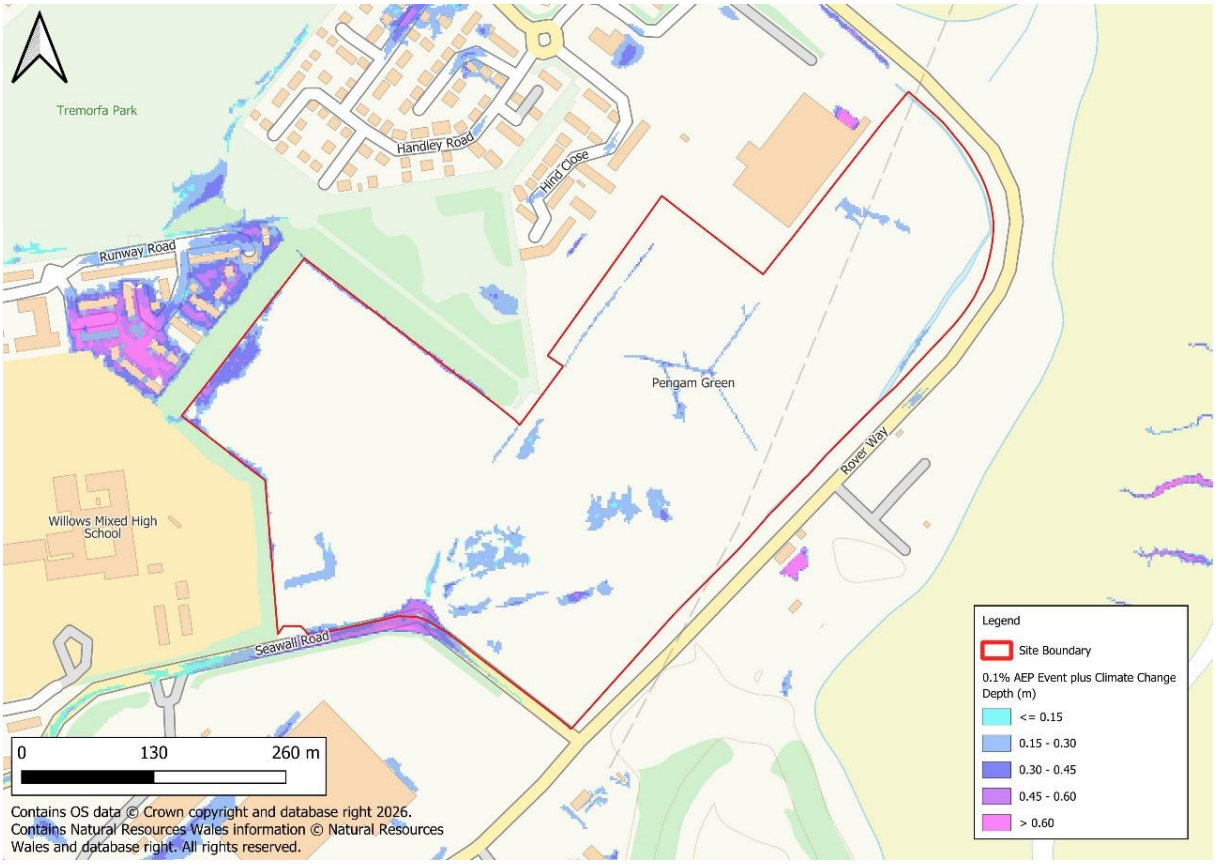

Figure 4-4 Flood Risk from Surface Water and Small Watercourses - 0.1% AEP plus Climate Change

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 proposed development is located within a TAN-15 Defended Zone for the Sea. The site is located on greenfield land and is therefore considered a new development.

TAN-15 states the following for new development within the 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".

The site is predicted to be flood free in all design events. 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.

Due to the presence of the TAN-15 Defended Zone for the Sea, a planning application should be accompanied by a site-specific FCA.

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 watercourse, some areas of the site are located in Flood Zones 2 and 3. These areas are associated with surface water accumulation within ditches and topographical lows across the site, and a surface water flow path along Seawall Road.

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 along the site's eastern boundary be retained and that development within its associated floodplains be avoided, with the exception of crossing points and water-compatible development. Any crossings over an ordinary watercourse will require Ordinary Watercourse Consent and should be designed to minimise the impact on the watercourse and risks associated with a potential blockage.

Flow paths associated with surface water flooding (i.e., flooding not associated directly with a small watercourse) should be carefully considered. Where built development is proposed

within such flow paths, this should be fully justified and supported by robust hydraulic assessment and suitable mitigation measures.

Access and egress via Rover Way is considered acceptable.

Due to the presence of Flood Zones 2 and 3 of the FMfP for Surface Water and Small Watercourses across the site, a planning application should be accompanied by a site-specific FCA to assess this risk to the development proposals.

With respect to the subject site, it is likely that the above requirements and recommendations can be satisfied through appropriate assessment, the implementation of SuDS, and site layout design providing a suitable buffer from existing onsite watercourses.

6 Summary and Recommendations

The site is located in the Defended Zone of the FMfP for the Sea, and Flood Zones 2 and 3 of the FMfP for Surface Water and Small Watercourses. As the site is located within the flood zones it triggers the requirement for an FCA to be undertaken.

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.
- A Drainage Statement shall be required demonstrating 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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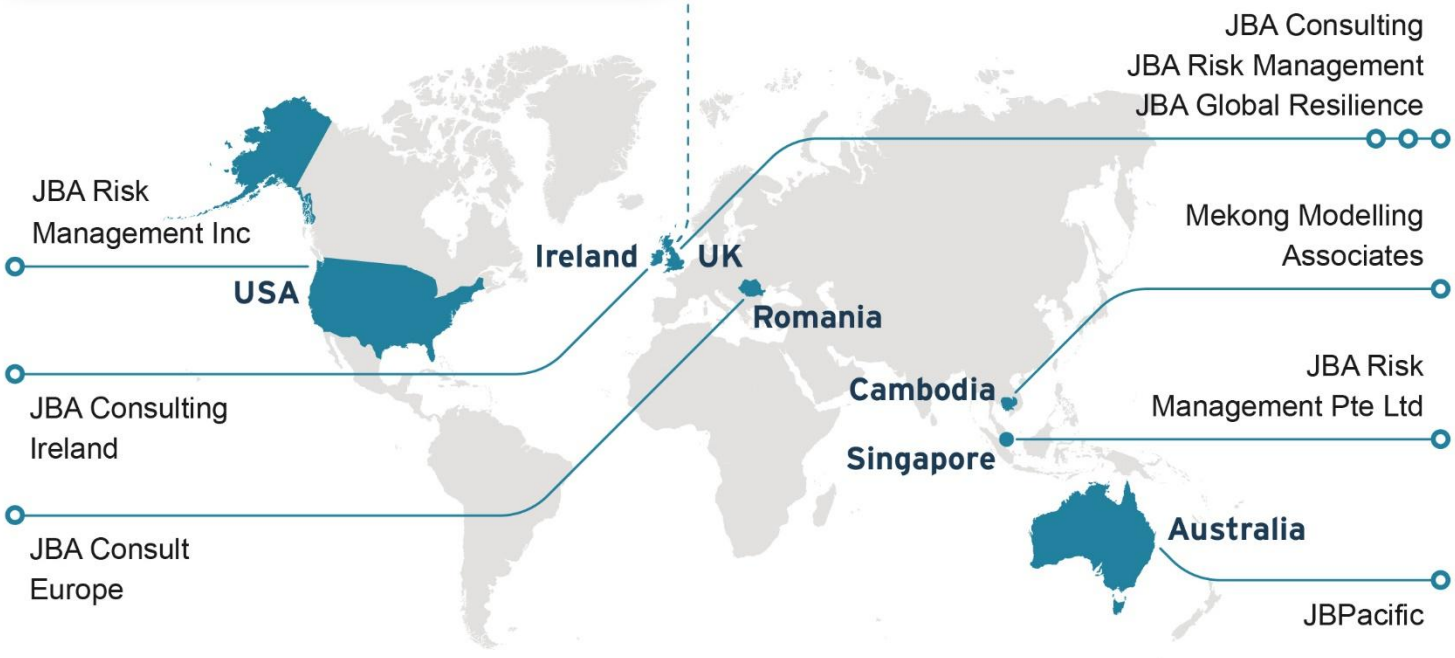

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