

Former Cooper Standard Site, Ewenny Road, Maesteg – SFCA updated site appraisal

June 2023

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Purpose

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1 Introduction

This document has been prepared as an addendum to the Bridgend County Borough Council (BCBC) Strategic Flood Consequence Assessment (SFCA) Site Screening Update¹, dated August 2022. The report revisits and updates the assessment for the appraisal of the candidate site at the Former Cooper Standard Site, Ewenny Road, Maesteg (hereafter referred to as 'the site').

Since the initial site appraisal, additional flood risk information and changes in the draft TAN15 policy have been published, coupled with a number of questions from the Planning Inspector raised from the revised Local Development Plan (LDP) examination. Specifically;

- The Flood Map for Planning (FMfP) for Maesteg was updated in May 2023;
- Associated with the FMfP update for Maesteg, additional detailed flood model data has become available, allowing for a more accurate and informed site appraisal;
- Welsh Government have postponed the release of the new Technical Advice Note 15 (TAN15) and published a second consultation on a revised draft. The consultation was released in January 2022 and is now closed. Welsh Government are currently reviewing the consultation responses and have advised that the new TAN15 is unlikely to be published earlier than the end of the year; and
- The Planning Inspector has requested further information regarding the constraints to the site in respect to flood risk and whether these can be overcome.

This report therefore applies the latest draft version of the new TAN15 (January 2023) to the site screening, utilises best available information and considers the constraints and opportunities of the Former Cooper Standard Site in further detail.

¹ Strategic Flood Consequence Assessment: Site Screening Update. August 2022.
<https://www.bridgend.gov.uk/media/14810/7-bridgend-strategic-flood-consequences-update-2022.pdf>

2 TAN15 Policy overview

The following chapter provides a summarised overview of the requirements of TAN15.

This Site Appraisal Update has been prepared in accordance with the consultation draft of the revised TAN15, published in January 2023². This differs from the previous site screening report that was based on the September 2021 release of the revised TAN15. The following sections have therefore been updated to reflect the latest consultation version of the TAN, **all references to TAN15 within this report are to the January 2023 version.**

2.1 Flood Map for Planning

The initial requirement of TAN15 is to identify the flood zones and vulnerability classification relevant to the proposed development, and to apply this information to the application of the Justification Tests.

The FMfP defines flood zones based on the central estimates of climate change, assuming a 100-year lifetime of the development. Table 2-1 summarises the flood zones used in the initial FMfP screening.

Table 2-1 TAN15 Definition of FMfP flood zones³

Zone	Flooding from rivers	Flooding from the sea	Flooding from surface water and small watercourses
1	Less than 1 in 1000 (0.1%) (plus climate change) chance of flooding in a given year.		
2	Less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.	Less than 1 in 200 (0.5%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.	Less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change.
3	A greater than 1 in 100 (1%) chance of flooding in a given year, including climate change.	A greater than 1 in 200 (0.5%) chance of flooding in a given year, including climate change.	A greater than 1 in 100 (1%) chance of flooding in a given year, including climate change.
TAN15 Defended Zone	Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from rivers of 1:100 (plus climate change and freeboard)	Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from the sea of 1:200 (plus climate change and freeboard).	Not applicable.

² <https://www.gov.wales/technical-advice-note-tan15-development-flooding-and-coastal-erosion-further-amendments.html>

³ Figure 1, TAN15 January 2023. <https://www.gov.wales/sites/default/files/consultations/2023-01/tan-15-development-flooding-and-coastal-erosion-jan-2023.pdf>

2.2 Vulnerability to Flooding

Under TAN15, one of three flood risk vulnerability classifications can be assigned to a development, as shown in Table 2-2 below.

Table 2-2 Development vulnerability categories⁴

Development category	Types
Highly Vulnerable Development	<p>All residential premises (including hotels, Gypsy and Traveller sites and caravan parks and camping sites).</p> <p>Schools and childcare establishments, colleges and universities.</p> <p>Hospitals and GP surgeries.</p> <p>Especially vulnerable industrial development (e.g. power generating and distribution elements of power stations, transformers, chemical plants, incinerators), and waste disposal sites.</p> <p>Emergency services, including ambulance stations, fire stations, police stations, command centres, emergency depots.</p> <p>Buildings used to provide emergency shelter in time of flood</p>
Less Vulnerable Development	<p>General industrial, employment, commercial and retail development.</p> <p>Transport and utilities infrastructure.</p> <p>Car parks.</p> <p>Mineral extraction sites and associated processing facilities (excluding waste disposal sites).</p> <p>Public buildings including libraries, community centres and leisure centres (excluding those identified as emergency shelters).</p> <p>Places of worship.</p> <p>Cemeteries.</p> <p>Equipped play areas.</p> <p>Renewable energy generation facilities (excluding hydro generation).</p>
Water compatible development	<p>Boatyards, marinas and essential works required at mooring basins.</p> <p>Development associated with canals.</p> <p>Flood defences and management infrastructure.</p> <p>Open spaces (excluding equipped play areas).</p> <p>Hydro renewable energy generation.</p>

Decision makers may also need to consider whether a proposed development includes land uses from more than one vulnerability category. For larger developments, mixed use schemes and those comprising multiple buildings, a single vulnerability category may not be appropriate. It may be appropriate to regard some parts of a development as highly vulnerable and other parts less vulnerable or water compatible. This can provide some flexibility when considering how best to use sites that are partially in Zone 1 and partially in flood risk areas. For example, locating some types of sustainable drainage systems (SuDS) features and open spaces in flood risk areas and using the land for appropriate flood alleviation, can help make best use of a site. Making water an integral feature within a development can enhance the design and function of places.⁵

2.3 New development and Redevelopment

Recognising that the ability to avoid or minimise risk when undertaking development varies according to the type of development proposed, TAN15 provides differing advice in relation to four types of development. These are New Development, Redevelopment, Change of use

4 TAN15, Figure 2

5 TAN15, para 6.6

or conversions, and Extensions. These new definitions bring in an element of flexibility for appropriate regeneration and redevelopment proposals within flood risk areas.

The definitions of New Development and Redevelopment are most relevant to this appraisal. The TAN15 defines New development as: “*development on any greenfield land; development of vacant or disused brownfield sites*”

The TAN15 defines Redevelopment as: “*replacing an existing in-use building(s) (fully or partly) with a new building(s)*”

Furthermore, the TAN15 states that:

Proposals for redevelopment, changes of use, conversions and extensions may be considered differently to new development. Where a development already exists and the use of the land or building is established, further development can present an opportunity to increase the resilience of the building. If buildings cannot be made more resilient then the expectation is that planning permission will not be granted (TAN15 para 4.5).

Schemes to develop greenfield sites and proposals to develop vacant or unused sites should be considered new development for the purposes of this guidance. New developments increase exposure of people, property and infrastructure to flood risk and are likely to adversely impact on flood storage capacity in areas at risk of flooding (TAN15 para 10.3).

Where buildings in flood risk areas are currently in use, there may be circumstances where redevelopment, changes of use or conversion proposals can bring clear benefits to the area and the building. These should be balanced and weighed against the flood risk considerations (TAN15 para 10.4).

The current consultation draft of the revised TAN15 appears to provide no flexibility for vacant brownfield site, such as the Former Cooper Standard site, that have comparatively recently been cleared of their former development and are no longer in use. Furthermore, for the time being and to the best of our knowledge, the proposed redevelopment of the site will be classified as ‘New Development’ for the purposes of the TAN15 and the application of the Justification Test.

2.4 Justification Test

TAN15 states that the Local Planning Authority will need to be satisfied that a development’s location is justified. This is determined through the application of the ‘Justification Test’, dependent on the flood zone and type of development, as summarised in Table 2-3 below.

Sites should be selected to support the overarching ambitions of the Development Plan. Planning authorities should prioritise development in Zone 1. Sites may also be allocated for any type of development on brownfield land in the TAN15 Defended Zones, or in areas that would benefit from flood mitigation measures that enable the site to meet the criteria of the Defended Zone as set out in Community Adaptation and Resilience Plans. Development on greenfield land in Defended Zones is not appropriate unless by exception it can be demonstrated that it is essential to future vitality, that it will not exacerbate flood mitigation and conforms to place-making principles.⁶

In Zone 2 (Rivers and Sea), allocations may be made for development that implements in full or in part a strategy to regenerate or revitalise existing settlements or to achieve key economic or environmental objectives. Land in Zone 2 may also be allocated for developments that address national security or energy security needs, mitigate the impacts of climate change or are necessary to protect and promote public health.

In Zone 3 (Rivers and Sea), allocations for new residential and other types of highly vulnerable new development must not be made as the risks and consequences of flooding

⁶ TAN15, para 7.14

are not considered acceptable for these types of development. Allocations for less vulnerable new development, including essential transport and utilities infrastructure, should only be made in exceptional circumstances. Exceptional circumstances could include addressing national security or energy security needs, reasons of public health or to mitigate the impacts of climate change.⁷

Allocations on greenfield land should be in exceptional circumstances only, where the development cannot reasonably be located in Zone 1 or on brownfield land elsewhere. Developments that must necessarily be located in specific locations may include important infrastructure such as railway stations or land-based facilities linked to offshore developments.⁸

The justification requirements for 'redevelopment' are less onerous than 'new development', and a clear distinction is drawn between the two forms of development.

The requirements of the Justification Test are summarised in Table 2-3.

Table 2-3 Justification Test⁹

Zone 1	TAN15 Defended Zones	Zone 2 (rivers and sea)	Zone 3 (rivers and sea)	Redevelopment in any Flood Zone
All types of development are acceptable in principle. Planning authorities should develop locally specific planning policies for localised areas at risk of flooding.	Development will be justified in the TAN 15 Defended Zones if:	Development will be justified in Zone 2 if:	Development will be justified in Zone 3 if:	Redevelopment will be justified in any Flood Zone if:
	Where there is an agreed Community Adaptation and Resilience Plan in place supporting developments forming part of a strategic regeneration scheme.	It will assist, or be part of, a strategy supported by the Development Plan to regenerate an existing settlement or achieve key economic or environmental objectives; and	There are exceptional circumstances that require its location in Zone 3, such as the interests of national security, energy security, public health or to mitigate the impacts of climate change; and	The scheme results in a development that is resilient to flooding.
		Its location meets the definition of previously developed land; and	Its location 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 in accordance with the criteria contained in section 11 of TAN15.			

7 TAN15, para 7.16
8 TAN15, para 7.15
9 TAN15, Section 10

2.5 Acceptability Criteria

If the planning authority is satisfied that the proposed development is justified in a flood risk area, it must next be considered if the risks and consequences of flooding can be managed safely which can be demonstrated through the 'Acceptability Criteria'. There are three principal aspects to the Acceptability Criteria:

1. **Flood frequency requirements.** The frequency at which flooding is regarded to be acceptable, depending on the primary source of flooding (Table 2-4).
2. **Tolerable conditions.** The flood conditions that are regarded to be acceptable during an extreme flood event, depending on the type of development (Table 2-5).
3. **Avoidance of third-party impacts.** Development must not cause or exacerbate the nature and frequency of flood risk elsewhere.

Table 2-4 Flood frequency requirements¹⁰

Vulnerability categories		Flood event types	
		Rivers	Sea
Highly Vulnerable Development	<i>Emergency services (command centres and hubs)</i>	0.1% +CC (1 in 1,000)	0.1% +CC (1 in 1,000)
	<i>All other types</i>	1% +CC (1 in 100)	0.5% +CC (1 in 200)
Less Vulnerable Development Water compatible development (limited to those built elements of development that may be occupied by people)		1% +CC (1 in 100)	0.5% +CC (1 in 200)

Table 2-5 Tolerable conditions in extreme flood event¹¹

Type of development	Maximum depth of flooding (mm)	Maximum velocity of flood waters (m/s)
Highly Vulnerable Development	600	0.15
Less Vulnerable Development Infrastructure associated with Highly Vulnerable Development e.g. car parks, access, paths and roads Water compatible development (limited to those built elements of development that may be occupied by people)	600	0.3

Note: The extreme flood event is defined as the 0.1% AEP flood event

10 TAN15, Figure 5

11 TAN15, Figure 6

3 Initial Assessment of Former Cooper Standard Site

This section assesses the flood risk to the site from all sources of flooding. This initial assessment is based solely on a desk-based analysis of readily available flood risk data.

3.1 Methodology

The assessment approach provides an initial assessment on how the site will perform under the application of the Justification Test and Acceptability Criteria. The appraisal makes use of readily available information to consider the site against the requirements of TAN15 as outlined in Section 2. The assessment uses this information to assess the extent and severity of flood risk from all sources of flooding.

3.1.1 Datasets used

This assessment applies the most recent national datasets, as listed below in Table 3-1, superseding Table 5-1 of the existing BCBC SFCA and Table 3-1 of the SFRA Site Screening Update in relation to the site.

Table 3-1 Datasets used in site screening assessment

Dataset	Source	Date of Data	Data Type
FMfP	NRW	2022	GIS
Historic Flood Outlines	NRW	2022	GIS
Flood Risk from Reservoirs	NRW	2015	GIS
Flood Defence Data	NRW	2022	GIS
National Flood Hazard Mapping (NFHM)	NRW	2022	GIS
Maesteg Flood Model	NRW	2012 (updated climate change runs completed in 2022)	ESTRY-TUFLOW

3.1.2 Site screening methodology

To initially assess the risk of flooding at the Former Cooper Standard Site, a Red, Amber, Green (RAG) Risk Rating has been applied in line with the approach taken within the previous Site Screening Update. The rating is summarised in Table 3-2.

The following broadly applies the Justification Test by considering the FMfP, the vulnerability classification of the site and whether its location meets the definition of previously developed land, and whether proposals would be considered as Redevelopment. An initial assessment can then be undertaken to identify the site's high-level suitability for development in terms of flood risk.

The resulting RAG scores and classification are used to indicate the following:

- **Red:** The site is unlikely to pass the Justification Test.
- **Amber:** It may be possible to develop the site in line with the requirements of TAN15 subject a detailed site-specific Flood Consequence Assessment and satisfaction of the Justification Tests.
- **Green:** The site is at low risk of flooding and a site-specific Flood Consequence Assessment is unlikely to be required.

The triggers and threshold for the RAG scoring system were agreed upon between JBA Consulting and BCBC. The percentage coverage threshold values are not absolute and are not directly linked to any requirements in TAN15. The RAG assessment provides information

for screening purposes only and demonstrates a high-level assessment of a site’s probable ability to satisfy the requirements of TAN15 based on readily available information. Where flood risk constraints are identified, an additional, more detailed appraisal and review of a site may inform a more considered view of a site’s potential.

The flood risk defined within this addendum supersedes the assessment undertaken for this site in Section 4.2 of the BCBC SFCA Site Screening Update.

Table 3-2 RAG Criteria Description

Risk Category	Criteria Description (at least one of the criteria is met)	Category Overview
Red	<ul style="list-style-type: none"> TAN15 Defended Zone and Greenfield Land HVD and >10% in Flood Zone 3 LVD and >15% in Flood Zone 3 HVD and >20% Flood Zone 2 >50% in a Surface Water risk zone 	<p>The site as a whole or in large part is unlikely to pass the Justification Test, or the Acceptability Criteria. If carried forward it is likely that extensive further work will be required to determine the full risk associated with the site, and such work may not be able to overcome fundamental flood risk or TAN15 policy constraints.</p>
Amber	<ul style="list-style-type: none"> HVD & LVD in a TAN15 Defended Zone HVD and >10% Flood Zone 2 LVD and >30% in Flood Zone 2 15-50% in a Surface Water risk zone 	<p>A potentially significant portion of the site is located in a Flood Zone. This may significantly constrain or limit development of the site. Careful consideration of the Justification Test and Acceptability Criteria will be required.</p>
Green	<ul style="list-style-type: none"> HVD and <10% Flood Zone 3 LVD and <15% Flood Zone 3 HVD and <10% Flood Zone 2 LVD and <30% Flood Zone 2 <15% in Surface Water zones Water compatible development 	<p>There are no significant flood risk concerns to the site.</p>

3.2 Site information

3.2.1 Site description and current use

The 7.7 hectare Former Cooper Standard Site is located to the south-east of Maesteg town centre. Maesteg is the second largest town in the County Borough, with the River Llynfi flowing in a southerly direction through the settlement.

The Former Cooper Standard Site is brownfield in nature, vacant and meets the definition of previously developed land as set out within the Planning Policy Wales (PPW)¹². Google Earth imagery shows that the buildings which previously occupied the site were demolished in circa 2010.

Within the latest draft of the revised TAN15, development at the site would most likely be considered as New Development and not Redevelopment, due to the site being vacant without current use.

12 Planning Policy Wales. Edition 11 | February 2021. Welsh Government
https://www.gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf

3.2.2 Site topography

The site is at a generally flat elevation but is characterised by varied micro-topographical features which are reflective of the former industrial use of the site and its subsequent site clearance. The Latest LiDAR elevation data (2022 composite) for the site shows that levels range from approximately 112.5m AOD to 113.4m AOD. The extreme north or the site and extreme south of the site exhibits the lowest elevations. To the east and south of the site elevations drop significantly to 106-107m AOD. To the west and north of the site, land levels rise. The 2022 LiDAR Digital Terrain Model (DTM) elevation data is shown on the left in Figure 3-1.

Previous hydraulic modelling of the site, including the Flood Map for Planning, is based on an older version LiDAR data collected in 2008, prior to clearance of the site. The older LiDAR data is shown on the right in Figure 3-1. This clearly shows that there are significant differences between the two elevation datasets.

The differences in the two LiDAR ground model are most clearly shown through a comparison of the two datasets as mapped in Figure 3-2. This shows that the latest LiDAR elevation data (2022) is generally 0.1-0.3m higher than the elevation used in the 2012 modelling. There are also areas which are >0.5m higher than the data used within previous flood modelling.

This difference in the underlying elevation data can be particularly significant where shallow flood depths are predicted, as they may be the difference between flooding and not flooding in a particular design event. Consequently, this issue is further discussed in Section 4.

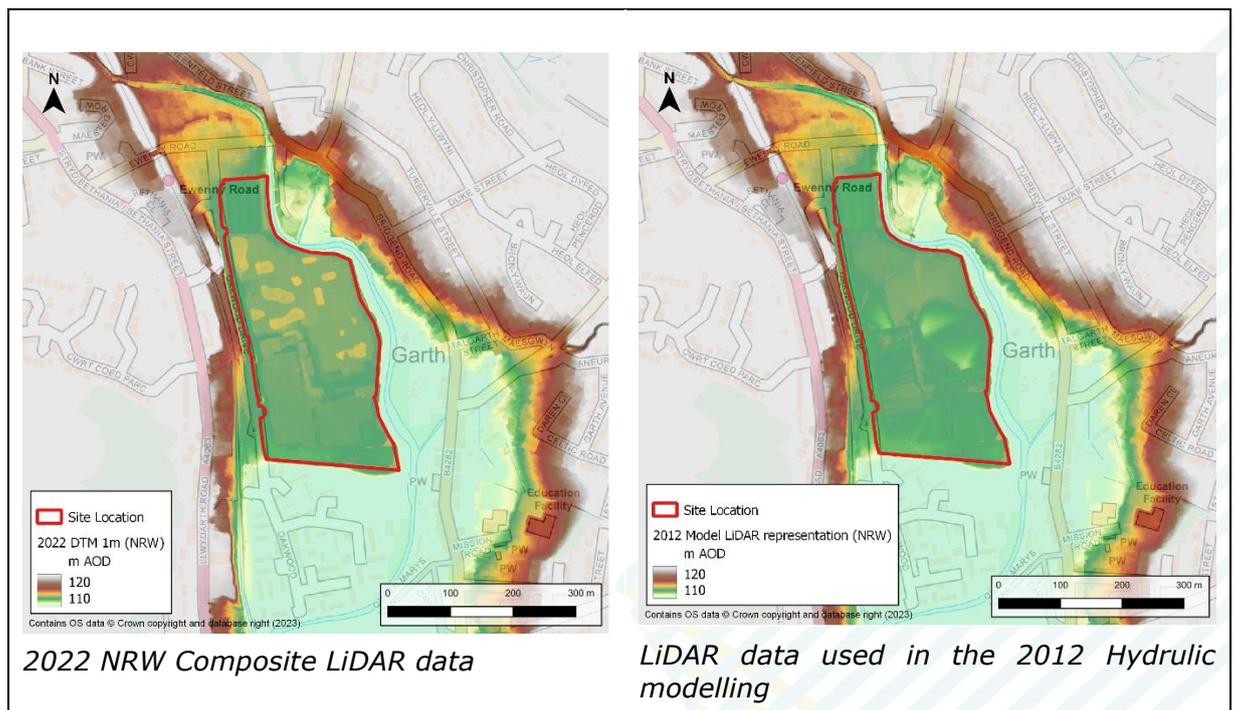


Figure 3-1: LiDAR elevation data

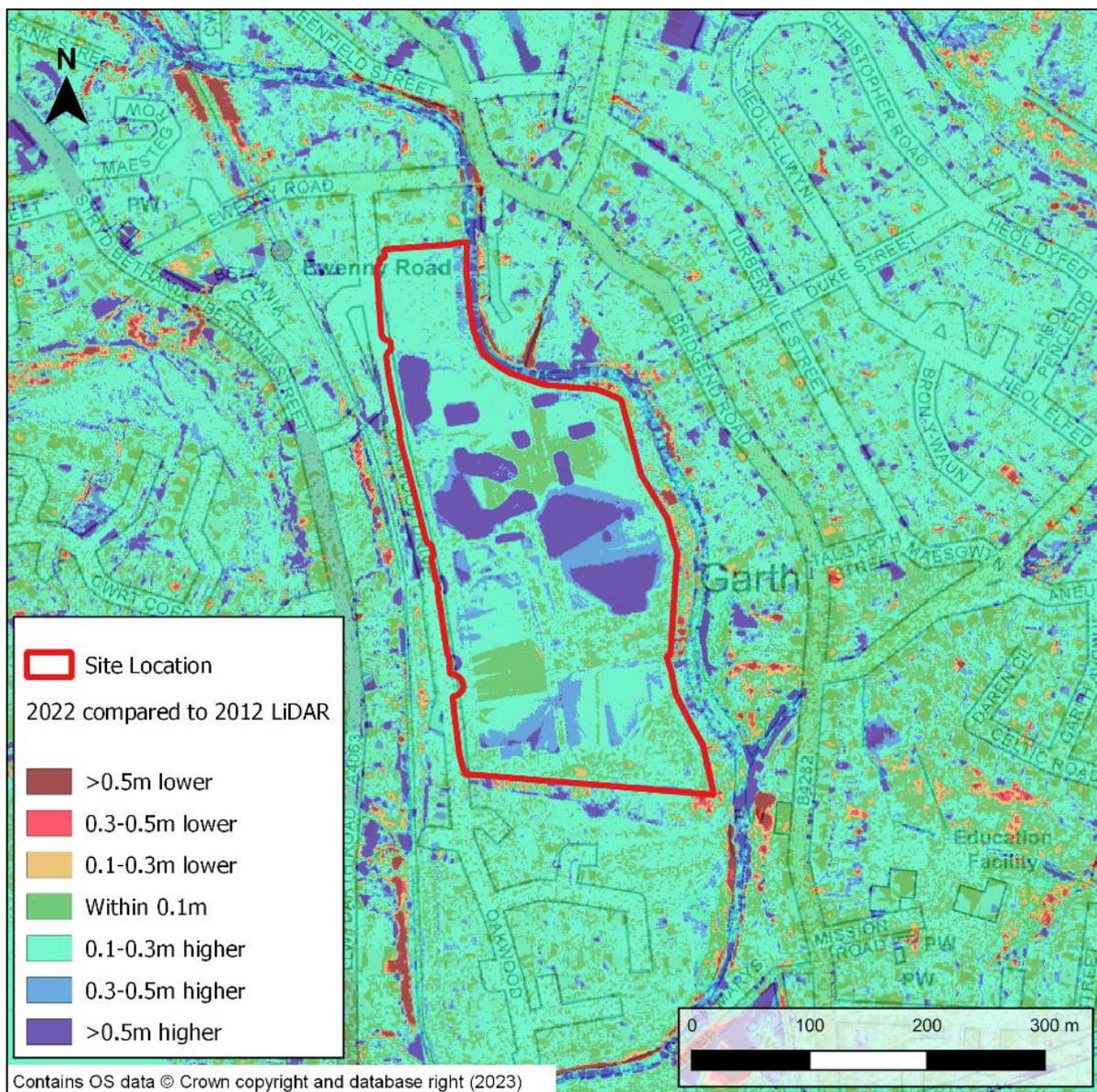


Figure 3-2: LiDAR Comparison

3.2.3 Site allocation background

The Former Cooper Standard Site is a high priority brownfield regeneration site that demonstrates significant propensity to stimulate economic growth within the Main Settlement of Maesteg, thereby addressing the past industrial legacy of the town in a positive placemaking-led manner. The site is closely aligned to existing transport hubs, services and facilities, thereby proving highly conducive to sustainable development and delivery of the full range of placemaking principles outlined in national policy. Development of this allocated site represents a necessary degree of continuity with the first adopted Local Development Plan (LDP) and is essential to implement the long-term regeneration strategy embodied within the Replacement LDP Vision.

The Site scored poorly within the SFRA Site Screening Update and was originally proposed as a Long-Term Regeneration Allocation within the Replacement Local Development Plan (RLDP) 2018 to 2033. This recognised that delivery timescales of such brownfield sites can be more difficult to specify, yet reflected the Council's ongoing commitment to enabling the site's redevelopment. However, the status of this site has changed considerably over the

course of RLDP preparation. The site was awarded grant funding by the Cardiff Capital Region in November 2022 (to tackle several major infrastructure and remediation works) and deliverability evidence has progressed significantly. A Flood Consequences Assessment was also prepared in October 2022. The Council now consider the Site suitable for incorporation within the housing trajectory to enable development in the short-term.

3.2.4 Potential proposed redevelopment

The overall vision for the site is to provide a distinctive and high-quality development which enhances this suburban area of Maesteg. The development will deliver 205 new dwellings with associated public open space. It will provide a choice of housing to meet the growing needs of the area, 15% of which will be affordable. An enterprise hub will also form part of the development, with scope to include both office and retail space. A transport interchange is also proposed for the site in order to strengthen public transport connections to and from Maesteg. The new interchange is a key component of the Metro's enhanced services on the Valley Lines via the Maesteg branch. The residential development and enterprise hub will be set within robust green infrastructure that enhances the existing vegetation along the peripheries of the site, particularly along the river corridor. The residential parcel has a net developable area of approximately 4.1 hectares. The site has four access points along Oakwood Drive. The first two serve the transport interchange, the third serves the enterprise hub and the fourth serves the housing development.

The site has been put forward for mixed-use development, with a corresponding range of development vulnerability classifications under the revised TAN15. The size of the site and mixed-use nature of the proposed development provides greater opportunities to adopt a sequential approach to the layout and design of the development, as advocated in the TAN15 paragraphs 6.6, and 13.4. This would seek to align the vulnerability of development with the flood risk in an area; steering more vulnerable development away from areas of flood risk. For example, in those areas most at flood risk, it may be more appropriate to utilise these areas for water compatible public open space provision, but where the risk is very low (naturally or by design) more vulnerable uses could be allowed.

This approach provides some flexibility when considering how best to use sites that are partially in Flood Zone 1 and partially in flood risk areas. However, the level of flood risk and the degree to which it can be managed may impact on the extent and nature of development permissible.

3.3 Flood risk appraisal

3.3.1 Historical flooding

The NRW Historic Flood Outline does not include any details of historic flood events in the Maesteg area. The BCBC PFRA highlights two historic fluvial flood events. The first in Salisbury Road in October 2000, and the second in Llynfi Road in January 2008. Neither of these historical flood locations are in the vicinity of the site.

3.3.2 FMfP: Flood risk from the sea

The site is not at flood risk from the sea given its inland location and elevation. This is confirmed by the Flood Map for Planning – flood risk from the sea layer.

3.3.3 FMfP: Flood risk from rivers

The main source of flood risk to the site is flood risk from rivers (fluvial flooding). This arises from the River Llynfi which passes to the east of the Former Cooper Standard Site.

Figure 3-3 shows the FMfP Flood Zones for flood risk from rivers. This suggests that floodwater enters the site to the north after overtopping the banks of the River Llynfi and the deck of Ewenny Road bridge before flowing towards the site and down Oakwood Drive.

The former car park area to the north of the site is situated at a lower level to most of the site, consequently this is the area of greatest flood risk and is entirely within the extent of Flood Zone 3. Furthermore, the extent of Flood Zone 3 extends south along the western boundary of the site where water from the north flows along Oakwood Drive. The remainder of the site is outside of Flood Zone 3. The area within Flood Zone 3 accounts for 10.88% of the site.

57.13% of the site area is located within Flood Zone 2. The flood mechanisms for the Flood Zone 2 event are likely to be similar for that of the Flood Zone 3 event, with water appearing to enter the site from the north. Due to the relatively flat nature of the site, once floodwater enters onto the site, it spreads out evenly across much of the site. Only areas to the north-east and south-east of the site are typically outside of Flood Zone 2 and 3.

The FMfP rivers layer for Maesteg was updated by NRW in May 2023. This detailed flood model information is considered in Section 4.

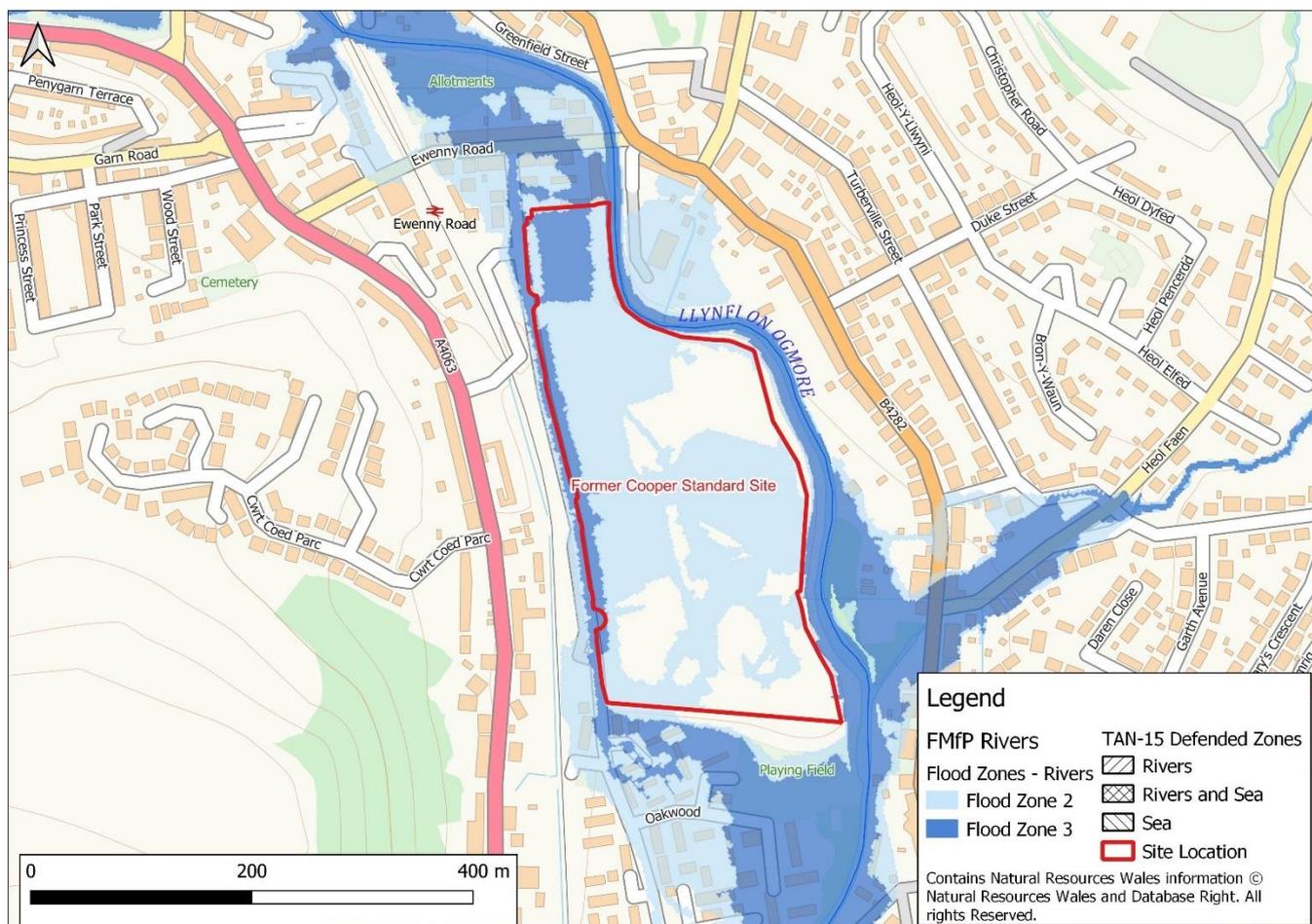


Figure 3-3: FMfP Rivers and Former Cooper Standard Site location

3.3.4 FMfP: Flood Risk from Surface Water and Small Watercourses

There is a widespread risk of surface water flooding across the wider Maesteg area as a result of the steep topography of the valley sides combined with the relatively flat valley bottom, where development is primarily located. Many minor (ordinary) watercourses have been heavily modified by historical development, contributing to this surface water flood risk.

As shown in Figure 3-4, the western boundary and northern area of the Former Cooper Standard Site is located in Flood Zone 3 of the FMfP Surface Water and Small Watercourses. This aligns closely with the outline of Flood Zone 3 in the FMfP Rivers. While it is quite possible that the FMfP Surface Water and Small Watercourses is underestimating the capacity of culverted sections of the watercourses and other drainage infrastructure, the susceptibility to such flooding in these areas is clear. Built development in these areas would need to be supported by further, more detailed, assessment to demonstrate that the flood risks are manageable to an acceptable level.

There are two small areas located in Flood Zone 2 and 3 in the centre of the site, corresponding to localised depressions in the site topography. Such minor and isolated pockets of surface water flooding are not of significant concern as they are likely to be manageable within site layout and design, through a suitable SAB compliant site drainage strategy.

It is recommended that the Lead Local Flood Authority (LLFA) should be consulted on the level of assessment required to support any proposals that interact with significant areas of the Flood Map for Surface Water and Small Watercourses.

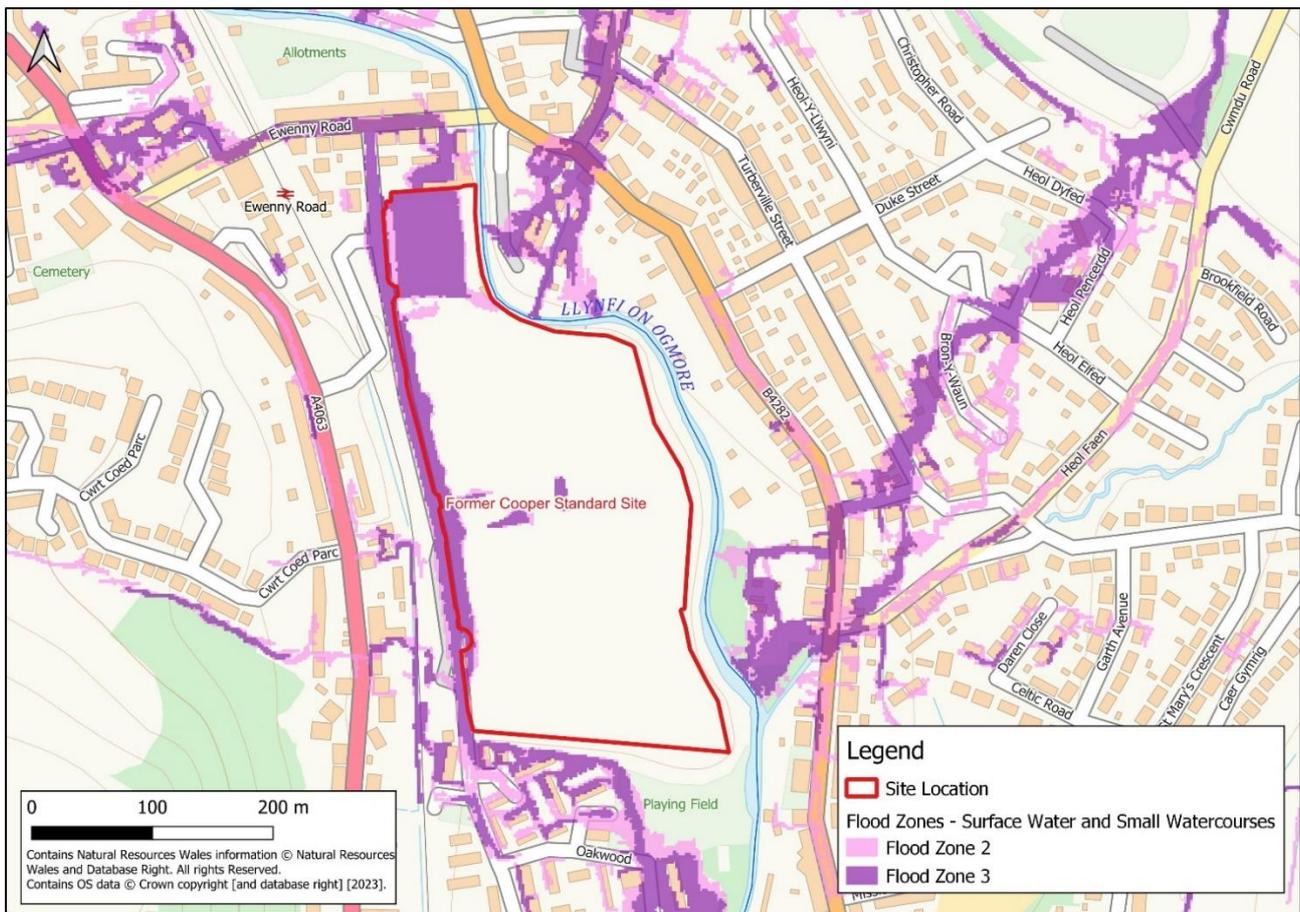


Figure 3-4: FMfP Surface Water and Small Watercourses

3.3.5 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels, and it occurs as excess water emerges at the ground surface or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, sometimes lasting for weeks or months, and can damage property. This risk of groundwater flooding depends on the nature of the site's geological strata and the local topography.

The risk of groundwater flooding has been screened using the JBA Groundwater Flood Map. The JBA Groundwater Flood Map is a high resolution product which provides a detailed assessment of groundwater flood hazard. The map categorises the depth difference (m) into five feature classes based on the 100-year model outputs. Groundwater depth was modelled at a 5m resolution. Groundwater flood hazard has been classified into the below categories (Table 3-3).

It does not show the likelihood of groundwater flooding occurring and is not suitable for planning considerations at a site-specific level. It should only be used as a trigger for further investigation as to the possibility of groundwater flooding.

As shown in Figure 3-5, groundwater levels are predicted to be well below the ground surface. Therefore, the risk of groundwater flooding is concluded to be low.

Table 3-3 Groundwater Flood Hazard Classification

Groundwater depth below ground level (m)*	Class label
0 to 0.025	Groundwater levels are either at or very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event. There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.
>5	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event, meaning there is a very low risk of groundwater flooding. Flooding from groundwater is not likely.
N/A	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.

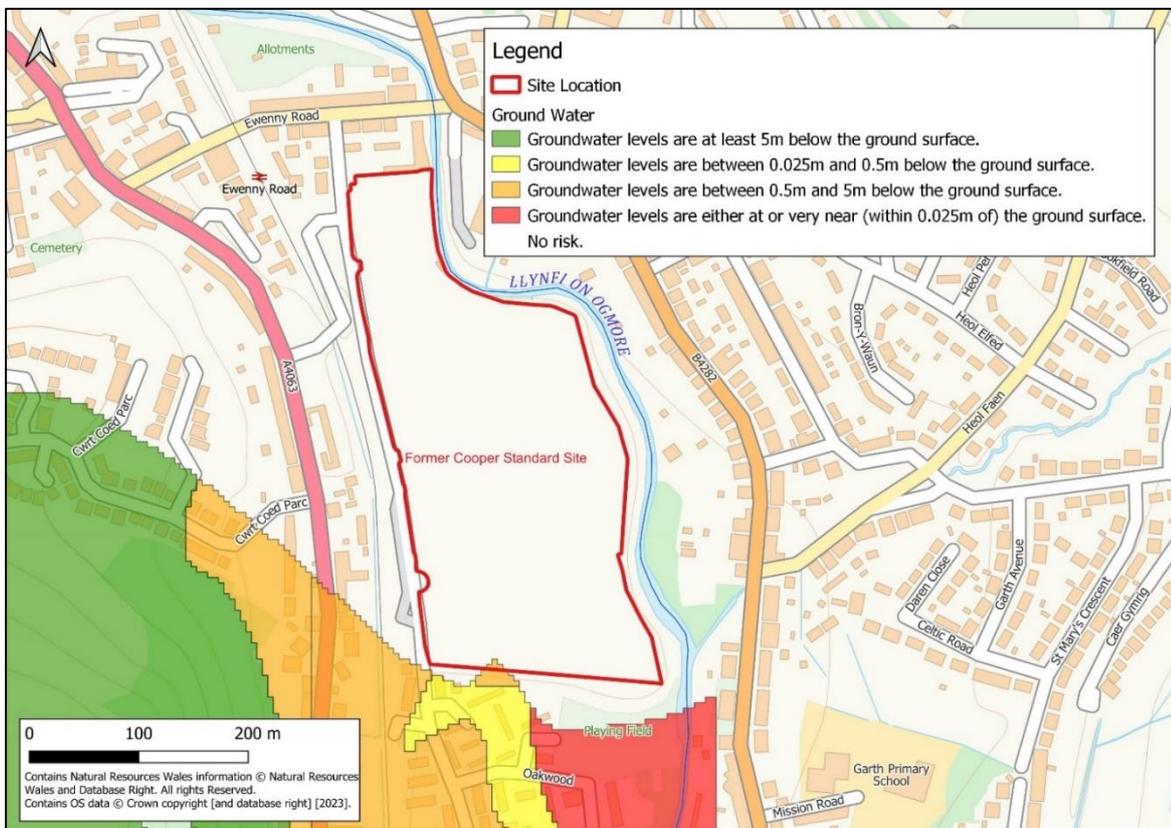


Figure 3-5: Groundwater flood risk

3.3.6 Flood Risk from Reservoirs

NRW flood maps indicate that the site is at **very low risk** of flooding due to reservoir failure. Furthermore, no artificial sources of flood risk have been identified in the area (e.g. canals).

3.3.7 Flood Risk from Sewers

There are no significant records of sewer flooding in the area.

3.4 Initial screening assessment of Former Cooper Standard Site

Table 3-4 presents the initial screening assessment based on the standard SFRA screening methodology. However, it should be stressed that this is not a definitive assessment of site suitability but a mechanism to determine where further assessment is required.

Table 3-4: Former Cooper Standard Site Assessment – RAG Score

Site: Former Cooper Standard Site				
% Zone 2 FMfP Rivers and Sea	% Zone 3 FMfP Rivers and Sea	TAN15 Defended Zone	% Zone 2/3 FMfP Surface Water and Small Watercourses	RAG Assessment
57.1%	10.9%	No	13.7%	Red for HVD Amber for LVD

The site exceeds the threshold for two flood risk triggers as further discussed below:

- Red:** The site is given a red rating because the development will include HVD and over 10% of the site is in Flood Zone 3 (rivers & sea). The area of the site in Flood Zone 3 is only marginally over 10%. This percentage is sensitive to the site boundary used and the inclusions of the more flood susceptible northern area of the site. The initial screening assessment criteria fail to recognise that the proposals are for a mixed-use development, whereby HVD can relatively easily be directed away from areas of Flood Zone 3, adopting a sequential approach to zoning development across the site. Taken as a whole, the Red RAG score for this site is marginal and potentially misleading. The fact that 10.9% of the site is currently in Flood Zone 3 is unlikely to fundamentally prohibit development of the site as a whole.
- Amber:** The site is given an Amber rating because a potentially significant portion of the site is in Flood Zone 2 for rivers. This has the potential to significantly constrain development of the site. Careful consideration of the Justification Test and Acceptability Criteria is required for such sites. Such further consideration follows in the next section of this report.

4 Flood risk from rivers – further assessment

4.1 NRW Maesteg flood model (2012/2022)

Detailed flood mapping was developed for Maesteg in 2012 and is available upon request from NRW. This models a range of fluvial events for both the defended and undefended scenarios.

The model was rerun in 2022 for the 1% AEP plus climate change and 0.1% AEP plus climate change events. These reruns have allowed NRW to apply the local model data to the latest version of the Flood Map for Planning, superseding the previous generalised modelling.

The 2022 model reruns used the original 2012 hydrology, but with updated climate change allowance to reflect current Welsh Government guidance.

4.1.1 Modelling appropriateness

It should be noted that with no other updates to the modelling, other than climate change projections, the 2012 hydraulic modelling is now of significant age such that it will not conform to all aspects of current best practice, best available information and software improvements. Potentially most significant is the age of the flood flow estimates, which should typically be reviewed every 3-5 years. However, at this time, the NRW modelling reflects best available data, as demonstrated by its inclusion in the FMfP.

An assessment of the latest LiDAR data shows that the elevation data for the site has changed significantly since the NRW Maesteg model was produced. It appears the LiDAR at the time of the modelling may have been based on survey data that predated the clearance of the site. The latest LiDAR data suggests elevations are more than 400mm higher in many areas than the ground level representation within the 2012 modelling. This means that the flood extents for the modelled events are likely to be overestimated, especially given the shallow flood depths presented later in the section.

4.1.2 Flood model results

1% AEP plus climate change results

The maximum flood depths during the 1% AEP plus climate change (30%) event are shown in Figure 4-1.

The hydraulic modelling results for the 1% AEP plus climate change fluvial event (Flood Zone 3) shows that the maximum depths within the site are generally less than 100mm across the site. This would equate to a very low hazard rating and would not impact access or egress at the site.

Small, localised areas to the north of the site reach maximum depths of 180mm, where floodwater ponds within the lower lying former car park area.

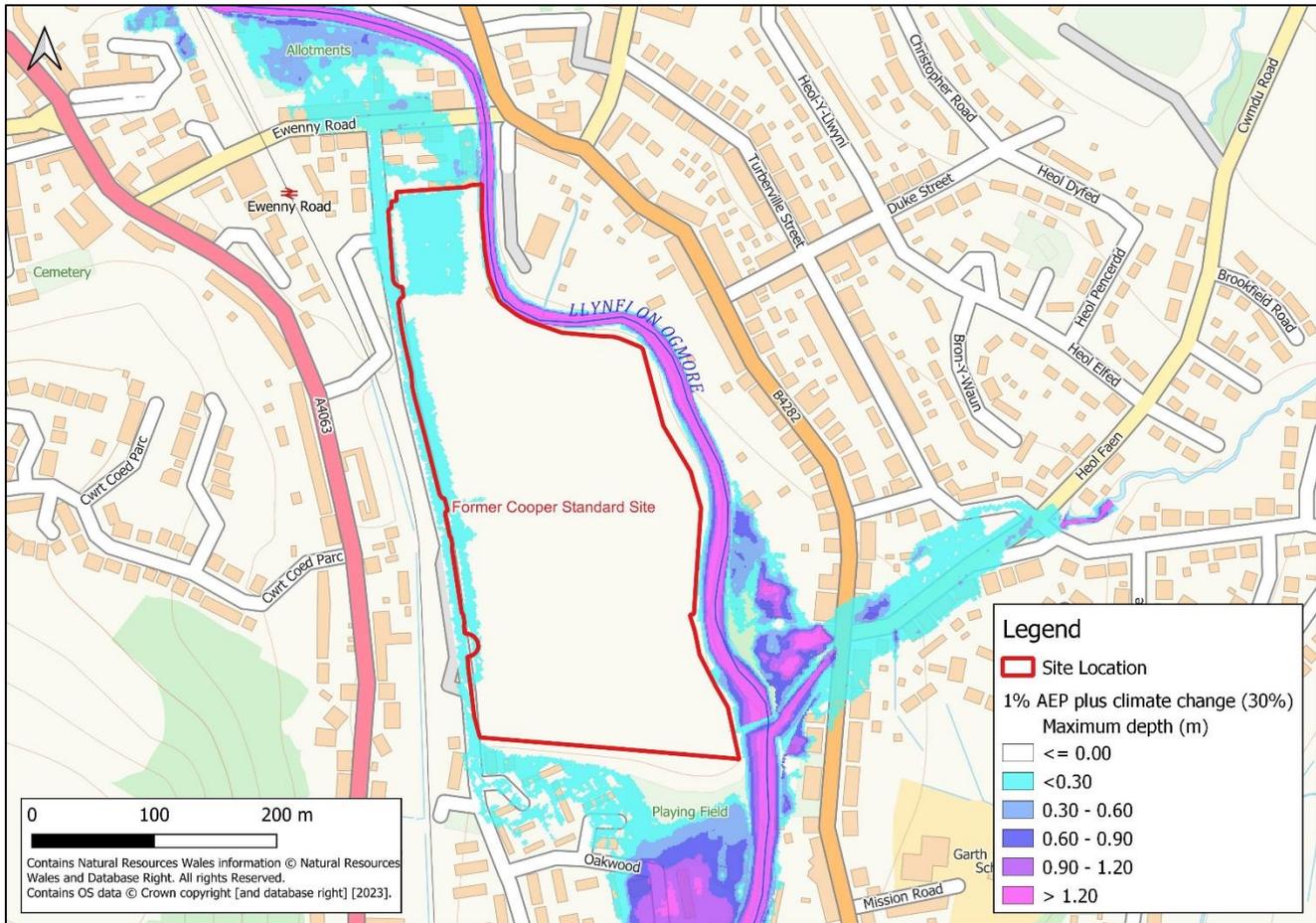


Figure 4-1: 1% AEP plus climate change (30%) maximum depths (2012 (2022) modelling)

0.1% AEP plus climate change results

The maximum flood depths during the 0.1% AEP plus climate change (30%) event are shown in Figure 4-2.

The hydraulic modelling results for the 0.1% AEP plus climate change fluvial event shows that flood depths within the site are generally less than 300mm. The flow route along Oakwood Drive exhibits maximum depths of ~500mm. The former car park of the north of the site experiences maximum flood depths of 750mm.

Small, localised areas within the central areas of the site reach maximum depths of up to 1000mm. This is caused by localised depressions in the ground model used within the flood model. Inspection of the latest LiDAR data for the site shows that many of these depressions within the site do not exist. It is believed that these depressions were caused by filtering issues in the original LiDAR data which predated the clearance of the site. Therefore, these areas of deeper flood can be assumed to be significant overestimates of the actual flood depths. Most likely, these areas would only experience shallow flooding.

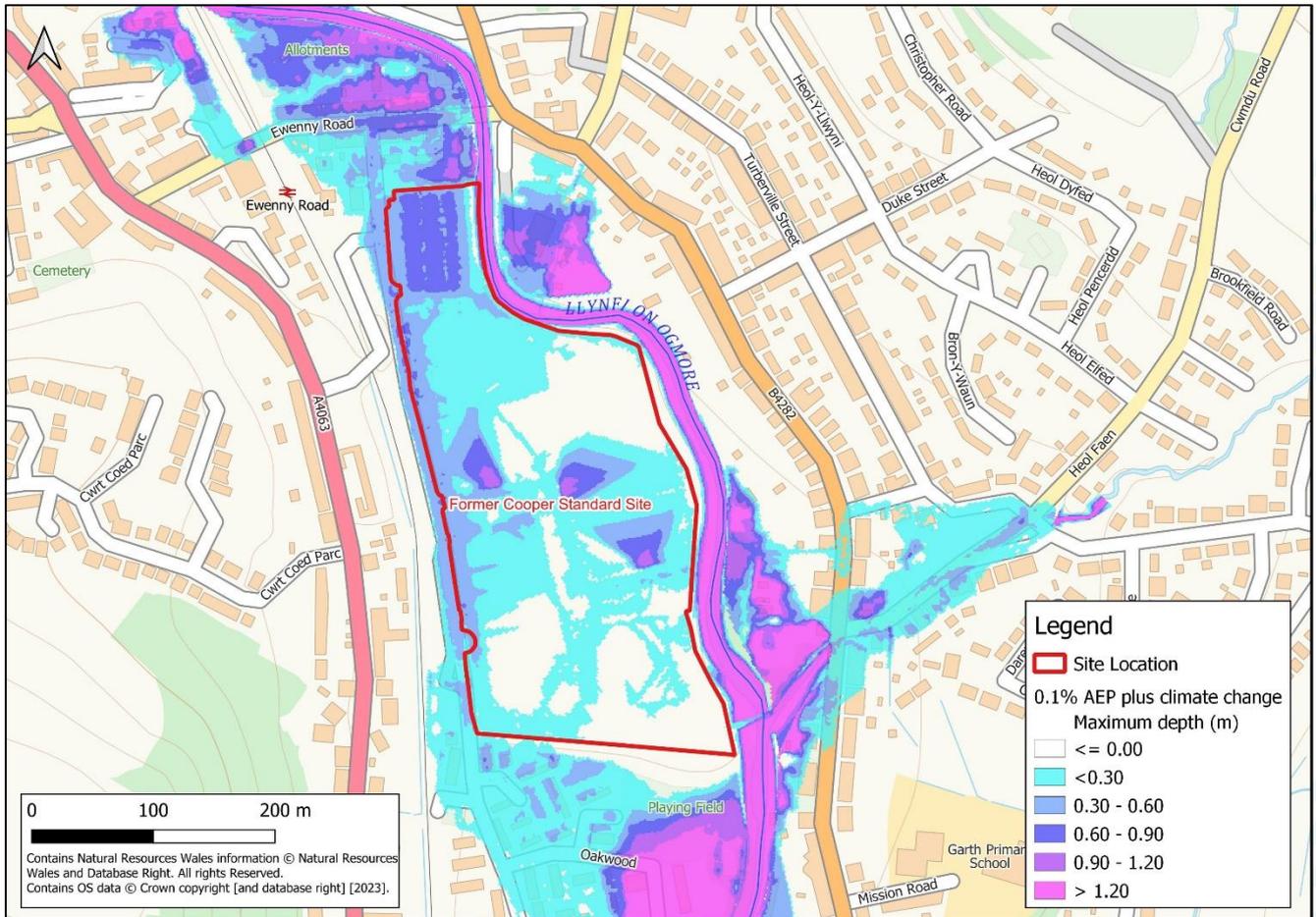


Figure 4-2: 0.1% AEP plus climate change (30%) maximum depths (2012 (2022) modelling)

4.2 WSP Flood Modelling (2023 – ongoing)

BCBC are presently considering an outline planning application for a mix of residential and commercial development at the site, submitted on behalf of Pontardawe Coal and Metals Company Ltd (P/13/808/OUT). The application is supported by a Flood Consequences Assessment (FCA) prepared by WSP (ref. 7006-0546-C-RP-001-00-FCA). At the time of writing the WSP FCA and hydraulic modelling is going through the review process with NRW and is yet to be accepted. Therefore, at this time greater weight has been given to the NRW flood modelling, whilst recognising its limitations.

The WSP FCA modelling is based on the 2012 NRW Maesteg flood model, with significant updates to many aspects of the modelling, including LiDAR, site topography, hydrology, improvements to key hydraulic structures and hydraulic modelling software versions. Once accepted by NRW (shortly it is hoped), the WSP modelling will represent best available flood risk information.

As shown in Figure 4-3 the current WSP baseline flood modelling of the 1% AEP plus climate change event closely aligns with the original 2012 NRW modelling. In the 0.1% AEP flood event, results are again broadly similar, with slightly more flooding shown within the site in the NRW model, which is likely to be associated with the lower site levels in the NRW model.

Therefore, while the WSP model is likely to represent a significant improvement on the original NRW modelling, the results are broadly comparable. Therefore, it is reasonable to assume that the flood mitigation strategy set out in the FCA is also broadly sound.

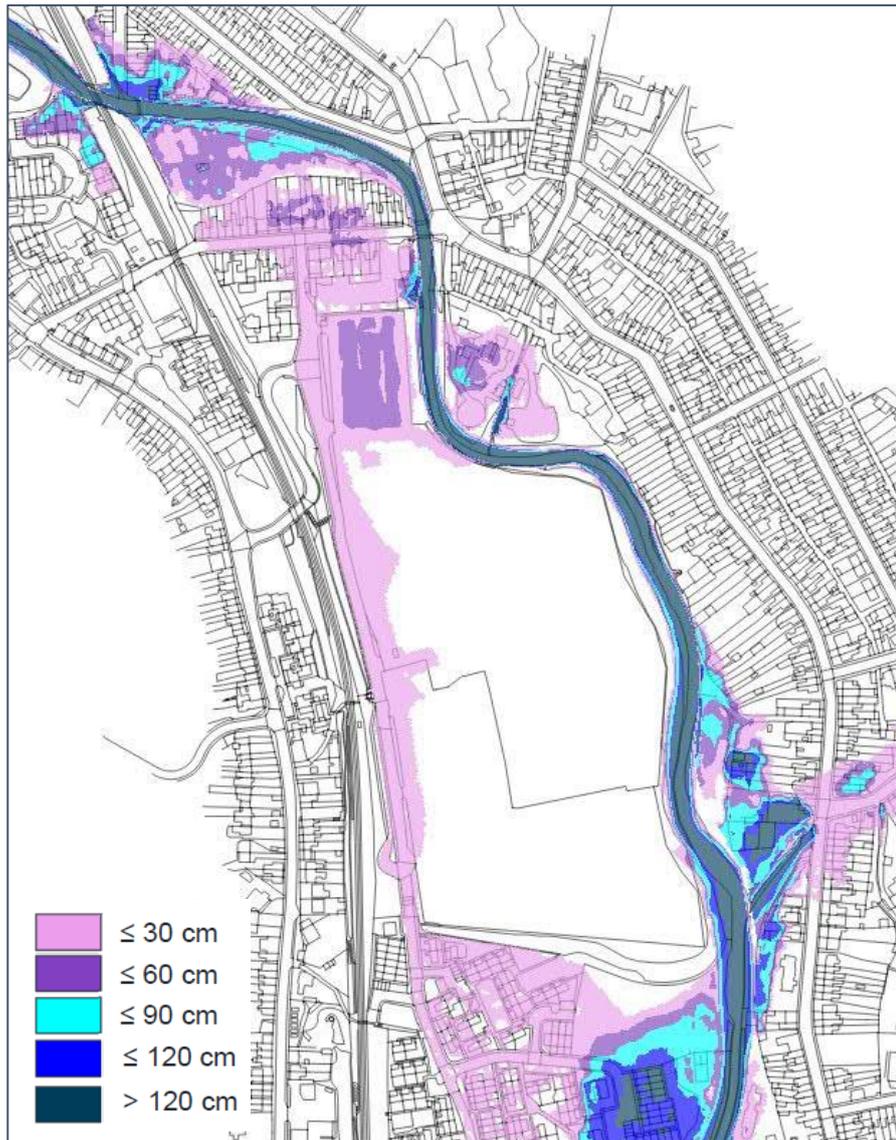


Figure 4-3: WSP modelling of the 1% AEP +CC event (extract from WSP FCA)

4.2.1 WSP Flood mitigation strategy

The WSP FCA sets out a strategy for managing flood risk across the site so that no areas of built development will flood in the extreme 0.1% AEP design event. The strategy proposes the construction of a flood channel from the northwest corner of the site to an area of dual use public open space and flood attenuation to the northeast of the site. Other areas of the site would be raised to prevent them from flooding, whilst also managing (capping) the ground contamination risks. Areas of Oakwood Drive and dwellings to the south of the site are predicted to benefit from this strategy, with reductions in flood extents and depths.

While this flood mitigation strategy is still to receive the approval of NRW and BCBC it does show, at least in principle, how the risk of flooding at the site might be safely managed. The proposed scheme demonstrates that it should be possible to exceed many of the requirements of TAN15 (i.e. no flooding in the extreme design event) whilst also reducing flood risk elsewhere. The strategy shows how a mixed-use development can be carefully set out to align development vulnerability classifications with the levels of flood risk.



Figure 4-4: Proposed Flood Conveyance Channel and Attenuation (WSP FCA, P. 7)

4.3 Access and Egress Considerations

The lowest flood risk is found on the southwest corner of the site, with access onto Oakwood Drive. This access point should be favoured when determining site layout and planning access and egress arrangements. However, maximum flood depths at other locations along Oakwood Drive also remain relatively low (<300mm) and may therefore provide further options for safe site access. Consequently, the flood risk to the provision of safe access and egress is not considered to be a significant constraint to development of the site.

4.4 Fluvial flood risk conclusions

- Review of both the results for NRW and WSP flood modelling of the site, reveal that:
 - A modest proportion (~10%) of the site is at risk in the 1% AEP plus climate change event. This area will not be suitable for Highly Vulnerable Development.
 - A larger proportion of the site is at risk in the 0.1% AEP plus climate change event, although what flooding does occur is shallow. Due to issues in the site topography in the NRW model, the current extent of Flood Zone 2 is likely to be overestimated.
- The WSP FCA shows, at least in principle, how the risk of flooding at the site might be safely managed. Potentially such a flood mitigation and development strategy

could exceed many of the requirements of TAN15 (i.e. no flooding in the extreme design event) and reduce flood risk elsewhere. The strategy also shows how a mixed-use development can be carefully set out to align development vulnerability classifications with the levels of flood risk.

5 Evaluation against Justification Tests and Acceptability Criteria

5.1 Justification Test

TAN15 states that the Local Planning Authority will need to be satisfied that a development's location is justified. This is determined through the application of the 'Justification Test', dependent on the flood zone and type of development, as summarised earlier in Section 2.4.

As a mixed-use development, TAN15 recognises that it may be appropriate to regard some parts of a development as highly vulnerable and other parts less vulnerable or water compatible. This can provide some flexibility when considering how best to use sites that are partially in Flood Zone 1 and partially in flood risk areas. For example, locating some types of SuDS features and open spaces in flood risk areas and using the land for appropriate flood alleviation, can help make best use of a site.

Development should therefore be carefully and sequentially planned, directing development to areas of lowest flood risk according to their vulnerability. For the Former Cooper Standard Site it is suggested that the Justification Tests will apply as follows:

Development in Flood Zone 1: There remains some uncertainty in the extent of Flood Zone 1, given the age of NRW's detailed modelling of the area. However, within those areas of Flood Zone 1 (now or redefined in the future) all types of development are acceptable in principle.

Development in Flood Zone 2: TAN15 specifically states that allocations may be made for development in Flood Zone 2 (Rivers and Sea) where they implement "in full or in part a strategy to regenerate or revitalise existing settlements or to achieve key economic or environmental objectives"¹³. Ewenny Road's Southern Parcel (residential and commercial proposal) clearly meets these criteria as detailed in Section 3.1. It is a high priority regeneration proposal, essential to implement the long-term regeneration strategy embodied within the Replacement LDP Vision. It will stimulate significant regenerative benefits throughout Maesteg and enable urban renewal through sustainable placemaking in accordance with Town Centre First principles.

The further requirements for development in Flood Zone 2 are that the location meets the definition of previously developed land, and the acceptability of flood consequences are found to be satisfied. The site in its entirety meets the definition of previously developed land and the acceptability criteria are considered in the next section.

Development in Flood Zone 3: The former car park area in the north of the site is located in Flood Zone 3. This is the location of the proposed transport interchange. This area would not be suitable for Highly Vulnerable Development. Less Vulnerable Development is permissible in Flood Zone 3, if there are "exceptional circumstances that require its location in Zone 3, such as the interests of national security, energy security, public health or to mitigate the impacts of climate change". Ewenny Road's Northern Parcel (transport interchange proposal) is a key component of the Metro's enhanced services on the Valley Lines via the Maesteg branch and is essential to strengthen public transport connections to and from Maesteg. The development proposal is therefore considered one such exception in accordance with the new proposed TAN15 criteria. As in all flood zones, water compatible development (e.g. flood mitigation measures, public open space) would be acceptable within Flood Zone 3.

Similar to development in Flood Zone 2, development in Flood Zone 3 must also be located on previously developed land and satisfy the acceptability of flood consequences.

13 TAN15, para 7.15

5.2 Acceptability of flood consequences

There are three principal aspects to the Acceptability Criteria:

- 1 **Flood frequency requirements.** The frequency at which flooding is regarded to be acceptable, depending on the primary source of flooding.
- 2 **Tolerable conditions.** The flood conditions that are regarded to be acceptable during an extreme flood event, depending on the type of development.
- 3 **Avoidance of third-party impacts.** Development must not cause or exacerbate the nature and frequency of flood risk elsewhere.

NRW model results show that the first test of flood frequency requirements is satisfied for all parts of the site other than the former car park to the north of the site, which is situated in Flood Zone 3. Therefore, this area will require some form of flood mitigation if it is to be developed for Less Vulnerable Development (Highly Vulnerable Development not being allowed in Flood Zone 3).

NRW model results suggest that flooding in the extreme design event will not exceed tolerable conditions (>600mm) across the vast majority of the site. The only possible exception is the former car park to the north of the site, where this threshold is exceeded by 150mm in some locations. However, as previously acknowledged, this area requires some form of flood mitigation for development to take place.

The WSP FCA demonstrates, at least in principle, that the risks of flooding can be managed to satisfy the acceptability criteria. The flood mitigation strategy would ideally prevent flooding of all areas of development, with the deliberate exception of areas of water compatible development. Indeed, such a strategy for the site is likely to be able to exceed the requirements of 'flood frequency' and 'tolerable conditions' and reduce flood risk elsewhere.

We therefore conclude that the proposed development is very likely to be able to satisfy the acceptability of flood consequences.

5.3 Conclusion

As a large mixed-use development, we find that the proposed allocation and development of the Former Cooper Standard Site is capable of meeting all aspects of the Justification Tests of TAN15. This will require some aspects of site zoning and flood mitigation, but recent studies have demonstrated that this is very likely to be achievable.

6 Summary and conclusions

This document has been prepared as an addendum to the Bridgend County Borough Council SFCA Site Screening Update dated August 2022. The report revisits and updates the assessment for the appraisal of the Former Cooper Standard candidate site. The addendum provides a more current and detailed assessment of the site.

Since the initial site appraisal, additional flood risk information and changes in the draft TAN15 policy have been published, coupled with a number of questions from the Planning Inspector raised from the revised Local Development Plan (LDP) examination. Specifically;

- The Flood Map for Planning (FMfP) for Maesteg was updated in May 2023;
- Associated with the FMfP update for Maesteg, additional detailed flood model data has become available, allowing for a more accurate and informed site appraisal;
- Welsh Government have postponed the release of the new Technical Advice Note 15 (TAN15) and published a second consultation on a revised draft. The consultation was released in January 2022 and is now closed. Welsh Government are currently reviewing the consultation responses and have advised that the new TAN15 is unlikely to be published earlier than the end of the year; and
- The Planning Inspector has requested further information regarding the constraints to the site in respect to flood risk and whether these can be overcome.

The appraisal has been prepared in accordance with the latest consultant draft of TAN15 (January 2023), the associated Flood Map for Planning (FMfP) and detailed hydraulic modelling. The appraisal presents information on all sources of flooding to provide decision support guidance.

The appraisal has concluded that:

- The initial site screening methodology gives the site a Red RAG score because the development will include HVD and over 10% of the site is in Flood Zone 3 (rivers & sea). The area of the site in Flood Zone 3 is only marginally (0.9%) over 10% threshold. This percentage is sensitive to the site boundary used and the inclusions of the more flood susceptible northern area of the site. The initial screening assessment criteria fail to recognise that the proposals are for a mixed-use development, whereby HVD can relatively easily be directed away from areas of Flood Zone 3, adopting a sequential approach to zoning development across the site. Taken as a whole the Red RAG score for this site is marginal and potentially misleading. The fact that 10.9% of the site is current in Flood Zone 3 is unlikely to fundamentally prohibit development of the site as a whole. The more reasonable RAG classification for the site is Amber – identifying that flood risk is a significant consideration.
- A review of detailed model results from both NRW and WSP show that:
 - A modest proportion (~10%) of the site is at risk in the 1% AEP plus climate change event. This area will not be suitable for Highly Vulnerable Development and will require some form of flood mitigation to bring forward Less Vulnerable Development.
 - A larger proportion of the site is at risk in the 0.1% AEP plus climate change event, although what flooding does occur is generally shallow. Due to issues in the site topography in the NRW model, the current extent of Flood Zone 2 is likely to be overestimated. Access and egress routes to the site are not significantly affected by flooding, experiencing only shallow flooding.
- The WSP FCA shows, at least in principle, how the risk of flooding at the site might be safely managed. Potentially such a flood mitigation and development strategy could exceed many of the requirements of TAN15 (i.e. no flooding in the extreme design event) and reduce flood risk elsewhere. The strategy also shows how a mixed-

use development can be carefully set out to align development vulnerability classifications with the levels of flood risk.

- Flood risk from groundwater, surface water, the sea, sewers and artificial sources is low.
- As a large mixed-use development, we find that the proposed allocation and development of the Former Cooper Standard Site is capable of meeting all aspects of the Justification Tests of TAN15. This will require some aspects of site zoning and flood mitigation, but recent studies have demonstrated that this is very likely to be achievable.

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