Redevelopment of Porthcawl Waterfront

CHAPTER 10 – Flood Risk and Drainage

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10. Introduction

Background

10.1.1. The following Chapter has been prepared by Stantec. The primary authors are Daisy Thurlow BSc (Hons), Flood Risk Consultant, and Karl Griffiths BSc (Hons), Senior Civil Engineer.

10.1.2. This Chapter of the Environmental Statement (ES) assesses the likely significant effects of the Proposed Development, as described in Volume 1, Chapter 4 of this ES, in terms of Flood Risk and Drainage. Throughout the Chapter, the site shall be referred to as the "Proposed Development".

10.1.3. This Chapter should be read in conjunction with the following Technical Appendices:

- Volume 3, Appendix 10.1: Drainage Statement
- Volume 3, Appendix 10.2: Flood Consequence Assessment

10.1.4. This Chapter is not supported by any technical figures.

Site Location and Description

10.1.5. The Proposed Development location is situated within Porthcawl, along the southern coast of Wales. The town of Porthcawl is located approximately 25 miles west of Cardiff and 19 miles southeast of Swansea. The Proposed Development covers an area of 43.82 hectares (ha) and is connected to Junction 37 of the M4 by the A4229, which follows onto the A4106 and into the northeast of the site.

10.1.6. The Proposed Development is bounded by Trecco Bay Caravan Park to the east, Sandy Bay and the Rhych Point Peninsula to the south, The Portway road to the west, and residential and mixed-use areas to the north. The Proposed Development is located approximately 380m east of Porthcawl town centre.

10.1.7. The Proposed Development is currently brownfield land and comprises a mixture of public open space, leisure facilities and commercial properties situated around Sandy Bay. There are a number of key local areas within the Proposed Development, detailed below.

10.1.8. Within the centre of the Proposed Development is **Coney Beach Pleasure Park**, a long-standing visitor attraction that will continue operating until the end of 2026. The park has a prime location, fronting directly onto Sandy Bay Beach. It is easily accessible from the

Eastern Promenade to the east and Mackworth Road to the west, making it a central feature of the area.

10.1.9. Immediately west of the Pleasure Park are **The High Tide** and the **former Buccaneer and Wimpey sites**. These are privately owned properties with direct access to Coney Beach. The High Tide includes several buildings that provide a mix of retail and leisure uses, accessible from Mackworth Road.

10.1.10. The eastern area of the Proposed Development lies the **Sandy Bay** area, which currently serves as a seasonal campsite. A pedestrian path runs through the southern portion of Sandy Bay, connecting Coney Beach and the Eastern Promenade with Trecco Bay.

10.1.11. Located just north of the High Tide site is **The Monster Park**, a disused outdoor attraction that is not currently open to the public.

10.1.12. Moving north, the **Salt Lake** area is a large brownfield site positioned east of The Portway and the new bus station, north of the Harbour, and west of the Eastern Promenade. A new **Aldi supermarket** has been constructed on the northern portion of this land, which includes an area that was once an infilled dock.

10.1.13. Directly west of The Portway and opposite the new bus station is **Hillsboro Car Park**, a surface-level car park with convenient vehicle access and strong pedestrian connections to Porthcawl town centre.

10.1.14. To the north of Salt Lake lies **Griffin Park**, which includes the Griffin Park Pavilion. Pedestrian access is provided from New Road and the Eastern Promenade.

Proposed Development

10.1.15. The Proposed Development proposal aims to transform and regenerate the area into a mixed-use development featuring residential, commercial, and leisure spaces. The Proposed Development plans to incorporate the areas local natural assets and seaside location to enhance the sites existing qualities.

10.1.16. The masterplan is shown to include:

- Up to 980 homes.
- Approximately 20 ha of open space including a series of new significant public open spaces with different offers.
- A 2.2 ha of land for education use.
- Approximately 130,000 square feet of commercial and leisure floorspace including retail uses, a Hotel, Lido and Gym / Studio Space.

- Enhancement of Porthcawl Harbour environment.
- New coastal defence works.
- A flexible meanwhile leisure use space (approximately 23,500 square feet).
- Approximately 6,500 square feet of flexible community / civic space.
- Provision of up to 600 public parking spaces within the site area.
- New spine road access from the Eastern Promenade to Sandy Bay.
- Enhancement of the Griffin Park and proposed new facilities including MUGA.

10.1.17. The Proposed Development is comprised of several key components, including demolition, groundworks and phased construction on site. The Proposed Development will involve the demolition of the Coney Beach Amusement Park, along with several other existing waterfront buildings. In addition, certain roads within the area will be permanently closed. Site preparation will include cut and fill operations and the redistribution of soils across the Proposed Development. Works will also involve stabilisation of the rear dune system, serving both coastal protection and development security functions. Further protective measures will be implemented along the coastal edge, and foundational works such as piling may be undertaken as required.

10.1.18. The construction phase will be delivered in a series of stages including infrastructure, buildings and structures and landscaping. Infrastructure includes the construction of highways, incorporating both vehicular and non-vehicular routes, as well as the installation of essential services such as electricity, communications, water supply, and foul drainage systems. Buildings and structures include a range of residential and mixed-use buildings being constructed, providing both private and public spaces as part of the wider development. Lastly, landscaping includes a combination of private and public landscaping, integrating ecological mitigation and enhancement measures. Dedicated spaces for play, health, and wellbeing will also form part of the landscaped areas.

Legislation and Policy Framework

10.1.19. The Legislation and Policy guidance documents used in the assessment of the Proposed Development are summarised in the following sub-sections.

The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations (2017)[1]

10.1.20. The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 establish the legal framework for assessing the environmental effects of certain development projects in Wales. These regulations implement the amended EU

Environmental Impact Assessment (EIA) Directive (2011/92/EU as amended by 2014/52/EU) into Welsh planning law.

Environment (Wales) Act (2016)[2]

10.1.21. The Environment (Wales) Act 2016 establishes a statutory framework for the sustainable management of natural resources in Wales, promoting integrated approaches to environmental protection, climate change mitigation, and biodiversity enhancement. It places duties on public bodies to maintain ecosystem resilience and manage natural resources in a way that supports long-term wellbeing. The Act also includes provisions relevant to flood risk and drainage, such as the establishment of the Flood and Coastal Erosion Committee and updates to land drainage legislation, supporting more coordinated and adaptive responses to water management challenges.

Planning Policy Wales (Edition 12) (2024)[3]

10.1.22. Planning Policy Wales (PPW) (Edition 12) sets out the Welsh Government's national land use planning policies, with a strong emphasis on the sustainable management of natural resources, including water. It promotes a precautionary and risk-based approach to flood risk, directing development away from areas vulnerable to flooding and encouraging the use of sustainable drainage systems (SuDS) to manage surface water. In particular, Chapter 3 Strategic and Spatial Choices and Chapter 6 Distinctive and Natural Places of the PPW are relevant to this ES Chapter.

10.1.23. Section 3.3 Sustainable Management Natural Resources of the PPW outlines the relevant legislation that must be considered in order to ensure the sustainable management of natural resources and sets this into a planning context. It identifies that the planning system can contribute towards 'ensuring resilient locational choices for infrastructure and built development, taking into account water supplies, water quality and reducing, wherever possible air and noise pollution and environmental risks, such as those posed by flood risk, coastal change, land contamination and instability'.

10.1.24. Section 6.6 of the PPW outlines how well-planned water services can provide a range of benefits and services to society. It advises that the ability of the planning system to protect water features and foster sustainable water management as key attributes of attractive and resilient places to live is closely aligned with securing the multiple benefits of green infrastructure.

10.1.25. The PPW advises that water resources must be taken into account from an early stage in the process of identifying land for development and redevelopment. Due to the potential

consequential environmental and amenity impacts associated with a lack of capacity, infrastructure for water services should be fully considered when proposing development.

Technical Advice Note 15 (TAN15) 2025[4]

10.1.26. TAN15 provides the planning framework for flooding and coastal erosion in Wales. It adopts a risk-based approach, requiring flood risk to be considered from the earliest stages of development planning. TAN15 integrates sustainable drainage principles and mandates that new development avoids increasing flood risk elsewhere. It places strong emphasis on designing for exceedance and ensuring that water compatible and flood resilient infrastructure is embedded in all proposals.

10.1.27. TAN15 sets out categories of flood risk vulnerability, using the classifications: highly vulnerability development, less vulnerable development and water compatible development. It makes reference to the Flood Map for Planning (FMfP), which provides information on these risks to enable planning authorities to develop locally appropriate approaches for areas at risk, or in close proximity to risk. TAN15 also outlines the technical requirements of Flood Consequences Assessments (FCAs).

Future Wales: The National Plan (2040)[5]

10.1.28. Future Wales: The National Plan 2040 is a national development framework, directing development in Wales to 2040. It includes strategy for addressing key national priorities through the planning system, such as developing and sustaining a vibrant economy, decarbonisation and climate resilience. Future Wales outlines where investment in infrastructure and development are required. It highlights the challenge of delivering these improvements to the public, private and third sectors.

South East Wales Level 1 Strategic Flood Consequence Assessment (2022)[6]

10.1.29. The South East Wales Stage 1 Strategic Flood Consequence Assessment (SFCA) identifies areas at risk of flooding from all sources, including the likely impact of climate change. The study identifies areas at potential high risk from flooding as well as providing details of historical flood events and any details of flood risk management structures or procedures present. The SFCA provides an overview of the planning context in the country and represents available data on flood risk across South East Wales from each of the sources of flooding outlined within TAN15.

Bridgend County Borough Council Strategic Flood Consequence Assessment[7] (2020)

10.1.30. The Strategic Flood Consequence Assessment (SFCA), published in 2020, creates a strategic framework for the consideration of flood risk when making planning decisions, using the most current available information. In the SFCA, Porthcawl is highlighted as a

key settlement and regeneration area. Porthcawl is also identified as a location at risk of tidal flooding with two historic events discussed. These events occurred during May 2008, along the Esplanade (80m to the west of the site) and West Drive (600m to the west of the site).

10.1.31. During the production of the SFCA, BCBC have completed detailed tidal modelling of Sandy Bay to understand the future potential for tidal flooding. The SFCA reports that the results of this modelling show that climate change will significantly increase flood risk at Salt Lake car park, which is located within the site boundary, and will increase the flood risk to a broad area of Porthcawl.

Local Policy

- Bridgend County Borough Local Development Plan 2018-2033[8]
- Bridgend Local Flood Risk Management Plan (2016)[9]

Guidance and Best Practice

- Principles of Nutrient Neutrality in relation to development or water discharge permit proposals (2024)[10];
- CIRIA The SuDS Manual: C753 (2015)[11];
- CIRIA Sustainable Urban Drainage Systems – Hydraulic, Structural and Water Quality Advice: C609 (2004)[12];
- CIRIA Planning for SuDS Making it Happen: C687 (2010)[13];
- CIRIA Site Handbook for the Construction of SuDS: C698 (2014)[14];
- CIRIA Guidance on the Construction of SuDS: C768 (2017)[15]; and
- National Standard for Sustainable Drainage Systems (SuDS) (2025)[16]

10.2. Assessment Methodology

10.2.1. This section sets out the assessment approach, study area, effect significance criteria and any assumptions and limitations. The employed methods of assessment are consistent with current guidance and recommendations in the form of statutory documents (Section 1.4), such as Planning Policy Wales and TAN15, to ensure that the findings represent a robust assessment. The assessment approach broadly follows overarching Environmental Impact Assessment (EIA) methodology.

10.2.2. The methodology used for the identification and assessment of likely significant impacts on Flood Risk and Drainage arising from the Proposed Development is set out as follows:

- Establishing baseline conditions in the absence of the Proposed Development, including tidal and surface water flood risk, surface water drainage, water quality and foul water drainage;
- Assessing the potential impacts of the Proposed Development on flood risk and drainage, including its operational phase, and evaluating the implications of climate change;
- Evaluating the significance of the predicted changes from the implementation of the Proposed Development on Flood Risk and Drainage;
- Determining what mitigation measures, if any, are required during the development's design, construction or operation lifetime; and,
- Determining the level of significance attributed to potential impacts and whether there will be any likely significant environmental impacts for the purposes of the EIA regulations.

Significance Criteria

10.2.3. The assessment covers Flood Risk and Drainage. The following receptors are considered in the assessment of environmental impacts relating to water:

- Tidal Flood Risk;
- Surface Water Flood Risk;
- Surface Water Drainage;
- Foul Water Drainage; and
- Water Quality.

Receptor Sensitivity

10.2.4. The sensitivity of these receptors is a matter of professional judgement with the levels of likelihood set out within Table 10.1 below.

Table 10.1: Receptor sensitivity level and definition

Classification	Definition
Very High	• An area within the functional floodplain or with a significant history of flooding.
High	• Water body of 'high' / 'good' chemical status or ecological quality. Water dependent Sites of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Areas of Conservation (SAC), Ramsar Sites or highly sensitive aquatic ecosystem. • Protected areas including designated bathing waters, shellfish and salmonid fisheries. • A source used for public or local potable water supply. • Water body of high amenity value, including areas of bathing and where water emersion sports are regularly practised. • Areas which are 'highly vulnerable' to flooding.
Medium	• Water body of 'moderate' chemical status or ecological quality and/or non-public water supply. • Water body of nature conservation importance at the regional level or a moderately sensitive aquatic ecosystem. • Water body of a moderate amenity value including public parks, boating, non-contact water sports, popular footpaths adjacent to watercourses, or watercourses running through housing developments/town centres. • Areas which are 'less vulnerable' to flooding.
Low	• Water body of 'poor' chemical status or ecological quality. • Water body of no or only local social interest. Water body of low amenity value with only casual access. • Areas which are 'water compatible'.
Negligible	• Waterbody of 'bad' chemical status or ecological quality. • Receptors which are outside of the Proposed Development catchment. • Water body of no or only local social interest. • Water body of low amenity value with only casual access.

Impact Magnitude

10.2.5. The significance of impact is judged by the magnitude of impact (see Table 10.2 below), based on a combination of professional judgement and published guidance. At one end of the scale is no measured impact (Negligible). At the other end of the scale are the most serious (Substantial) impacts. Impacts are judged to be Adverse or Beneficial.

10.2.6. Examples of Substantial Adverse magnitude impacts are short-term, high-dose, acute impacts such as death, severe illness or a sudden large-scale pollution incident. Examples

of Major Adverse impacts include chronic (long-term small dose) illness or diffuse pollution.

Table 10.2: Impact magnitude and the criteria

Impact Magnitude	Criteria
High	• These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
Medium	• These beneficial or adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
Low	• These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.
Negligible	• Imperceivable loss/benefit of attribute that does not affect use or integrity.

Impact Significance

10.2.7. The significance of a potential impact is based on the combination of the magnitude of an impact and the receptor sensitivity as provided in the matrix within Table 10.3 below. Note that the degree of 'significance' for EIA purposes is not the same as the legal definition of 'significant harm' as defined by the Environmental Protection Act 1990. Table 10.3 illustrates how the significance of an impact is determined and provides definitions for each category of significance.

Table 10.3: Impact significance from the sensitivity and magnitude of impact

		Magnitude of Impact				
		No change	**Negligible**	**Low**	**Medium**	**High**
Sensitivity	**Negligible**	No Change	Negligible	Negligible or Minor	Negligible or Minor	Minor
	Low	No Change	Negligible or Minor	Negligible or Minor	Minor	Minor or Major

	Medium	No Change	Negligible or Minor	Minor	Moderate	Moderate or Major
	High	No Change	Minor	Minor or Major	Moderate or Major	Major or Substantial
	Very High	No Change	Minor	Moderate or Major	Major or Substantial	Substantial

10.2.8. Potential impacts are to be considered with respect to the Proposed Development's construction and operational phases. Any potential impact rated as 'Major' or 'Significant' is considered hazardous in terms of the EIA Regulations and is discussed under mitigation measures. It should be noted that for the purposes of this ES Chapter, any potential impact rated as 'Moderate or Major', 'Major or Substantial', or 'Substantial' will be considered hazardous due to the differing terminology between Table 3 and the EIA Regulations.

10.2.9. For those effects which are found to have an impact, the spatial extent and duration will be quantified using the following descriptors:

- Temporary or Permanent – Temporary impacts are those associated with the construction phase of the project or a short period of time following completion of the project. Permanent impacts are those associated with the completed development.
- Direct or Indirect – Direct impacts are those occurring through direct interaction of an activity with an environmental impact. Indirect impacts are those that do not occur as a direct result of the project or occur through complex pathways.

Consultation

10.2.10. In accordance with the EIA Scoping Opinion issued from Bridgend County Borough Council (BCBC) on 28th July 2025 (application number P/25/462/ESO), it was agreed that Flood Risk and Drainage will be scoped into the assessment with the following receptors: Tidal and Surface Water Flood Risk, Surface Water Drainage, Water Quality and Foul Water Drainage.

10.2.11. In regard to this Chapter, NRW advise the following:

"NRW note that feasibility studies are currently being undertaken with regards a new sea wall at Sandy Bay. We advise that should a new sea wall defence be included as

part of the overall proposed development, that flood risk is scoped into the ES. The Flood Map for Planning (FMfP) identifies certain areas of the application site to be at risk of flooding and within Flood Zone 2 and 3 (Sea), with some areas also within the Defended Zone for Sea. They have reviewed the submitted Scoping Statement and welcome the proposed submission of a Flood Consequence Assessment (FCA) to support any future application. Any FCA should demonstrate how the various aspects of the proposed development will accord with Technical Advice Note 15: Development and Flood Risk (2025)."

Assumptions and Limitations

10.2.12. The assessment process is designed to enable robust decision-making about the environmental implications of the Proposed Development, based on the best available information at the time of writing (November 2025). However, there will always be some uncertainty as to the exact scale and nature of the environmental effects identified. Where this is the case, this has been highlighted in the assessment of effects (i.e. further assessments that could be undertaken to confirm conclusions).

10.2.13. The data used to compile this Chapter consists of secondary information derived from a variety of sources. The assumption is made that this data is reasonably accurate. No physical ground investigations have been undertaken by Stantec to prove the baseline conditions at the time of writing.

10.2.14. It is assumed that the construction phase and completion and occupation of the Proposed Development will be undertaken in compliance with all relevant environmental regulations and the implementation of standard good HS&E practice working methods employed on UK development sites. Further investigation and remediation of the site should be undertaken in line with the appropriate guidance and following further consultation with BCBC and NRW to agree details of scope.

10.3. Baseline Conditions

10.3.1. The following sections describe the findings of the baseline study, which has been used to determine the likely impacts of the Proposed Development on Flood Risk and Drainage. A full assessment of flood risk can be found within the Flood Consequence Assessment (Volume 3, Appendix 10.2).

Current Conditions

Fluvial Flood Risk

10.3.2. According to NRW Flood Map for Planning (Rivers), the Proposed Development is located within Flood Zone 1 (Low Probability) with the closest areas of Flood Zone 2 and Flood Zone 3 located approximately 2.8km to the northwest of the site, associated with an unnamed watercourse. Due to this, the Proposed Development is considered to be at '**low**' risk from fluvial flooding.

Tidal Flood Risk

10.3.3. According to NRW Flood Map for Planning (Seas), the majority of the Proposed Development is shown to be located within Flood Zone 1. However, a large area of Flood Zones 2 and 3 is shown within the eastern region and centre of the Proposed Development. This is shown to originate from Sandy Bay, which travels north along the A4106 towards Newton Nottage Road.

10.3.4. However, the NRW Flood Defence Locations dataset shows a 182m Western Breakwater to the west of the Proposed Development, with a 400m long masonry sea wall and parapet along the Eastern Promenade. This defence is shown to have a standard of protection up to 1 in 200 year event. Additionally, the eastern end of Sandy Bay is bound by sand dunes, approximately 4m above the beach level and Rhych Point, which extends approximately 180m south of the dunes. Additionally, the areas of tidal flood risk within the Proposed Development are shown to be within the TAN15 Defended Zones with the exception of a small area in the centre and very southeast of the Proposed Development.

10.3.5. To further assess the tidal flood risk of the Proposed Development, a hydraulic modelling study has been undertaken. As part of the Porthcawl Waterfront Regeneration Project, Arup have updated the previous Sandy Bay baseline modelling (2017) to account for climate change allowances. According to the NRW guidance on Climate Change Allowances for Flood Consequence Assessments, updated September 2021, development proposals should be assessed against the relevant regional 70th percentile to inform design levels as a minimum.

10.3.6. The baseline results for the 1 in 200 year event plus the higher central allowance (2126), predicts flooding in a number of areas across the Proposed Development including Salt Lake, Porthcawl Marina, Griffin Park and Mackworth Road. The Salt Lake area is shown to experience flood depths up to 750mm, with the majority of the flooded area remaining below 700mm. Flooding is shown to overtop the northeastern corner of the Porthcawl Marina and travel across Eastern Promenade and into Salt Lake. Further north of the Proposed Development, flooding is shown to flow down the Eastern Promenade and into Griffin Park. This flood extent reaches Poplar Road. The majority of Griffin Park is shown to flood, with depths up to 570mm. Along the southern border of the Proposed Development, flood waters are shown to convey along Mackworth Road and reach depths of 790mm.

10.3.7. Considering this, the Proposed Development is considered to be at a '**high**' risk of tidal flooding. Mitigation for this is discussed within Section 4.

Surface Water Flood Risk

10.3.8. Surface water (pluvial) flooding is caused by rainfall levels exceeding the natural infiltration properties of the surrounding soils. Flooding can also occur owing to the absence of a natural method of drainage such as watercourses or ditches, or where soil infiltration rates are low. Flooding often results in ponding of water at low points or when surface water flow routes are blocked by an obstruction.

10.3.9. The NRW Flood Map for Planning (including climate change), shows that most of the Proposed Development is located within Flood Zone 1 in relation to Surface Water and Small Watercourses. However, there are small areas of Flood Zone 3 located in Hillsboro Place Car Park, Salt Lake car park, along The Portway and on Dock Street. Additionally, there are small, isolated areas of Flood Zone 2 in Griffin Park and the Sandy Bay bowl green space. These areas are shown to be due to topographic lows and no overland flow routes are shown to enter the Proposed Development. Therefore, the Proposed Development is concluded to be at '**low**' risk of surface water flooding.

Groundwater Flood Risk

10.3.10. Groundwater flooding is caused by the emergence of water originating from sub-surface permeable strata. A groundwater flood event results from a sufficient rise in groundwater level where the water table intersects the ground surface and inundates low lying land. Periods of prolonged rainfall may also be a cause of groundwater flooding, with aquifers and soils becoming saturated.

10.3.11. As the Proposed Development is within an area designated by BGS as a Principal Aquifer for bedrock geology and Secondary A for superficial deposits, there is potential for the ground below the site to have high permeability and a high level of water storage. The Proposed Development is not located within a Source Protection Zone (SPZ).

10.3.12. Given the extensive area covered by the Proposed Development, it is likely that groundwater conditions will vary spatially across different parts of the Proposed Development. This variability may be influenced by factors such as localised geology, historical land use, and topography.

10.3.13. BGS historic borehole records show that there are nine historic boreholes located within the Proposed Development boundary ranging from 4.2m to 10.0m in depth. Groundwater was encountered in four of the boreholes, at depths between 4.00m and 6.50m bgl (BGS Reference: SS87NW13, SS87NW11, SS87NW10 and SS87NW14). The boreholes in which groundwater was found to be present are situated between The Portway and Eastern Promenade, in proximity to the current site of Aldi (located at CF36 5TS).

10.3.14. In the eastern part of the Proposed Development, the ground investigation undertaken by Quantum Geotech in June 2020 consisting of nine trial pits to a depth of 3.4m bgl did not encounter any groundwater in the Sandy Bay Bowl area.

10.3.15. Further ground investigations were undertaken in February 2021 by Groundtech Consulting as part of the Aldi development that falls within the western part of the Proposed Development (planning reference P/21/835/FUL)[1]. In these investigations, groundwater was encountered in BH2, BH3, BH4 and WS01 between depths of 4.5m and 7.5m bgl. Due to the depths at which groundwater was encountered, the Proposed Development is considered to be at '**low**' risk of groundwater flooding.

Sewer Flood Risk

10.3.16. Flooding can occur owing to the failure of existing foul or surface water drainage infrastructure. If flows within the drainage system exceed the designed capacity or foreign matter causes blockages, overflow to the surface can occur, leading to flooding.

10.3.17. Dŵr Cymru Welsh Water (DCWW) is identified as the entity responsible for sewer infrastructure across the study area. A drainage strategy report produced by Redstart (November 2020), stated that there are several public foul sewers under DCWW ownership, most notably within the Hillsboro Place Car Park, adjacent to the pavilion in Griffin Park, through Mackworth Road and along the western and northern perimeter of

[1] BCBC Planning Register P/21/835/FUL

the Sandy Bay Caravan Park. Additionally, there is a 400mm diameter public foul rising main that crosses the Salt Lake Car Park. The rising main originates from the Irongate Sewerage Pumping Station located off West Drive. A 225m diameter public surface water sewer travels in a southerly direction through Mackworth Road and eventually discharges into a 600mm drain under BCBC ownership.

10.3.18. Several drainage assets located within the Proposed Development are owned by BCBC. These include highway drainage infrastructure (mainly along The Portway), an 1100mm diameter drain that conveys flows from The Wilderness Lakes approximately 600m north of the site before discharging into the harbour, and a 600mm drain crossing the Salt Lake Car Park, which connects to the public surface water sewer network.

10.3.19. Large areas within the Proposed Development are currently served by private drainage systems, such as those at Sandy Bay Caravan Park and Coney Beach Amusement Park. It is anticipated that most of these private networks will be decommissioned and replaced with new drainage systems to serve the proposed development. Considering the above, the Proposed Development is concluded to be at '**low**' risk of sewer flooding.

Artificial Flood Risk

10.3.20. Failures and overtopping of reservoirs and navigable water bodies, and failure of water mains, constitute the primary means of flooding from artificial sources.

10.3.21. NRW Flood Risk from Reservoirs mapping shows the Proposed Development to lie outside of the extents of potential reservoir flooding. NRW also state that reservoir flooding is extremely unlikely to happen. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England and Wales, NRW ensure that reservoirs are inspected regularly, and essential safety work is carried out. Additionally, there is no indication within the SFCA that the site is at an enhanced risk of flooding from artificial sources. Due to the above, the Proposed Development is considered to be at '**low**' risk of artificial sources of flooding.

Surface Water Drainage

10.3.22. As discussed above, the NRW Flood Map for Planning (including climate change), shows that most of site is located within Flood Zone 1 in relation to Surface Water and Small Watercourses, with isolated areas of Flood Zones 2 and 3 across the site.

10.3.23. DCWW is identified as the entity responsible for sewer infrastructure across the study area. A 225m diameter public surface water sewer has been identified within the Proposed Development and travels in a southerly direction through Mackworth Road and eventually discharges into a 600mm drain under BCBC ownership. In addition, a large

1100mm diameter drain, referred to as 'The Wilderness Drain' receives flow from the Wilderness Lake to the north of the development. Both sewers discharge to the existing harbour to the south of the Salt Lake plot, and it is the intention to divert both surface water assets in order to accommodate the future development of Salt Lake whilst maintaining the existing outfalls to the harbour, thus reducing the extent of heavy civil engineering infrastructure changes in the area.

10.3.24. Due to this, the Proposed Development is considered to be at a '**medium**' risk of affecting surface water drainage.

Water Quality

10.3.25. According to information available on DataMapWales, provided by the Welsh Government, the Proposed Development is located in the Western Wales River Basin District, the Ogmore Operational Catchment and the Newton and Porthcawl Management Catchment.

10.3.26. Specifically, the Proposed Development is located in the Ogmore Water Body, at the confluence with the River Llynfi. The Ogmore Water Body at the confluence of the River Llynfi is indicated to have an overall Water Framework Directive (WFD)[17] rating of 'Good', an ecological rating of 'High' and a chemical rating of 'High'. The Kenfig/Cynffig area 800m east of the Proposed Development, is designated as a Special Area of Conservation (SAC).

10.3.27. The Proposed Development is not located within a Source Protection Zone (SPZ) or a Nitrate Vulnerable Zone (NVZ). There are no designated bathing waters or water bodies used for recreational activities in the vicinity of the Proposed Development.

10.3.28. The existing potable water supply network for the area is operated and maintained by DCWW. The DCWW Water Resources Management Plan (2024) states that the majority of potable water is supplied from reservoirs. Although, a significant volume is also abstracted from lowland river sources. It also advises that groundwater accounts for less than five percent of their supplies at a company level.

10.3.29. Additionally, the Proposed Development sits within the WFD coastal water body operational catchment known as "Bristol Channel Outer North". This achieved an overall status of "moderate" in the interim 2024 Water Cycle Study.

10.3.30. As the WFD Water Body which the Proposed Development is located within has a chemical rating of 'High' and given the proximity to a SAC, the Proposed Development is considered to be at a '**high**' risk of affecting water quality.

Foul Water Drainage

10.3.31. As stated in Section 3.2.16, there are several public foul sewers under DCWW ownership, most notably within the Hillsboro Place Car Park, adjacent to the pavilion in Griffin Park, through Mackworth Road and along the western and northern perimeter of the Sandy Bay Caravan Park. Additionally, there is a 400mm diameter public foul rising main that crosses the Salt Lake Car Park. However, the new development will be served by a new foul water network that will remain independent of the existing foul sewer network in the area. More information can be found within the Drainage Statement (Volume 3, Appendix 10.1).

10.3.32. Due to this, the Proposed Development is considered to be at a '**medium**' risk of affecting foul water drainage.

Future Baseline

10.3.33. Without the implementation of the Proposed Development, the future baseline of the Proposed Development will be largely the same as the existing baseline with the land continuing to be used as a mixture of public open space, leisure facilities and commercial properties.

10.3.34. As the NRW Flood Map for Planning includes Climate Change, the flood risk from rivers, seas, surface water and small watercourses is considered to be representative of the future baseline conditions of the Proposed Development.

10.3.35. It is difficult to quantify the potential impacts of Climate Change on Water Quality, Foul Water Drainage or Surface Water Drainage. However, more frequent and prolonged droughts in the UK may reduce the availability of potable water and increase pressure on water resources, effecting water quality. Additionally, shifts in weather patterns and extreme weather events could cause greater variability in the water table. This could result in higher winter groundwater levels and increased soil moisture, reducing the capacity of SuDS to store water. On the other hand, this could result in lower summer groundwater levels and surface water levels, reducing infiltration. Additionally, more frequent short-term flooding could occur due to additional surface water flows into drainage systems.

10.4. Assessment of potential Effects, Mitigation Measures and Residual Effects

Potential Effects

10.4.1. These impacts may arise with respect to the construction and operational phases. This includes consideration of the likely impacts of Flood Risk and Drainage on the Proposed Development and its eventual users, and any impacts of the Proposed Development might have on Flood Risk and Drainage. The assessment of potential effects takes embedded mitigation into account, as outlined in Section 4.2.

10.4.2. The assessment of cumulative effects for Flood Risk and Drainage has been scoped out as per the EIA Scoping Opinion issued from BCBC on 28th July 2025 (application number P/25/462/ESO). This is because the Scoping Opinion identified no existing development and/or approved development that was deemed likely to have a cumulative effect alongside the Proposed Development.

During Construction

Tidal Flood Risk

10.4.3. During the groundworks of the construction phase, the natural ground level of the Proposed Development will be altered and could potentially be lowered for a certain period of time, as part of cut and fill. Additionally, flood protection features may not yet be installed or developed during this time. Temporary works often disrupt or reduce natural and designed flood resilience, which can increase the risk of tidal flooding at the Proposed Development.

10.4.4. As previously discussed in paragraph 3.2.3., a number of tidal flood defences are located within and around the Proposed Development. Along with this, a CEMP (detailed below in paragraph 4.2.3) should include temporary measures to manage tidal flood risk.

10.4.5. Therefore, the likely impact of the Proposed Development on tidal flood risk during the construction phase is considered to be of a medium magnitude in line with Table 10.1 of this ES Chapter. Given the medium sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on tidal flood risk is considered to be classed at '**Moderate adverse**' significance in line with Table 10.3 of this ES Chapter.

Surface Water Flood Risk

10.4.6. It is likely that the construction phase will require paved areas and construction compounds that could increase the risk of surface water flooding on the Proposed

Development. However, the proposed CEMP (detailed below in paragraph 4.2.3) would need to include temporary measures to manage surface water generated on the Proposed Development.

10.4.7. Therefore, the likely impact of the Proposed Development on surface water flood risk during the construction phase is considered to be of a low magnitude in line with Table 10.1 of this ES Chapter. Given the medium sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on surface water flood risk is considered to be classed at '**Minor adverse**' significance in line with Table 10.3 of this ES Chapter.

10.4.8. Due to this level of significance, further mitigation is not required for this receptor.

Surface Water Drainage

10.4.9. It is likely that the construction phase will require paved areas and construction compounds that may result in soil compaction. Soil compaction could result in an increase in surface water runoff, as soil compaction reduces the infiltration rate. As a result, the construction phase of the Proposed Development may impact surface water drainage systems located beyond the Proposed Development boundaries, without additional mitigation to manage surface water on-site.

10.4.10. As previously discussed in paragraph 3.2.16., a public surface water sewer is shown to flow through the centre of the site and discharge into the Marina. Therefore, the impact of the construction phase on surface water drainage could be moderate. However, the proposed CEMP (detailed below in paragraph 4.2.3) would need to include temporary measures to manage surface water generated on the Proposed Development in order to minimise the potential impact on the local surface water drainage system. Frequent checks on temporary drainage measures should be carried out during the construction phase.

10.4.11. Therefore, the likely impact of the Proposed Development on surface water drainage during the construction phase is considered to be of a low magnitude in line with Table 10.1 of this ES Chapter. Given the low sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on surface water drainage is considered to be classed at '**Negligible or Minor adverse**' significance in line with Table 10.3 of this ES Chapter.

10.4.12. Due to this level of significance, further mitigation is not required for this receptor.

Water Quality

10.4.13. Given the nature of construction, there is the potential for surface water to be contaminated in the event of a fuel spillage or spillage of any chemicals within the Site. Contaminants could potentially enter the surrounding area by being transported within generated runoff.

10.4.14. Although the Site is not located within a groundwater SPZ, the Water Body in which it is located has a chemical rating of 'High' and an ecological rating of 'High', indicating a high receptor sensitivity. However, the Proposed Development sits within the WFD coastal water body operational catchment known as "Bristol Channel Outer North". This achieved an overall status of "moderate" in the interim 2024 Water Cycle Study. The WFD aims to protect and enhance the quality of the water environment.

10.4.15. The proposed CEMP (detailed below in paragraph 4.2.3) would need to include temporary measures to prevent pollution of surface water bodies and sensitive habitats. Additionally, the CEMP would outline any NRW permitting requirements and can be tailored to site-specific risks, such as the proximity to the Kenfig/Cynffig SAC. The effects of potential contamination of surface water on site would be temporary during the construction phase and be localised to the Proposed Development area.

10.4.16. Therefore, when taking embedded mitigation into account, the likely impact of the Proposed Development on water quality during the construction phase is considered to be of a low magnitude in line with Table 10.1 of this ES Chapter. Given the high sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on water quality is considered to be classed at '**Minor or Moderate adverse**' significance in line with Table 10.3 of this ES Chapter.

10.4.17. Due to this level of significance, further mitigation is not required for this receptor.

Foul Water Drainage

10.4.18. As previously discussed in paragraph 3.2.16., there are a number of foul water sewers across the Proposed Development. Wastewater generation from the construction phase would include effluent from sanitary facilities, as well as sediment-laden water from excavations and washing down of construction equipment. As a result, the construction phase of the Proposed Development may impact foul water drainage systems located beyond the Proposed Development boundaries without additional mitigation to manage foul water on site.

10.4.19. The proposed CEMP (detailed below in paragraph 4.2.3) would need to include temporary measures to manage the potential foul water generated from construction to minimise the potential impact.

10.4.20. Therefore, when considering embedded mitigation, the likely impact of the Proposed Development on foul water drainage during the construction phase is considered to be of a low magnitude in line with Table 10.1 of this ES Chapter. Given the medium sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on foul water drainage is considered to be classed at '**Minor adverse**' significance in line with Table 10.3 of this ES Chapter.

10.4.21. Due to this level of significance, further mitigation is not required for this receptor.

During Operation

Tidal Flood Risk

10.4.22. During the operational phase of the Proposed Development, tidal flooding still poses a risk. TAN15 and local planning policy state that it must be demonstrated that any proposed development will be safe over its intended lifetime for the design flood event (1 in 200 year plus climate change). Even with the flood defences and mitigation measures in place, tidal flooding can still occur due to storm surges, sea level rise over time, damaged defences or a storm occurring with a magnitude larger than the standard of protection of the defences.

10.4.23. To further assess the tidal flood risk of the Proposed Development during the operational phase (post development), Arup have undertaken a hydraulic modelling assessment (Ref: 309314-ARP-XX-XX-RP-MO-001). Within these results, three main areas of flood risk were identified. The first area is around Salt Lake and the Porthcawl Marina, where floodwaters are shown to flow from the marina and across the Eastern Promenade towards the ramped vehicle access on the south side of the proposed Hotel and Flexible Community Space. The car park basement of this is shown to flood with a maximum depth between 300mm-400mm. The next at risk area is shown to be within and surrounding Griffin Park, where flooding originates from both the Eastern Promenade and the Coney Beach Promenade. However, a low depth of approximately 100mm is recorded here, which the proposed road drainage system is expected to be able to intercept given the small volume of flooding. Additionally, this area of Griffin Park is proposed to be a Multi-Use Games Area (MUGA) and therefore does not pose a risk to residential areas. The third area of flood risk is along and surrounding Mackworth Road, where the flood extent is shown to be larger than the baseline results due to overtopped water being able to return back to

sea in the baseline scenario. However, existing drainage at the low points along Mackworth Road are expected to mitigate this. Further information on these results has been provided within the FCA (Volume 3, Appendix 10.2).

10.4.24. A comparison of the 1 in 200-year event with higher central allowance for 2126 between the baseline and post-development scenarios shows a significant benefit to flood extents beyond the site boundary. A reduction in flood extents is shown on Northways, New Road, Poplar Road and Nicholls Avenue, north of the site boundary, which is further detailed within the FCA (Volume 3, Appendix 10.2.).

10.4.25. Therefore, the likely impact of the Proposed Development on tidal flood risk during the operational phase is considered to be of a medium magnitude in line with Table 10.1 of this ES Chapter. Given the high sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on tidal flood risk is considered to be classed at **Moderate or Major adverse**' significance in line with Table 10.3 of this ES Chapter. Further mitigation is discussed in Section 4.2.

Surface Water Flood Risk

10.4.26. Due to the changes of land uses across the Proposed Development, it is very likely that the cover of impermeable surfaces will increase. These surfaces prevent infiltration and can increase the amount of surface water within the Proposed Development. However, the proposed Drainage Statement (Volume 3, Appendix 10.1) details a new drainage system to handle surface water flood risk during the operational phase.

10.4.27. Therefore, the likely impact of the Proposed Development on surface water flood risk during the operational phase is considered to be of a low magnitude in line with Table 10.1 of this ES Chapter. Given the low sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on surface water flood risk is considered to be classed at '**Negligible or Minor adverse**' significance in line with Table 10.3 of this ES Chapter.

10.4.28. Due to this level of significance, further mitigation is not required for this receptor.

Surface Water Drainage

10.4.29. The Proposed Development is understood to introduce new land uses to the area due to it being converted from brownfield land to mixed-use development including residential and commercial uses. Due to this, an increase in surface water runoff due to an increase in impermeable surfaces throughout the Proposed Development.

10.4.30. Although there is an existing surface water sewer system within the Proposed Development, this increase in surface water discharge may put a strain on the sewer network.

10.4.31. However, as previously discussed in Section 4.2.2., a new drainage system is proposed within the Drainage Statement which anticipates that surface water flows from the new Spine Road, as well as the Salt Lake and Coney Beach parcels, will be permitted to discharge freely into the harbour via a new outfall. Surface water discharges from the Sandy Bay parcel are anticipated to be dealt with by swales, bioretention areas, and conventional pipework leading to infiltration basins which will facilitate runoff discharging to the groundwater network below.

10.4.32. Therefore, when considering the proposed drainage system as embedded mitigation, the likely impact of the Proposed Development on surface water drainage during the operational phase is considered to be of a low magnitude in line with Table 10.1 of this ES Chapter. Given the medium sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on surface water drainage is considered to be classed as '**Minor adverse**' significance in line with Table 10.3 of this ES Chapter.

10.4.33. Due to this level of significance, further mitigation is not required for this receptor.

Water Quality

10.4.34. During the operational phase of the Proposed Development, pollutants (oil, sediment and heavy metals) may be washed from hardstanding surfaces and transported to waterbodies in proximity to the Site. Additionally, sewer flooding within the Proposed Development during heavy rainfall may also result in the transportation of contaminated water.

10.4.35. However, as previously discussed in Section 4.2.2., the Drainage Statement (Volume 3, Appendix 10.1) proposes a variety of SuDS measures, including swales, bioretention areas, permeable paving and infiltration basins. This will significantly reduce contaminated water by managing surface water runoff, capturing particles within the sediment of the SuDS system and preventing them from entering the environment.

10.4.36. Therefore, when considering the proposed SuDS as embedded mitigation, the likely impact of the Proposed Development on water quality during the operational phase is considered to be of a low magnitude in line with Table 10.1 of this ES Chapter. Given the high sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the

Proposed Development on water quality is considered to be classed at '**Minor or Moderate adverse**' significance in line with Table 10.3 of this ES Chapter.

10.4.37. Due to this level of significance, further mitigation is not required for this receptor.

Foul Water Drainage

10.4.38. As previously discussed in paragraph 1.3.2., the Proposed Development comprises up to 980 new homes. Therefore, foul water flows are predicted to significantly increase and flow into the foul water network at a suitable location leading to the Ogmore Wastewater Treatment Works to the east. Although there is shown to be a number of existing private and public/adopted foul water sewers within the boundary of the Proposed Development, a new designated foul water network and associated infrastructure will be provided to solely serve the Proposed Development and remain independent of the existing foul sewer network in order to mitigate any negative impact that Proposed Development would otherwise have on the existing sewer network in the area.

10.4.39. Based on the overall increased foul water discharge rate leading to the downstream Wastewater Treatment Works, discussions and an associated Hydraulic Modelling Assessment (HMA) with DCWW will need to be undertaken in order to ascertain a suitable connection point for the new foul system serving the Proposed Development as well as the extent of any potential network upgrades to the existing foul sewer network that may be required to accommodate this additional flow.

10.4.40. Therefore, when considering the new designated foul water network as embedded mitigation, the likely impact of the Proposed Development on foul water drainage during the operational phase is considered to be of a medium magnitude in line with Table 10.1 of this ES Chapter. Given the medium sensitivity of the receptor as per Table 10.2 of this ES Chapter, the impact of the Proposed Development on foul water drainage is considered to be classed at '**Moderate adverse**' significance in line with Table 10.3 of this ES Chapter.

10.4.41. Due to this level of significance, further mitigation is not required for this receptor.

Mitigation and Enhancement Measures

Embedded Mitigation

10.4.42. This section sets out mitigation that is embedded into the design of the Proposed Development and is relevant to the assessment of effects in relation to Flood Risk and Drainage. The embedded mitigation has been considered within the above assessment of potential effects. This includes primary and tertiary mitigation. Primary mitigation refers to design features that are included to mitigate potential adverse effects on Flood Risk and Drainage. Tertiary mitigation refers to actions that will be undertaken to meet existing legislative requirements or are considered to be standard practices used to manage commonly occurring environmental effects.

10.4.43. The design process and development of the Drainage Statement (Volume 3, Appendix 10.1) include measures such as SuDS to mitigation additional surface water runoff and pollution risks. SuDS are effective in removing potential contaminants and ensuring that the quality of water discharged off-site is acceptable. The Drainage Statement (Volume 3, Appendix 10.1) proposes a variety of SuDS measures, including swales, bioretention areas, permeable paving and infiltration basins. It is anticipated that surface water flows from the Salt Lake parcel will be permitted to discharge freely either into the harbour (via a new drainage system) or into the wilderness culvert (which currently discharges into the harbour). Surface water flows from the Coney Beach parcel will discharge into the harbour to the south of Salt Lake via a new drainage system. Surface water discharges from the Sandy Bay parcel are anticipated to be dealt with by swales, infiltration basins and conventional pipework.

10.4.44. Due to the size of the Proposed Development, it has been noted within the EIA Scoping Opinion that an outline Construction Environment Management Plan (CEMP) has been advised to fully understand and manage the construction impacts. As a minimum, the CEMP will need to include the following measures:

- All construction works would be designed in accordance with the latest relevant NRW guidelines;
- Contractors undertaking demolition and earthworks would develop risk assessments and method statements covering all aspects of their work that have the potential to cause physical damage to structures (water supply and sewerage infrastructure);
- Good practice guidance on erosion and pollution control would be followed, e.g., CIRIA Environmental Good Practice on Site (C650) and Control of Water Pollution from Construction Sites (C532);

- Dust suppression and management of waterborne silt would be implemented;
- Temporary restriction of surface water runoff rates and attenuation to store runoff would be implemented to ensure there is no increase in flood risk during the construction phase;
- Scheduling key development work outside of known high-risk tidal periods or seasons where feasible and real-time tidal and weather monitoring;
- Any critical equipment used should be stored within areas above the predicted tidal flood level (1 in 200 year plus climate change), to ensure they remain flood free;
- All personnel onsite should be briefed in tidal flood risk and evacuation procedures; and
- Frequent checks on temporary drainage measures and barriers should be carried out.

Phasing

10.4.45. The construction of the Proposed Development is proposed to be brought forward on a phased basis (discussed in Section 1.3). The Proposed Development constitutes the following parts:

- Demolition:
    - The demolition of the Coney Beach amusement Park and several other waterfront buildings, as well as the permanent closures of some roads.
- Groundworks:
    - Cut and fill and movement of soils within the overall development site.
    - Stabilisation of the dune rear (coastal protection / development security).
    - Other protection of the coastal edge.
    - Piling or other foundational works.
- Phased Construction:
    - Infrastructure:
        - Highways - Including non-vehicular routes.
        - Services – Including electrical, communications, water, and foul.
    - Buildings and Structures – Including residential and mixed-use buildings, areas, and structures with a mixture of private and/or public use.
    - Landscaping – A mixture of private and/or public space landscaping, including ecological mitigation and enhancement, and areas for play and health and wellbeing.

Additional Mitigation: Construction Phase

10.4.46. It should be noted that major hazards are unlikely to arise during the construction phases of the Proposed Development given that the CEMP will include measures to manage impacts during the construction phase, as discussed above.

10.4.47. As outlined in paragraph 2.1.6, any potential impact rated as 'Moderate or Major', 'Major or Substantial', or 'Substantial' is considered hazardous and would require additional mitigation. Therefore, during the construction phase, the assessment of effects above identified that no mitigation is required for the Proposed Development for all receptors assessed due to their impact rating.

Additional Mitigation: Operational Phase

10.4.48. As outlined in paragraph 2.1.6, any potential impact rated as 'Moderate or Major', 'Major or Substantial', or 'Substantial' is considered hazardous and would require additional mitigation. During the operational phase, the assessment of effects above identified that the Tidal Flood Risk receptor has a 'Major or Substantial' significance, and therefore requires additional mitigation, as outlined below. No additional mitigation is required for the other receptors assessed due to their impact rating.

Tidal Flood Risk

10.4.49. Due to the '**Moderate or Major adverse**' impact significance identified, further mitigation is required to protect the Proposed Development from potential tidal flooding. In order to minimise the risk of tidal flooding, finish floor levels (FFLs) of all newly proposed buildings are recommended to be a minimum of 600mm above the design flood level. The FFL of each at risk area within the Proposed Development has been detailed further within the FCA (Volume 3, Appendix 10.2). Additionally, highly vulnerable land uses such as residential areas within the tidal Flood Zones 2 and 3 should be located on upper floors. Flood resistant materials and flood resistant doors should be used to further protect proposed buildings.

10.4.50. To protect flooding of the basement car park in the Salt Lake area, it is also proposed to raise the levels at the entrance to 7.9mAOD. These will prevent water ingress during the 1 in 200yr event with climate change and ensure a flood depth that is considered tolerable by TAN15 during the 1 in 1000yr extreme event with climate change, with a theoretical flood depth of 300mm in the basement car park in this scenario.

10.4.51. Lastly, the maintenance of tidal flood defences within Porthcawl is imperative to ensure that the risk of tidal flooding is managed. The primary responsibility for the ongoing maintenance of sea walls and coastal defence structures in the Porthcawl area lies with

BCBC as the designated coast protection and flood-risk authority, working in partnership with Welsh Government (FCERM programme) and NRW.

10.4.52. As such, when taking the additional mitigation into account, the likely impact of the operational phase of the Proposed Development on tidal flood risk is considered to be high sensitivity and low magnitude. Additionally, due to the post development results showing a significant reduction in flood extent offsite, the Proposed Development is considered to be of '**Minor Beneficial**' significance when considering additional mitigation.

Residual Effects

10.4.53. It is anticipated that when considering the additional mitigation outlined above, there would be no residual significant effects anticipated during the construction and operational phases of the Proposed Development, with only a '**Minor or Moderate adverse**' and '**Minor Beneficial'** effect identified for the tidal flood risk receptor which is not considered to be significant.

10.5. Conclusions

Summary

10.5.1. This section provides a summary of the ES Chapter 10 – Flood Risk and Drainage and its conclusions.

10.5.2. Potential effects to Flood Risk and Drainage from the Proposed Development were identified and have been summarised in Table 10.4 below. The assessment addressed the following receptors: tidal flood risk, surface water flood risk, surface water drainage, water quality, and foul water drainage.

10.5.3. The assessment of effects was undertaken with consideration of embedded mitigation. As embedded mitigation, the implementation of a CEMP would need to include temporary measures to control surface water runoff from the Proposed Development, mitigating potential impacts of the construction phase.

10.5.4. The design process and development of the Drainage Statement (Volume 3, Appendix 10.1) include measures such as SuDS to mitigate any additional surface water runoff during the Operational phase of the Proposed Development and are also considered to be embedded mitigation.

Table 10.4: Potential effects to flood risk and drainage from the Proposed Development

Receptor	Impact	Potential Effects	Additional Mitigation	Potential Effects (after Additional Mitigation)
During Construction				
Tidal Flood Risk	Increased tidal flood risk	Moderate	N/A	N/A
Surface Water Flood Risk	Increased surface water risk	Minor	N/A	N/A
Surface Water Drainage	Increased surface water runoff	Negligible or Minor	N/A	N/A
Water Quality	Contaminated runoff	Minor or Moderate	N/A	N/A
Foul Water Drainage	Increased discharge	Minor	N/A	N/A
During Operation				

Tidal Flood Risk	Increased tidal flood risk Post Development results show a significant reduction in flood extent offsite	Moderate or Major adverse	Raising FFLs, vulnerable land use to be located on upper floors. Raising of level near the basement car park entrance at Salt Lake. General level raising around the coastal frontage.	Minor Beneficial
Surface Water Flood Risk	Increased surface water risk	Negligible or Minor	N/A	N/A
Surface Water Drainage	Increased surface water runoff	Minor	N/A	N/A
Water Quality	Contaminated runoff	Minor or Moderate	N/A	N/A
Foul Water Drainage	Increased discharge	Moderate	N/A	N/A

10.5.5. Significant effects were identified as likely during the operational phase of the Proposed Development for tidal flood risk. As a result, additional mitigation is considered to be required for tidal flood risk of the Proposed Development for the following impacts:

- During Operation: Increase tidal flood risk during operation due to changes in ground levels and the overtopping or breaching of sea defences.

10.5.6. Due to these impacts, it is recommended that the additional mitigation of tidal risk is undertaken as follows:

- During Operation: Finish Floor Levels should be set to a minimum of 600mm above the design flood level, and the basement car park entrance levels within the southern area of Salt Lake raised to 7.9mAOD.

10.5.7. With additional mitigation, the potential impact for the tidal flood risk receptor during the operational phase of the Proposed Development would be of minor beneficial significance. This has been concluded as beneficial as the post development results have shown a significant reduction in flood extent offsite to the north of the Proposed Development.

10.5.8. It is anticipated that with the proposed mitigation measures discussed in this ES chapter, both embedded and additional, any likely significant effects identified would be suitably addressed and are not anticipated during the construction and operation phases of the Proposed Development.

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