

SGM Waste Management - Flood Consequences Assessment

Version 1

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Prepared for:

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Abbreviations

AEP	Annual Exceedance Probability
BGS	British Geological Survey
DTM	Digital Terrain Model
FCA	Flood Consequence Assessment
FMfP	Flood Map for Planning
HGV	Heavy Goods Vehicle
LDP	Local Development Plan
LiDAR	Light Detection and Ranging
mAOD	metres Above Ordnance Datum
NGR	National Grid Reference
NRW	Natural Resources for Wales
OS	Ordnance Survey
OS NGR	Ordnance Survey National Grid Reference
PPW	Planning Policy Wales
TAN-15	Technical Advice Note 15: Development and Flood Risk
TUFLOW	Two-dimensional Unsteady FLOW (a hydraulic model)

1 Introduction

1.1 Terms and References

JBA Consulting were commissioned by SGM Waste Management Ltd to prepare a Flood Consequences Assessment (FCA) for a retrospective planning application for the change of use of a farmyard to a waste management and transfer facility at Wentlooge Avenue, Cardiff, CF3 2TN. This FCA demonstrates the suitability of the proposed development in terms of flood risk.

1.2 FCA requirements

This FCA follows the Welsh Government guidance on development and flood risk set out in the Technical Advice Note 15: Development, Flood Risk and Coastal Erosion (TAN-15). TAN-15 states that:

'The prime objective of a Flood Consequences Assessment is to develop a full appreciation of:

- The risks and consequences of flooding on the development; and*
- The risk and consequences (i.e the overall impacts) of the development on flood risk elsewhere.'*

To achieve this, the FCA should establish if suitable avoidance and mitigation measures can be incorporated, in a manner compatible with the placemaking aims of Planning Policy Wales, within the site design to ensure that development is safe and there is:

- • Minimal risk to life;
- • Minimal disruption to people living and working in the area;
- • Minimal potential damage to property; and
- • Minimal disruption to the sustainable management of natural resources.

As outlined in TAN-15, the planning authority will need to conclude where a development should proceed or not depending on whether the consequences of flooding can be safely managed, including its effects on flood risk elsewhere.

2 Site Description

2.1 Site Summary

The 1.0085ha site is located on Wentlooge Avenue, Cardiff as shown in Figure 2-1. The site is approximately 5-miles to the east of Cardiff City Centre and due to the retrospective nature of the proposals, the site is currently being used as a waste management and transfer facility. The site was previously used as a livery yard.

The site is bounded by mostly greenfield agricultural land, with the Rhosog Fawr Reen and Wentlooge Road adjacent to the Southern boundary, and Tarwick Reen followed by an additional neighbouring development adjacent to the West of the site. The Severn Estuary is located approximately 450m to the south of the site. There are two entrances to the site, one for HGV access, and one for Staff and visitor access. These are both accessed from Wentlooge Road. A summary of the site is contained in Table 2-1.

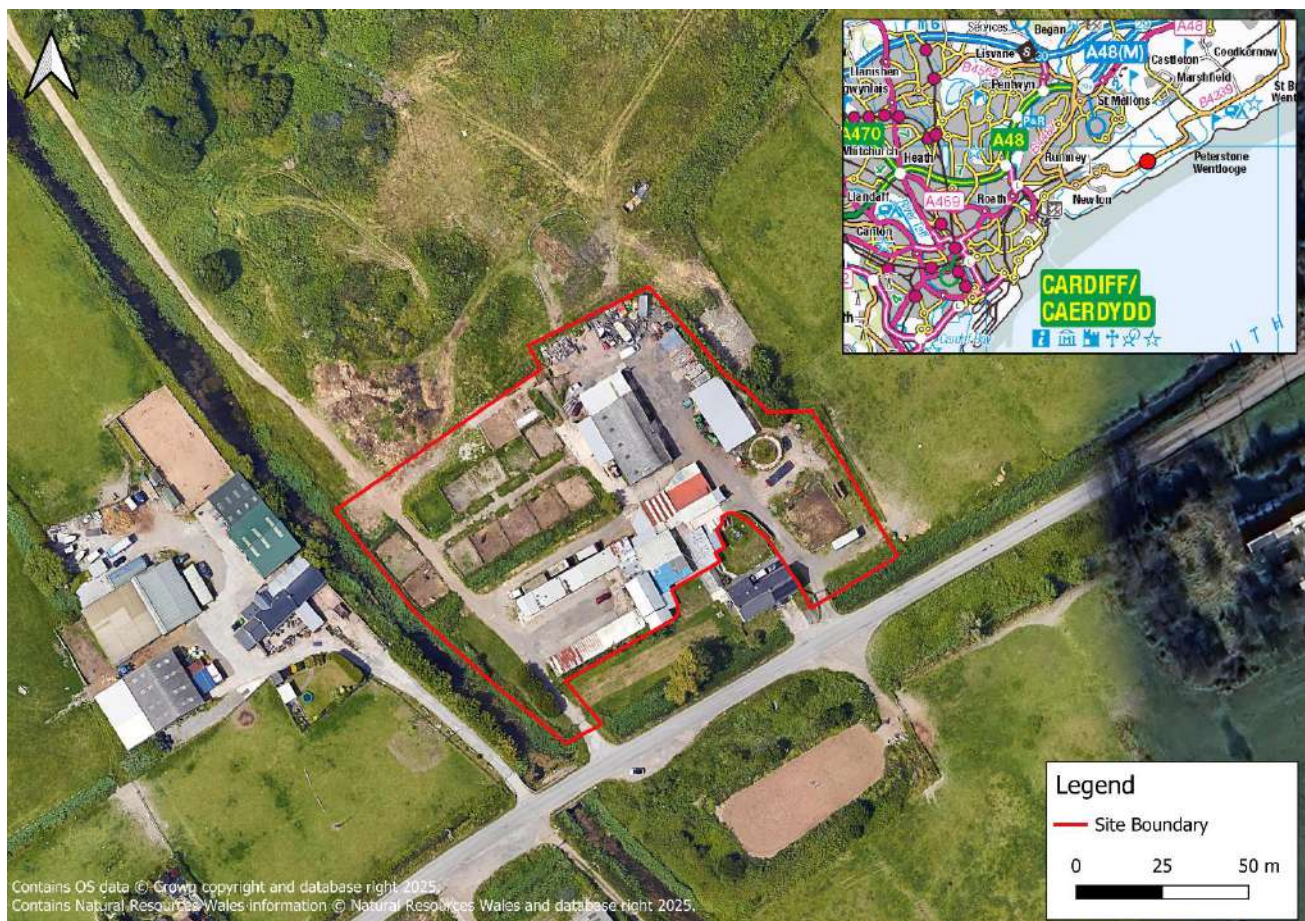


Figure 2-1 Site location plan

Table 2-1 Site Summary

Site Name	SGM Waste Management
Site area (ha)	1.0085
Existing land use	Farm/Livery Yard
Purpose of development	Waste Management and transfer facility
OS NGR	ST 25286 79377
Local Planning Authority	Newport City Council
Lead Local Flood Authority	Newport City Council

2.2 Site Topography

The Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data has been used to assess the site topography in the absence of a site-specific topographic survey, as shown in Figure 2-2.

Ground levels across the site are shown to mostly fall in a general south-easterly direction. Highest elevations of 7.53mAOD can be found towards the central northern border of the site. Ground levels across the main site range from 4.2mAOD to 7.53mAOD. The lowest ground levels are located along the southeastern boundary of the development site.

Further spot heights of the site are provided in Figure 2-2 below.



Figure 2-2 NRW 1m LiDAR DTM

2.3 Watercourses and Flood Defences

There are no NRW Main Rivers located within the development site boundary. However, there are a number of Reens which flow near to the site boundary, predominantly along the southern and western boundaries, as is shown in Figure 2-3 below. The Tarwick Reen flows in a southerly direction, parallel to the Western boundary, with the Rhosog Fawr Reen adjacent to the south boundary of the site.

These watercourses are part of several Main Rivers and Ordinary Watercourses which forms a complex network of Reens comprising the Wentlooge Levels. The Wentlooge Levels are managed by NRW as the Internal Drainage District for the area. The Levels comprise watercourses and drainage channels which are controlled by a combination of tilting weirs, penstocks and boarded sluices.

The site is located approximately 450m from the South Wales coastline, and the Severn Estuary. A flood defence is located along the South Wales coastline in the form of an earth embankment, as shown in Figure 2-3. The embankment aims to mitigate the risk of tidal flooding to the Caldicot and Wentlooge Levels and is managed by Natural Resources Wales (NRW). The site is located within an area benefitting from this defence.

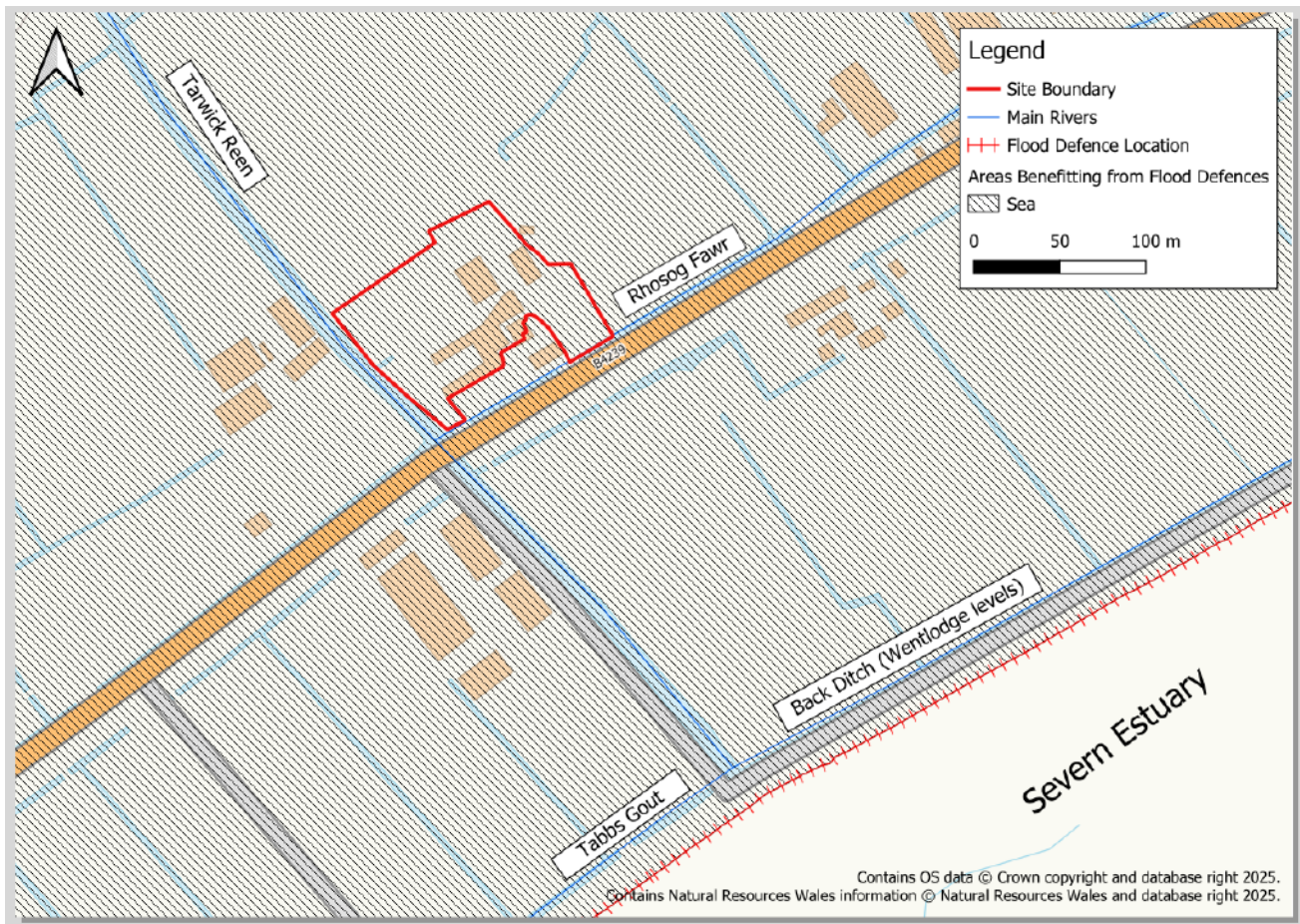


Figure 2-3 Watercourses and Flood Defences

2.4 Soils and Geology

The geology of the site has been assessed using the BGS GeoIndex¹. The bedrock geology is shown to comprise of Mercia Mudstone.

The soils on site have been assessed on the Cranfield University Soilscales Viewer². The underlying soils have been described as loamy and clayey in texture, with naturally high groundwater.

2.5 Proposed Development

The development proposals are for a retrospective change of use from a livery yard to a waste management and transfer facility, including an engineering fabrication unit. The Waste Transfer Station includes:

- The sourcing and collection of inert waste to be processes into recycled aggregates, for sale to the market.

¹ <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

² <https://www.landis.org.uk/soilscales/>

- Collection of mixed skip wastes, tipping and sorting into recovery streams, and then onward transportation to facilities permitted to receive the wastes.
- Assessment of sources material through GI and laboratory data.
- Loading and delivery of processed material to customers.

The proposed site layout is contained in Figure 2-4, and contained in full in Appendix A. There will be no change to existing building footprint or levels as a result of the change of use. In addition, there is no change in site access as a result of the proposals.

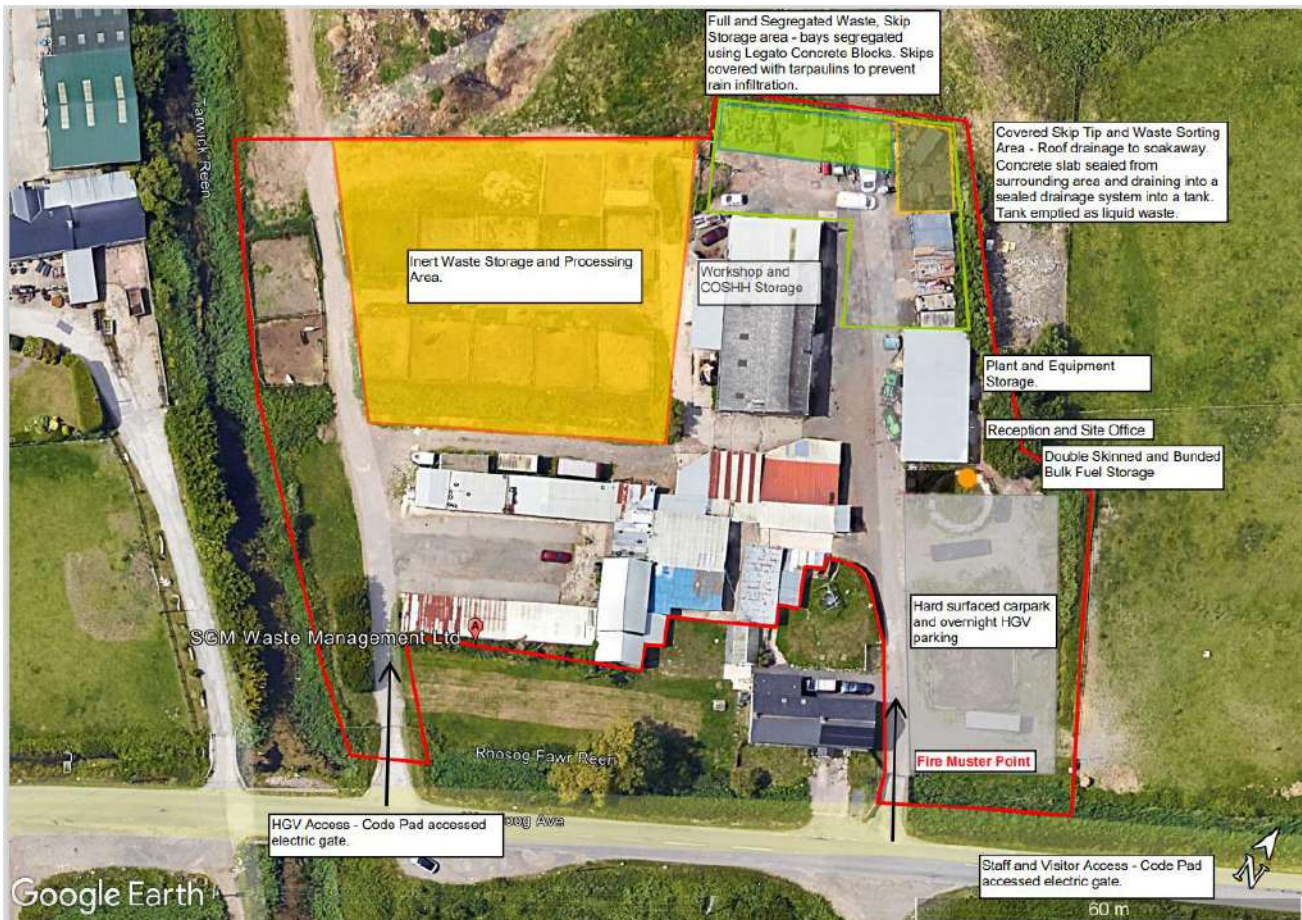


Figure 2-4 Proposed development layout

3 Planning Policy and Flood Risk

3.1 Planning Context

Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which, together with PPW, provide the national planning policy framework for Wales. These policies aim to make all development in Wales is sustainable and improve the social, economic, environmental, and cultural wellbeing of Wales as set out in the Wellbeing of Future Generations Act 2015.

Technical Advice Note 15 (TAN-15), originally introduced by the Welsh Government in 2004 and most recently updated in March 2025, provides technical guidance relating to development planning and flood risk in Wales. TAN-15 provides a framework within which the flood risks arising from rivers, the sea and surface water, and the risk of coastal erosion can be assessed. The approach set out in the most recent update to TAN-15 ensures flooding and coastal erosion are accorded appropriate consideration in plan making and development management decisions.

3.2 Form of Development

TAN-15 recognises two key forms of development: New development and Redevelopment. The definition of both terms is provided in **Error! Reference source not found..**

Table 3-1 Form of Development

Form of Development	Definition
New Development	Any Development on greenfield land
Redevelopment	Any Development on previously developed land as defined in Planning Policy Wales

As detailed in Section 2.5, development proposals are for the retrospective change of use from a livery yard to a waste management and transfer facility. As such, the proposed development is classified as **Redevelopment**.

3.3 Vulnerability Classification

TAN-15 assigns one of three flood risk vulnerability classifications to developments, as shown in **Error! Reference source not found..** The proposed development is consequently classed as **Less Vulnerable Development, in accordance with a general industrial site**.

Table 3-2 TAN-15 Vulnerability Classification

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

3.4 Lifetime of Development

An FCA should help the planning authority determine whether the risk and consequences of flooding are acceptable over the lifetime of development. TAN-15 states:

'Generally, it is appropriate to think of new dwellings as having a lifetime of 100 years. Lifetimes for other types of development will vary, but 75 years is considered a reasonable rule of thumb'.

As the proposals are for a general industrial development a 75-year lifetime of development has been considered in this assessment.

3.5 Flood Map for Planning

The Flood Map for Planning is the starting point for consideration of flood risk in the planning system. The map uses flood zones to indicate the degree to which land is at risk of flooding from rivers, the sea, surface water and small watercourses. The FMfP displays predicted future flood risk with an allowance made for climate change over a 100-year lifetime of development.

3.5.1 Flood Map for Planning - Flood Risk from Rivers

The Flood Map for Planning - Flood Risk from Rivers map has identified the development site is mostly located within Flood Zone 1 and Flood Zone 2, as shown in **Error! Reference source not found.** below. Flood Zone 1 represents areas with a less than 0.1% AEP (1 in 1000 year) chance of flooding from fluvial mechanisms in any given year, including the effects of climate change. Areas in Flood Zone 2 have a less than 1% (1 in 100 year) but greater than 1 in 0.1% (1 in 1000 year) chance of flooding in any given year, including climate change.

There is a small area of the site along the southeastern boundary which is shown to be located in Flood Zone 3. This area is associated with the Rhosog Fawr Reen only. Areas in Flood Zone 3 have a greater than 1% (1 in 100 year) chance of flooding in a given year, including climate change. No development is proposed in Flood Zone 3.



Figure 3-1 FMfP - Flood Risk from Rivers

3.5.2 Flood Map for Planning - Flood Risk from the Sea

The site is shown to be in TAN-15 Defended Zone of the Flood Map for Planning - Flood Risk from the Sea as shown in **Error! Reference source not found.** TAN-15 Defended Zones are the areas that benefit from Risk Management Authority flood defences which provide a minimum standard of protection against flooding from the sea of 1:200 (plus climate change). The site benefits from robust, coastal embankments that are maintained by NRW, and can be seen on Figure 2-3 in Section 2 above.



Figure 3-2 FMfP - Flood Risk from the Sea

3.5.3 Flood Map for Planning - Flood Risk from Surface Water and Small Watercourses

Error! Reference source not found. shows the site to be within Flood Zone 1 of the FMfP - Flood Risk from Surface Water and Small Watercourses. Flood Zone 1 represents areas that have a less than 0.1% AEP (1 in 1000 year) chance of flooding from surface water or small watercourses.

All forms of development are suitable within Flood Zone 1.

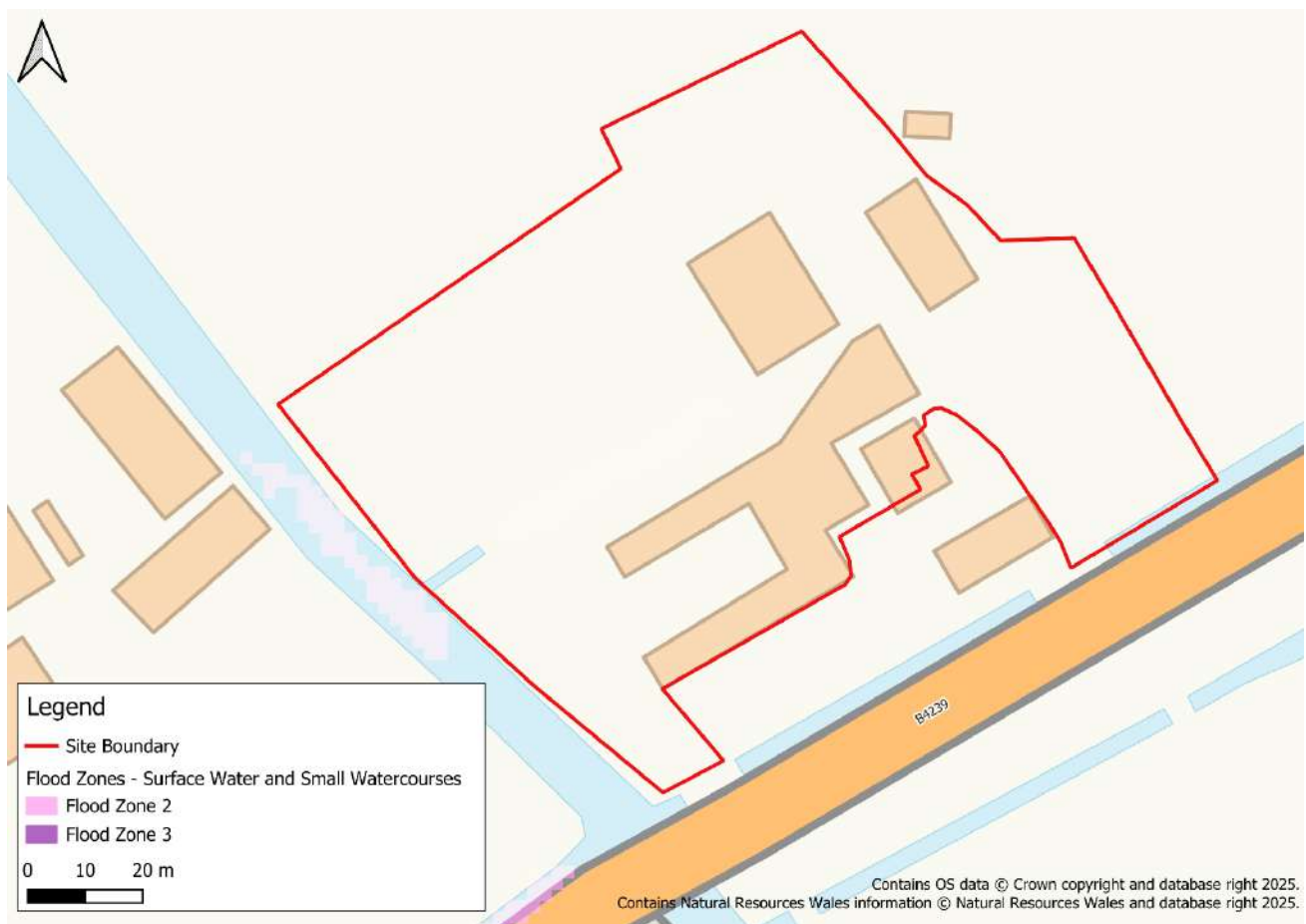


Figure 3-3 FMfP - Flood Risk from Surface Water and Small Watercourses

3.6 Newport Council Local Development Plan

The Newport City Council Local Development Plan (LDP)³ adopted in 2015 sets out how new development will be managed and how land will be used in Newport until 2026. The vision of the LDP is -

"As a gateway to Wales, Newport will be a centre of regeneration that celebrates its culture and heritage, while being a focus for varied economic growth that will strengthen its contribution to the region. It will be a place that people recognise as a lively, dynamic, growing City, with communities living in harmony in a unique natural environment."

To achieve this, the LDP has ten key objectives, of which, the development site will help to meet objectives 1, 3, 6 and 10.

- **Objective 1 - Sustainable Use of Land:** "To ensure that all development makes the most efficient use of natural resources by seeking to locate development in the most sustainable locations, minimise the impact on the environment and make a positive contribution to local communities." - "A key way in which the Plan will seek to meet this objective is by focusing development on previously used, brownfield sites."

³ <https://www.newport.gov.uk/documents/Planning-Documents/LDP-2011-2026/LDP-Adopted-Plan-January-2015.pdf>

- **Objective 3 - Economic growth:** "To enable a diverse economy that meets the needs of the people of Newport and those of the wider Southeast Wales economic region."
- **Objective 6 – Conservation of the Natural Environment:** "To protect and enhance the quality of the natural environment, including landscape, protected habitats and species of principal importance for biodiversity in Wales (regardless of greenfield or brownfield status) and the protection of controlled waters."
- **Objective 10 – Waste:** "To ensure that waste management choices are based on the proximity principle, where appropriate, and a hierarchy of reduce, reuse, recovery and safe disposal, and that there is adequate provision for facilities to enable this to happen."

3.7 Shoreline Management Plan and Severn Estuary Flood Risk Management Strategy

The proposed site and all the Caldicot and Wentlooge Levels are protected by significant and extensive coastal flood defences that protect large areas of existing development (inc. Newport, Magor, Undy, Caldicot) and national infrastructure (rail mainline, Severn Tunnel, national grid power infrastructure, M4 motorway).

The Severn Estuary Shoreline Management Plan⁴ recognised this and set a policy to 'Hold the Line', maintaining the flood defences for the long term.

The importance of defending the area from flood risk is further established in the Severn Estuary Flood Risk Management Strategy. The Strategy concluded that *"There is a strong economic case to maintain and improve the existing defences due to the large number of properties and infrastructure that is protected."* It also states *"We will continue maintaining the line and level of defences over the next 100 years. After 2060 there will be improvements to keep pace with climate change. This is likely to involve rock armour or concrete protection where not already present and raising to ensure the risk of tidal flooding remains a 1 in 200 chance or less."*

The significance and importance of the coastal defences and the need to maintain and upgrade them over time was also firmly established by the Welsh Government at the 'M4 corridor around Newport' enquiry.

⁴ <https://severnestuarycoastalgroup.org.uk/shoreline-management-plan/>

4 Flood Risk Assessment

4.1 Review of Existing Flood Risk Data

This section has been completed using the NRW Flood Risk Assessment Wales (FRAW) dataset. It should be noted that the FRAW data set does not include an allowance for climate change. Datasets or modelling with an allowance added for climate change will need to be considered where required, as is the case for tidal risk in this assessment.

Table 4-1 below provides a summary of the flood risk to the site from all sources of risk.

Table 4-1 Summary of Flood Risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✖	The site is at a very low risk of flooding from fluvial sources.
Flood Risk from the Sea	✓	The site is at a low risk of flooding from the Sea.
Flood Risk from Surface Water and Small Watercourses	✖	The site is at a low risk from flooding from Surface Water and Small Watercourses.
Flood Risk from Groundwater	✖	The site is at very low risk from flooding from groundwater.
Flood Risk from Reservoirs	✖	The site is at low risk from flooding from reservoirs.
Flood Risk from Sewers	✓	The site is at low risk from flooding from sewers.

4.2 Historical Flood Risk

NRW's map of recorded flood extents does not show any historic record of flooding on the site. Furthermore, no site-specific mention has been made within Newport Councils Flood Risk Management Plan⁵ of any historical flooding across the application site.

4.3 Flood Risk from Rivers

NRW's Flood Risk Assessment Wales (FRAW) Flood Risk from Rivers mapping indicates that the proposed development site is at **very low** risk of fluvial flooding. This means there is less than a 0.1% AEP chance of fluvial flooding in any given year. This is shown by a transparent layer on the FRAW mapping, as shown in Figure 4-1.

⁵ <https://www.newport.gov.uk/documents/Council-and-Democracy/Consultations/Newport-Flood-Risk-Management-Plan-Report-Issue-for-Consultation.pdf>

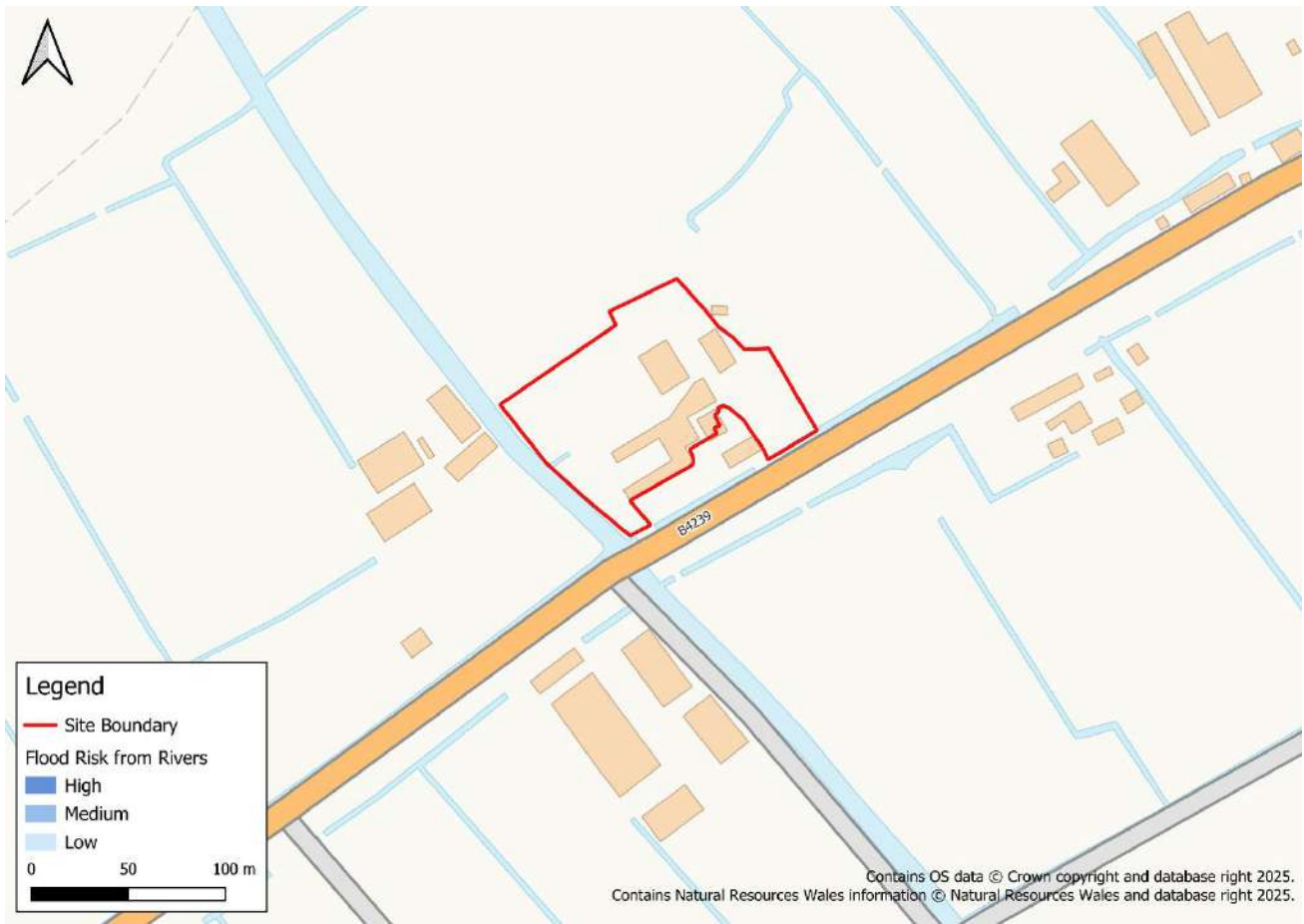


Figure 4-1 FRAW - Flood Risk from Rivers

4.3.1 Detailed Fluvial Flood Risk Assessment

The FRAW mapping does not contain any allowances for climate change. The Flood Map for Planning, (contained in Section 3.5.1) suggests that there is a risk of fluvial flooding during the extreme event, when climate change is considered. Consequently, a review of local detail hydraulic models has been undertaken. A detailed fluvial flood model of the River Ebbw was developed by Wallingford HydroSolutions in 2019 and since updated in 2021 by JBA Consulting. It is noted the tidal boundary within the dataset used allows for climate change to 2117. This exceeds the 75 year lifetime of the proposed development, and the results are therefore considered precautionary. This model has been used unamended to determine the fluvial flood risk to the site in the extreme event.

Figure 4-2 below indicates that the site is predicted to be entirely flood-free during the 0.1% AEP, including climate change, event. No flooding is predicted within 1.4km West, 2.1km East, and 1.5km Northeast of the site.

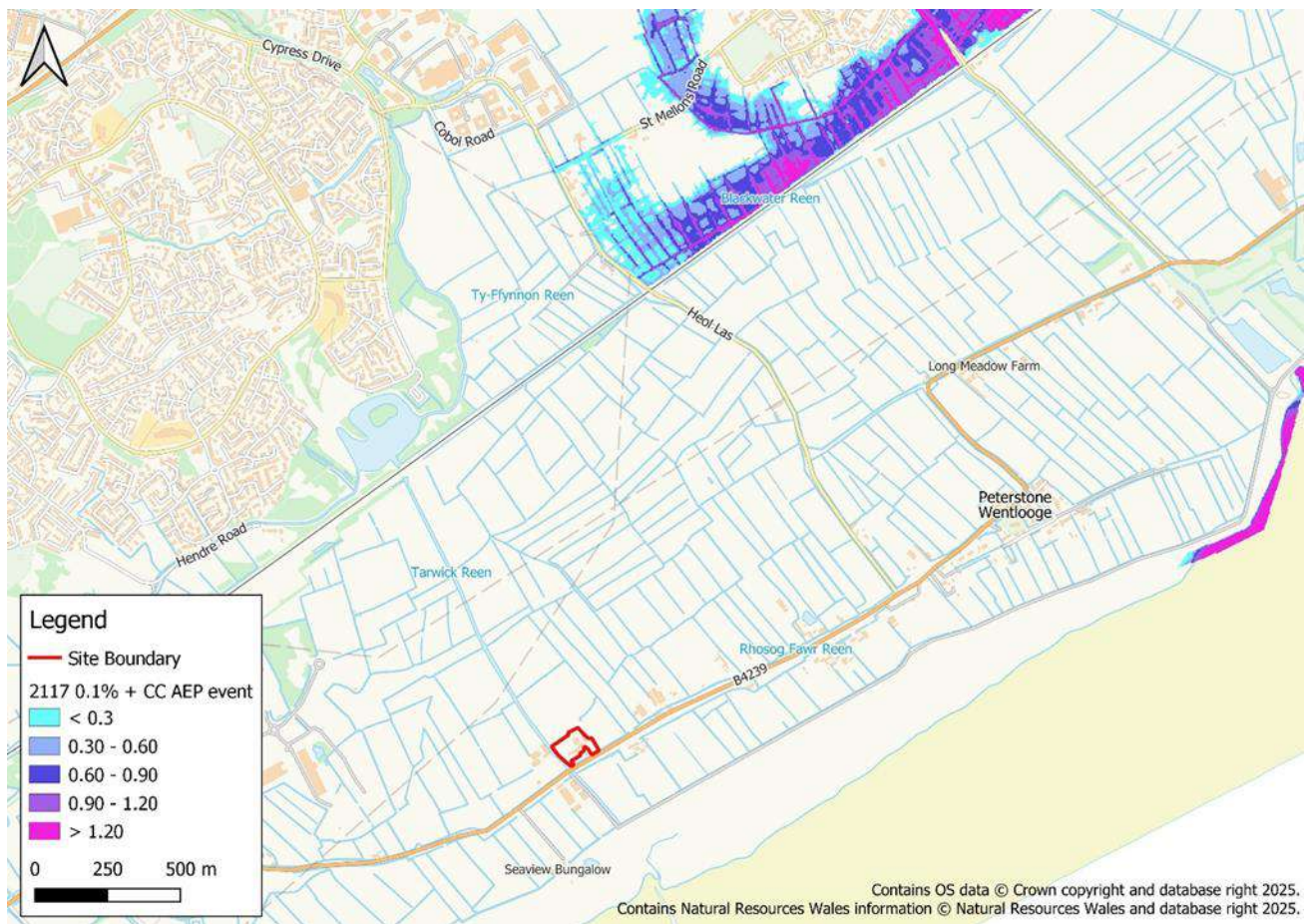


Figure 4-2 Modelled Flood Depths for the 0.1% plus Climate Change event

4.4 Flood Risk from the Sea

The NRW FRAW map for Flood Risk for the Sea, shows that the site is at **low** risk of flooding from these sources, as shown in Figure 4-3 below. This means that in each year, the site has a chance of flooding of between 0.1% AEP (1 in 1000) and 0.5% AEP (1 in 200).

The NRW FRAW maps use a combination of generalised national scale modelling and detailed local maps where available, resulting in mixed levels of accuracy. They also do not contain consideration of climate change. Therefore, to better understand the risk of tidal flooding and the implications of climate change on future redevelopment aspirations, further assessment is detailed in Section 5.



Figure 4-3 FRAW Flood Risk from the Sea

4.5 Flood Risk from Surface Water and Small Watercourses

The NRW FRAW flood risk from Surface Water and Small Watercourses mapping shows that the site is at **very low** risk of flooding from these sources, as shown in Figure 4-4. This means that there is a less than 0.1% AEP (1 in 1000 years) chance of flooding in any given year from surface water and small watercourses.

There is a small area of the development site that is shown to be at 'low' risk from surface water or small watercourse flooding. This means that the area has between 0.1% AEP (1 in 1000 years) and 1% AEP (1 in 100 years) chance of flooding in any given year.

This area is, however, small and isolated and would not pose a significant risk to the site. It has, therefore, been assessed that the risk from surface water and small watercourse flooding to the site is **low**.



Figure 4-4 FRAW Flood Risk from Surface Water and Small Watercourses

4.6 Flood Risk from Groundwater

Groundwater flooding occurs when the level of water within the rock or soil underground rises, due to extended periods of heavy rainfall or already high groundwater levels. Water then begins to reach ground level, and seep through to the surface, saturating the soil and causing flooding of land areas or flooding within basements of properties which can cause significant damage over time.

There are no site-specific recorded groundwater flood incidents in Newport Flood Risk Management Plan⁶, and the plan states that 'groundwater is not considered to be a significant risk in Newport' and 'there are no recorded groundwater flood incidents' within Marshfield Ward, Newport.

It can therefore be concluded that the risk of groundwater flooding at the site is **very low**.

⁶ <https://www.newport.gov.uk/documents/Council-and-Democracy/Consultations/Newport-Flood-Risk-Management-Plan-Report-Issue-for-Consultation.pdf>

4.7 Flood Risk from Reservoirs

The NRW FRAW flood risk from Reservoirs flood maps indicate that the proposed development site is not at risk of flooding due to reservoir failure. It can therefore be concluded that the site is at **low** risk of flooding from reservoirs. Very low risk is shown as transparent on the NRW map Figure 4-5 below.



Figure 4-5 FRAW Flood Risk from Reservoirs

4.8 Flood Risk from Sewers

The Newport Flood Risk Management Plan states that there have been 71 reported incidents of DG5 sewer flooding within the Marshfield Ward area. The management plan states that the majority of these are in a cluster to the southwest of the ward.

The development site is within the Southwest of the Marshfield Ward area, however there is no site-specific mention of the development site; therefore, it can be concluded that the risk of sewer flooding is **low**.

5 Detailed Tidal Flood Risk Assessment

Tidal flood risk has been identified as a significant source of flood risk to the site. Consequently, a more detailed assessment of this flood risk source has been carried out and is reported in the following section.

5.1 Hydraulic Model Availability

A detailed tidal flood model covering an area from the River Rhymney estuary in Cardiff, to the River Usk estuary in Newport was developed by JBA Consulting in 2019 and has since been updated in 2022 to apply the latest climate change guidance, extreme sea level predictions, and utilise the most recent software and modelling approaches.

The updated flood modelling has utilised the latest TUFLOW executable release of 2020-10- AC. This is considered an improvement on the previous modelling that had adopted the TUFLOW executable 2018-03-AE.

Given the nature of the proposals and level of flood risk assessed, it is considered disproportionate to update the model to reflect the additional years of climate change from 2021 to 2025 as this would have negligible impact on the results.

5.2 Detailed Model Results

Figure 5-1 below indicates that the site is predicted to be entirely flood-free in the 2097 0.5% AEP event, with no flooding predicted within approximately 65 metres of the site.

Figure 5-2 Modelled flood depths for the 2097 0.1% AEP event below shows the modelled flood depths for the 2097 0.1% AEP event. Most of the site is shown to be flood free in this event. However, there is some flooding predicted along the northwestern and southeastern boundaries of the site, which reach maximum depths of 0.37m.

The greatest depths are located within the reed network along the northwestern boundary of the site. Some overtopping can be seen on the model results no development is proposed in these areas of flood risk.

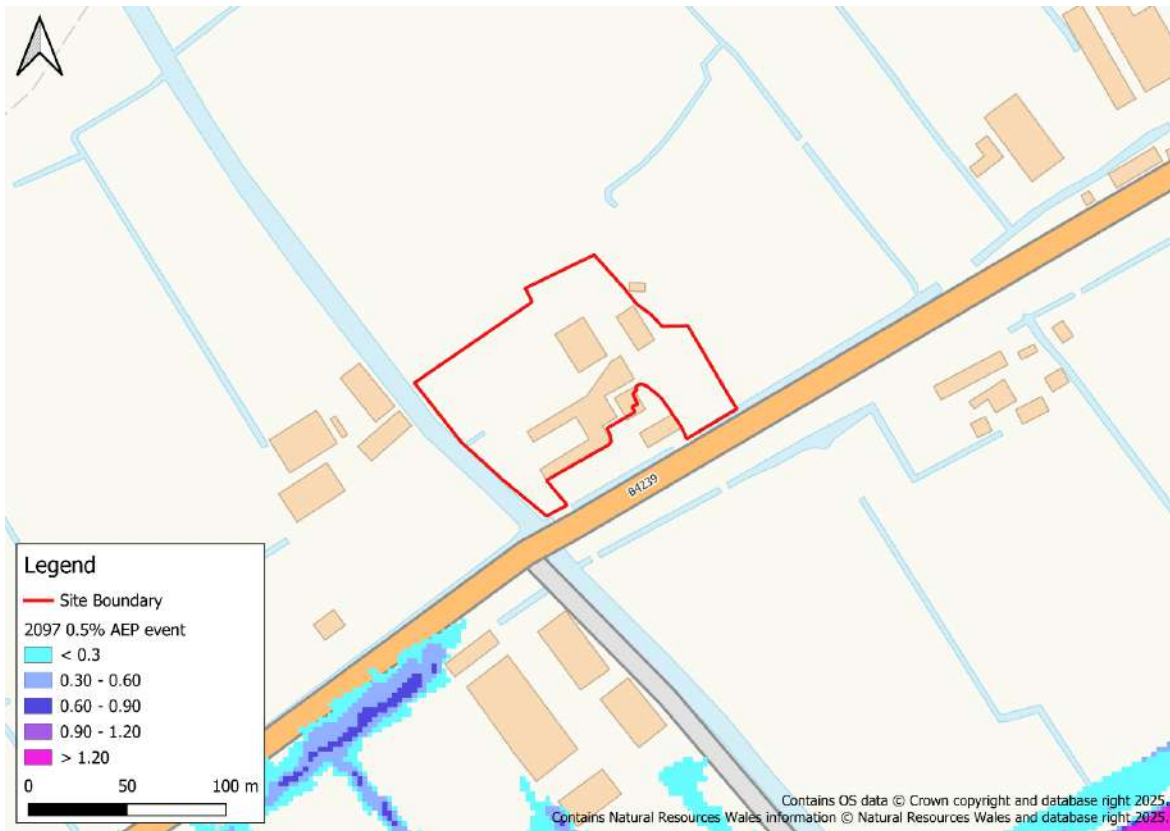


Figure 5-1 Modelled flood depths for the 2097 0.5% AEP event

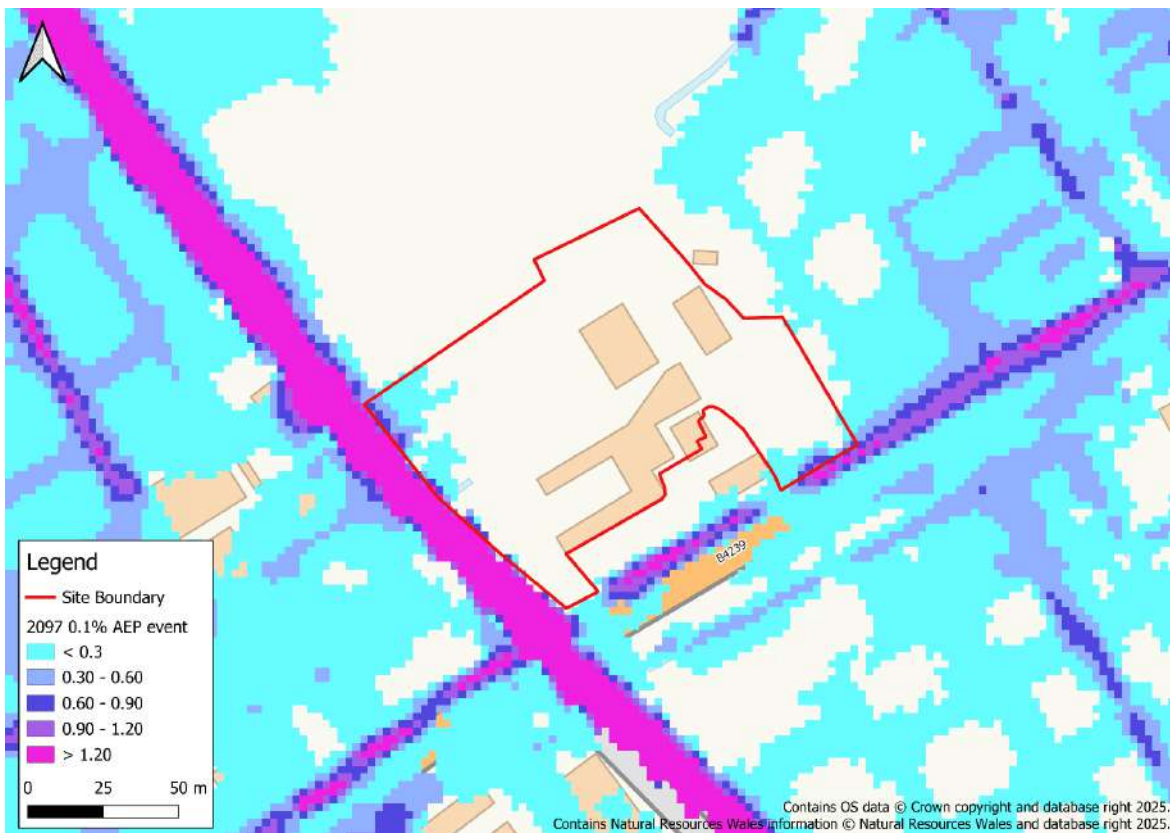


Figure 5-2 Modelled flood depths for the 2097 0.1% AEP event

6 Flooding and the Plan Led System

6.1 Application of Flood Zones to Development Management Decisions

When considering a site for development, TAN-15 sets out the requirements for the form of development in any given flood zone.

It is understood that the presence of the site within the TAN-15 Defended Zone supplants the sites' location within Flood Zones 2 and 3, regardless of the source of risk. For a proposed redevelopment site within a TAN-15 Defended Zone, Section 10.17 of TAN-15 states:

"On brownfield sites, redevelopment proposals should not over intensify use neither should they reduce the area's ability to absorb flood water nor cause problems with flooding elsewhere. All applications should consider opportunities to incorporate flood resilient design as appropriate and any proposal involving highly vulnerable development must be compliant with the tolerable conditions set out in section 11."

It is considered that the proposals do not result in an over intensification of use as a result of the general industrial nature of the development site. Both a livery yard, and a waste transfer facility would fall within the 'less vulnerable development' classification. As the development is for a change of use the building footprint will remain the same, with no proposals to extend or amend the existing infrastructure on site, or amend site ground levels. The proposed development represents a sustainable and proportionate reuse of existing agricultural infrastructure to support the aims and objectives of the Newport LDP.

Whether a development should proceed or not will depend upon whether the consequences of flooding can be safely managed, including its effects on flood risk elsewhere. TAN-15 sets out the key conditions that should be met to demonstrate that development is appropriate for its location.

6.2 Acceptability Criteria

The site has been assessed against the Acceptability Criteria of Section 11 of TAN-15, as shown in Table 6-1 below.

Table 6-1 Assessment of Acceptability Criteria

TAN-15 Acceptability Criteria	Comments	Achieved
No increase in flooding elsewhere	The development site is predicted to be entirely flood free in the 0.5% AEP design event, and almost entirely flood free in the 0.1% AEP design event for tidal flood risk. The site also remains entirely flood-free during the 0.1% AEP event plus climate change for fluvial flood-risk. There shall be no change to the development footprint	Yes

TAN-15 Acceptability Criteria	Comments	Achieved
	from existing arrangements and therefore flood risk to the site, and third parties remains unchanged.	
Occupiers aware of flood risk	The occupiers will be aware of the flood risk in the form of this report. It is also advisable for site users to sign up to NRW flood alerts and warnings.	Yes
Escape/evacuation routes present	Flood free escape and evacuation routes are available via Wentloog Avenue in the 0.5% AEP tidal design event, and the fluvial 0.5% AEP plus climate change event. Tidal flooding is predicted to occur across both the HGV access, and visitor/staff access/egress routes in the 2097 0.1% AEP tidal design event. The HGV access route floods to less than 300mm, therefore in a flooding event emergency services will be able to reach the site if required. Occupiers should sign up to local flood alerts, and warnings of flood events will be sent with sufficient time to allow for evacuation of the site. As the site is for general industrial use only, it is advisable for the premises to remain closed during flood events until safe to enter.	Yes
Flood emergency plans and procedures agreed and in place	The boundary, and the access routes of the development site are predicted to flood in the 2097 0.1% AEP tidal design event, and it is advisable that users prepare a Flood Response Plan to determine safe response to a flood event at the site.	Yes
Flood resistant and resilient design	N/A - The site remains entirely flood free in the 2097 0.5% AEP design event, and the fluvial 0.1% AEP plus climate change event. The site remains mostly flood free in the 2097 0.1% AEP design event and the predicted tidal flooding is located along the boundaries of the site with minor encroachment into the wider site. All buildings are predicted to be flood free. The proposals result in no change of flood risk in comparison to existing site use.	Yes
Acceptable consequences for type of use	Detailed in Sections 6.2.1.1 and 6.2.2.1	Yes

6.2.1 Frequency thresholds: designing development to be flood free

The required design standard for new development is to be flood-free during the 0.5% AEP tidal event, plus an allowance for climate change (1 in 200 year), and flood-free during the 1% AEP fluvial flood event, including an allowance of climate change (1 in 100 year) TAN-15 states that this threshold may be applied with more flexibility for redevelopment proposals.

As per Section 5 of this report, the proposals meet this frequency threshold.

6.2.2 Tolerable conditions: managing consequences in an extreme flood event

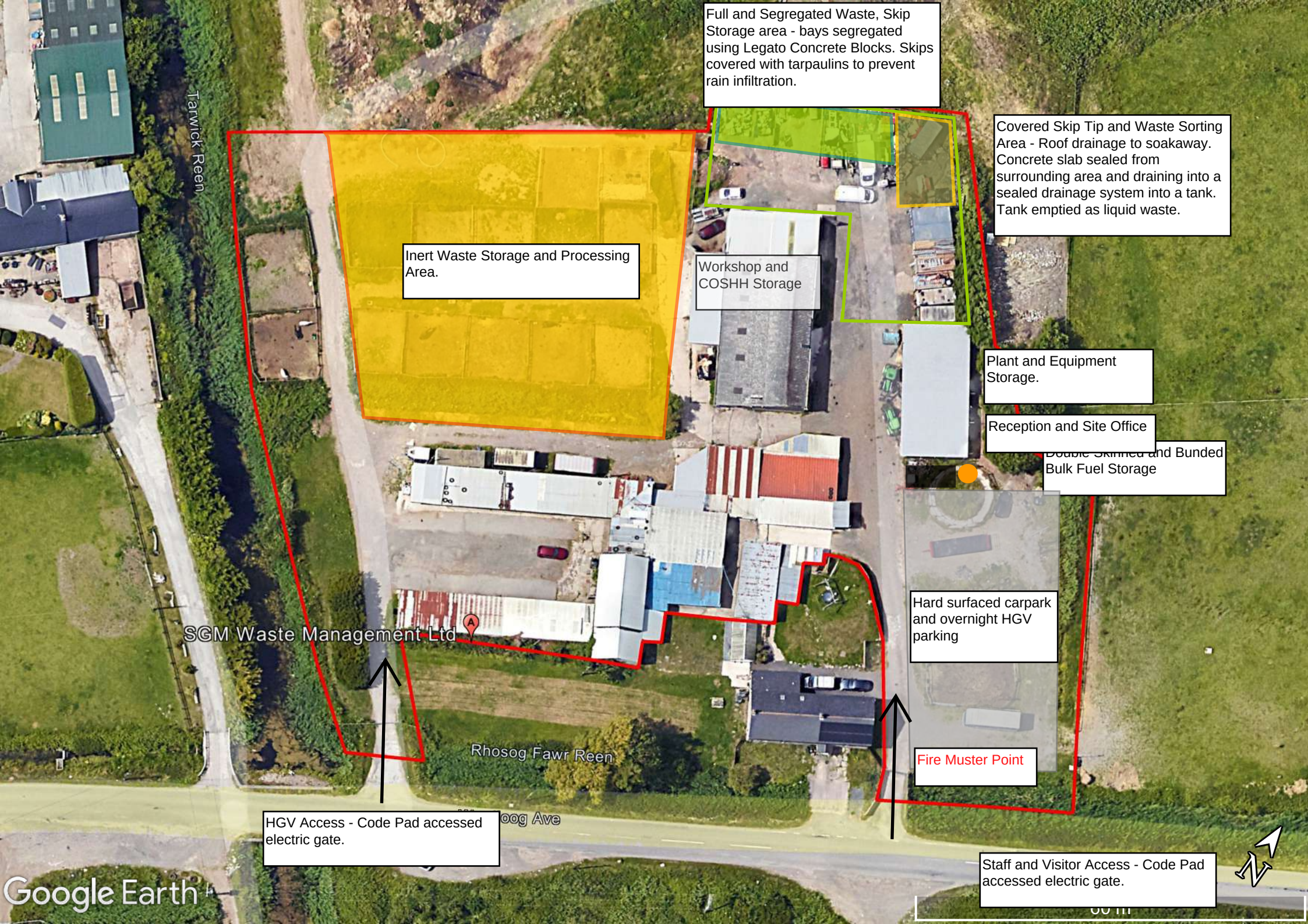
The flood-free thresholds relate to very serious but not extreme flood events. During extreme flood events, there is recognition that it may not be possible to keep all development flood-free. Figure 6 of TAN-15 provides indicative tolerable flood depth and velocity conditions for the 0.1% AEP event, including an allowance for climate change. Up to 600mm of flooding is considered tolerable within Less Vulnerable Developments. It is understood that some flexibility to this indicative value is afforded to redevelopment sites.

As per Section 5 of this report, most of the site is predicted to be flood free in the extreme event. No built development is proposed to be located within the flood extent and therefore the proposals are deemed to be compliant with the tolerable conditions as outlined in Figure 6 of TAN-15.

7 Conclusion and Recommendations

- JBA Consulting were commissioned by SGM Waste Management to prepare a Flood Consequences Assessment (FCA) to support a retrospective planning application for the change of use of a livery yard to a waste management and transfer facility at Wentlooge Avenue, Cardiff.
- A Waste Management Facility is classified as a Less Vulnerable Development, within the general industrial development category.
- The site is located within the TAN-15 Defended Zone and presently benefits from tidal flood defences. Redevelopment proposals within the TAN-15 Defended Zone are justified provided that they are consistent with the acceptability considerations set out in Section 11 of TAN-15.
- The proposals have been assessed against the acceptability considerations and shown to meet all requirements.
- Flood Risk from rivers, surface water, groundwater, and reservoir failure are shown to be low/very low across the site. Presently, the flood risk from the sea is low, but is predicted to increase with climate change over the lifetime of the development. Consequently, a detailed assessment of the tidal flood risk at the site has been undertaken.
- Detailed Tidal modelling demonstrates the site to be entirely flood free in the 2097 0.5% AEP event. The site is mostly flood free within the 2097 0.1% AEP event, and no development is proposed within the flood extent.
- Detailed Fluvial modelling demonstrates that the site is predicted to be entirely flood-free during the 2117 0.5% AEP event including the allowance for climate change.
- Consequently, it can be concluded that on the grounds of flood risk, the proposed development meets the requirements set out in TAN-15 and the aims of Planning Policy Wales.

A Development Proposals



Tarwick Reen

Inert Waste Storage and Processing Area.

Full and Segregated Waste, Skip Storage area - bays segregated using Legato Concrete Blocks. Skips covered with tarpaulins to prevent rain infiltration.

Workshop and COSHH Storage

Covered Skip Tip and Waste Sorting Area - Roof drainage to soakaway. Concrete slab sealed from surrounding area and draining into a sealed drainage system into a tank. Tank emptied as liquid waste.

Plant and Equipment Storage.

Reception and Site Office

Double Skinned and Bunded Bulk Fuel Storage

Hard surfaced carpark and overnight HGV parking

Fire Muster Point

SGM Waste Management Ltd

Rhosog Fawr Reen

HGV Access - Code Pad accessed electric gate.

Staff and Visitor Access - Code Pad accessed electric gate.



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