www.jbaconsulting.com

Cardiff Council Strategic Flood Consequences Assessment - Dwrlyn Cottage

Version 1

Prepared for
Cardiff Council

Date
May 2026

Document Status

Issue date	May 2026
Issued to	Cardiff Council
BIM reference	RSX-JBA-XX-XX-RP-HM-0007-S3-P01-Dwrlyn_Cottage
Revision	S3-P01
Prepared by	Bethany Adams BSc (Hons) Assistant Analyst
Reviewed by	Charlotte Lickman BSc (Hons) PG Cert MCIWEM C.WEM Senior Consultant
Authorised by	Faye Tomalin BSc (Hons) MSc MCIWEM C.WEM Project Director

Carbon Footprint

The format of this report is optimised for reading digitally in pdf format. Paper consumption produces substantial carbon emissions and other environmental impacts through the extraction, production and transportation of paper. Printing also generates emissions and impacts from the manufacture of printers and inks and from the energy used to power a printer. Please consider the environment before printing.

Accessibility

JBA aims to align with governmental guidelines on accessible documents and WGAG 2.2 AA standards, so that most people can read this document without having to employ special adaptation measures. This document is also optimised for use with assistive technology, such as screen reading software.

Contract

JBA Project Manager	Charlotte Lickman
Address	8 High Street, Kings Chambers, Newport, NP20 1FQ
JBA Project Code	2026s0106

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

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Cardiff Council and its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to Cardiff Council for the purposes for which it was originally commissioned and prepared.

No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by JBA. This Report cannot be relied upon by any other party without the prior and express written agreement of JBA.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between January and May 2026 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

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.

Copyright

Contents

List of Figures

List of Tables

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 'Dwrlyn Cottage', 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 (TAN-15). Furthermore, recommendations will be provided, where appropriate, 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.

Table 2-1 Site Summary

Site name	Dwrlyn Cottage
Site ID	8
Site area (ha)	0.49
Existing land use	Brownfield land
Purpose of Development	Residential (Single dwelling)
OS NGR	ST 10023 79942
Access location	Unnamed track, connected to Llantrisant Road (A4119)

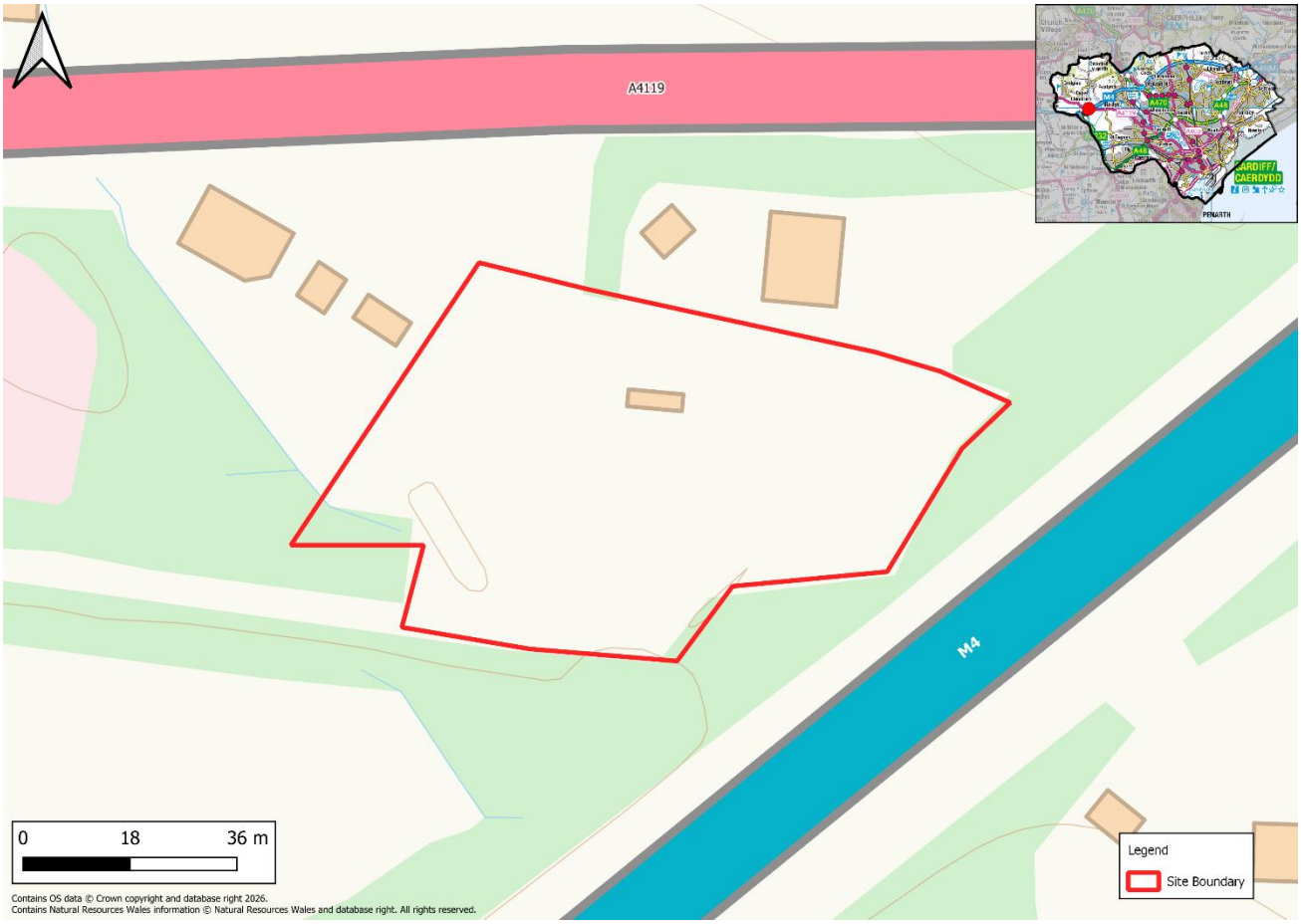


Figure 2-1 Proposed development site

2.1 Development proposals

The proposed development is for a residential property (single dwelling) which is classed as a Highly Vulnerable Development. The site is brownfield land, associated with the existing dwelling.

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[1] across the site has been reviewed and is shown in Figure 2-2.

Levels across the site slope in a south-westerly direction. The highest ground levels are in the north-eastern corner of the site at approximately 56.65mAOD, declining to approximately 46.96mAOD in the south-western corner of the site.

1 https://datamap.gov.wales/maps/lidar-data-download/

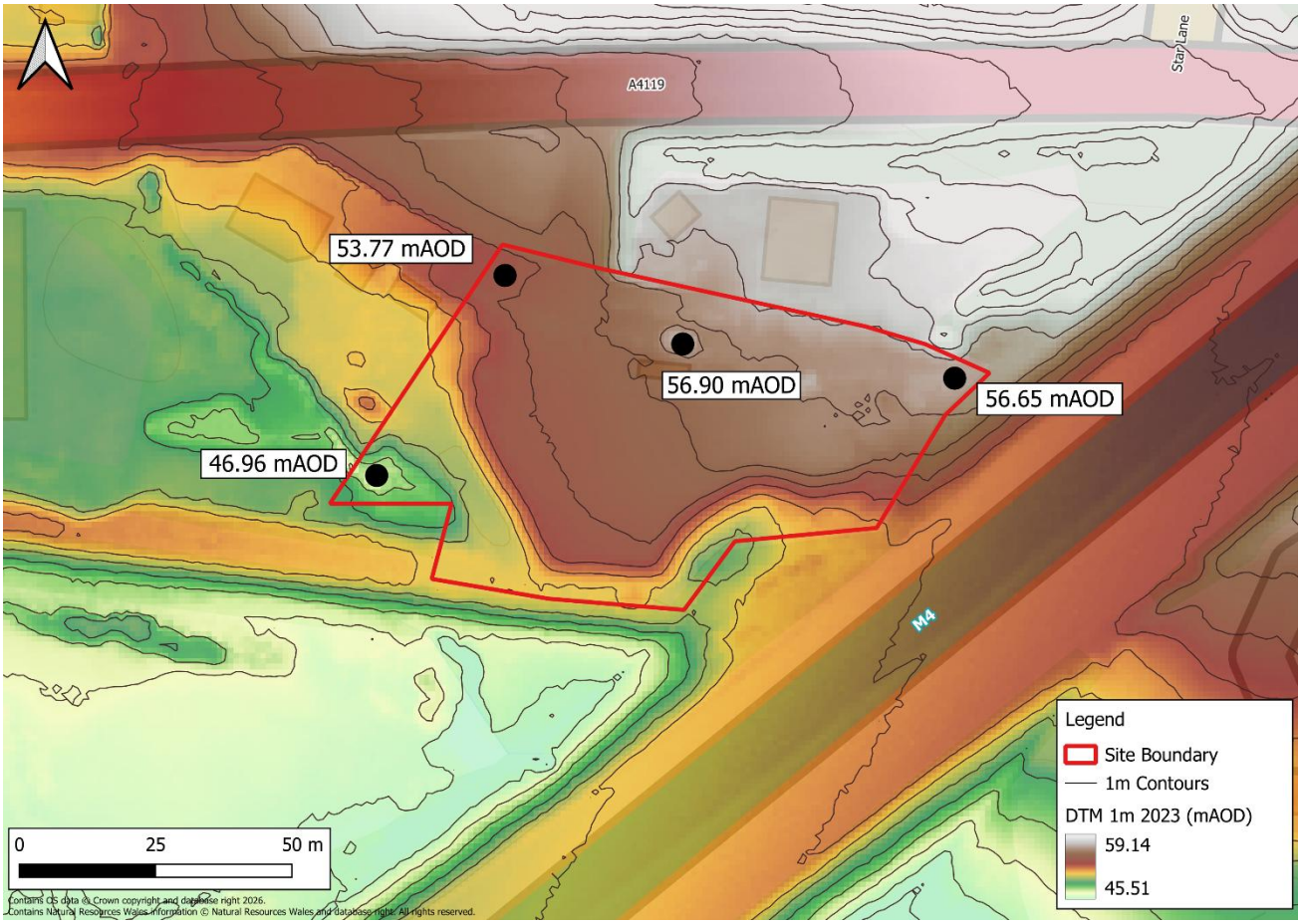


Figure 2-2 1m Lidar

2.3 Watercourses and Flood Defences

Figure 2-3 shows the locations of the nearest watercourses to the site. An unnamed ordinary watercourse flows in a general southerly direction through the western corner of the site. Approximately 70m upstream of the site the watercourse is culverted under Llantrisant Road (A4119). The channel also appears to pass beneath the area of raised ground along the southern site boundary, and approximately 50m to the south of the site, the watercourse is culverted again, beneath the M4. The watercourse continues south for approximately 1.26km before discharging into the Nant Glaswg, which is designated as an NRW Main River.

The site is not within an area that benefits from flood defences.

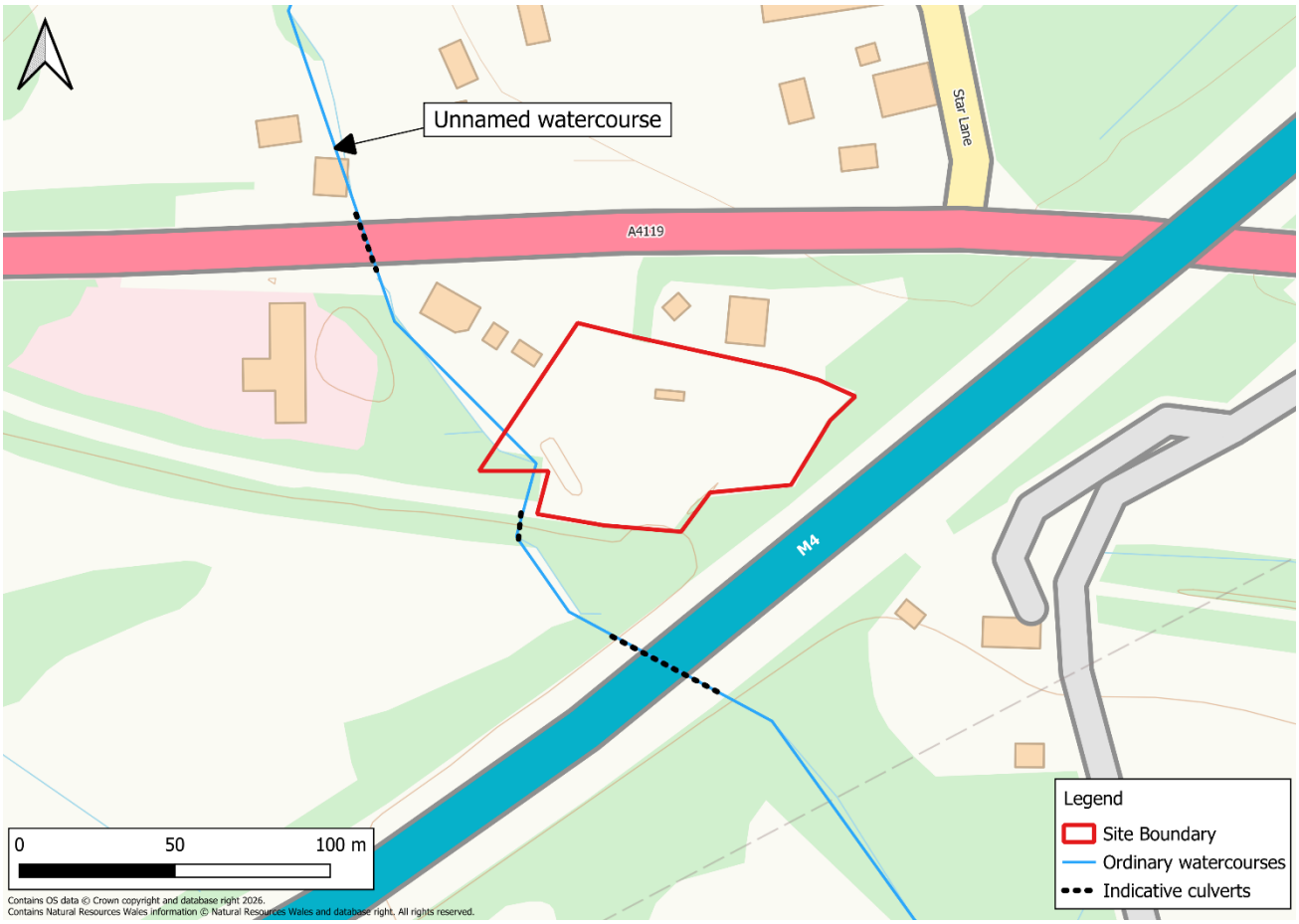


Figure 2-3 Watercourses

3 Planning Policy and Flood Risk

TAN-15 provides a framework within which flood risk arising from rivers, the sea, and surface water, as well as the risk of coastal erosion, 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 (FMfP) 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 (Single dwelling)
Form of Development	Redevelopment
Vulnerability Classification	Highly Vulnerable Development
Flood Map for Planning - Rivers	Flood Zone 1
Flood Map for Planning - Sea	Flood Zone 1
Flood Map for Planning - Surface Water and Small Watercourses	Flood Zones 1, 2 and 3 - shown in Figure 3-1 below.

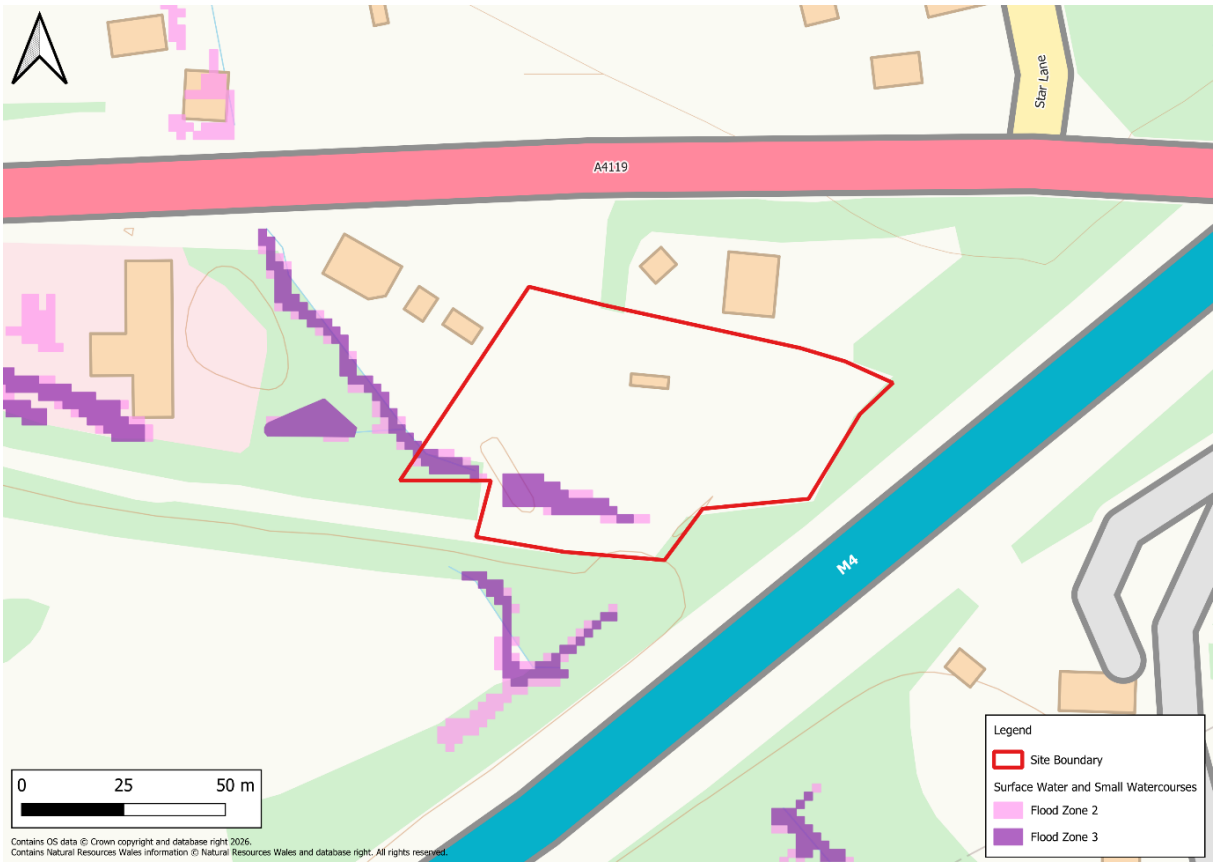


Figure 3-1: Flood Map for Planning - Surface Water and Small Watercourses

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 are summarised in Table 4-1.

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 site's location within Flood Zone 1 of the FMfP for the Sea indicates that the site is at **very low** risk of tidal flooding.
Flood Risk from Surface Water and Small Watercourses	✓	The site is predominantly at **very low** risk of surface water flooding, with a **high risk** shown in the south of the site. **See Section 4.1 for further assessment**.
Flood Risk from Groundwater	×	JBA's Groundwater risk of emergence map shows that the site is at very low risk of groundwater emergence, and there are no nearby groundwater incidents. Therefore, it is concluded that the risk of flooding is **very low.**
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 Cardiff SFCA has identified that there have been 14 sewer flooding incidents within the Pentyrch and St Fagans electoral ward. However no specific sewer flooding incidents have been named within the site. Therefore, it is concluded that the risk of flooding is **low**.

4.1 Flood Risk from Surface Water

Surface water flooding occurs when rain falling on saturated ground flows overland, following the local topography. Surface water flooding and subsequent overland flow can therefore pose a risk to both the development site and the surrounding land. Overland flow may originate from the site itself or adjoining land at a higher elevation, from which flow migrates onto the development.

As show in Figure 3-1, the FMfP for Surface Water and Small Watercourses indicates that the site is predominantly located within Flood Zone 1 for this flood source, associated with a very low risk of flooding.

An area in the south of the site is shown to be located within Flood Zones 2 and 3 for surface water and small watercourses. This flood extent is associated with the unnamed watercourse which flows in a general southerly direction through the west of the site.

In the absence of detailed hydraulic modelling of the site, the NRW National Flood Hazard Mapping (NFHM) has been used to provide a further assessment of surface water and small watercourse flood risk to the site. The NFHM is used to define the FMfP surface water and small watercourses Flood Zones, but inspection of the NFHM data provides additional information on flood depth, velocities and hazard, and provides greater insight into the mechanisms and accuracy of the flood mapping.

During both the 1% AEP and 0.1% AEP plus climate change events, flooding is predominantly confined to the watercourse corridor, as shown in Figure 4-1 and Figure 4-2. However, the watercourse is shown to overtop, causing flooding to an area in the southern part of the site. Flood depths of up to 690mm and 730mm are predicted during the 1% AEP and 0.1% AEP plus climate change events, respectively.

Due to the broadscale nature of the NFHM dataset, often channels, culverts and structures are omitted or not accurately represented which can often result in an overestimation of risk, which is likely to be the case in this instance. Consequently, further analysis through hydraulic modelling could be undertaken to further establish the baseline flood risk to the site. This may result in the flood extent being greatly reduced compared to the FMfP and NFHM outputs.

It is anticipated that the watercourse is culverted beneath the area of raised ground near to the south of the site. It is unlikely that a culvert at this location is modelled accurately within the NFHM dataset, and therefore causes the water to back up, exceeding the capacity of the watercourse and encroaching into the site. Subsequently, further analysis could be undertaken to further establish and refine the small watercourse flood extent.

The main access and egress route to the site is via the unnamed track located to the north-west, which provides a direct connection to Llantrisant Road (A4119). The unnamed track is predicted to remain flood free during both the 1% AEP and 0.1% AEP plus climate change events. Approximately 200m to the west of the site Llantrisant Road is predicted to experience shallow ponding up to depths of 250mm and 270mm in the 1% AEP and 0.1% AEP plus climate change events, respectively. Given the shallow depths predicted, access and egress is considered to be available in all design events.

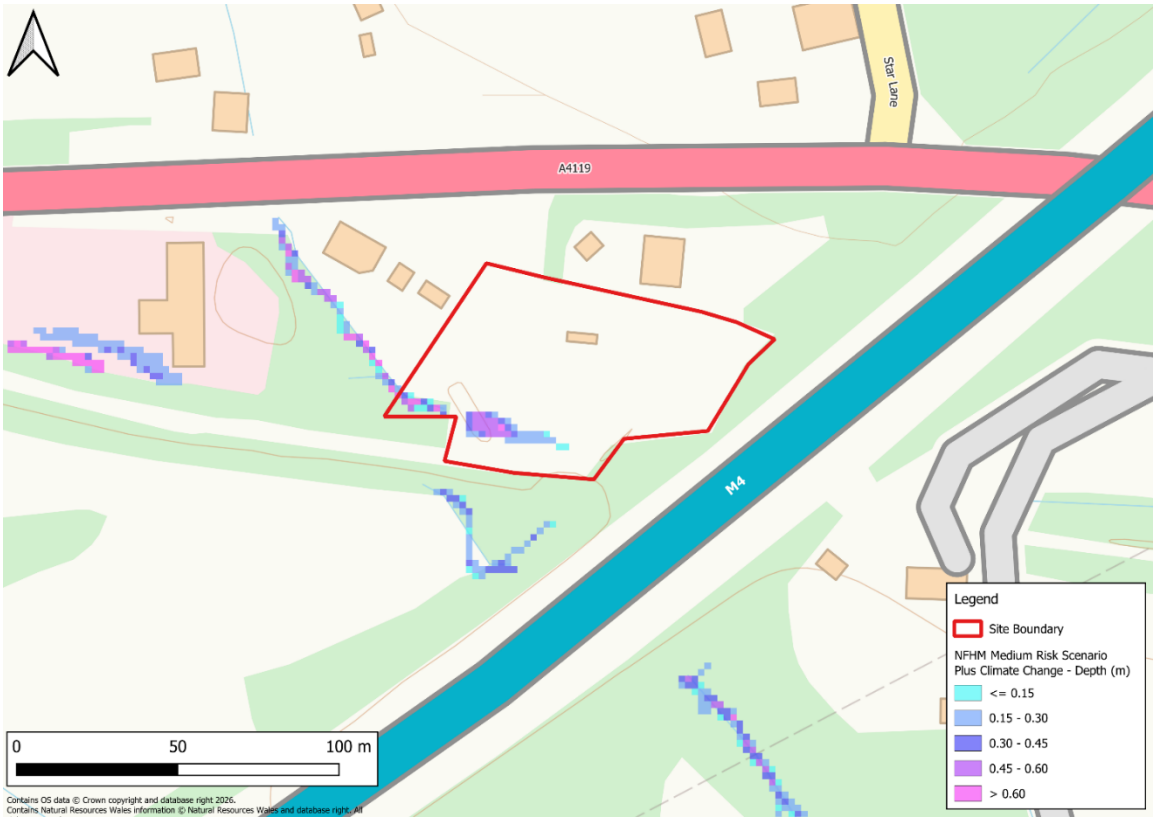


Figure 4-1: Flood Risk from Small Watercourses - 1% AEP + Climate Change - Flood depths

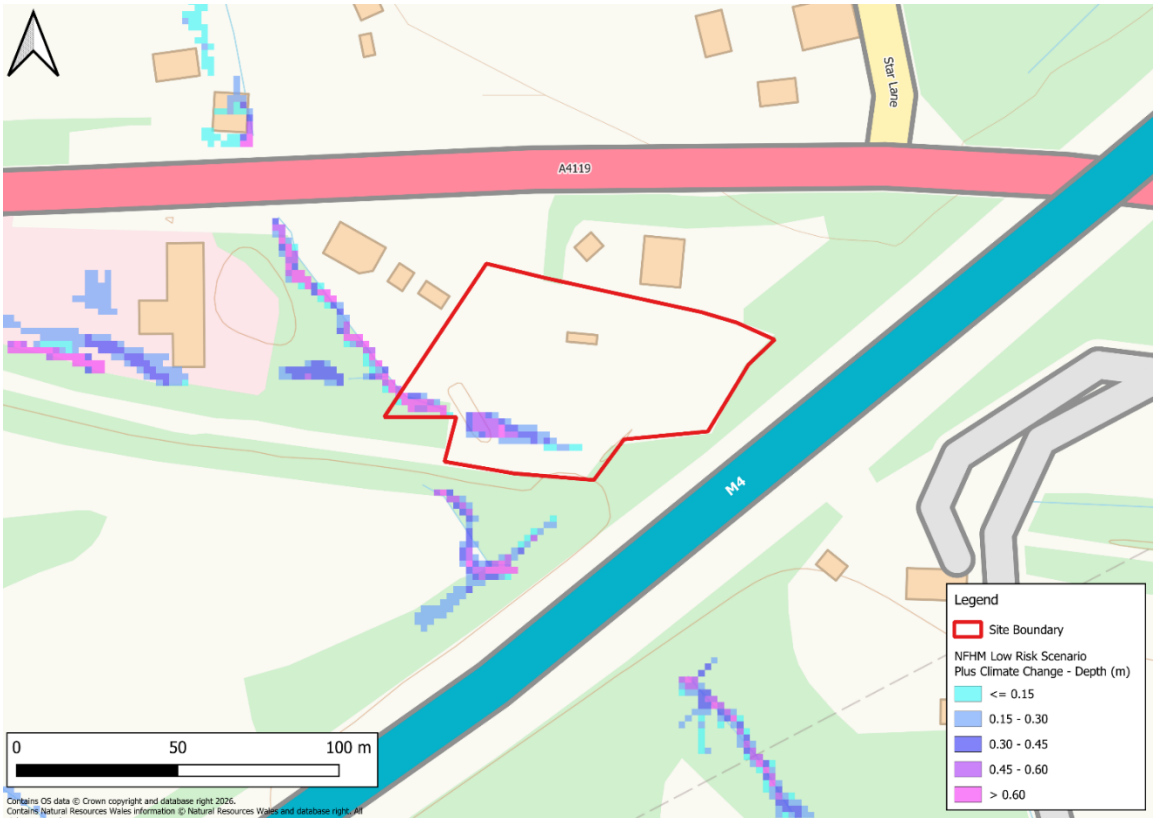


Figure 4-2: Flood Risk from Small Watercourses - 0.1% AEP + Climate Change - Flood depths

5 Application of Flood Zones to Development Management Decisions

The site is located within Flood Zone 1 for river and sea flooding. Within Flood Zone 1 all forms of development are acceptable in principle and further assessment or justification is not typically required.

The site is predominantly located within Flood Zone 1 of the FMfP for surface water and small watercourses. However, the southern area of the site is located within Flood Zone 2 and 3 associated with the flood extent of the unnamed ordinary watercourse flowing in a southerly direction through the western part of the site.

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. However, these sections do not strictly apply to the surface water and small watercourse zones in which this proposed development site lies. Instead, it is for the applicant to demonstrate alignment with the risk-based principles of TAN15 and the general acceptability criteria of Section 11.4 to ensure the following conditions are met:

- No increase in flooding elsewhere
- Occupiers aware of flood risk
- Escape/evacuation routes present
- Flood emergency plans and procedures agreed and in place
- Flood resistant and resilient design
- Acceptable consequences for type of use (see detailed guidance below):

A sequential approach to masterplanning and good site design can result in an avoidance of development in the flood zones. All highly vulnerable development should be built within areas of Flood Zones 1, with the existing ordinary watercourse retained as an open channel. Opportunities to enhance the watercourse corridor should be considered through the provision of public open space and Blue Green infrastructure within this area of the site.

It is considered that the indicated flood extent and depths may be an overestimation of flood risk due to the broadscale nature of the FMfP and NFHM datasets. It may therefore be beneficial to undertake detailed hydraulic modelling to determine a more accurate understanding of the baseline flood risk to the site. Hydraulic modelling is not considered strictly necessary to facilitate development on site.

Access and egress routes are minimally affected by shallow surface water and small watercourse flooding in extreme flood events, and predicted depths are not considered to restrict access.

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

6 Summary and recommendations

The site is located within Flood Zone 1 for river and sea flooding.

The site is mostly located within Flood Zone 1 for surface water and small watercourses, with a limited area in the south of the site located within Flood Zones 2 and 3. Consequently, an FCA will be required in support of any planning application for the site. The flood extent is associated with the unnamed ordinary watercourse that flows through the western corner of the site.

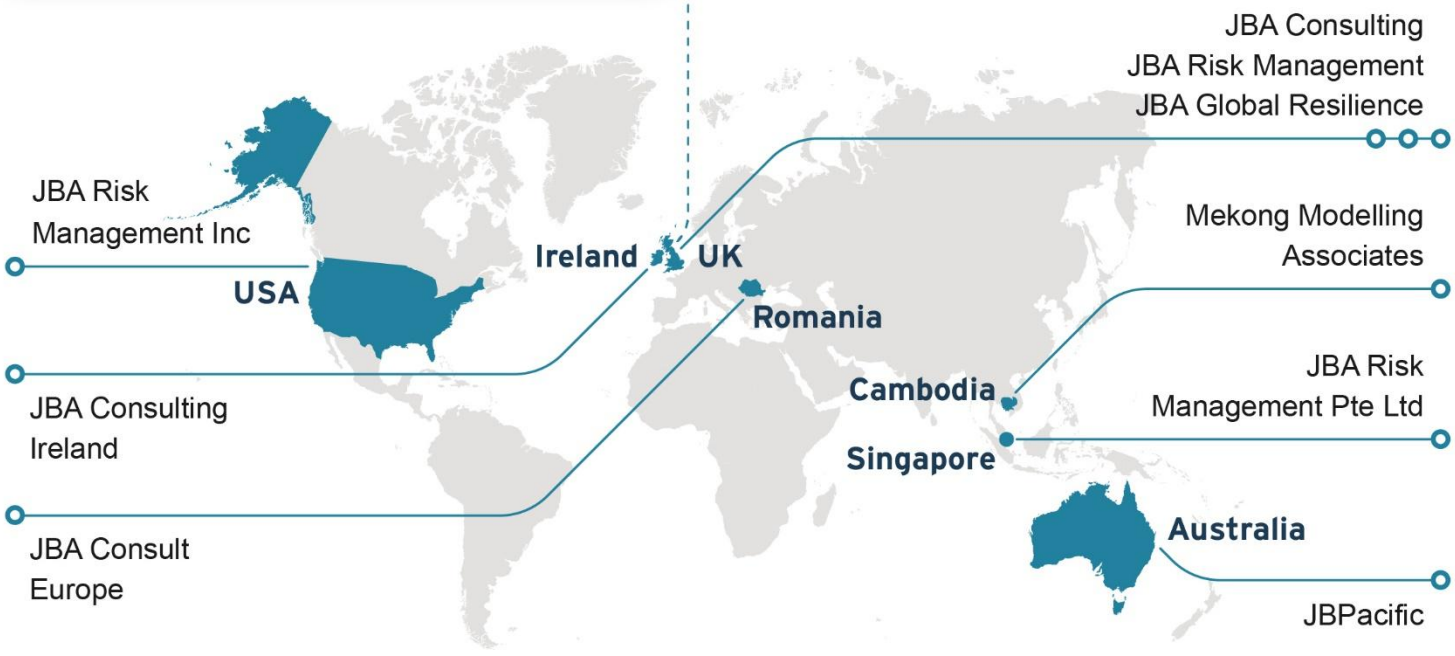
The site is therefore considered likely to satisfy the requirements of TAN-15, subject to the following recommendations:

- Any planning application for the site should be accompanied by an FCA which demonstrates how the proposals meet the requirements of TAN-15.
- A sequential approach to masterplanning should be taken which locates the most vulnerable elements of development within Flood Zone 1.
- A detailed hydraulic modelling assessment may be beneficial to further refine the flood extent but is not considered strictly necessary to facilitate development on this site.
- Watercourses should be retained as open channels, and development within their associated floodplains avoided, except for crossing points and water compatible development.

www.jbaconsulting.com

Our Offices

Bristol
Coleshill
Cork
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Leeds
Limerick
Newcastle
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington



Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0) 1756 799919
info@jbaconsulting.com
www.jbaconsulting.com

Follow us on

Jeremy Benn
Associates Limited
Registered in
England
3246693

JBA Group Ltd is
certified to
ISO 9001:2015
ISO 14001:2015
ISO 27001:2022
ISO 45001:2018