Inspector's Report
ABP-311746-21

Development	Flood Defence West (flood protection scheme)
Location	Waterford City, Co. Waterford
Planning Authority	Waterford City & County Council
Applicant(s)	Waterford City & County Council
Type of Application	Approval under Sections 175, 177AE & 226 of the Planning & Development Act, 2000 (as amended).
Submissions:	Transport Infrastructure Ireland Dept of Transport DAU/NPWS Kilkenny County Council
Date of Site Inspection:	12th May 2022
Inspector:	**Karla Mc Bride**

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1.0 INTRODUCTION

1.1 Introduction

Waterford City and County Council proposes to implement a flood protection scheme in Waterford City under sections 175, 177AE and 226 of the Planning and Development Act (as amended), and to compulsorily acquire the necessary lands to implement the scheme under Section 216 of the Planning and Development Act 2000 (as amended). The proposed scheme and associated works would be located along the River Suir and parallel to the Waterford to Dublin railway track.

1.2 Project Background

Waterford City and County Council are seeking approval of a proposed Waterford City Public Infrastructure Project - Flood Defences West in the townland of Mountmisery in Co. Waterford and the townland of Newrath in Co. Kilkenny. This Project comprises several other elements in addition to the flood protection measures (incl. a new access road, railway station & bridge). There have been several flood events at and in the vicinity of Plunkett Station in recent years, and the existing quay walls are ineffective at protecting Iarnod Eireann (IE) lands and associated rail infrastructure against flooding, because of their inadequate height.

The Council states that the proposed development will provide protection for lands and the existing built assets in Waterford City from future flood events, including the existing and proposed railway infrastructure in the vicinity of Plunkett Station and Rice Bridge roundabout, and that it will form a continuation of the flood protection measures proposed along the North Quays SDZ as part of the new Transport Hub development. It states that the proposed development requires an Environmental Impact Assessment under the Sections 175 and 226 of the Planning and Development Act, 2000 (as amended) in respect of development within the foreshore.

1.3 Site Location and Description

The site is located in Waterford City and the surrounding area comprises a mix of transport, industrial, commercial and maritime uses. The 1.1km linear site extends along the N side of the River Suir upstream of Rice Bridge. It extends c.1km to the W and c.100m to the E of Plunkett Station, and it is located parallel to the Waterford to Dublin railway track with the R448 beyond, and the Rice roundabout to the E. The N and S parts of the town along the river are defined by a diverse range of buildings and structures that are mainly in industrial and commercial use, with some residential uses along the S bank, and the surrounding North Quay area lies within a Strategic Development Zone (SDZ).

The Viking city and port of Waterford date back to the early 10th Century and there are several recorded shipwrecks within the River Suir and estuary. The existing railway infrastructure and quay walls date from the mid-19th century and several of the buildings are protected structures (incl. Railway structures) and/or listed in the NIAH (incl. Edmund Rice Bridge). There are several other features of archaeological and cultural heritage interest in the vicinity. The River Suir forms part of the Lower River Suir SAC which is designated for a wide variety of terrestrial and aquatic habitats and species, and it is possible that the river and environs are used by mobile species from other further afield natural heritage sites.

Maps and photographs in Appendix 1 describe the site in more detail.

1.4 Planning history

There is an extensive planning history related to the wider area and the following cases are of particular relevance.

Planning applications:

ABP-303274-18: permission granted for a 5-span, 8m wide sustainable transport bridge across the River Suir, c.500m downstream of Rice Bridge.

Reg. Ref. 19/928: permission granted for a mixed use commercial, residential & office development within the SDZ comprising 9 x blocks built on a new raised podium structure which established new ground levels (c.8-9m OD).

WCC Part 8 Schemes:

Transport Hub: permission granted in 2019 for a Transport Hub within the SDZ comprising a new railway station and reconfigured bus depot layout, drainage and flood defence work along the S boundary of the railway track.

Rock Stabilisation: permission granted in 2018 for Rock Stabilisation and Rock Protection Measures at Plunkett Railway Station.

SZD Access: permission granted in 2019 for the SDZ road and access infrastructure comprising modifications to the road network (incl. R711).

Gracedieu LIHAF Scheme: permission granted for a Public Infrastructure Scheme comprising a new access road to serve future housing.

Kilbarry LIHAF Scheme: permission granted for a Public Infrastructure Scheme comprising a new ring & distributor road to serve future housing.

Ferrybank LIHAF Scheme: permission granted for a Public Infrastructure Scheme comprising community & amenity facilities at a new Neighbourhood Park.

2.0 PROPOSED DEVELOPMENT

2.1 Documentation

The ***application documentation*** includes the following:

- Planning Drawings & Photomontages
- Environmental Impact Assessment Report (EIAR)
- Appropriate Assessment Screening/Natura Impact Statement (NIS)

The ***EIAR*** was supported by several Technical Appendices which included:

- Appendix 4.1: Environmental Operating Plan (incl. CEMP & C&DWMP)
- Appendix 7.1: Intertidal Survey Report
- Appendix 10.1: Specific Flood Risk Assessment
- Appendix 10.2: Hydraulic Modelling Report
- Appendix 14.3: Archaeological Impact Assessment

The ***NIS*** was supported by additional Technical Appendices:

- Appendix E: Designated Sites
- Appendix F: Habitat Mapping

Other: A foreshore lease and licence application will be submitted for approval to the Minister for Housing, Local Government and Heritage.

2.2 Development Description

The proposed development comprises the Waterford City Flood Defence West (flood protection scheme) which would be undertaken to alleviate flooding along the North Quays in order to protect existing and future railway infrastructure and property. The scheme would comprise the following main elements:

- Construction of c.365m of impermeable underground trench within the Plunkett Station car parking areas, in the vicinity of the Railway Platform Canopy, Post Box & Signal Box (Protected Structures).
- Total of c.185m of overground flood defence measures, comprising:
    - C.170m of glass flood barriers (1.5m x 0.7m) at Rice Bridge roundabout, Terminus Street & Rice Bridge.
    - C.15m of demountable flood barriers on Rice Bridge.
- Remedial works to c.75m section of existing quay wall in front of Plunkett Station car parking area (raise height by 0.8m & 1.2m).
- Construction of c.730m of sheet pile flood defence wall, comprising:
    - C.540m of sheet pile wall within the foreshore, 1m from front face of the existing quay wall (incl. an eco-seawall).
    - Demolition of up to c.3m of existing quay wall.
    - Install c.190m of sheet pile wall on IE land, 1m behind existing quay wall & construct a c.20m underground isolation structure.
- Drainage works, comprising:
    - Remedial works to existing drainage outfalls
    - New trackside & groundwater drains, pumping stations & surface water outfalls

- Fit all outfalls with non-return valves
- Demolish the existing quay wall to c.800mm below existing ground level, including c.25m to a level between 2m & 4m below ground level to facilitate a new pumping station.

- Ancillary site works.

2.3 Environmental Impact Assessment Report (EIAR)

The EIAR was prepared using the standard “grouped format structure”. It described the site and surrounding area and explained the background to the Flood Protection Scheme, the benefits arising and the need for the development based on an analysis of existing and predicted levels of fluvial and tidal flooding along the River Suir. It stated that the proposed Scheme would comply with EU, national, regional and local environmental and planning policies. It provided a detailed description of the proposed Scheme, identified constraints, and described the selection process and the alternatives considered, including the “do-nothing” scenario.

The main body of the EIAR outlined the study methodologies and assessed the potential impacts on the receiving environment under the required range of headings, and it proposed mitigation measures. It identified residual and cumulative impacts and assessed interactions (incl. North Quays SDZ). It also included details of the qualifications and competencies of the main contributors to the report, stated that no particular difficulties were encountered, and it had regard to the risk of major accidents or natural disasters, and to Climate Change. The EIAR was informed by several technical appendices including photomontages, a Non-Technical Summary was provided as was a summary of the Mitigation Measures.

The EIAR concluded that the positive environmental impacts relate to human beings by providing protection form future flood events (fluvial & tidal) with associated health, economic, community and cultural benefits related to the protection of public and private property, and transport infrastructure. It concluded that adverse environmental impacts will be minimal and mainly relate to short term disturbance during the construction phases. All other identified impacts will be managed by mitigation measures. It further concluded that the proposed development would

comply with all relevant environmental and planning policy and objectives; it would not adversely affect amenities (incl. residential, visual & heritage), interfere with biodiversity or give rise to a traffic hazard. It finally concluded that the Scheme would be in accordance with the proper planning and sustainable development of the area and that it would have positive impacts in terms of the alleviation of fluvial and tidal flooding in Waterford City, and enable the implementation of the North Quays SDZ.

2.4 Natura Impact Statement

A Stage 1 AA screening exercise was carried out for the proposed Flood Protection Scheme and a Stage 2 Natural Impact Statement was prepared.

Stage 1 AA Screening Report

The AA Screening exercise described the site and the characteristics of the proposed development, it summarised the legislative requirements and described the AA screening methodology. It identified the European sites within of the Zone of Influence, described the likely sources of impact, and concluded that the project had the potential to affect the Conservation Objectives of 2 x European Sites.

The Natura Impact Statement Report

The NIS assessed the likely significant effects on the Conservation Objectives for the following European sites which were screened in after the AA screening exercise.

- Lower River Suir SAC
- River Barrow & River Nore SAC

The NIS described the individual elements of the project with potential to give rise to effects on these European Sites (incl. their Conservation Objectives & Qualifying Interests). It described any likely direct, indirect or secondary effects on the European Sites along with in-combination effects, and it assessed the significance of any effects. It identified the potential for direct and indirect effects on the European

sites and their Conservation Objectives during the construction and operational phases. It concluded that the proposed development had the potential to adversely affect several downstream Qualifying Interest habitats and species, and it outlined a range of mitigation measures (incl. water quality protection measures) and assessed the likelihood of residual effects following mitigation. It also assessed the potential for cumulative effects in-combination with other plans and projects in the area (incl. North Quays SDZ). The NIS was informed by the Stage 1 AA Screening exercise, Ecological, Habitat, Intertidal Survey and Hydraulic Modelling reports, a CEMP and the relevant EIAR Chapters.

The NIS objectively concluded that the Board should determine that, given the full and proper implementation of the mitigation measures prescribed in the NIS, the proposed development, does not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European Site, either individually or in combination with other plans and projects, will not adversely affect the integrity of the Lower River Suir SAC, the River Barrow and River Nore SAC or any other European site.

3.0 POLICY CONTEXT

3.1 EU Policy

EU Directive on the Assessment and Management of Flood Risks (2007/60/EC)
This Directive, which was transposed into Irish law in under SI No.122 of 2010, requires Member States to assess watercourses and coastlines at risk from flooding, to map flood extent, assets and humans at risk, and to take adequate measures to reduce this flood risk. Implementation is being co-ordinated with the EU Water Framework Directive and the current River Basin Management Plans by the OPW.

EU Water Framework Directive (2000/60/EC), as amended
This Directive established a legislative framework for the protection of all waters (incl. rivers, lakes, estuaries, coastal waters & groundwater) and their dependent wildlife and habitats. It requires Member States to protect and improve water quality

in all waters so that they achieve good ecological status by 2015 (extended to 2027). It requires the preparation and regular review of River Basin Management Plans.

EU Strategy on Adaption to Climate Change, 2021

This Strategy is an integral part of the European Green Deal which seeks to address the impacts of climate change and the need to become climate resilient by 2050 by way of smarter, swifter and more systematic adaptation.

3.2 National Policy

National Planning Framework, 2018-2040

This plan sets out a high-level strategic plan for shaping the future growth and development to 2040. It seeks to develop a region-focused strategy to manage growth and environmentally focused planning at a local level. It contains several National Strategic Outcomes (NSOs) which include seeking to achieve compact growth, enhanced regional accessibility (NSO2), empowered rural economies and communities (NSO3), sustainable mobility (NSO4), enhanced amenity and heritage, and a transition to a low-carbon and climate resilient society.

National Development Plan, 2021-2030

This plan underpins the National Planning Framework 2018-2040, and it sets a framework for investment priorities which includes expenditure commitments to secure a wider range of Strategic Investment Priorities. Under Strategic Outcome 8 (Transition to a Low Carbon & Climate Resilient Society) it allocated c.E940 million to Flood Defence and outlined several investment actions relating to flood risk management. The National Adaptation Framework (Planning for a Climate Resilient Ireland) seeks to address current and future risks associated with climate change.

Climate Action Plan, 2021

This plan seeks to tackle climate breakdown and achieve net zero greenhouse gas emissions by 2050. It identifies several risks as a result of climate change including rising sea-levels, extreme weather, further pressure on water resources and food production systems, and increased chance and scale of river and coastal flooding.

National Biodiversity Action Plan, 2022

The Plan sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first and second National Biodiversity Action Plans. It contains 119 x targeted actions which are underpinned by 7 x strategic objectives which lay out a clear framework for Ireland's national approach to biodiversity, ensuring that efforts and achievements of the past are built upon, while looking ahead to what can be achieved over the next five years and beyond.

Obj.1: seeks to mainstream biodiversity into decision making across all sectors.

Action 1.1.3: states that all public authorities and private sector bodies should move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure.

Flood Risk Management Climate Change Sectoral Adaptation Plan, 2018

This plan updates the previous plan by taking account of new information on climate change, its potential impacts and developments in flood risk management. It identifies 21 x actions needed to ensure effective and sustainable management of flood risk into the future.

The Planning System and Flood Risk Management, 2009

These Guidelines seeks to avoid inappropriate development in areas at risk of flooding and avoid new developments increasing flood risk elsewhere. They advocate a sequential approach to risk assessment and a justification test.

National Ports Policy, 2013

The core objective of this document is to facilitate a competitive and effective market for maritime transport services, and it introduces clear categorisation of the ports sector into Ports of National Significance (Tier 1 & 2), and Ports of Regional Significance which includes the 5 smaller State-owned commercial port companies and all other ports that handle commercial freight. The Port of Waterford is a Tier 2 Port of National Significance.

Architectural Protection Guidelines for Planning Authorities, 2004

These Guidelines provide a practical guide for planning authorities (and others) who must comply with Part IV of the Planning and Development Act 2000 on the protection of the architectural heritage. Section 14.2 deals specifically with bridges and railway infrastructure that are Protected Structures.

3.3 Regional Policy

Southern Regional Spatial & Economic Strategy, 2020

The RSES supports the delivery of the programme for change set out in the National Planning Framework and the National Development Plan. It sets out a strategic vision and policy objectives for urban and rural areas, people, the economy, the environment, connectivity, amenities and utilities, and it contains a number of Regional Policy Objectives (RPOs) which deal with the: - preparation of Strategic Flood Risk Assessments; avoidance of inappropriate land use zonings and development in areas at risk of flooding; co-ordination with relevant agencies for the management of flood risk; protection of water quality; and the enhancement of biodiversity and amenities. Waterford is also identified as a Metropolitan Strategic Area which contains a Tier 2 Port of National Significance. The RSES states that the Waterford Metropolitan Area Transport Strategy will be instrumental in the regeneration and transformation of Waterford. The development of a concentric city including N of the River Suir - the North Quays and other key locations will be supported by integrated transport investment to create an attractive, liveable city, connecting city and suburbs, and building north-south linkages.

3.4 Local Policy

Waterford City Development Plan 2022-2028

The Waterford City and County Development Plan 2022 - 2028 was made at a special plenary meeting of Waterford City and County Council on the 7th of June 2022 and came into effect on the 19th of July 2022.

Waterford Metropolitan Area Strategic Plan (MASP):

The vision seeks to develop a Concentric City, N and S of the river (incl. areas in County Kilkenny), based on the guiding sustainable growth principles established in the Waterford Planning, Land-use and Transportation Study 2004 - 2020 (PLUTS).

Zoning objectives:

West: the surrounding lands are zoned "CD" to provide for light industry, high technology, manufacturing campus development.

East: the surrounding lands are identified as a Regeneration and Opportunity site for future development which should complement the North Quay Planning Scheme and are zoned "RE" to provide for enterprise and/or residential led regeneration.

Flood Zone A: the subject lands mainly lie within this flood zone.

Climate Change:

***CA 01*:** seeks to support & implement the policies of the Waterford Climate Adaptation Strategy in collaboration with Waterford Climate Action Team the Climate Action Regional Office, and review/replace the strategy pursuant to the provisions of the Climate Action Plan 2021 and Low Carbon Development Act.

Flood risk management:

FM 01: seeks to work with the OPW, LAWPRO and other agencies at a catchment-level to identify any measures, such as natural water retention measures, that can have benefits for, water quality, flood risk management and biodiversity objectives.

FM 02: seeks to protect floodplains of river catchments in the County and retain them for their flood protection and natural heritage values.

Water Quality:

WQ 01: seeks to ensure compliance with the Water Framework Directive and associated legislation and guidance.

WQ 02: seeks to achieve High/ Good Water Quality Status.

WQ 03: seeks to support the implementation of the recommendations & measures in the River Basin Management Plan 2018-2021, and related Program of Measures.

Biodiversity:

BD 01: seeks to protect and conserve all sites designated or proposed for designation as sites of nature conservation value (Natura 2000 Network, Ramsar Sites, NHAs, pNHAs, Sites of Local Biodiversity Interest, Geological Heritage Sites, TPOs) and protect ecological corridors and networks that connect areas of high conservation value such as woodlands, hedgerows, earth banks and wetlands.

Wetlands:

BD 15: seeks to ensure that Waterford's floodplains, wetlands and watercourses are retained for their biodiversity and flood protection values and maintain good ecological status of wetlands and watercourses in support of the provisions of the Water Framework Directive and Ramsar Convention.

Cultural Heritage:

Heritage 01: seeks to implement and review the Waterford Heritage Plan.

BH 21: seeks to protect Industrial Built Heritage.

AH 01: seeks to protect and enhance all elements of the archaeological heritage including …. (f) Wrecks protected under the National Monuments Acts or otherwise included in the Shipwreck Inventory maintained by the National Monuments Service, underwater archaeology, riverine, coastal or lacustrine locations.

Kilkenny City and County Development Plan 2021-2027

Part of the site is located within the Kilkenny administrative area, and within the Waterford Metropolitan Area (MASP). The Plan acknowledges the need for growth on the N and S sides of the River Suir focussed on the development of significant housing and employment locations. It also seeks to ensure that new developments do not reduce the effectiveness or integrity of any existing or new flood defence infrastructure, and to facilitate the provision of new, or the reinforcement of existing, flood defences & protection measures where necessary.

Ferrybank Belview Local Area Plan (LAP) 2017-2023

The LAP contains a strategy for the lands located adjacent to the River Suir. It supports the development strategy set out in the Waterford Planning, Land Use and Transportation Study (PLUTS) to achieve the balanced and sustainable growth of Waterford which includes new dwellings on the N & S side of the river and a rail-passenger platform on the N Quays as part of a new Public Transport Interchange.

North Quays SDZ Planning Scheme 2018

The SDZ covers lands on the North Quays and the Planning Scheme seeks to:

- Create a sustainable extension to the City Centre of 83,000 people.
- Act as a regeneration catalyst for the City & Region.
- Create an integrated multi modal transport hub.
- Create a high-quality urban quarter as a natural extension of the city.
- Promote the expansion of the City Centre to the N of the river.
- Create a sustainable urban environment.
- Provide sustainable solutions to address flood risk & climate change.

Climate Adaptation Strategy, 2019-2024

This strategy seeks to ensure a proper comprehension of the key risks and vulnerabilities of climate change and bring forward the implementation of climate resilient actions in a planned and proactive manner to ensure that climate adaption considerations are mainstreamed into all plans and policies and integrated into all operations and functions of the local authority.

3.5 European Site Designations

- Lower River Suir SAC
- River Barrow & River Nore SAC

4.0 PROJECT SUBMISSIONS

4.1 Prescribed Bodies

***DAU/ NPWS*:**

Nature conservation:

- Recognise that the works are in the public interest & necessary to prevent flooding of public infrastructure.
- Loss of c.800sq.m. of Annex 1 habitats (intertidal mudflat & estuaries) in Lower River Suir SAC, and also disturbance to QI species.
- Suitable alternative habitat to compensate should be provided elsewhere within the range of species affected in/or adjoining the SAC.
- Although the mudflat & estuary habitats are not QIs for the SAC, they are used in varying degrees by QI fisheries species (Twaite Shad, Sea & River Lamprey, Atlantic Salmon & Otter).
- Accept NIS conclusion that the project would not constitute an adverse impact on the SAC & would not breach Article 6(3) of the Directive.
- However, project does entail undesirable permanent removal of habitat that is used by Annex 11 QI species, and it is an Annex 1 habitat.
- The Conservation Status of Twaite Shad & Sea Lamprey is bad, River Lamprey is unknown & Atlantic Salmon is inadequate, and the habitats (intertidal mudflats & estuaries) is inadequate & deteriorating.
- Obj.1 of the National Biodiversity Action Plan seeks to mainstream biodiversity into decision making & Action 1.1.3 stats that there should be a move to no net loss of biodiversity (incl. appropriate offsetting).
- Welcome use of eco-structures in the intertidal zone on the new concrete wall, but it is not a substitute for the permanent habitat loss.
- Loss of the non-QI Annex 1 habitats should be considered in the EIA, and do not accept EIAR conclusion that this loss would have no effect on the designated site.

Archaeology:

Concerns raised:

- Note information contained in Desktop Assessment & field inspection (mainly by boat) and the absence of RMs and previous excavations.
- Note the presence of 8 x post medieval landing stages, a landing stage abutment & the existing quay wall which is "contemporary" with the C18th railway, and the record of coastal shipwrecks in the Port area.
- Note the proposed intertidal and wave/dive & metal detecting survey and recording to be undertaken by an underwater archaeologist.
- Inadequate assessment of the archaeological potential of the intertidal mudflats & riverbed, given its proximity to the medieval port city, its strategic location and the wealth of prehistoric remains in the area.
- Site may contain previously unknown submerged underwater archaeology (incl. slipways, quays, weirs, fish traps, industrial structures, reclamation deposits & artefacts), as well as Wrecks.
- NE side of the site corresponds with the location of the former c.1793 bridge (Timbertoes) across the River Suir & ferry landing stages that may survive beneath or in the environs of Rice Bridge.
- Note demolition of existing quay wall to various depths and absence of designation, however the structure should be examined & recorded to determine the presence/absence of any earlier fabric/structures.
- Ground disturbances may have an impact on archaeological features or deposits that may survive behind the quay walls, and all ground disturbance within the car park & train station should be monitored.
- Pre-development archaeological testing of groundworks should be undertaken, and an impact assessment report prepared (incl. mitigation) in advance of any demolition/constructions works.

Recommended Further information:

- Archaeological Impact Assessment (AIA)
- Underwater Archaeology Impact Assessment (UAIA)

- ***UAIA*** should: - contain a desktop assessment, inventory & mapping of sites, maps to indicate impacts, site investigation, indirect & secondary impacts & no groundworks in absence of an archaeologist; include wave/dive assessment & metal detection survey; subsequent targeted test trenching; and the submission of a written report to NMS.
- ***AIA*** should be undertaken by a specialist in industrial archaeology for the terrestrial elements, the quay wall shall be fully recorded & examined, a mitigation strategy agreed in advance of works, and pre-development testing should be undertaken.

Recommended planning condition:

- Attach a condition which requires archaeological monitoring of the works programme, all excavated material should be spread & metal detected to assess the artefact bearing potential, works should cease if material is found pending advice, and a report prepared for NMS.

Department of Transport:

- No objection.

Transport Infrastructure Ireland:

- No observations.

***Kilkenny County Council*:**

- Support the proposed Flood Defences West Project.
- Ferrybank Belview LAP should be used for policy guidance, the SEA specifically refers to Strategic Flood Risk Assessment for this area and should be considered in terms of potential impacts within Co. Kilkenny.
- Note EIAR reference to the SDZ as a separate project and conclusion of no potential for cumulative impacts on environmental parameters.
- However, it is unclear if the in-combination effects of the project and proposed SDZ flood defences have been taken into consideration under the relevant EIAR parameters.

- Potential flooding impact upstream & downstream of these defences during the Operational Phase within the KCC area & foreshore is of potential concern (incl. impacts on habitats).
- Ideally the EIAR should model the pre & post flood defence situation for both projects, and this area is identified as being within the NIS ZoI.
- Acknowledge that potential downstream flooding may be more coastal as opposed to fluvial and that there is no perceptible change in predicted flow velocities up and down stream as a result of the project on its own.
- Consider providing sealed attenuation storage as part of the new surface water drainage system, prior to discharge to the River Suir, or carry out an assimilative capacity exercise for the river for discharges.
- Construction phase noise & vibration limits should be set & appropriate monitoring locations agreed, and construction time limits should be set, although minimal impacts within KCC expected.
- Air quality limits should be set and agreed at appropriate monitoring levels, although minimal impacts within KCC expected.

4.2 Observers:

No public submissions received to date.

4.3 Planning Authority response to submissions

The PA's response to the concerns raised is summarised below.

Kilkenny County Council:

Flood risk assessment:

- Ferrybank Belview LAP (& SEA) was used for policy guidance in the EIAR assessment of Interactions and Cumulative Impacts, which concluded significant positive direct, indirect, cumulative impacts.

- SSFRA concluded that the project is a water compatible development as per the OPW Guidelines & appropriate for the associated flood risk.
- There will be an imperceptible in-combination effect on extreme flood levels upstream or downstream of the works with no increase flood risk in the locality as flooding is mainly caused by extreme tides/storm surges, with negligible/imperceptible impacts on the local flood regime.

Biodiversity:

- In-combination sediment regime assessments concluded that the likely effects upstream & downstream would be very localised with negligible effects on erosion & deposition rates, or water dependant habitats.
- Subject to compliance with mitigation measures there will be no significant residual impacts on any ecological receptors, individually or in combination with other past, present or future plans or projects.
- While there will be a local loss of c.800sq.m of 2 x Annex I habitats (Estuaries and Mudflats & Sandflats), there will be no effect on their conservation status nationally.
- The project, either individually or in combination with other plans or projects, will not adversely affect the integrity of the Lower River Suir SAC, the River Barrow & River Nore SAC, or any other European site.
- Given the mitigation measures prescribed for the North Quays SDZ and the mitigation described for the proposed Flood Defences West project, no cumulative significant effects are likely.

Surface water drainage system:

- Project maintains existing flow paths & minor drainage catchments, no additional discharge volumes or sources of pollution within the network.
- Adequate storage capacity in the pump station storage tanks & pipe network to attenuate flows from the discharge points into the river.

Noise and Vibration:

- EIAR contains mitigation measures for noise & vibration, including limits, on-going monitoring at sensitive receptors & working hours.

Air quality:

- EIAR contains mitigation measures for control of dust emissions to ensure that air quality limits are adhered to and monitored.

Nature conservation:

- There may be incorrect terminology in the NPWS submission in relation to compensatory habitats given their acceptance of the AA conclusions and the fact that the habitats impacted are not QIs.
- Accept that the loss of non-QI habitat will involve potential disturbance to QI species, and the NIS has assessed protective measures to avoid or reduce any adverse effects on the intertidal mudflat habitat.
- NIS has not assessed compensatory measures which are aimed at compensating for the adverse effects of the project on a European Site.
- Accept that a key objective of the NBP is to "mainstream biodiversity into decision-making across all sectors" and WCCC is actively engaging with NPWS to explore options for biodiversity offsetting.
- No potentially suitable replacement sites in the Council ownership have yet been identified but will continue to consult with NPWS.
- Due to the uncertainties in relation to location & timing of delivery it is not proposed that this is provided as a direct mitigation measure but as a separate commitment in collaboration with the NPWS.
- Loss of Annex I habitats will not affect their conservation status nationally, the impact would be imperceptible without any mitigation, and any impacts would be offset /reduced by the eco-cladding.

Archaeology & Underwater Archaeology

- Actively engage with NMS to devise a strategy with regard to underwater & terrestrial archaeology and retain the services of specialist consultant to advise on its development & implementation.
- A Draft Archaeological Strategy has been developed in consultation with the NMS to formulate a methodology for providing the NMS with the information they seek as it relates to the works to be executed.

- This Strategy will cover all DAU observations & recommendations and engage a suitably experienced Underwater Archaeologist to conduct a UAIA of the riverine & foreshore elements of the project.
- Concurrently, engage a suitably experienced terrestrial Archaeologist to conduct an AIA, including test trenching of the land-side elements.
- Engage a suitably experienced specialist surveyor with expertise in the collation and generation of photogrammetrically or laser-survey based recording or a combination of both, of the quay wall.
- Ensure that the underwater & terrestrial archaeologists work together to assess the project to the relevant legal requirements & guidelines.
- Ensure that the required archaeological assessments and liaison with the NMS is carried out in a timely manner
- Ensure that the Design Team are fully briefed on the results and that any required mitigation measures agreed with the NMS.
- Incorporate mitigation measures into the finalised design, with sufficient time & resources to execute the mitigations in advance of construction.

5.0 PLANNING AND ENVIRONMENTAL ASSESSMENT

This section should be read in conjunction with Section 6.0 (EIA) and Section 7.0 (AA) of this report.

The main issues arising in this case are:

1. Principle of development
2. Visual amenity
3. Residential amenity
4. Traffic & movement
5. Biodiversity & water quality
6. Cultural heritage
7. Drainage & flood risk
8. Other issues

Section 6 deals with Environmental Impact Assessment
Section 7 deals with Appropriate Assessment

5.1 Principle of development

5.1.1 EU, national and regional policy compliance:

The proposed development would be compatible in principle with EU, national and regional land use, planning, environmental and climate change policy as set out in the documents summarised in sections 3.1 to 3.3 above. It would address the issues identified in these documents in relation to climate change, rising sea levels and flood risk (incl. the EU Strategy on Adaption to Climate Change, 2021, the Climate Action Plan, 2021 & the National Marine Planning Framework, 2021). It would also contribute to achieving the objectives of the EU Water Framework Directive, as amended, in relation the protection and improvement of water quality and the achievement of good ecological status by 2027.

The Scheme would be compatible with the policies and objectives contained in the National Planning Framework and National Development Plan in relation to transitioning to a climate resilient society (incl. Strategic Outcome 8 of the NDP); the National Marine Planning Framework, 2021 in relation to the co-ordination of measures to deal with coastal change resulting from climate change as the scheme would require the input from the OPW and KCC; and the Flood Risk Management Climate Change Sectoral Adaptation Plan, 2018 which identifies the actions needed to ensure effective and sustainable management of flood risk into the future. It could also factor into the sequential approach to flood risk assessments and justification tests for future development proposals as advocated in the Planning System and Flood Risk Management, 2009.

The Scheme would be compatible with the strategic vision and policy objectives contained the Southern Regional Spatial & Economic Strategy, 2020 in relation to future development of Waterford City, the provision of sustainable public transport infrastructure, and the management and reduction of flood risk. It notes that Waterford is identified as a Metropolitan Strategic Area which contains a Tier 2 Port of National Significance as designated in the National Ports Policy, 2013.

5.1.2 Local policy compliance:

The proposed development would be compatible in principle with the Core Strategy and relevant policy objectives in the Waterford City and County Development Plan, 2022 to 2028, and the Climate Adaptation Strategy, 2019 to 2024 as summarised in section 3.4 above. It would also contribute to and / or enable the implementation of the Waterford Metropolitan Area Strategic Plan (MASP), the Ferrybank Belview Local Area Plan 2017 to 2023 and the North Quays SDZ Planning Scheme 2018, in relation to the future development of the north quays area.

The scheme would be compatible with the Development Plan's land use zoning objectives for the surrounding area which include "CD" zoned lands to the W which seeks to provide for light industry, high technology, manufacturing campus development, and the "RE" zoned lands to the E which seeks to provide for enterprise and/or residential led regeneration. The lands lies within Flood Zone A and a Site Specific Flood Risk Assessment has been undertake in accordance with Development Plan requirements.

The scheme would also be compatible with and / or enable the implementation of Development Plan climate change policies (incl. CA01), flood risk management polices (incl. FM 01 & 02) which seek to work with the OPW and other agencies to apply an integrated and co-ordinated catchment-based approach to the management of floodplains of river catchments, and water quality policies (incl. WQ 01, 02 & 03*)* which seek to ensure compliance with the Water Framework and relevant guidance, and the protection and or improvement of water quality status.

Part of the site is located within County Kilkenny and the scheme would be compatible in principle with the Kilkenny City and County Development Plan 2021 to 2027 in relation to the future development of lands on the N and S sides of the River Suir. It would also be compatible with and / or enable the implementation of Development Plan policies related to protecting the effectiveness and integrity of existing or new flood defence infrastructure, and facilitating the provision of new, or reinforcement of existing, flood defence and protection measures.

In relation to other Development Plan policies and objectives (incl. residential amenity, roads & traffic, the environment, biodiversity, wetlands, archaeology, tourism & cultural heritage), the extent to which the practical elements of the scheme would interact with these policies and objectives will be addressed below.

5.1.3 Need for the scheme:

The Council states that the need for the flood protection scheme is based on its: - acknowledgment of past flood events and associated adverse impacts; an analysis of future flood risk along the River Suir; an assessment of the height and condition of the existing quay walls; the need to alleviate flooding of public and private property and transport infrastructure; and to enable the future development of the surrounding North Quays area. I am therefore satisfied that the Council has demonstrated the need and justification for the flood protection scheme.

5.1.4 Conclusion:

Having regard to the foregoing, I am satisfied that the proposed development would comply with all relevant EU, national, regional and local policies, land use zoning objectives, and planning policies and objectives for the area, and that the need for the project has been clearly demonstrated. The proposed Flood Defence West (flood protection scheme) would therefore be acceptable in principle, and compatible with the proper planning and sustainable development of the area.

5.2 Visual amenity:

Site context:

The linear riparian site is located along the N side of the River Suir in Waterford City and the surrounding area comprises a mix of transport, industrial, commercial, industrial, residential and maritime uses. The site mainly extends W along the River Suir upstream of Rice Bridge, and parallel to the Dublin to Waterford railway track at North Quay. Some of the railway buildings are Protected Structures (incl. the Signal Box, Platform & Post Box) whilst the Railway Station and Rice Bridge are listed in the NIAH. The Quay Walls date from the mid-19th Century and the river may contain remnants of shipwrecks. The River Suir is a designated SAC, although this section is not covered by any sensitive landscape designations or protected views.

Project elements:

A detailed description of the main project elements is provided in Section 2.2 above, two temporary construction compounds would be located in the W section of the site, and the permanent flood protection works along the River Suir would comprise the following main elements that have the potential to affect visual amenity: -

- c.185m of overground flood defence measures, comprising:
    - c.170m of glass flood barriers (1.5m x 0.7m) at Rice Bridge roundabout, Terminus Street & Rice Bridge.
    - c.15m of demountable flood barriers on Rice Bridge.
- Remedial works to c.75m section of existing quay wall in front of Plunkett Station car parking area (raise height by 0.8m & 1.2m).
- Construction of c.730m of sheet pile flood defence wall, comprising:
    - C.540m of sheet pile wall within the foreshore, 1m from front face of the existing quay wall (incl. an eco-seawall).
    - Demolition of up to 3m of existing quay wall.
- The final top of wall height would be c.4.3m OD.

Environmental Impact Assessment Report:

EIAR chapter 11 dealt with the Landscape and Volume 3 contains Photomontages of before and after the installation of the flood defence walls and glass panels (Figs. 11.1-12), along with views of North Quay from several sensitive receptors (incl. Rice Bridge, R448, Grattan Quay & residential areas). It concluded: - slight negative visual impacts on the existing landscape along the river; slight, negative and permanent impacts on views from Rice Bridge; and slight to moderative negative impacts on views from residential areas on the S side of the river.

Assessment:

The scheme would alter the visual appearance of the existing mid-19th century quay walls (incl. partial removal & replacement) however it is noted that they are not covered by any sensitive built heritage designations and that sections of the existing wall are in a very poor state of repair. The top of wall height would rise to c.4.3mOD,

which would be up to c.2m above the hight of the existing quay walls, however the installation of c.170m of glass panels in the E section close to Rice roundabout would have a positive visual impact on the public realm. It is also proposed to face sections of the wall with an eco-seawall which will serve to reduce the visual impact of the structure and integrate it with the surrounding riparian environment over time.

The works would be visible from a number of sensitive locations in the surrounding area to the N, E and S, including the R488, Rice Bridge, Grattan Quay and along the South Quays which comprises some settled residential areas and a Traveller's halting site. The overall impact on views and visual amenity would range from slight at high tide to moderate at low tide. Given the small-scale of the low-lying linear works and the extent of the separation distances between the sensitive receptors and the flood defence wall across the River Suir, I am satisfied that the impact on views and visual amenity would not be significant.

The proposed development would not comprise any works to any existing built heritage features (incl. railway buildings) with no adverse impacts on the character or visual setting of any protected structures or heritage features in the vicinity.

The main purpose of the scheme is to protect transport infrastructure and public and private property from the adverse effects of recurring flood events and predicted fluvial and tidal flooding as a consequence of climate change and rising sea levels, and to contribute to the enablement of the future development of the surrounding SDZ lands. I am satisfied that a reasonable balance has been struck between the flood protection measures and the visual amenities of the area.

Conclusion:

Having regard to the foregoing, I am satisfied that the proposed development would not have a significant adverse impact on the visual amenities of the surrounding area in the long term. I am also satisfied that the works in the vicinity of Rice Bridge and roundabout (incl. glass panels) would make a positive contribution to the urban and riverside landscape, and they would help mitigate any localised moderately adverse visual impacts along the North Quays, as would the installation of the eco-seawall.

5.3 Residential amenity

Site context:

Refer to sections 1.3 and 5.2 above for a detailed description of the site and environs. More specifically, the site of the proposed flood protection measures at North Quay are located within a predominantly industrial area although the surrounding SDZ lands are earmarked for future residential and commercial uses. There is a terrace of houses to the E of Rice roundabout, and an apartment building and Traveller's halting site along South Quay, to the W and E of the Waterford distillery buildings. There are very few residential properties at the immediate vicinity of the proposed works given the predominantly industrial and transport infrastructure character of this area.

Project elements:

Refer to sections 2.2 and 5.2 above for a detailed description of the project. The main elements of the scheme that have the potential to affect residential amenity comprise: - the installation of a flood defence wall along North Quay, including associated excavation, demolition and construction works (incl. pile driving); new and altered drainage (incl. pumping stations); two temporary construction compounds in the W section on adjoining industrial lands; and construction vehicle access off the R448 to the N, to the works areas.

Environmental Impact Assessment Report:

EIAR chapters 5, 6, 11, 12, 13 & 16 contain sections that dealt with potential impacts on residential amenity (incl. Traffic & Transport, Population & Human Health, Landscape, Noise & Vibration, Air Quality and Material Assets) and chapter 4 contains a Construction Methodology. Appendix 4.1 contains an Environmental Operating Plan, Construction and Environmental Management Plan (CEMP) and Construction and Demolition Waste Management Plan (C&DWMP). Volume 3 contained Photomontages. The EIAR concluded that there would be short term temporary adverse impacts during the construction phase with no perceptible impacts during the operational phase.

Assessment:

Kilkenny Council raised concerns in relation to adverse construction phase impacts within its administrative area, although it noted that minimal impacts are expected. It suggested that noise vibration and air quality limits are set, and appropriate monitoring locations agreed, and that construction time limits are also set. The concerns of KCC are noted (as summarised in s.4.2 above) as is the Councils response to them (as summarised in s.4.3). None of the other submissions raised concerns in relation to the impact of the proposed development on the residential amenity of properties the vicinity during either the construction or operational phases of the scheme.

Construction works:

There is potential for adverse impacts on the amenities of nearby residential properties in the vicinity of the North and South Quays during the construction phase of the various project elements (incl. noise, vibration, dust, dredge odours, traffic disruption & general disturbance) during the construction phase of the scheme.

The entire construction phase would take between c.30 to 35 weeks to complete and the construction works would be sequenced to commence with site preparation (c.2 weeks) followed by the main flood protection works (c.28 to 33 weeks). The works phases would comprise: - remedial works to the existing quay walls (c.4 weeks); impermeable trench in front of Plunkett Station (c.2.5 months / 10 x weekends); works at Rice Bridge Roundabout (6-8 weeks); sheet pile wall installation with back filling and sea-seawall (c.12 weeks); and new and upgraded drainage works (c.9-12 weeks). Most of the works would run in parallel over the construction phase, but in separate sections for some of the enabling elements (incl. sheet piling at drainage outlets). The installation of the sheet piles would be carried out by two piling rigs on two separate barges that will work W and E along the riverside. Waste arising from the work would be managed by a Construction and Demolition Waste Management Plan and in accordance line will waste licences and permits.

The construction phase works will undoubtedly give rise to disturbance at the various project locations and temporary work compounds.

Site access would be via the N25 and mainly off the R448 but with no construction traffic routed through Waterford City, and although there would be some disruption to traffic movements and journey times any adverse impacts would be temporary and not significant. Vehicular and pedestrian access to the road network and Plunkett Station, along with access to the river for boat users would be maintained.

The demolition, excavation and pile driving works along with the operation of plant and machinery have the potential to cause adversely affect residential amenity in the surrounding area. Working hours would run from Monday to Saturday (7am to 7pm) with occasional night-time works to take account of train timetables Monday to Friday (9.30pm to 5.30am). Although these impacts would be temporary and short term over the various phases of the c.30 to 35 week works programme, they could also be significant. However, I am satisfied that the EIAR and CEMP mitigation measures, along with the implementation of the C&DWMP and adherence to best construction practices, would serve to manage any adverse impacts on residential amenity during the construction phase (incl. noise, vibration, dust, traffic disruption & general disturbance). The excavation works within the river for the new sheet pile walls have the potential to release odours and this aspect of the works should be monitored, however given the short duration of the project and the separation distances to the nearest residential property, I am satisfied that any adverse odour impacts would be short term, temporary and not significant.

As previously stated, the main purpose of the scheme is to protect transport infrastructure, and public and private property from the adverse effects of recurring flood events and predicted fluvial and tidal flooding as a consequence of climate change and rising sea levels, and to able the future development on the adjacent SDZ lands. The construction works would undoubtedly have localised adverse impacts on residential amenity in the surrounding areas at various stages. However, I am satisfied that all potential adverse impacts have been identified and that they would be monitored, managed and minimised by the mitigation measures. The scheme would not have a significant long term adverse impacts on residential amenity and it would have positive benefits for the local community.

Other related concerns raised in the submissions and issues related to traffic safety, surface water drainage is addressed below in Section 5.4 (Traffic & Movement), Section 5.7 (Drainage & Flood Risk), and Section 6.4 (EIA-Traffic & Movement).

Operational phase:

The proposed flood protection works would not adversely affect the residential amenities of properties in the vicinity during the operational phase by way of overlooking, loss of privacy or noise disturbance because of the low-lying linear layout and design of the flood defence wall which would not be visually obtrusive. Although drainage maintenance works will be periodically required during the operational phase (incl. inspections & sheet pile panel painting) the works would not have an adverse impact on residential amenity. Although the flood defence walls will always be visible from the public domain, I am satisfied that a reasonable balance has been struck between the need to provide flood protection measures along North Quay and the visual and residential amenities of the area. The proposed surface water drainage arrangements would ensure that the scheme would not give rise to flooding or pose a flood risk to any nearby residential properties in the area. Overall, the public realm elements of the Scheme (incl. glass panels) would make a positive contribution to the riverside amenity, and they would help mitigate any localised moderately adverse impacts on residential visual amenity. I am satisfied that the scheme would not have a significant long-term adverse impact on residential amenity in the surrounding area.

Decommissioning phase:

Given the nature of the scheme, there are no plans to decommission the project.

Conclusion:

Having regard to the foregoing, I am satisfied that the mitigation measures would manage any adverse impacts on residential amenity during the construction phase (incl. noise, vibration, dust, odours, traffic disruption & general disturbance). The proposed development would not have a significant long term adverse impact on amenity during the operational phase. Furthermore, the scheme would have positive benefits in relation to protecting transport infrastructure and property, enabling the

development of the adjacent SDZ lands, and public amenity in relation to the glass panels at Rice Bridge and environs. I am satisfied that a reasonable balance has been struck between the provision of flood protection measures and the protection of residential amenity.

5.4 Traffic and Movement

Site context:

Refer to sections 1.3 and 5.2 above for a detailed description of the site and environs. More specifically, vehicular access to the two temporary work compounds and project elements would be via the N25, N9 and R711 (Dock Road), and mainly off the R448 (Terminus Street) to the N of the linear site. The western most work compound would utilise the L3408 which crosses the Dublin to Waterford railway track in the NW section of the site. Construction traffic would not be routed through Waterford City or along the South Quays.

Project description:

Refer to section 2.2 and 5.2 above for a detailed description of the project. More specifically the scheme would not comprise any significant infrastructural road works other that the installation of glass flood barriers in the vicinity of Rice Roundabout. However, construction delivery vehicles (HGVs) have the potential to cause a disturbance by adversely affecting road capacity and traffic movements. The construction works would take place over a 30 to 35-week period and vehicles would utilise the N25, N9, R448 and R711 to the W, N and E respectively, with access mainly off the R448 (Terminus Road). Minor works would take place at Rice Roundabout and Bridge, and the city centre road network would not be directly affected. The volume of additional traffic generated by construction works would be relative to the level of activity at each location associated with the particular works (incl. site deliveries, removal of materials & staff vehicles).

Environmental Impact Assessment Report:

EIAR chapter 5 dealt with Traffic Impacts, Appendix 4.1 contains an Environmental Operating Plan which includes a Construction and Environmental Management Plan (CEMP) and Construction and Demolition Waste Management Plan (C&DWMP). The Traffic Analysis described the existing road network and public transport facilities, it carried out junction turning count surveys at the Rice Bridge Roundabout (R448 & Rice Bridge), and collated accident and collision data for the area. The information was used to describe baseline traffic conditions and to determine the additional traffic loading resulting from the construction works. The EIAR concluded short-term slight to moderate adverse traffic impacts during construction, with no adverse impacts predicted in the long-term operational phase.

Assessment:

None of the submissions raised concerns in relation to the impact of the proposed development on traffic movement or safety during the construction or operational phases of the scheme.

Construction works:

There is potential for adverse impacts on traffic movement along the surrounding network (incl. R448) during the construction phase of the various project elements, which would be mainly related to the movement of HGV delivery vehicles to and from the site (incl. access, disruption, safety & general disturbance) over the lifespan pf the works (c.30 to 35 weeks). The EIAR predicts that peak of the HGV traffic load is estimated to occur for total of 7 x weeks, which will result in an increase of the number of HGVs on the existing road network of between c.26 and 32 HGV movements per day over 7 weeks.

At the peak of construction, the scheme is predicted to increase total traffic flows on the R448 (Terminus Street) by c.0.1%, and HGV movements by 1.2% per day. This would give rise to a negative short term temporary impact on the road network which would not be significant given the small scale of the additional traffic movements and the short duration of the proposed works. Lower construction traffic movements are

expected during the remainder of the construction phase, ranging from c.4 to 20 HGV movements per day. Slight negative traffic impacts are predicted on the wider road network along with a slight increase in traffic congestion at Rice Roundabout, and some localised inconvenience will occur during the construction phase.

The construction phase works will undoubtedly give rise to traffic disruption and possible diversions, and general disturbance on the north side of Waterford City, and in the vicinity of and along the approach roads to the site access points off the R448. The EIAR does not propose any specific traffic mitigation measures, however, a Construction Traffic Management Plan should be prepared prior to the works commencing as part of the CEMP, to help manage and minimise any adverse traffic impacts within the area during the construction phase. This could be addressed by way of a planning condition. Any traffic management measures contained in the CEMP and C&DWMP and should be complied with, and best construction practices should be adhered to, which would also ensure that construction related traffic would not give rise to a traffic hazard or endanger the safety of other road users. It is noted that some of the works at Rice Roundabout and Bridge will take place over a short period of time with minimal traffic impacts anticipated.

Operational Phase:

The flood protection scheme would not have any significant adverse traffic impacts on the local road network during the operational phase.

Conclusions:

Having regard to the foregoing, I am satisfied that the proposed development would not give rise any permanent adverse traffic impacts during the construction phase (incl. traffic disruption & diversions and general disturbance). The proposed development would not have a significant long term adverse impact on traffic and movement during the operational phase. I am satisfied that a reasonable balance has been struck between the provision of flood protection measures and the management of traffic impacts during the relatively short construction phase.

5.5 Biodiversity & water quality

Site context:

Refer to sections 1.3 and 5.2 above for a general description of the site and environs. More specifically, the linear scheme would occupy an urban riverside location that comprises a mix of riparian and intertidal habitats (incl. Mudflats & Estuaries) which in turn support a wide variety of terrestrial and aquatic plant and animal life. The river supports several species of migratory fish (incl. Salmon, Twaite shad & Lampreys) along with freshwater and marine macroinvertebrates, and it also provides suitable foraging habitat for birds, bats and otter.

Project description:

Refer to sections 2.2 and 5.2 above for a detailed description of the proposed flood defence scheme. More specifically, the works would comprise several elements that have the potential to affect biodiversity and water quality, including the following:

- Site preparation works (incl. excavation & trenching)
- Partial demolition of existing quay walls
- Construction of new quay walls (c.1m to fore of existing walls)
- Drainage works (incl. new outfalls & pumping stations)

Environmental Impact Assessment Report:

EIAR chapters 7, 8, 9 & 10 dealt with potential impacts on Biodiversity, Soil and Geology, Hydrogeology and Hydrology. The Technical Appendices contained an Intertidal Survey Report (7.1), Hydraulic Modelling Report (10.2), Designated Sites (E) And Habitat Mapping (F). The EIAR was informed by a variety of desk top studies and site surveys which were undertaken for the proposed scheme (incl. habitats, otter, birds, bats, fish, macroinvertebrates, water quality & invasive species). The works would result in the permanent linear loss of Annex 1 Mudflat and Estuaries habitats (c.800sq.m.) which are not Qualifying Interest (QI) habitats for the Lower River Suir SAC. The scheme was amended to exclude a small area of Annex 1 Atlantic salt meadow habitat which is a QI habitat for the Lower River Suir

SAC. Notwithstanding the loss of Annex 1 Mudflat habitat, the EIAR concluded that there would be no significant adverse impacts on biodiversity or water quality during the construction operational phases, post mitigation (incl. water quality protection measures, timing & seasonality of works and adherence of guidance for in-stream works). It concluded that the Eco-seawall would result in a net gain for biodiversity.

Assessment:

NPWS and KCC raised concerns in relation to the impact of the proposed development on biodiversity (incl. habitats, fisheries & otter), hydrology, flood regimes, and water quality. NPWS raised particular concerns about the loss of Annex 1 habitats (incl. Mudflats & Estuaries) and requested that compensatory habitats be provided. These concerns are noted (and summarised in s.4.2 above) as is the Councils response to them (as summarised in s.4.3). The council's response included clarification that the in-combination impacts of the project with other flood relief works had been assessed and that the works would not have an adverse impact on landward flood regimes, sediment or erosion patterns, or water dependent habitats along the River Suir. It also provided a commitment to continue working with NPWS to provide suitable compensatory (non-QI) intertidal habitats to replace the c.800sq.m. that would be permanently lost.

Water quality:

The River Suir rises to the NW of Templemore in Co. Tipperary and flows SE to Waterford where it forms a confluence with the Rivers Nore and Barrow downstream of Waterford City before discharging to the coast via Waterford Harbour. The River Suir is intertidal in the vicinity of the proposed development. The EPA water quality results for this section of the River Suir in Waterford City (Middle Suir Estuary Transitional Waterbody) are not good. The WFD status was classified as "Poor" (2010-2018) and "At Risk" in 2020, whilst the overall WFD status of the downstream Estuary ranged from "Moderate" to "Good". Hydrodynamic Modelling did not predict any significant disturbance to riverbed sediments which were also found not to contain any hazardous materials during environmental testing. Previous examinations of benthic habitats (mainly sand & mud) recorded low species diversity

and numbers. Several species of Annex II fish (incl. Salmon, Lampreys & Twaite shad) migrate along the River Suir.

Protected sites

The proposed development would be located within the Lower River Suir SAC which is a designated European site, and the site and environs may also be of importance to mobile species from several further afield coastal sites. Issues related to potential adverse effects on European sites (incl. their Conservation Objectives and Qualifying Interest habitats & Special Conservation Interest species) are addressed in Section 6.0 of this report (Appropriate Assessment). There are also several nationally designated sites (pNHAs) in the wider area which would not be affected by the proposed works several reasons, including the absence of an aquatic connection or the extent of the separation distance.

Habitats

This section of the River Suir and its environs contain c.16 habitat mosaics ranging from Buildings and Artificial surfaces through to Scrub, Wet grassland, Tidal rivers, Mudflats, Salt Marshes and Estuaries. The entire riverine habitat up and downstream of Rice Bridge is categorised as Tidal River (CW2) and the narrow linear upstream habitat along the existing N quay walls is categorised as Mud Shores (LS4). There are 2 x small sections of Lower and Upper Salt Marsh in the W section (CM1 & CM2), with a small strip of Wet Grassland in between (GS4).

The construction phase works would undoubtedly have an adverse impact on some sensitive Annex 1 habitats (incl. Estuaries, Intertidal & Shoreline), and the aquatic species that they support including several QI fish species for the Lower River Suir SAC that migrate and feed within the Estuaries habitat.

The scheme has been amended to exclude the Lower and Upper Salt Marsh habitats in the W section which also contain QIs for the Lower River Suir SAC (incl. Atlantic salt meadows).

However, other sensitive Annex 1 habitats which are not QIs for the SAC would be lost, including c.800sq.m. of Intertidal Mudflats in the W section (incl. Mudflats & sandflats not covered at low tide). NPWS has raised concerns about the loss of this Annex 1 non-QI habitat at national level, its current conservation status, and the effect its loss would have on QI fish species that feed within the mudflats at local level. NPWS has requested that suitable alternative compensatory habitat be provided elsewhere within /or adjoining the SAC.

The council has advised that although other locations had been surveyed and examined, none were considered to be suitable as of yet. However, it has provided a commitment to continue working with NPWS to provide suitable compensatory (non-QI) intertidal habitats to replace the c.800sq.m. that would be permanently lost. This loss of habitat would have a localised impact in terms of habitat loss, however any resultant adverse impacts on SAC QI fish species in terms of support habitat (incl. food supplies & shelter) would be very minor relative to the overall extent of habitat along this section of the River Suir, and imperceptible at national level. Nonetheless, the Council should continue in their quest to find suitable replacement non-QI compensatory habitat in the vicinity, in consultation with NPWS.

Species:

Fisheries:

The proposed works would result in the permanent loss of linear intertidal habitats and their constituent macroinvertebrate species within a section of the River Suir that contains suitable feeding, sheltering and resting habitat for several species of migratory fish in their various life cycle stages (incl. Salmon, Twaite shad, and Sea, River & Brook Lampreys). Given the small scale, contained and localised nature of the works along the edge of the river channel, and the relatively short duration of the in-stream works, I am satisfied that migration would not be hindered to any significant extent.

The construction works could give rise to the release of fine sediments and possibly historic industrial contaminants into the watercourse along with general disturbance (incl. pile driving noise & vibration). This could have resultant localised adverse

impacts on water quality, aquatic macroinvertebrates and fish (incl. their food sources & prey species). Twaite shad is particularly sensitive to noise and the effects of pile driving noise and vibration should be managed accordingly. Most of the fish species have the potential to be affected by artificial lighting during the night time works (incl. disruption of circadian rhythms & increased risk of predation), and this would also require careful management.

The EIAR contains a comprehensive range of construction phase mitigation measures which would protect water quality and minimise construction phase impacts on aquatic biodiversity (incl. timing & seasonality of works, controls on night time lighting, contained in-stream work areas, measures to the prevent release of sediments & contaminants, and control of accidental spills) which ae considered acceptable. The construction works should also comply with relevant legislation and guidance (incl. IFI Guidelines) for in-stream works, and river water quality monitoring should be undertaken throughout the construction phase. I also recommend that pile driving mitigation should be undertaken to reduce any impacts on aquatic species (incl. soft start & ramping up of machinery, vibrating hammer & bubble curtains). This could be addressed by way of a planning condition.

Having regard to the small spatial scale of the works relative to the overall size of the river and the extent of the northern embankments, along which the short-term duration of the in-stream and night time works (c.35 & c.6 weeks), and subject to the full implementation of the mitigation measures, adherence to best construction practice, and compliance with all relevant legislation and guidelines to minimise pollution and siltation, and the attachment of conditions to address fisheries concerns (incl. pile driving noise & vibration), the scheme would not have a significant adverse impact on fisheries and aquatic macroinvertebrates during the construction or operational phases.

Birds and bats:

The River Suir and its environs provide a habitat for several breeding, resting and foraging bird species (incl. wintering waterbirds & passerines) along with foraging opportunities for bats (incl. Common, Soprano & Nathusius' Pipistrelle, Leisler's, Natterers', Whiskered, Daubenton's & Brown Long-eared bats). There are few

nesting or roosting opportunities along this industrialised section of the river for birds and bats. Bat counts were relatively low and mainly included Common Pipistrelle and Leisler's bats. However, the arches under Rice Bridge and the R448 elevated roadway have the potential to provide a suitable resting and roosting habitat, and the river embankments have foraging potential.

The construction phase works would undoubtedly cause a general and localised disturbance to birds and bats (incl. demolition, excavation & plie driving works), with a resultant short-term localised disturbance to species in the surrounding area, along with temporary displacement and loss of foraging opportunities. However, having regard to the small spatial scale of the works relative to the overall size of the river and the extent of the northern embankments, along which the short-term duration of the works (c.35 weeks), I am satisfied that there would be no significant adverse impacts in terms of support habitat loss or species displacement. The birds and bat species would gradually habituate to the presence of the new flood defence wall in the long term. However, I recommend the installation of bat boxes and/or tubes along the flood defence walls to provide resting and roosting opportunities for bats. This could be required by way of a planning condition.

More specifically, the proposed installation of flood defence flood barriers (i.e. glass panels) at Rice Bridge has the potential to disturb any resting or roosting bats that may be present under the bridge. A pre-construction bat survey of the bridge should be undertaken, and in the event that any roosts are discovered, a NPWS Derogation Licence should be sought for their safe removal and relocation. This could be addressed by way of a planning condition.

I am satisfied that there would be no significant long term adverse impacts on bird and bat species in terms of habitat loss or displacement and that the various species would return to the area when the works are complete. Subject to the full implementation of the mitigation measures, adherence to best construction practice, and compliance with all relevant legislation and guidelines to minimise pollution, and the attachment of conditions (incl. pre-construction bat surveys and the management of pile driving noise & vibration), I am satisfied that the scheme would not have a significant adverse impact on birds and bats.

Otter:

The River Suir and its northern embankment provide a suitable commuting route for Annex IV Otter which is also a QI for the Lower River Suir SAC. Although otter footprints were recorded during the site surveys, no holts or couches were identified. The proposed works have the potential to affect this species either directly by way of disturbance or interference with communing routes, or indirectly by way of a reduction in prey availability as a result of a diminution in water quality with resultant impacts on macroinvertebrates and fish. Having regard to the small spatial scale of the works relative to the overall size of the river and the extent of the northern embankments, along which the short-term duration of the works (c.35 weeks), I am satisfied that there would be no significant adverse impacts on commuting routes. Furthermore, the construction phase mitigation measures would protect water quality and the thus the availability of prey species in the food chain. However, I recommend that a pre-construction otter survey should be undertaken, and in the event that any holts are discovered, an NPWS Derogation Licence should be sought for their safe removal and relocation. This could be addressed by way of a planning condition.

Protected plant species:

None of the species listed in the Flora Protection Order, 2015 were recorded in the desktop studies or field surveys.

Other animal species:

Several other species have been recorded within or close to the project area in the desktop and site surveys or are expected to be present based on the availability of suitable habitat. The EIAR mitigation measures would provide protection during the construction works with no long terms adverse impacts anticipated.

Invasive plant species:

Several invasive species have been recorded in the wider area but only one within or proximate to the project area (Japanese knotweed), and an Invasive species management plan should be required along with a biodiversity condition to ensure that no new species are introduced to the area.

Conclusions:

Having regard to the foregoing, I am satisfied that the mitigation measures and recommended conditions would manage any adverse impacts on biodiversity and water quality during the construction phase, along with adherence to best construction practice and compliance with all relevant guidelines. The flood defence scheme would not have a significant long term adverse impact on biodiversity or water quality during the operational phase. I am therefore satisfied that a reasonable balance has been struck between the provision of flood defence measures and the management of predicted impacts on biodiversity and water quality within and along this section of the Lower River Suir.

5.6 Cultural Heritage

Site context:

Refer to sections 1.3 and 5.2 above for a general description of the site and environs. More specifically, the proposed linear scheme would occupy a riverside location on the N side of Waterford City and to the W of Waterford Port which date back to the early 10th Century Viking settlement. The Zone of Archaeological Potential for the Historic Town of Waterford is located c.250m to the S of the proposed development, numerous shipwrecks have been recorded in the coastal waters around Waterford Port to the E of the site, and a number of medieval landing stages have been identified along the River Suir and North Quay. There are several structures of built heritage importance in the vicinity which date from the mid-19th Century, including 3 x Protected Structure at the railway station (incl. Signal Box, Platform & Post Box) and 2 x structures listed in the NIAH (incl. the Railway Station & Edmund Rice Bridge). There are several other Protected Structures and NIAH listings in the surrounding area, along with several maritime heritage features (incl. quay walls) along N & S Quays which are not covered by any sensitive designation but date from the mid-19th Century.

Project description:

Refer to sections 2.2 and 5.2 above for a detailed description of the project. More specifically, the proposed works would comprise several elements that have the

potential to affect archaeology and cultural heritage. This includes the installation of the sheet pile flood protection walls within the River Suir, the demolition of the sections of the existing quay walls, and trenching, excavation and drainage works in the vicinity of the railway station and car park, along with minor works at Edmund Rice Bridge to install glass panels.

Environmental Impact Assessment Report:

EIAR chapters 14 and 15 dealt with Archaeology and Cultural Heritage impacts, and Architectural Heritage. Appendix 14.3 contains an Archaeological Impact Assessment and Appendix 14.5 contains Mitigation Measures. The historic development of the maritime town was described (incl. Prehistoric, Pre-Viking & Viking), and the subsequent development of the mid-19th Century railway infrastructure along the River Suir. The EIAR contains an extensive list of archaeological investigations (desktop & site specific) undertaken in and around the town, within the Zone of Archaeological Potential for the Historic Town of Waterford and at the subject site. It referred to several underwater features of interest (incl. ship wrecks) in the coastal waters around Waterford Port and acknowledged the possible presence of previously unrecorded underwater artefacts within the riverbed. The proposed works would not affect any built heritage features, and although sections of the quay walls would be demolished, they are not covered by any sensitive heritage designations. The EIAR concluded that the proposed development could give rise to significant permanent adverse impacts on below ground and underwater archaeology during construction, with no significant adverse impacts on architectural heritage during construction, following mitigation There would be no long-term impacts on cultural heritage in the operational phase. A Draft Archaeological Strategy was submitted in response to the Prescribed Bodies submissions.

Assessment:

The DAU raised concerns in relation to the impact of the proposed development on below ground and underwater riverbed archaeology, and architectural and cultural heritage along and within the River Suir. The DAU concerns are summarised in s.4.2 above. The concerns mainly relate to the adequacy of the site surveys and

subsequent assessment of the archaeological potential of the intertidal mudflats and riverbed and note that the site may contain previously unknown submerged underwater archaeology (incl. slipways, quays, weirs, fish traps, industrial structures, reclamation deposits & artefacts), as well as possible shipwrecks and the presence of medieval landing stages along the quay wall was noted. DAU also noted that the NE side of the site corresponds with the location of the former c.1793 bridge across the River Suir and that ferry landing stages may survive beneath or in the environs of Rice Bridge. It is recommended that pre-development archaeological testing of riverbed and ground works should be undertaken by way of Further Information, and that an impact assessment report prepared (incl. mitigation) in advance of any works (incl. AIA & UAIA). Alternatively, a planning condition should be attached to require archaeological monitoring of the works programme, all excavated material should be spread and metal detected to assess the artefact bearing potential, works should cease if material is found pending expert advice, and a report prepared for NMS.

The Councils response to the DAU concerns are summarised in section 4.3 above. It confirmed that it will devise a strategy with regard to underwater and terrestrial archaeology, and that it will retain the services of specialist consultants to advise on its development and implementation. A Draft Archaeological Strategy has been developed in consultation with the NMS to formulate a methodology which will cover all of the DAU observations and recommendations. The Council will engage an Underwater Archaeologist to conduct a UAIA of the riverine and foreshore elements of the project, a Terrestrial Archaeologist to conduct an AIA, and a suitably experienced specialist surveyor with expertise in the collation and generation of photogrammetrically or laser-survey based recording or a combination of both, of the quay wall. The Draft Strategy states that any resultant mitigation measures will be incorporated into the finalised design, and that sufficient time and adequate resources will be available to execute the mitigation measures in advance of the construction works.

***Archaeology*:**

The linear riverside scheme would lie c.250m to the N of the Zone of Archaeological Potential for the Historic Town of Waterford and to the E of the Waterford Port which dates back to the Viking era. Several medieval land stages were recorded along North Quay walls parallel to the River Suir and railway track. It is possible that the riverbed and surrounding lands at the railway station may also contain as yet undiscovered artefacts, including maritime shipwrecks, riparian features, and evidence of earlier river crossings in the vicinity of Rice Bridge.

The proposed site preparation, excavation and construction works have the potential to result in the permanent loss of archaeological materials along and within the River Suir, which would give rise to a significant adverse impact on cultural heritage. The Appendix 14.5 mitigation measures should be fully implemented (incl. monitoring & recording) along with the measures contained in the Draft Archaeological Strategy (DAS). A planning condition should be attached to require that all underwater riverbed and terrestrial ground works are overseen by a Project Archaeologist and are subjected to archaeological pre-testing and on-going monitoring, in line with the DAS. The riverbed dredge material should also be archeologically examined at the work compounds or other suitable locations, and all findings should be recorded.

Cultural Heritage:

The character and setting of the 3 x Protected Structure and NIAH listings at the railway station (incl. Signal Box, Platform & Post Box) and 2 x structures listed in the NIAH (incl. the Railway Station & Edmund Rice Bridge) would not be adversely affected by the proposed development. The installation of glass panels in a section of Rice Bridge (NIAH) would not have an adverse visual impact on the structure and the panels would enhance the public realm by affording clear upstream views along the River Suir from the bridge. However, it is possible that Rice Bridge occupies the position of a much older river crossing and any underwater or riverbed works (incl. drainage infrastructure) in the vicinity of the bridge should be subject to the aforementioned archaeological testing. I am satisfied that the bridge is stable and capable of withstanding the proposed installation of the glass panels without the risk of collapse or damage to the structure. I am also satisfied that the proposed works would not have an adverse impact on the character and setting of protected railway station buildings or Rice bridge.

There are several other Protected Structures and features of heritage interest located in the surrounding area, however, having regard to the scale and layout of the project and the separation distances, I am satisfied that the scheme would not adversely affect the character and setting of any other heritage features in the wider area. There are several features of maritime/riparian heritage interest located along the North Quay (incl. 19th Century quay walls) which would be affected during the construction phase of the works, although the quay walls appear to be in a very poor stage of repair. However, I am satisfied that the proposed development would not have a significant adverse impact on these heritage features.

Operational phase:

The flood protection scheme would not have any significant adverse during the operational phase.

Conclusions:

Having regard to the foregoing, although the proposed development could have a permanent adverse impact on underwater and below ground archaeology, I am satisfied that the mitigation measures and recommended condition would help manage the impacts on archaeological heritage during the construction phase. The proposed development would not have a significant long term adverse impact on cultural heritage during the operational phase. I am satisfied that a reasonable balance has been struck between the provision of flood protection measures and the treatment of cultural heritage during the construction and operational phases.

5.7 Drainage and Flood Risk

Site context:

Refer to sections 1.3 and 5.2 above for a general description of the site and environs. More specifically, the proposed linear scheme would occupy a riverside location that is characterised by a mix of transport and industrial lands along N side of the River Suir. The Suir rises to the NW of Templemore in Co. Tipperary and flows SE to Waterford where it forms a confluence with the Rivers Nore and Barrow

downstream of Waterford City before discharging to the coast via Waterford Harbour. The River Suir is tidal in the vicinity of the proposed development, the surrounding surface waters are located within the South-eastern River Basin District, and the scheme would be located within Hydrometric Area No.16 (Suir. The NW section of the proposed flood protection works would be located within the County Kilkenny administrative area.

Project description:

Refer to sections 2.2 and 5.2 above for a detailed description of the scheme. More specifically, the proposed development would mainly comprise the installation of new flood defence walls along a c.1.1km length of the River Suir along with associated drainage arrangements, outfalls and pumping stations. The Council states that the need for the Scheme is based on its analysis of existing flood events and future flood risk and the need to provide flood relief measures along the River Suir to alleviate flooding up to the 1% Annual Exceedance Probability fluvial event and the 0.5% Annual Exceedance Probability tidal/coastal flood event, to take account of climate change and storm surges.

Environmental Impact Assessment Report:

EIAR chapters 2, 3, 4 & 10 dealt with the need for the scheme, the alternatives considered, the design of the main flood defence elements & construction strategy, and hydrology. Appendix 4.1 contains an Environmental Operating Plan and Construction and Environmental Management Plan (EOP & CEMP), Appendix 10.1 contains a Specific Flood Risk Assessment, and Appendix 10.2 contains a Hydraulic Modelling Report. The EIAR carried out desktop studies and field surveys and the referenced previous OPW flood risk studies undertaken as part of PFRAMS, CFRAMS, the Waterford Flood Alleviation Scheme and the Waterford North Quays SDZ Planning Scheme, and the EPA Monitoring River Programme. The EIAR concluded that the proposed scheme will have a net significant positive impact.

Assessment:

Kilkenny County Council supports the proposed Flood Defences West Project and notes that it would have minimal impact on its area. It nonetheless raised concerns in relation to potential impacts on upstream river hydrology and habitats, the possibility of an increased risk of upstream flooding, and queried the assessment of cumulative impacts in-combination with the SDZ flood defence works. The concerns of KCC are noted (as summarised in s.4.2 above) as is the Councils response to them (as summarised in s.4.3).

Construction phase:

There is potential for flood events to occur during the construction phase, however given the small scale of the flood defence works relative to the size of the receiving waterbody, any adverse impacts on flood levels are likely to be imperceptible along North Quay. Nonetheless, all excavation and construction work, including the management of surface and ground water should be carried out in accordance with best construction practices. All drainage concerns should be addressed in the Environmental Operating Plan (EOP) Construction and Environmental Management (CEMP) and surface water and drainage management plans. The proposed flood wall installation works and drainage arrangements should comply with all relevant regulations, requirements and guidelines (incl. IFI Guidelines for in-stream works).

Operational phase:

There is potential for hard flood defences, if not properly designed, to cause a permanent disturbance to a river channel, floodplain and flood regime, by altering channel morphology, with resultant changes in flow capacity and water depth (incl. localised riverbed & riverbank erosion).

The area also lies mainly within Flood Zone A as identified in the EIAR Flood Risk Assessment (FRA), and the adjoining lands are mainly occupied by transport and industrial uses. The purpose of the flood defence scheme is to protect adjacent lands from existing and predicted floods arising from a combination of existing and future tidal and fluvial events along the River Suir. I accept the Stage 3 FRA conclusions that that the proposed flood wall will defend to a minimum design level of 4.30mOD,

which will in turn protect the adjoining lands from future flood events resulting from future flood events, arising from climate change and storm surges. I am satisfied that the flood defence works would not contribute to increased flood levels in the area.

The Hydraulic Modelling Report assessed the effects of the scheme on circulation patterns in the estuary under normal tide conditions and extreme flood events (incl. a 200-year storm surge tide & 100-year fluvial flood event). The results show a minor increase in velocity magnitude along localised sections of the flood wall on both ebb and flood flows, and a reduction in velocity locally in the vicinity of the outfall structures. The greatest increase in velocity between existing and proposed cases would occur in the spring tides along the toe of the flood wall (c. 0.075 to 0.1m/sec). This is an insignificant increase when compared with baseline velocity magnitudes, and I am satisfied that resultant impacts on erosion and sediment transport in the vicinity of the flood wall would be imperceptible and equally insignificant. The model did not identify any perceptible changes in the main river channel, and it concluded that downstream flooding would be mainly coastal as opposed to fluvial, given the proximity of the scheme to the estuary and the tidal nature of this section of the river.

Kilkenny County Council raised concerns about the assessment of in-combination impacts in relation to other flood relief projects in the area. It also queried the possibility of future upstream flooding as a result of the works, and suggested the provision of a sealed attenuation storage system as part of the new surface water drainage system, prior to discharge to the River Suir, or to alternatively carry out an assimilative capacity exercise for the river for discharges. The Council's response (as summarised in c.4.3 above) confirmed that the in-combination impacts of the proposed development and other flood relief schemes project in the area had been assessed in the EIAR, in line with relevant policy guidance (incl. OPW Guidance & Ferrybank LAP/SEA). In relation to the possibility of future upstream flooding, it is noted from the hydraulic modelling exercise that there would be no perceptible change in predicted flow velocities up or down stream as a result of the proposed scheme. The proposed flood protection arrangements (incl. drainage & pumping stations) would ensure that flooding would not occur upstream or downstream of the works, with no increase flood risk in the locality given that flooding is mainly caused by extreme high tides and storm surges. The Council confirmed that the project

would maintain existing flow paths and minor drainage catchments in the area, that it would not give rise to any additional discharge volumes or sources of pollution within the network, and that there would be adequate storage capacity in the pump station storage tanks and pipe network to attenuate flows from the discharge points into the River Suir.

As previously stated, the main purpose of the scheme is to protect transport infrastructure and public and private property from the adverse effects of existing and predicted fluvial and tidal flooding as a consequence of climate change and rising sea levels, and not to exacerbate flooding, either upstream or downstream of the works. I am also satisfied that the Scheme would be in accordance with the proper planning and sustainable development of the area.

Alternative solutions:

In relation to the consideration of alternative solutions which would encompass more environmentally friendly nature and catchment-based flood defence initiatives to managing flood risk, it is noted that such schemes tend to be more effective within small catchments which do not have multiple landowners and a complexity of uses, and that the design of the scheme has integrated SUDs principles.

Conclusions:

Having regard to the foregoing, I am satisfied that the various elements of the flood protection scheme would have positive benefits in relation to the protection of transport infrastructure and property. I am satisfied that a reasonable balance has been struck between the risks posed by future fluvial and tidal flooding as a consequence of climate change and rising sea levels and the provision of flood protection measures.

5.8 Other issues

Separate consents: The application references the relevant consents, licences authorisations and permits that may be required in addition to the consent for the proposed development from An Bord Pleanála (incl. Foreshore, National Monuments & NPWS Derogation Licences, OPW Section 50 Consent, and EPA Waste Permits).

Decommissioning: The application notes that the flood defence scheme will be a key strategic asset in the protection of Waterford Town and Railway Station from flooding, and that it will not be decommissioned in the foreseeable future.

6.0 ENVIRONMENTAL IMPACT ASSESSMENT

6.1 Introduction

This section of the report deals with the potential environmental impacts of the proposed development during the construction and operational phases of the flood defence scheme.

This section should be read in conjunction with Section 5.0 (Planning Assessment) and Section 7.0 (Appropriate Assessment of this report.

6.2 Compliance legislative requirements

Directive 2011/92/EU was amended by Directive 2014/52/EU. Waterford County Council has submitted an Environmental Impact Assessment Report (EIAR) which is presented in a 'grouped format' comprising the following:

- Non-Technical Summary
- Main Statement
- Technical Appendices
- Photomontages

It is submitted by the applicant that the EIAR has also been prepared in accordance with the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 that came into effect on 1st September 2018, and which the Board will be aware, transposed Directive 2014/52/EU into Irish planning law. As is required under Article 3(1) of the EIA Directive 2011/92/EU amended by Directive 2014/52/EU, the EIAR identifies, describes and assesses in an appropriate manner, the direct and indirect significant effects of the project on the following environmental factors: (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape and it equally considers the interaction between the factors referred to in points (a) to (d).

I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality, and that the information contained in the EIAR and supplementary information provided by the applicant, adequately identifies and describes the direct, indirect and cumulative effects of the proposed development on the environment and complies with the requirements of Directive 2011/92/EU as amended by Directive 2014/52/EU.

I am satisfied that the information contained in the EIAR complies with article 94 of the Planning and Development Regulations 2000, as amended, and the provisions of Article 5 of the EIA Directive 2014.

I have carried out an examination of the information presented by the applicant, including the EIAR, and the submissions made during the course of the application. A summary of the results of the submissions made by the prescribed bodies has been set out in Section 4.1 of this report.

The EIAR describes the proposed development, including information on the receiving environment, the site, and the project size and design. A description of the main alternatives studied by the applicant is provided and the reasons for the preferred choice. The impact of the proposed development was assessed under all the relevant headings with respect to population and human health; noise, air and climate; biodiversity; landscape; land, geology and soils; hydrology and hydrogeology; roads and traffic; material assets and cultural heritage; interactions of impacts; and the suggested mitigation measures are clearly set out within each chapter and also summarised Chapter 20.

The content and scope of the EIAR is in compliance with Planning Regulations. No likely long term significant adverse impacts were identified following mitigation.

6.3 Consideration of Reasonable Alternatives

The consideration of reasonable alternatives was considered in EIAR Section 3. This section considered the “Do-Nothing” alternative as well several other measures which culminated in the further consideration of 2 x Options (A & B) which were evaluated against a range of physical and environmental constraints (incl. railway track to N), technical, economic, social and environmental criterion. Option B was

selected as the Preferred Option as it met the Council's objective of protecting transport infrastructure and property from the existing and predicted adverse effects of fluvial and tidal flooding as a consequence of climate change, rising sea levels and storm surges. It would remove the risk of the existing quay wall from collapsing into the river and would avoid any subsequent impacts on the Lower River Suir SAC.

6.4 Likely Significant Effects

Section 5.0 of this report identifies, describes and assesses the main planning and environmental issues arising from the proposed development and it should be considered in conjunction with the following environmental impact assessment (EIA).

The EIA identifies and summarises the likely significant effects of the proposed development on the environment with respect to several key receptors in the receiving environment. It identifies the main mitigation measures and any residual impacts following the implementation of these measures together with the planning conditions recommended in section 5.0 of this report, and it reaches a conclusion with respect to each of the receptors. It assesses cumulative impacts, identifies interactions between the receptors, and considers the risks associated with major accidents and/or disasters. The EIA reaches a Reasoned Conclusion.

For ease of reference the EIA is presented in a tabular format with respect to:

- Population and Human Health
- Air and Climate
- Landscape
- Biodiversity
- Land soil and water
- Material assets
- Cultural heritage

Population and human health	
EIAR chapters 5, 6, 11, 12, 13, 16 & 18 and associated Technical Appendices dealt with: - Traffic & Transport, Population & Human Health, Landscape, Noise & Vibration, Air Quality and Material Assets, Major Accidents & Disasters; and Climate. Ch.4 contained a Construction Methodology. Appendix 4.1 contains an EOP, CEMP & CDWMP. Volume 3 contained Photomontages. The EIAR described the receiving environment and identified potential impacts on human beings, human health, local amenities and health & safety. The EIAR did not predict any significant adverse impacts on human beings, population or human health as a result of dust emissions, changes to air quality, noise & vibration, visual intrusion, traffic movements during the construction & operational phases, or climate change effects, subject to implementation of mitigation measures which mainly relate to the management of the construction phase works and associated traffic movements. The EIAR noted that positive impacts would result from the flood protection measures.	
Submissions	***Concerns raised***
KCC	Disturbance during the construction phase.
Potential impacts	***Assessment & mitigation measures***
Potential for the following impacts on human beings during the construction and operational phases of the proposed flood defence scheme. ***Residential amenity:*** potential for localised impacts on residential amenity during the construction phase.	The surrounding lands are mainly characterised by a mix of industrial, transport & commercial uses. However, there are residential uses in the wider area, including along South Quay on the opposite side of the River Suir & proposed flood defence works. Refer to section 5.3 of this report for detailed analysis of residential impacts which concluded that there would be minor disturbance during the construction phase (incl. noise, vibration, dust & traffic disruption), but no significant adverse effects on amenity by way overshadowing,

	overlooking, loss of privacy, visual intrusion, traffic generation or general disturbance during the operational phase.
Visual: potential localised visual impacts on residential & community uses & businesses during the operational phase.	Refer to section 5.2 of this report for a detailed analysis of visual impacts which concluded that there would be no significant adverse effects. Views of the proposed flood defence wall from the public domain (incl. Rice Bridge & Grattan Quay) would not be significant. Sections of the proposed flood defence wall would have an imperceptible to minor localised visual impact when viewed from residential areas along South Quay. On balance, the scheme would not be visually obtrusive or overbearing having regard to its linear nature, and the scale, height & design of the main elements.
Noise & vibration**:** potential for localised noise & vibration impacts on residential amenities, community uses & businesses from construction activities (incl. demolition, excavation, pile driving & traffic movements).	Refer to section 5.3 & 5.4 of this report for detailed analysis of construction noise impacts which concluded that there would be no significant adverse effects. Noise emissions during the construction phase would not significantly exceed the prevailing day time ambient noise levels at the nearest sensitive receptors. This would be subject to compliance with the EIAR mitigation measures (incl. ongoing noise monitoring), compliance with best construction practices and adherence to the final CEMP. The Scheme would not have any significant long-term effects during the operational phase.

Dust: potential for dust & air quality impacts during construction phase.	Refer to section 5.3 & 5.4 of this report for detailed analysis of construction dust impacts which concluded that there would be no significant adverse effects. This would be subject to compliance with the EIAR mitigation measures, compliance with best construction practices and adherence to the final CEMP. The scheme would not have any significant long-term effects during the operational phase.
Traffic: Construction traffic volumes have potential for localised air quality impacts, traffic disruption & road safety impacts.	Refer to section 5.3 & 5.4 of this report for a detailed analysis of movement & traffic impacts which concluded that there would be no significant adverse effects. The national, regional and local road network has sufficient capacity to assimilate any additional traffic volumes associated with the construction phase, and construction vehicles would not enter Waterford City Centre. This would be subject to compliance with EIAR mitigation measures (incl. traffic management), compliance with best construction practices and adherence to the final CEMP. The Scheme would not have any long-term adverse effects during the operational phase. The scheme would have a positive local impact on population and human health.
Health & safety: Potential for adverse impacts on health & safety from on-site accidents and traffic accidents during the construction phase.	On-site accident concerns would be addressed by way of compliance with all relevant health and safety legislation.

Residual Effects: There will be some increase in noise, dust, vibration & traffic emissions during the construction phase, however predicted levels would mainly lie within guidance limit values and would be subject to on-going monitoring. Residual impacts are not predicted to be significant subject to the implementation of mitigation measures & any suggested conditions.
Cumulative Impacts: Minor construction phase impacts may occur in-combination with the implementation of planning permissions for developments in the surrounding area (incl. at the SDZ lands & South Quay). No significant cumulative impacts predicted during the operational phase.
Conclusion: I have considered all the written submissions made in relation to population & human health, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Air and Climate	
EIAR chapters 5, 6, 13 & 18 and associated Technical Appendices dealt with traffic & transportation, air quality & climate, and major accidents & disasters. The EIAR described the receiving environment and identified potential impacts on air quality and climate. The EIAR did not predict any significant adverse impacts on air and climate as a result of dust, odours, emissions or traffic movements during the construction and operational phases, subject to implementation of mitigation measures.	
Submissions	***Concerns raised***
None received.	None raised.
Potential impacts	***Assessment & mitigation measures***
Dust & odours: Potential short term localised impacts on air quality resulting from dust emissions (incl. construction works & traffic) and possible minor odour emissions from localised in-stream works.	Refer to section 5.3 & 5.4 of this report for a detailed analysis of construction phase dust & odour impacts which concluded that there would be no significant adverse effects. This would be subject to compliance with the EIAR mitigation measures (incl. monitoring), compliance with best construction practices and adherence to the final CEMP. The scheme would not have any significant long-term effects during the operational phase.
Traffic emissions: Potential localised impacts on air quality (incl. particulate matter & NO_2) resulting from increased traffic volumes during construction phase.	Refer to section 5.3 & 5.4 of this report for a detailed analysis of movement & traffic impacts. The national, regional and local road network has sufficient capacity to assimilate additional traffic volumes associated with the construction phase. The proposed development would not have any significant effects on air quality during the construction phase. This would be subject to

	compliance with the EIAR mitigation measures, compliance with best construction practices and adherence to the final CEMP which should contain a Traffic Management Plan. The scheme would not have any significant long-term effects during the operational phase.
Climate: Potential for impacts on the achievement of flood protection objectives (EU, National, Regional & Local).	The proposed scheme would serve to protect transport infrastructure and property from the existing and predicted adverse effects of fluvial and tidal flooding as a consequence of climate change, rising sea levels and storm surges.
Residual Effects: There will be some increase in dust, odours & traffic related emissions during the construction phase however predicted levels would mainly lie with guidance limit values. Residual impacts are not predicted to be significant subject to the implementation of mitigation measures & any suggested conditions.	
Cumulative Impacts: Minor construction impacts may occur in-combination with the implementation of planning permissions for developments in the surrounding area (incl. at the SDZ lands & South Quay). No significant cumulative impacts predicted during the operational phase.	
Conclusion: No written submissions were made in relation to air & climate. I have considered a variety of issues and a range of potential impacts, and I am satisfied that the issues have been identified and appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.	

Landscape and Visual	
EIAR chapter 11 and associated Photomontages assessed landscape and visual effects. Baseline conditions and landscape character were described and several viewpoints were selected in the surrounding urban and riparian landscape (incl. Grattan Quay, Rice Bridge & local road network). The EIAR did not predict any significant adverse impacts on landscape or views during the construction & operational phases.	
Submissions	***Concerns raised***
None received.	None raised.
Potential impacts	***Assessment & mitigation measures***
There is potential for the following visual impacts on the landscape during the construction and operational phases of the flood defence scheme. ***Sensitive receptors***: potential for adverse visual impacts on sensitive receptors (incl. Grattan Quay, South Quay & Rice Bridge). ***Protected Structures & heritage features:*** potential for adverse visual impacts during the operational phase.	Refer to section 5.2 & 5.6 of this report for a detailed analysis of visual impacts which concluded that there would be no significant adverse visual effects. Views of the proposed flood defence wall from the public domain at Grattan Quay, South Quay and Rice Bridge would not have a significantly adverse impact on visual amenity. On balance, the flood defence scheme, which would include glass panels at Rice Roundabout and Rice Bridge, would not be visually obtrusive or overbearing having regard to its linear nature, the scale, height & design of the main elements. There would be no adverse visual impacts on the character or setting of any Protected or NIAH Structures located within the railway station lands (incl. Signal Box, Platform, Post

	Box & Railway Station), having regard to the linear nature of the scheme and to the scale, height & design of the main elements. The installation of glass panels at Edmund Rice Bridge (NIAH) would not affect the character and setting of this structure and they would enhance the amenity value of the public realm. No other heritage features in the surrounding would be adversely affected having regard to the separation distance with the linear low-lying scheme.
Residential amenity: Potential for minor localised visual impacts on nearby houses during the operational phase.	Refer to section 5.3 of this report for a detailed analysis of visual impacts on residential amenity, which concluded that there would be some imperceptible to minor visual impacts on residential amenity along South Quay but no significant adverse effects overall.
Residual Effects: Impacts predicted to be minor.	
Cumulative Impacts: None predicted.	
Conclusion: No written submissions were made in relation to landscape & visual impacts. I have considered a variety of issues and a range of potential impacts, and I am satisfied that the issues have been identified and appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.	

Biodiversity	
EIAR chapters 7, 8, 9 & 10 and associated Technical Appendices dealt with: - biodiversity, soils, hydrogeology, hydrology & water quality. Desk top studies & field surveys were undertaken, Appendix 7.1 contains an Intertidal Survey report, Appendix 10.2 contains a Hydraulic Modelling report, and an AA Screening & NIS report was prepared. The EIAR described the receiving environment as mainly comprising the tidal & estuarine river corridor along the River Suir with an industrial urban area to the N. It noted that the site is located within the Lower River Suir SAC and that the area may be of value to mobile species in the vicinity and from other further afield sensitive sites (incl. otters, birds & bats). The EIAR noted the loss of c.800sq.m. of Annex 1 intertidal habitats but did not predict any other significant adverse impacts on biodiversity during the construction and operational phases, subject to the implementation of mitigation measures to protect water quality and sensitive habitats and species from loss and disturbance.	
Submissions	***Concerns raised***
NPWS & KCC	Biodiversity & net loss of Annex 1 habitats. Impacts on mammals (incl. otter). Water quality & fisheries.
Potential impacts	***Assessment & mitigation measures***
The flood defence wall would be located with Lower River Suir SAC which forms a confluence with the River Barrow & Nore SAC to the SE. The lands mainly comprise a mix of tidal river, riparian, wetland & industrial urban habitats. Several species of mammal (incl. otter) utilise the area which is also foraged by several species of birds and bats, and the underside of Rice Bridge and the R448 could provide suitable roosting opportunities for bats.	Refer to section 5.5 of this report for detailed analysis of potential impacts on biodiversity (incl. habitats & species) which concluded that there would be no significant adverse impacts (following mitigation).

Several species of fish migrate along the river (incl. Salmon, Twaite shad and Sea, river & Brook Lampreys). There is potential for the following impacts on Biodiversity during the construction & operational phases.	
European sites: Direct & indirect connections to sensitive sites.	The proposed scheme would be located within European site (Lower River Suir SAC) and upstream of the Rivers Barrow & Nore SAC. The area could also be of value to mobile species from other further afield sites and there may be an aquatic connection to some coastal European sites to the S of the estuary. Refer to Section 7.0 of this report (AA) which concluded that there would be no adverse effects on any European sites, their Conservation objectives or Qualifying Interest habitats or during the construction or operational phases.
Habitats: Potential for permanent localised loss of and/or alteration to intertidal & terrestrial habitats (incl. intertidal, shoreline, estuarine, wetland, riparian & scrub).	The installation of the flood defence wall and associated drainage works would result in the loss of intertidal and riparian habitat. The location of the flood defence wall was amended to exclude some small areas of Annex 1 shoreline habitat (incl. Upper & Lower Salt Marsh) in the W section. The installation of the flood defence walls in the riverbed c.1m to the fore of the existing

	quay wall would result in the permanent loss of c.800sq.m. of Annex 1 intertidal Mudflat habitat. Although the loss of this habitat would be permanent, the impact would be localised with no significant adverse impacts at national level. Any resultant adverse impacts on SAC QI fish species as a result of support habitat would be minor and negligible. According to the Intertidal Survey report the riverbed does not support a wide variety of macroinvertebrates, and the Hydraulic Modelling report concluded that the flood defence walls would not have a discernible impact on flow patterns or give rise to erosion of the riverbed. Subject to the implementation of the EIAR mitigation measures, adherence to best construction practice, and the future provision of compensatory intertidal habitat (in consultation with NPWS), the long-term impact would not be significant during the operational phase. Having regard to the linear nature of the scheme and the small scale of the works, any impacts would be minor relative to the overall scale and extent of the river and northern embankment. Several other habitats would be permanently lost or altered but given their lack of sensitivity, the long-term impact would not be significant.

Flora: Potential for permanent localised loss of species during construction phase.	Construction of the flood defence walls and associated drainage works would result in the localised loss of several non-designated plant species but given their lack of sensitivity, the overall impact would not be significant.
Fauna: Potential for disturbance to several terrestrial animal species (incl. otter, birds & bats) during the construction & operational phases.	Several species of animal would be disturbed during the construction phase (incl. otter, birds & bats) as a result of the site clearance and construction works, including the removal of riverbed habitats and constituent species (macroinvertebrates). An NPWS Derogation licences will be required for the removal of otter holts and bat roosts. There is evidence of commuting ***Otter*** along the River Suir although no holts were recorded. A pre-construction survey should be undertaken and an NPWS Derogation licence will be required for the removal of any holts. Notwithstanding the disturbance during the construction phase, otter will eventually return and habituate in the operational phase, with no long-term adverse impacts anticipated. Several species of ***bird*** (incl. wintering waterbirds & passerines) frequent River Suir and environs and vegetation clearance should take place outside of the bird nesting season. Most species will eventually return and habituate to activity in the long term during the operational phase, with no adverse impacts anticipated.

	Foraging and commuting ***bats*** could be adversely affected by the removal of riverbank vegetation and intertidal riverbed habitats and their constituent macroinvertebrate prey species. They could also be adversely affected by artificial lighting during the night-time construction phase, particularly at Rice Bridge and the R448 overpass where there may be suitable roosting opportunities. A pre-construction survey should be undertaken and an NPWS Derogation licence will be required for the removal of any roosts. Artificial lighting should be minimised during the construction phase, and bat boxes and/or tubes should be provided along the flood defence wall. Most bat species will eventually return and habituate to activity in the long term during the operational phase, with no adverse impacts anticipated.
Aquatic species: Potential for loss, disturbance or damage to fish during the construction phase resulting from in-stream works (incl. flood defence wall & associated drainage works); deterioration in water quality (incl. sedimentation, spillages & runoff), construction noise at the flood defence walls (incl. demolition & pile driving), artificial lighting during night time	The River Suir forms a confluence with the Rivers Barrow & Nore to the SE which then discharge S into the Irish Sea. EPA/WFD have categorised water quality in this section of the river as ranging between Poor and Moderate, and the waterbody is At Risk. According to Intertidal Survey report, this section of the river does not contain a wide variety of ***macroinvertebrates,*** or particularly good breeding or spawning habitat for ***fish.*** However, it does provide a migratory route for

works, and the barriers to fish migration.	several fish species (incl. Salmon, Twaite shad, and Sea, Brook & River Lampreys,) which are QI species for the Lower River Suir SAC, and the riverbed embankments provide a food source and shelter for fish during their various life cycle stages. Implementation of EIAR and CEMP mitigation measures for in-stream works and the associated drainage arrangements, adherence to relevant legislation & guidelines (incl. IFI Guidance), and the use of best construction practices, would protect water quality, aquatic species, fisheries & their food sources during the construction phase. No adverse impacts ae anticipated during the operational phase. Concerns in relation to the impact of demolition, construction and plie driving noise & vibration (particularly on Twaite shad) would be addressed by the EIAR and final CEMP mitigation measures, and the recommended planning condition (incl. soft start & ramping up of machinery, vibrating hammer & bubble curtains around work sites). Fish migration in the river channel would be unhindered during localised in-stream works, which would not affect river flows, or existing and future hydraulic conditions within the river to any significant extent.

	The proposed scheme would not have any significant long-term adverse effects on aquatic species during the operational phase.
Residual Effects: Impacts predicted to be minor subject to implementation of mitigation measures and any recommended planning conditions.	
Cumulative Impacts: Minor construction impacts may occur in-combination with the implementation of planning permissions for developments in the surrounding area (incl. at the SDZ lands and associated flood defence works & along the Quays). No significant cumulative impacts predicted during the operational phase.	
Conclusion: I have considered all the written submissions made in relation to biodiversity, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.	

Land, soil and water	
EIAR chapters 8, 9 & 10 and associated Technical Appendices dealt with soils & geology, hydrogeology and hydrology. Ch.4 (Project Description) contains a Construction Methodology and Appendix 4.1 contains an Environmental Operating Plan (Incl. CEMP & CDWMP). Appendix 7.1 contains an Intertidal Survey report and Appendix 10.2 contains a Hydraulic Modelling report. The EIAR described the receiving environment, and several desktop studies, field surveys & ground investigation tests were undertaken. The low-lying linear site mainly comprises a mix of riparian, tidal, wetland & industrial urban lands underlain by a variety of bedrock types (slates, shales & siltstones) and bedrock aquifer types (mainly low permeability except in localised zones). EPA water quality results for this section of the river (Middle Suir Estuary Transitional Waterbody) are not good. The WFD status was classified as "Poor" (2010-2018) and "At Risk" in 2020, whilst the overall WFD status of the downstream Estuary ranged from "Moderate" to "Good". Terrestrial & riverbed sediments which were found not to contain any hazardous materials during environmental testing. The EIAR described the site preparation, quay wall demolition and trench excavation work, along with the installation of the flood defence wall and associated drainage arrangements. It identified potential impacts (incl. sediment release during in-stream works, accidental sediment & chemical discharges to ground & surface water during the construction phase, possible hydraulic changes to flow patterns, and contaminated surface water run-off during the operational phase). The EIAR did not predict any significant adverse impacts on land, soil or water during the construction and operational phases, subject to implementation of mitigation measures related to the management of in-stream works and surface water drainage.	
Submissions	***Concerns raised***
KCC	Surface & round water quality. Drainage arrangements & flood risk.
Potential impacts	***Assessment & mitigation measures***
The linear site mainly comprises a mix of riparian, tidal, wetland & industrial urban lands that drain to the River Suir, upstream of its	Refer to section 5.5 & 5.7 of this report for detailed analysis of land soil & water impacts which concluded that there would be no significant adverse effects (following mitigation).

confluence with the Rivers Barrow & Nore to the SE, and hence the Irish Sea to the S. There is potential for the following impacts on land, soil & water in relation to the works associated with the construction & operation of the proposed scheme.	
Water quality: Potential pollution of ground & surface waters (incl. River Suir) by sediments & contaminants released during the demolition, excavation and in-stream flood wall installation works during the construction phase, and by accidental fuel spillages or leaks during the construction and operational phases.	The EIAR contains a suite of mitigation measures to protect ground and surface water quality during the site preparation, demolition, excavation & in-stream works and associated trenching and drainage, from contamination by sediments, historic substances and chemical spills during the construction & operational phases. Implementation of the EIAR and final CEMP mitigation measures, along with adherence to best construction practices, and compliance with all relevant legislation & regulations (incl. IFI Guidelines for in-stream works) would protect water quality during the construction phase. The proposed scheme would not have any significant long-term adverse effects during the operational phase.
Hydraulic changes: Potential for changes to river flow patterns resulting from the new flood defence wall and associated impacts on erosion patterns & riverbed morphology	Hydrodynamic Modelling did not predict any significant erosion or disturbance to riverbed sediments, or any significant changes to river flow patterns or riverbed morphology as a result of the installation of the flood defence wall.

Flood risk: Possible potential impacts resulting from uncontrolled surface water runoff and build-up behind the flood defence walls at North Quay.	These issues are addressed in details in section 5.7 above. No adverse flood risk impacts are anticipated given that the purpose of the scheme is to protect against the harmful effects of existing and future fluvial and tidal flooding.
Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of mitigation measures.	
Cumulative Impacts: Minor construction impacts may occur in-combination with the implementation of planning permissions for developments in the surrounding area (incl. at the SDZ lands and flood defence works at North Quay and along South Quay). No significant cumulative impacts predicted during the operational phase.	
Conclusion: I have considered all the written submissions made in relation to land, soil & water, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.	

Material assets	
EIAR chapter 5 & 16 and associated Technical Appendices dealt with traffic, transport and material assets (incl. access, power supply, telecommunications, water supply & wastewater management). The EIAR described the receiving environment (incl. the road network, access arrangements and railway operations) and several desktop studies and traffic surveys were undertaken. The EIAR described the site as comprising a mix of riparian and urban lands (incl. industrial & transportation) located within an area zoned for a variety of urban uses. It described the proposed movement, access and service arrangements to the main elements of the scheme and the 2 x site compounds. It stated that the works would take place over a period of c.35 weeks, and it predicted minor localised traffic impacts (incl. at Rice Roundabout) and noted that construction vehicles would not enter Waterford City Centre. The EIAR did not predict any significant adverse impacts on material assets during the construction phase, subject to implementation of mitigation measures, nor during the operational phase.	
Submissions	***Concerns raised***
None received.	None raised.
Potential impacts	***Assessment & mitigation measures***
Traffic: Potential for localised impacts on the rail and road network & traffic safety during the construction phase.	Refer to section 5.4 of this report for a detailed analysis of traffic & movement impacts which concluded that there would be no significant adverse impacts on traffic movement or safety during the construction and operational phases. The national, regional & local road network has sufficient capacity to assimilate any additional construction traffic volumes associated with the construction phase. Minor impacts on train timetables would be short term and temporary.
Water supply & drainage: Potential impacts on environmental services related to	Refer to section 5.7 of this report and section 6.4 (Land, soil & water) above for an analysis of water supply & drainage impacts. The proposed

the provision of clean water and disposal of unclean water from the site (incl. wastewater & storm water), and resultant impacts on water quality because of uncontained and unmanaged discharges.	drainage arrangements system (incl. pumping stations) would manage discharge volumes, prevent flooding & protect downstream water quality. Section 6.4 (Land, Soil & Water) above concluded that the proposed development would not have significant impact on surface & ground or ground water and would not give rise to a flood risk.
***Public water supply*:** potential adverse impacts on future connections to adjacent lands.	These concerns would be addressed by ensuring compliance with standard IW & WCC requirements, and during the detailed design stage of the project.
Water sports, fisheries, & tourism: potential localised adverse impacts on water sport activities, angling & tourism.	Short term disturbance to water sports, tourists & angling predicted during the construction phase but no long terms adverse effects during the operational phase. The EIAR drainage and surface water management arrangements would ensure that water quality is protected with no resultant adverse effects on fisheries anticipated.
Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of mitigation measures and compliance with any recommended conditions.	
Cumulative Impacts: Minor construction impacts may occur in-combination with the implementation of planning permissions for developments in the surrounding area (incl. at SDZ lands & flood defence works at North Quay and along South Quay). No significant cumulative impacts predicted during the operational phase.	
Conclusion: I have considered all the written submissions made in relation to material assets, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.	

Cultural heritage	
EIAR chapters 11, 14 & 15 and associated Technical Appendices dealt with Landscape & Visual impacts, Archaeology, Cultural & Architectural Heritage. The EIAR described the receiving environment as mainly comprising a mix of riparian and urban lands (incl. industrial & transportation) located within an area zoned for a variety of urban uses. It described Waterford's underlying archaeological heritage. The Zone of Archaeological Potential for the Historic Town of Waterford is located c.250m to the S of the site, numerous shipwrecks have been recorded in the coastal waters around Waterford Port to the E, and several medieval landing stages have been identified along the River Suir and North Quay. There are several mid-19th Century railway structures of built heritage importance in the vicinity including 3 x Protected Structure (Signal Box, Platform & Post Box) and 2 x NIAH structures (Railway Station & Edmund Rice Bridge). There are several other Protected Structures and NIAH listings in the surrounding area, along with several non-designated maritime heritage features (incl. mid-19th Century quay walls). The EIAR described the proposed Scheme and identified potential impacts on cultural heritage. It did not predict any significant adverse impacts during the construction phase, subject to implementation of mitigation measures (incl. archaeological pre-testing, monitoring & recording) and retention of maritime features. The EIAR did not predict any significant adverse impacts on Recorded Monuments or Protected Structures.	
Submissions	***Concerns raised***
DAU	General cultural heritage. Underwater & terrestrial archaeology. Maritime & quayside heritage.
Potential impacts	***Assessment & mitigation measures***
There is potential for the following impacts on cultural heritage in relation to the construction & operational phases of the proposal.	Refer to section 5.6 of this report for detailed analysis of archaeology & cultural heritage impacts which concluded that there would be no significant adverse effects (post mitigation).

Archaeology: Potential impacts on recorded and as yet undiscovered artefacts within in River Suir and environs.	It is possible that the riverbed may contain as yet undiscovered maritime artefacts and river dredge material should be transported to one of the work compounds (or another suitable location) for archaeological examination. Groundworks should be monitored during the site preparation and construction phase, and any discoveries recorded and preserved by record. Notwithstanding these measures, the proposed scheme could have a permanent adverse impact on archaeological heritage along and within the within the River Suir and environs. The Council has committed to undertaking underwater and terrestrial surveys prior to the works commencing, in line with the Draft Archaeological Strategy.
Heritage features: Potential impacts on character & setting of several Protected & NIAH Structures, and other heritage features in the area.	There would be no adverse impacts on the character or setting of any Protected or NIAH Structures located within the railway station lands (incl. Signal Box, Platform, Post Box & Railway Station), having regard to the linear nature of the scheme and to the scale, height & design of the main elements. The installation of glass panels at Edmund Rice Bridge (NIAH) would not affect the character and setting of this structure and they would enhance the amenity value of the public realm. No other heritage features in the surrounding would be adversely affected having regard to the separation distance with the linear low-lying scheme.

	Although the Mid-19th Century North Quay walls would be significantly altered by the proposed works (demolition, heighted or obscured), it is noted that some sections are in a very poor state of repair and are at risk of collapse into the River Suir.
Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of mitigation measures and compliance with any recommended planning conditions.	
Cumulative Impacts: Minor construction impacts may occur in-combination with the implementation of planning permissions for developments in the surrounding area (incl. at the SDZ lands and flood defence works at North Quay & along South Quay). No significant cumulative impacts predicted during the operational phase.	
Conclusion: I have considered all the written submissions made in relation to cultural heritage, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.	

6.12 Cumulative Impacts

Several projects are either permitted or being progressed in the wider area. This includes the adjacent SDZ lands along North Quay which include transportation and flood protection schemes, and the potential in-combination impacts of these works have been addressed in the EIAR. Having regard to the nature and scale of the permitted and proposed projects, and the predicted short duration of the proposed flood protection works, I am satisfied that cumulative effects can be avoided, managed and mitigated by the embedded measures which form part of the proposed development, mitigations measures, and recommended conditions. There is, therefore, nothing to prevent the granting of approval on the grounds of cumulative effects.

6.13 Interactions and Interrelationships

I have also considered the interrelationships between the key receptors and whether this might as a whole affect the environment, even though the effects may be acceptable when considered on an individual basis. In particular, the potential arises for the following interactions and interrelationships.

Population and human health:

- Noise, dust & odours
- Air quality and climate
- Landscape and visual amenity
- Material Assets (fishing)
- Roads and traffic (air quality, safety & disturbance)

Air & climate

- Noise, dust & odours
- Roads and traffic (emissions)
- Population and Human Health

Landscape

- Population and Human Health (visual amenity)
- Material Assets and Cultural Heritage (tourism & recreation)

Biodiversity:

- Hydrology (water quality & fisheries)
- Population and human health (water quality)
- Material assets (recreation, water sports, angling & tourism)
- Landscape (visual amenity)
- Soils and geology (protected species & water quality)
- Land (landscape character)

Land, Soil and water:

- Air quality
- Biodiversity (terrestrial & aquatic)
- Population & Human Health

Material Assets and Cultural Heritage:

- Population & human health
- Landscape (visual amenity & landscape character)
- Roads and traffic (disturbance & safety)

In conclusion, I am satisfied that any such impacts can be avoided, managed and mitigated by the measures which form part of the proposed development and the aforementioned conditions, as recommended in section 5.0 above.

6.14 Risks associated with major accidents and/or disasters

No outstanding risks associated with major accidents or disasters identified and the potential impacts associated with climate change have been factored into most sections of the EIAR.

6.15 Reasoned Conclusion

Having regard to the examination of environmental information contained above, and in particular to the EIAR and the submissions from the prescribed bodies and observers in the course of the application, it is considered that the main significant direct and indirect effects of the proposed development on the environment have been identified in section 5.0 and section 6.0 of this report. It is considered that the main significant direct and indirect impacts of the proposal on the environment are as follows.

- ***Biodiversity impacts*** arising from proximity to sensitive habitats, foraging corridors and migratory routes, loss or fragmentation of Annex 1 habitat, changes to vegetation along the route, and general disturbance during the construction phase. These impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan and the implementation of mitigation measures and recommended conditions which include: - pre-construction surveys (for bats & otter); in-stream works and surface water management measures; management of pile-driving noise and vibrations; future provision of replacement Annex 1 habitat, an Invasive Species Management Plan; and the appointment of a Project Ecologist.

- The ***risk of pollution of ground and surface waters during the construction phase*** through a lack of control of surface water during excavation and construction, the mobilisation of sediments and other materials during excavation and construction and the necessity to undertake construction activities within an existing watercourse (incl. the installation of the flood defence wall). The construction of the proposed development could also potentially impact negatively on ground and surface waters by way of contamination through accidents and spillages. These impacts would be mitigated by the agreement of measures within the Construction and Environment Management Plan, and the implementation of mitigation measures and recommended conditions related to: - design and avoidance,

management of in-stream works, management of accidental spills and contamination and drainage management.

- The proposed project would give rise to an impact on as yet undiscovered ***underwater and terrestrial archaeology*** during the construction phase. These impacts would be mitigated by the implementation of measures related to the protection of cultural heritage and the additional measures contained in the Draft Archaeological Strategy.

- The proposed project would give rise to an increase in ***vehicle movements and resulting traffic impacts*** during the construction phase where the vehicles would interact directly and indirectly with several roads and junctions. The construction phase impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan and the implementation of mitigation measures and recommended conditions (incl. the preparation of a Traffic Management Plan).

- The project could give rise to minor localised impacts on ***residential amenity*** during the construction phase (incl. noise, dust, odours, traffic safety & general disturbance). These impacts would be mitigated by the implementation of measures related to the protection of air quality, control of noise and traffic management.

- The proposed development would have ***potentially significant positive environmental impacts*** for Waterford City and environs during the operational phase by the provision of a flood defence system along the river.

In ***conclusion***, having regard to the above identified significant effects, I am satisfied that the proposed development would not have any unacceptable direct or indirect impacts on the environment, subject to the implementation of the mitigation measures and any conditions recommended in section 5.0 of this report.

7.0 APPROPRIATE ASSESSMENT

7.1 Compliance with Articles 6(3) of the EU Habitats Directive

The Habitats Directive deals with the Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union. Article 6(3) of this Directive requires that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. The competent authority must be satisfied that the proposal will not adversely affect the integrity of the European site.

7.2 Natura Impact Statement

The application was accompanied by a Natura Impact Statement report which contained a Stage 1 Appropriate Assessment (AA) Screening report and a Stage 2 Natura Impact Statement (NIS). The reports described the site, the receiving environment and the proposed development. They utilised the data collected as part of the EIAR desktop studies (incl. NPWS & IFI datasets for habitats & species, and WFD, EPA & GSI ground & surface water quality data) and specific field surveys (incl. habitats, plant species, otter, birds, bats & intertidal).

The AA Screening report described the site and the characteristics of the proposed development, it summarised the legislative requirements and described the AA screening methodology. It identified 2 x European sites within of the Likely Zone of Impact (Lower River Suir SAC and River Barrow & River Nore SAC), described the likely sources of impact, and concluded that the project had the potential to affect the Conservation Objectives on these European Sites.

The NIS assessed the likely significant effects on the Conservation Objectives for the 2 x European sites which were retained after AA screening (Lower River Suir SAC and River Barrow & River Nore SAC).

The ***NIS described*** the individual elements of the project with potential to give rise to effects on these European Sites (incl. their Conservation Objectives & Qualifying Interests). It described any likely direct, indirect or secondary effects on the European Sites along with in-combination effects, and it assessed the significance of any effects. It identified the potential for direct and indirect effects on the European sites and their Conservation Objectives during the construction and operational phases. It concluded that the proposed development had the potential to adversely affect several Qualifying Interest habitats and species, and it outlined a range of mitigation measures (incl. water quality protection measures) and assessed the likelihood of residual effects following mitigation. It also assessed the potential for cumulative effects in-combination with other plans and projects in the area (incl. North Quays SDZ). The NIS was informed by the Stage 1 AA Screening exercise, Ecological, Habitat, Intertidal Survey and Hydraulic Modelling reports, a CEMP and the relevant EIAR Chapters.

The ***NIS objectively concluded*** that the Board should determine that, given the full and proper implementation of the mitigation measures prescribed in the NIS, the proposed development, does not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European Site, either individually or in combination with other plans and projects, will not adversely affect the integrity of the Lower River Suir SAC, the River Barrow and River Nore SAC or any other European site.

Having reviewed the NIS and supporting documentation, I am satisfied that it provides adequate information in respect of the baseline conditions, does clearly identify the potential impacts, and does use best scientific information and knowledge, and details of mitigation measures are provided. I am satisfied that the information is sufficient to allow for the appropriate assessment of the proposed development, subject to the further consideration of European sites located within an enlarged Zone of Influence (further analysis below).

7.3 AA Screening Assessment

The main issues related to ecology and the concerns raised by the Prescribed Bodies are summarised and addressed in section 4.0 of this report, section 5.5 deals with Biodiversity and section 6.0 contains an environmental impact assessment (Biodiversity). These sections should be read in conjunction with this assessment.

The European sites within the Zone of Influence (i.e the area over which an impact can have a potential effect in relation to proximity of European sites and the mobility of faunal species from further afield sites) of the proposed works and approximate separation distances are set out below. The proposed development would be located within a European site however it is not relevant to the maintenance of this or any other any such sites. There are 2 x European sites located within the Zone of Influence (Lower River Suir SAC & River Barrow & River Nore SAC). The Qualifying Interests habitats and species, and approximate aquatic separation distances from the project site to these European sites are listed below.

European site	Site code	Qualifying Interests (QIs)	Distance
Lower River Suir SAC	002137	Atlantic & Mediterranean salt meadows Floating River / Ranunculion Vegetation Tall herb fringe communities Old sessile oak & Alluvial forests Freshwater Pearl Mussel White-clawed Crayfish Sea, Brook & River Lamprey Twaite Shad & Salmon Otter	0m (within river)
River Barrow & River Nore SAC	002162	Estuaries & Reefs Mudflats & sandflats Salicornia & other annuals Atlantic & Mediterranean salt meadows Floating River Vegetation European dry heaths	c.9km (aquatic)

		Tall herb fringe communities Petrifying springs Old sessile oak woods Alluvial forests Desmoulin's Whorl Snail Freshwater Pearl Mussel & Nore Pearl Mussel White-clawed Crayfish Sea, Brook & River Lamprey Twaite Shad & Salmon Otter & Killarney Fern	

The potential effects relate to:

- In-situ impacts on qualifying interest species within the European sites:
    - Release & transport of pollutants in ground or surface water.
    - Loss habitats used by QI species.
    - Loss of foraging & commuting areas used by QI species.
    - Noise disturbance to QI species during construction.

- Ex-situ impacts on qualifying species outside the European sites but which are an integral and connected part of the population.

Based on my examination of the NIS report and supporting information (incl. the desktop studies & field surveys), NPWS website, NPWS and KCC submissions, aerial and satellite imagery, the scale of the proposed works and nature of the likely effects, the substantial separation distance and functional relationship between the proposed works and the European sites and their conservation objectives, the site specific characteristics, the species specific characteristics and requirements (incl. habitat preference, diet & foraging distances), and the absence of suitable support habitats or an aquatic connection between the European site and the proposed works, taken in conjunction with my own assessment of the subject site and surrounding area, I conclude that a Stage 2 Appropriate Assessment is required for

the following 2 x European sites which I consider to be within the Zone of Influence by reason of mobile and/or aquatic connections.

- Lower River Suir SAC
- River Barrow & River Nore SAC

AA Screening Conclusion

In conclusion, having regard to the nature and scale of the proposed development, the location of the project within and proximate to the European sites, to the nature of the qualifying interest habitats and species, and the conservation objectives of the European sites, and to the available information as presented in the EIAR regarding ground and surface water pathways and mobile connections between the project and the European sites, and other information available, it is my opinion that the proposed development has the potential to affect the Lower River Suir and River Barrow & River Nore European sites having regard to the conservation objectives of the sites, and that progression to a Stage 2 Appropriate Assessment is required.

7.4 Appropriate Assessment:

The details for the remaining European sites within the Zone of Influence of the proposed development, their Conservation Objectives and relevant Qualifying Interest habitats and species are summarised below.

Site name	QIs	Conservation Objectives
Lower River Suir SAC	Atlantic & Mediterranean salt meadows. Floating River Vegetation, Tall herb fringe communities, Old sessile oak & Alluvial forests. Freshwater Pearl Mussel, White-clawed Crayfish. Sea, Brook & River Lamprey, Twaite Shad & Salmon Otter	To maintain or restore the favourable conservation condition of the habitat(s) and/or the species for which the SAC has been selected.
River Barrow & River Nore SAC	Estuaries & Reefs, Mudflats & sandflats, Salicornia & other	To maintain or restore the favourable conservation condition of the habitat(s) and/or the species

	annuals, Atlantic & Mediterranean salt meadows. Floating River Vegetation, European dry heaths, Tall herb fringe communities, Petrifying springs, Old sessile oak woods, Alluvial forests. Desmoulin's Whorl Snail, Freshwater Pearl Mussel & Nore Pearl Mussel, White-clawed Crayfish. Sea, Brook & River Lamprey, Twaite Shad & Salmon. Otter & Killarney Fern	for which the SAC has been selected.

Favourable Conservation Status is achieved when:

1. Habitats

- The natural range (and area covered) is stable or increasing.
- The specific structure and functions which are necessary for its long-term maintenance exist now and for the foreseeable future.
- The conservation status of its typical species is favourable.

2. Species

- Population dynamics data indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Lower River Suir SAC:

The proposed flood defence scheme would be located within and adjacent to this European site.

European site description:

This SAC consists of the freshwater stretches of the River Suir immediately S of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately E of Waterford, and it is designated for a variety of habitats and species.

Qualifying Interest habitats and species:

This SAC is designated for its importance to a wide variety of terrestrial and aquatic habitats (incl. riparian, vegetation & coastal), along with one species of mammal (Otter), several species of fish (incl. Salmon, Twaite shad & Lampreys), and 2 x freshwater invertebrate species (incl. pearl mussel & crayfish). The full list of QI habitats and species is set out in the table above.

It is noted from the NPWS documentation and maps (nos. 4, 5, 6 & 7) that several of the QI terrestrial and freshwater habitats and species are located upstream of the flood defence scheme which would occupy a tidal section of the River Suir, and they will not be included for further consideration (Floating River Vegetation, Old sessile oak, Freshwater Pearl Mussel & White-clawed Crayfish). The remaining QI habitats and species and their main Attributes and Targets are summarised below:

Relevant QIs	Attributes & Targets
Atlantic & Mediterranean salt meadows	Habitat area (stable or increasing); Habitat distribution (no decline); Physical structure (maintain sediment supply, creeks/ pans & tidal flooding regime); Vegetation structure (maintain range of habitats, sward height & cover); and Vegetation Composition (maintain range of species & no increase in negative species indicators).
Tall herb fringe communities	Habitat distribution (no decline); Habitat area (stable); Hydrological regime (maintained); Vegetation structure (sward height); Vegetation composition (broadleaf herb: grass ratio); Vegetation composition (typical species & negative species indicator).
Alluvial forests	Habitat area (stable or increasing); Habitat distribution (no decline); Woodland size (stable or increasing); Woodland Structure (maintain cover, diversity & regeneration); Hydrological Regime (maintain flood depth); Woodland Structure (no decline); Vegetation Composition (maintain range of species & no increase in negative species indicators).

Sea, Brook & River Lamprey	Distribution; Population structure of juveniles; Juvenile density in fine sediment; Extent and distribution of spawning habitat; Availability of juvenile habitat.
Twaite Shad	Distribution (extent of anadromy); Population structure (age classes); Extent and distribution of spawning habitat (no decline); Water quality (oxygen levels); Spawning habitat quality: Filamentous algae; macrophytes; sediment (stable).
Salmon	Distribution; Adult spawning fish; Salmon fry abundance; Out-migrating smolt abundance; Number and distribution of redds; Water quality
Otter	No significant decline in: - Distribution, Extent of terrestrial & freshwater habitats, couching sites & holts, Availability of fish biomass & Connectivity.

Potential direct and indirect effects: The proposed development would be located within a European site however it is not relevant to the maintenance of any European sites. There is potential for direct and indirect effects having regard to the location and scale of the proposed development within and adjacent to the northern embankment of the River Suir at North Quay. There is potential for direct and indirect effects on several of the QI habitats and species during the ***construction phase*** as a result of:- the loss of c.800sq.m. of non-QI Mudflat habitat which could affect the availability of prey species for the QI fish species; and water pollution from the unmitigated release of fine sediments and contaminated river dredge during construction works and hydrocarbons by way of accidental spillages from machinery, which could give rise to water pollution in the River Suir, chemical contamination and clogging of fish gills, with resultant impacts on the availability of prey biomass for the QI species Otter. Further potential direct and indirect effects relate to the loss of or disturbance to saltmarsh habitat and riparian vegetation within and along the river banks. The uncontrolled introduction of invasive species from works vehicles could give rise to the colonisation of habitats by invasive species, with resultant impacts on the attributes and targets for the QI species, in the absence of mitigation. There is no potential for any additional significant direct or indirect adverse effects during the ***operational phase*** when the works are complete as the hydraulic regime and riverbed morphology would be unaffected by the small scale of flood defence wall relative to the size and extent of the watercourse.

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Mitigation measures: The NIS mitigation measures which would serve to protect the SAC and its QI habitats and species from adverse effects, include: -

- Preparation of a CEMP
- Preparation of an Invasive Species Management Plan
- Erection of buffer zones
- Timing & seasonality of works.
- Appointment of Ecological Clerk of Works
- Adherence to best construction practices
- Compliance with relevant legislation & guidance
- Surface water management measures to protect water quality including:
    - regular surface water monitoring,
    - no concrete mixing, refuelling or washing out on site,
    - waste management plan & off-site waste disposal,
    - protection of watercourses from contamination.

Atlantic & Mediterranean salt meadows: the NPWS Site Synopsis and Maps (no.3) note the potential presence of Atlantic salt meadows habitat along the North Quays in the vicinity of the western section of the proposed flood defence scheme, and the presence Atlantic and Mediterranean salt meadow habitats at various locations downstream of the works between Rice Bridge and Little Island (c.4km) within the Lower River Suir SAC. The proposed flood defence scheme was designed to avoid these QI habitats and there would be no loss of fragmentation. Having regard to the nature and scale the proposed development and the avoidance of these habitats, I am satisfied that following the implementation of the mitigation measures and any recommended conditions (incl. the management of sediments & accidental spills, and the control of invasive species) the proposed works would not have an adverse impact on water quality in the Lower River Suir SAC or introduce invasive species to the watercourses during any of the works. There would be no resultant adverse effects on these QI habitats with respect to their attributes and targets (incl. Habitat area, Habitat distribution, Physical structure, Vegetation structure, or Vegetation Composition).

Tall herb fringe communities & Alluvial forests: The NPWS Site Synopsis notes that these habitats are present throughout the river systems within the Lower River Suir SAC. Having regard to the nature and scale of the proposed development and following the implementation of the mitigation measures and any recommended conditions (incl. the management of sediments & accidental spills, and invasive species control) the proposed works would not have an adverse impact on water quality in the Lower River Suir SAC, or introduce invasive species to the watercourse during any of the works. There would be no resultant adverse effects on these QI habitats with respect to their attributes and targets (incl. Habitat area, Habitat distribution, Vegetation and Woodland structure & composition, Hydrological regime, and negative species indicators).

Fisheries: The site and environs drain to the River Suir which forms part of the Lower River Suir SAC, and several species of fish (incl. Salmon, Shad, and Sea, River & Brook Lamprey) have been recorded in the river and its tributaries during their various lifecycle stages. Any deterioration of biological or chemical water quality or smothering of the riverbed substratum because of siltation, accidental fuel spills or poorly managed in-stream works could have adverse resultant impacts on the QI fish species, by affecting spawning grounds, food availability (incl. macro-invertebrates & macrophytes) and health (incl. clogging of fish gills). However, I am satisfied that following the implementation of the mitigation measures and any recommended conditions (incl. the management of sediments & accidental spills, ongoing water quality monitoring and the invasive species control), the proposed scheme would not have an adverse impact on fisheries in the Lower River Suir SAC. There would be no resultant adverse effects on these QI species with respect to their attributes and targets (incl. Distribution, Population structure & density, Extent and distribution of spawning habitat, Availability of juvenile habitat, & Water quality).

Otter: Otter has been recorded commuting and foraging along the River Suir and the EIAR survey results indicate that otter may commute along this section of the watercourse. Although no holts were identified a preconstruction survey should be undertaken. Otter has the potential to be temporarily disturbed during the construction phase however the flood defence scheme would not introduce a barrier to movement along the river. Any deterioration of water quality because of the

proposed works and resultant impacts on the availability of fish biomass for Otter could have an adverse impact on this QI species. However, I am satisfied that following the implementation of the mitigation measures (incl. the measures to protect water quality & hence the availability of prey species) the proposed development would not have an adverse impact on Otter during the construction and operational phases. Therefore, there would be no resultant adverse effects on this QI species respect to its attributes and targets (incl. Distribution, Extent of terrestrial & freshwater habitats, Couching sites & holts, and availability of fish biomass or Connectivity).

Potential in-combination effects: Potential direct and indirect in-combination effects relate to damage to QI habitats and species because of accidental spillages and sediment run off during the works, and the accidental introduction of invasive species by construction vehicles. This could give rise to pollution, contamination and/or colonisation with resultant impacts on water quality, fisheries, and the availability of prey species for Otter, having regard to the various plans or projects in wider area (incl. the adjacent SDZ lands & flood defence works) in the absence of mitigation. However, having regard to the implementation of the aforementioned mitigation measures and recommended conditions (see below), I am satisfied that there would be no adverse cumulative effects on this European site or its QI habitats and species.

Suggested conditions: Compliance with IFI "Guidelines on protection of fisheries during construction works in and adjacent to waters" should be required. A Project Ecologist should be appointed to oversee the works. Pre-construction Otter surveys should be undertaken. All plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.

Conclusion: I am satisfied that the proposed development individually or in combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures and planning conditions outlined above.

River Barrow & River Nore SAC

This European site lies within the Zone of Influence of the proposed works as it has a direct aquatic connection to the site via a downstream confluence with the River Suir.

European site description:

This site consist of the freshwater stretches of the Barrow and Nore River catchments. The River Barrow & River Nore SAC extends from the Slieve Bloom Mountains in Co. Offaly to the Creadun Head estuary in Co. Waterford, and it is designated for a wide variety of habitats and species.

Qualifying Interest habitats and species:

The River Barrow & River Nore SAC is designated for its importance to a wide variety of terrestrial and aquatic habitats (incl. riparian, estuarine & coastal), along with one species of mammal (Otter), several species of fish (incl. Salmon, Twaite Shad & Lampreys), and 4 x invertebrate species (incl. 2 x pearl mussels, crayfish & whorl snail). The full list of QI habitats and species is set out in the table above. It is noted from the NPWS documentation and accompanying maps that several of the QI habitats and species are located upstream of the confluence of the River Suir and Rivers Barrow and Nore, they will not be included for further consideration (Petrifying springs, Old sessile oak woods, Floating River Vegetation, European dry heaths, Nore & Freshwater Pearl Mussels, White-tailed crayfish & Killarney fern). It is also noted that several of the QI estuarine habitats are located in excess of 9km downstream of the proposed works, but in the vicinity of the confluence of the two rivers, and they will therefore be included for further consideration. The remaining QI habitats and species and their main Attributes and Targets are summarised below:

Relevant QIs	Attributes & Targets
Tall herb fringe communities	Habitat distribution (no decline); Habitat area (stable); Hydrological regime (maintained); Vegetation structure (sward height); Vegetation composition (broadleaf herb: grass ratio); Vegetation composition (typical species & negative species indicator).
Alluvial forests	Habitat area (stable or increasing); Habitat distribution (no decline); Woodland size (stable or increasing); Woodland Structure (maintain cover, diversity & regeneration); Hydrological Regime (maintain flood depth); Woodland Structure (no decline); Vegetation Composition (maintain range of species & no increase in negative species indicators).

Desmoulin's Whorl Snail	Distribution (no decline); population size & density; Area of occupancy; Habitat quality (vegetation & soil moisture).
Sea, Brook & River Lamprey	Distribution; Population structure of juveniles; Juvenile density in fine sediment; Extent and distribution of spawning habitat; Availability of juvenile habitat.
Twaite Shad	Distribution (extent of anadromy); Population structure (age classes); Extent and distribution of spawning habitat (no decline); Water quality (oxygen levels); Spawning habitat quality: Filamentous algae; macrophytes; sediment (stable).
Salmon	Distribution; Adult spawning fish; Salmon fry abundance; Out-migrating smolt abundance; Number and distribution of redds; Water quality
Otter	No significant decline in: - Distribution, Extent of terrestrial & freshwater habitats, couching sites & holts, Availability of fish biomass & Connectivity.
Atlantic & Mediterranean salt meadows	Habitat area (stable or increasing); Habitat distribution (no decline); Physical structure (maintain sediment supply, creeks/ pans & tidal flooding regime; Vegetation structure (maintain range of habitats, sward height & cover); and Vegetation Composition (maintain range of species & no increase in negative species indicators).
Mudflats & sandflats	Habitat area (stable or increasing); Community distribution (maintain).
Estuaries	Habitat area (stable or increasing); Community distribution & extent (maintain).
Salicornia & other annuals.	Habitat area (stable or increasing); Habitat distribution (no decline); Physical structure (maintain sediment supply, creeks/ pans & tidal flooding regime; Vegetation structure (maintain range of habitats, sward height & cover); and Vegetation Composition (maintain range of species & no increase in negative species indicators).
Reefs	None specified.

Potential direct effects: As for the Lower River Suir SAC.

Potential indirect effects: As for the Lower River Suir SAC.

Mitigation measures: As for the Lower River Suir SAC.

Habitats & species:

Tall herb fringe communities, Alluvial forests, Fisheries & Otter: As for Lower River Suir SAC.

Estuarine & intertidal habitats: The NPWS Site Synopsis and Maps note the presence of several QI intertidal and estuarine habitats in the vicinity of the confluence of the Lower River Suir SAC and River Barrow and River Nore (Atlantic & Mediterranean salt meadows, Estuaries & Reefs, Mudflats & sandflats and Salicornia & other annuals). Having regard to the nature and small scale the proposed development and the c.9km separation distance between the works and the QI habitats, I am satisfied that following the implementation of the mitigation measures and any recommended conditions (incl. the management of sediments & accidental spills, and the control of invasive species) the proposed works would not have an adverse impact on water quality in the River Barrow and River Nore SAC, or introduce invasive species to the watercourse during any of the works. There would be no resultant adverse effects on these QI habitats with respect to their attributes and targets (incl. Habitat area, Habitat distribution, Physical structure, Vegetation structure, Vegetation Composition, Community distribution or tidal flooding regime).

Desmoulin's Whorl Snail: may be present in the tall herb swamps and saltmarshes fringing the estuary or connected watercourses, and it could be indirectly affected by changes in water quality and sediment patterns, or the introduction of invasive species. As for Lower River Suir SAC in relation to mitigation measures and recommended conditions. There would be no resultant adverse effects on this QI species respect to its attributes and targets (incl. Distribution, Population size & density, Area of occupancy & Habitat quality).

Potential in-combination effects: As for the Lower River Suir SAC.

Suggested conditions: As for the Lower River Suir SAC.

Conclusion: I am satisfied that the proposed development individually or in combination with other plans or projects would not adversely affect the integrity of

this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above.

The NIS:

I am satisfied that the applicant has described the receiving environment, identified the European sites within the Zone of Influence (Likely Zone of Impact), and provided sufficient information to assess potential effects during the construction and operational phases on the Qualifying Interest habitats and species before and after the implementation of mitigation measures. I am satisfied that the NIS was informed by relevant and robust desktop and site surveys and prepared in accordance with all relevant guidelines. I concur with the conclusions of the NIS as summarised above.

Conclusion:

I concur with the conclusions reached in the NIS that the proposed flood defence scheme will have no adverse effects (direct, indirect or in-combination) on the Conservation Objectives or Qualifying Interests for any European Sites within the Zone of Influence of the scheme.

7.5 Appropriate Assessment conclusion:

I consider it reasonable to conclude on the basis of the information on the file, which I consider adequate in order to carry out a Stage 2 Appropriate Assessment, that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the European site Nos. 002137 and 002162, or any other European site, in view of the site's Conservation Objectives.

8.0 REASONS AND CONSIDERATIONS

Having regard to:

a. the National Planning Framework Plan 2018-2040,
b. the National Development Plan 2021-2030,
c. Regional Spatial and Economic Strategy for the Southern Region 2020,
d. the policies of the planning authority as set out in the Waterford City and County Development Plan 2022 to 2028,
e. the policies of the planning authority as set out in the Kilkenny City and County Development Plan 2021 to 2027,
f. the distance to dwellings or other sensitive receptors,
g. the submissions made in connection with the application,
h. the likely consequences for the environment and the proper planning and sustainable development of the area in which it is proposed to carry out the proposed development and the likely significant effects of the proposed development on European Sites,
i. the Appropriate Assessment report of the Inspector, and
j. the report and recommendation of the Inspector.

Proper planning and sustainable development:

It is considered that subject to compliance with the conditions set out below the proposed development would accord with European, national, regional and local planning and environmental policy, it would not have an unacceptable impact on the landscape or ecology, it would not seriously injure the visual or residential amenities of the area or of property in the vicinity, and it would be acceptable in terms of traffic safety and convenience. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Appropriate Assessment Stage 1:

The Board agreed with the screening assessment and conclusion carried out in the Inspector's report that the following European sites are the only sites for which there is a possibility of significant effects and must therefore be subject to Appropriate Assessment: -

- Lower River Suir SAC (Site Code: 002137)
- River Barrow and River Nore SAC (Site code: 002162)

Appropriate Assessment Stage 2:

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposed flood relief development for European Sites in view of the site's Conservation Objectives, namely: -

- Lower River Suir SAC (Site Code: 002137)
- River Barrow and River Nore SAC (Site code: 002162)

The Board considered that the information before it was sufficient to undertake a complete assessment of all aspects of the proposed development in relation to the site's conservation objectives using the best available scientific knowledge in the field.

In completing the assessment, the Board considered, in particular, the following:

(i) the site Specific Conservation Objectives for these European Sites,
(ii) the current conservation status, threats and pressures of the qualifying interest features,
(iii) the likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects, and
(iv) the mitigation measures which are included as part of the current proposal,

In completing the Appropriate Assessment, the Board accepted and adopted the Appropriate Assessment carried out in the Inspector's report in respect of the implications of the proposed development on the integrity of the aforementioned European Sites, having regard to the site's Conservation Objectives.

In overall conclusion, the Board was satisfied that the proposed development would not adversely affect the integrity of any European sites in view of the site's Conservation Objectives and there is no reasonable scientific doubt as to the absence of such effects.

Environmental Impact Assessment:

The Board completed an environmental impact assessment of the proposed development taking account of:

(a) the nature, scale, location and extent of the proposed development on a site,

(b) the Environmental Impact Assessment Report (EIAR) and associated documentation submitted in support of the application,

(c) the submissions received from the prescribed bodies, and

(d) the Inspector's report.

The Board considered that the environmental impact assessment report, supported by the documentation submitted by the applicant, adequately considers alternatives to the proposed development and identifies and describes adequately the direct, indirect, secondary and cumulative effects of the proposed development on the environment. The Board agreed with the examination, set out in the Inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the applicant and submissions made in the course of the application. The Board considered that the main significant direct and indirect effects of the proposed development on the environment are, and would be mitigated, as follows:

- The risk of pollution of ground and surface waters during the construction phase which would be mitigated by the implementation of measures set out in the Environmental Impact Assessment Report (EIAR) and the final Construction and Environment Management Plan (CEMP) which include specific provisions relating to groundwater, surface water and drainage.
- Noise, vibration and dust during the construction and phase would be avoided by the implementation of the measures set out in the Environmental Impact Assessment Report (EIAR) and the final Construction and Environment Management Plan (CEMP) which include specific provisions relating to the control of noise, vibration and dust.
- Biodiversity impacts, including on habitats, flora and fauna (incl. terrestrial and aquatic wildlife), would be mitigated by the implementation of specific mitigation to protect such habitats, flora and fauna (incl. pre-construction surveys, timing and seasonality of works, drainage and runoff management, the management of artificial lighting, buffers and the appointment of a project ecologist), during the construction and operational phases.
- The increase in vehicle movements and resulting traffic during the construction phase would be mitigated by the preparation of a Construction Traffic Management Plan.
- Landscape and visual impacts would arise during the operational phase from the insertion of the flood defence walls into the urban and riparian landscape, however, the scale, design and linear layout of the project would assist in assimilating the works into the landscape.
- The impacts on residential amenity during the construction phase would be avoided by the implementation of the measures set out in the Environmental Impact Assessment Report (EIAR) and the final Construction and Environment Management Plan (CEMP) which include specific provisions relating to the control and management of dust, vibration, noise, water quality and traffic movement.
- The impact on cultural heritage would be mitigated by terrestrial and underwater archaeological pre-testing and monitoring with provision made for resolution of any archaeological features or deposits that may be identified.

- Positive environmental impacts would arise during the operational phase from the installation of robust flood defence measures.

The Board completed an environmental impact assessment in relation to the proposed development and concluded that, subject to the implementation of the mitigation measures proposed, and subject to compliance with the conditions set out below, the effects of the proposed development on the environment, by itself and in combination with other plans and projects in the vicinity, would be acceptable. In doing so, the Board adopted the report and conclusions of the Inspector.

9.0 CONDITIONS

1. The applicant shall ensure that all construction methods and environmental mitigation measures set out in the Environmental Impact Assessment Report, the Natura Impact Statement and associated documentation are implemented in full, save as may be required by the conditions set out below.
   Reason: In the interest of the protection of the environment.

2. The services of a suitably qualified and experienced Ecologist shall be retained to undertake pre-construction surveys at the various project elements immediately prior to commencing work in order to check for the presence of protected species in the vicinity (including Otter, Bat and Birds). In-stream works shall be carried out in accordance with the requirements of Inland Fisheries Ireland and vegetation clearance should not take place during the bird nesting season. Derogation Licences shall be obtained for the removal of any Bat roosts or Otter holts.
   Reason: In the interest of protecting ecology and wildlife in the area.

3. The following additional ecological requirements shall be complied with:
    a. The Council shall continue to consult with the NPWS in relation to the provision of replacement Annex 1 Mudflat habitat (Mudflats and sandflats not covered by seawater at low tide) within the River Suir.
    b. Pile driving mitigation measures to reduce impacts on aquatic habitats and terrestrial and aquatic species shall be implemented (including soft start, vibrating hammer and bubble curtain).
    c. Bat boxes and tubes shall be provided along the flood defence walls and their use and uptake shall be monitored annually over a 5-year period focusing on occupancy of bat tubes (usage & species determination) as well as presence of foraging bats, and the survey results shall be submitted to Minister for Housing, Local Government and Heritage.

    Reason: In the interest of protecting ecology and wildlife in the area.

4. All plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.

    Reason: In the interest of the proper planning and sustainable development of the area, and to prohibit the spread of invasive species.

5. The construction of the development shall be managed in accordance with a Construction and Environmental Management Plan, which shall be finalised prior to commencement of development. This plan shall provide details of intended construction practice for the development, including hours of working, noise, vibration, dust and odour monitoring and management measures, traffic management, protection of wayleaves, an invasive species management plan and off-site disposal of construction, demolition and post examination river dredge waste. Structural surveys at sensitive receptors shall be undertaken to establish their condition and tolerance for vibration impacts before works commence. A construction noise management plan and a contingency plan for remedial action shall be prepared in the event that monitoring levels indicate an exceedance of limits, before works commence.

    Reason: In the interests of public safety and residential amenity.

6. The preservation, recording and protection of archaeological materials or features that may exist within the site shall be facilitated, and all excavated material from the riverbed shall be spread at the work compounds (or other suitable location) and metal detected to assess the artefact bearing potential. In this regard, a suitably qualified archaeologist shall be retained to monitor all site investigations and other excavation works and provide arrangements for the recording and for the removal of any archaeological material considered appropriate to remove. The measures contained in the Draft Archaeological Strategy in relation to underwater and terrestrial archaeology that was received by the Board on 17th August 2022 shall be fully implemented.
   Reason: In order to conserve the archaeological heritage of the site and to secure the preservation and protection of any remains that may exist within the site.

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Karla Mc Bride
Senior Planning Inspector
26th August 2022