Inspector's Report
ABP-313763-22

Development	Proposed Fermoy Weir remedial works and fish bypass on the River Blackwater.
Location	Fermoy Weir (Protected Structure), Carrignagroghera and Fermoy, Co. Cork.
Local Authority	Cork County Council
Type of Application	Application for approval made under Section 177(AE) of the Planning and Development Act, 2000 (local authority development requiring appropriate assessment)
Prescribed Bodies	OPW, IFI, TII, Development Applications Unit (DHLGH), An Taisce,
Observer(s)	Simon Beckett.
Date of Site Inspection	7th May 2023.
Inspector	Deirdre MacGabhann

Contents

1.0 Introduction

1.1. Cork County Council is seeking approval from An Bord Pleanála to undertake remedial works to Fermoy weir that is situated within Blackwater River (Cork/Waterford) SAC, a designated European site. A Natura Impact Statement (NIS) and application under Section 177AE was lodged by the Local Authority on the basis of the proposed development's likely significant effect on a European site.

1.2. Section 177AE of the Planning and Development act 2000 (as amended) requires that where an appropriate assessment is necessary in respect of development by a local authority, the authority shall prepare an NIS and the development shall not be carried out unless the Board has approved the development with or without modifications. Furthermore, Section 177V of the Planning and Development Act 2000 (as amended) requires that the appropriate assessment shall include a determination by the Board as to whether or not the proposed development would adversely affect the integrity of a European site and the appropriate assessment shall be carried out by the Board before consent is given for the proposed development.

2.0 Site and Location

2.1. The 5.1ha subject site lies in the townlands of Carrignagroghera and Fermoy in Fermoy Town, County Cork. It comprises the Fermoy weir, a protected structure (RPS No. 02068), and the adjacent river bed upstream and downstream of the weir, together with lands on the north bank of the River Blackwater, west and east of Kent Bridge, and on the south bank of the River at Mill Island, O'Neill Crowly Quay and Ashe Quay.

2.2. The existing weir extends from the northern bank of the river, west of Kent Bridge through the second arch of the Bridge to the southern bank of the river, east of the bridge as it passes through the town of Fermoy. To the west of Kent bridge it includes amenity grassland to the north of the river. To the north of the amenity grassland, extending west and east of Kent Bridge, is a flood defence earthen berm/embankment.

2.3. In section 3.2 of the Technical Engineering Report, the weir is categorised as a rubble embankment type weir upstream of the bridge and extending for a distance of 37m east of the bridge. The remaining section of the weir, extending eastwards, is a gravity wall type weir (Mill Race section). The weir is in a poor condition, with a breaches to the east of Kent Bridge. An existing fish pass lies on the weir to the west of the bridge in poor condition.

2.4. The site is clearly visible in views from Kent Bridge, in particular the mature trees along the northern bank of the River are dominant in views from the Bridge and riverside path to the south of the river. The site lies almost wholly within the boundary of the River Blackwater (Cork/Waterford) SAC (site code 002170).

3.0 **Proposed Development**

3.1. The proposed development comprises remedial works to the existing weir and the construction of a new fish bypass on the northern banks of the River Blackmore, west of Kent Bridge. Works include:

- Site preparation works which include the removal of c.30 no. trees on the northern bank of the river.
- Lowering of c.100m of masonry river wall.
- Excavation of spoil to facilitate construction of the fish bypass and installation of sheet piles and concrete capping beams to facilitate the proposed fish bypass.
- The construction of a new 28m wide fish bypass channel, to include the placement of gravel and rockfill for the base of the channel, the provision of stone steps in the bypass channel and masonry facing to bypass channel walls.
- Remedial works to the existing weir, upstream and downstream of the Fermoy/Kent Bridge, to include:
    - *Salmon leap*. Reconstruction of the existing salmon leap with replacement of damaged and missing limestone from side walls and base.
    - *Embankment*. Demolition of the concrete apron on face of embankment, placement of geotextile fabric and resetting of limestone

sets, excavation of trenches in river bed for toe and heal protection to embankment, placement of rock armour to toe and heel of embankment. The embankment section of the weir will be restored to a level of 21.45mOD, as per its historic level.

- *Mill Race weir wall*. Construction of concrete core for reconstructed Mill Race wall where wall breached, removal of capping stone from existing Mill Race Wall, natural cement injection to both faces of existing masonry weir wall, grout injection and pointing of masonry in existing Mill Race Weir wall, raising of weir wall with masonry and *in situ* concrete and reinstatement of capping stones to weir all ad adjusted level. The Mill Race weir wall will be restored to a level of 21.55m OD.
- *Dredging and reprofiling of the riverbed* (see drawing 'Construction Spoil Management' no. -0084) between the outlet from the fish bypass and Fermoy Bridge.

- Associated development works to include temporary construction works and diversion/control of river flows and tie-ins to the existing structures/embankments (including banks stabilisation works previously carried out by OPW, see drawing 'Weir Remediation Plan of Proposed Works, 0060-00663).
- Landscaping to include, willow along riparian zone, grass meadow and amenity grassland (see Landscape Plan LP-01-LP).

3.2. The proposed works will be carried out in three phases, phase 1 construction of fish bypass off line from main channel, phase 2 (possibly concurrent with phase 1) remediation of weir and salmon leap west of Kent Bridge and phase 3 remediation of weir downstream of Kent Bridge with all works carried out to comply with IFI guidelines (Drawing 'Instream Works Phasing', No. -0086).

3.3. The application to the Board includes drawings and the following documents (set out in different sections of the application documents, as indicated below).

- Planning and Environmental Report, including Conservation Engineer's report and Flood Risk Assessment (Section 5). Concludes that the development will ensure long term viability of an important Protected Structure, Fermoy Weir, in the town and will make a very positive contribution to the amenity and

natural/built heritage of the town. Development is fully compliant with policies of the Fermoy Town Development Plan 2009-2022 and Cork CDP 2022-2028 and will have no adverse or negative impact on the receiving environment or Blackwater SAC.

- Engineering Technical Report (Section 6). Sets out the rational for the development. This includes that the historic weir, which has been a central feature of the town for >200years, is in disrepair and has suffered breaches in recent years, particularly at its eastern end where the weir is entirely breached (See drawings 'Summary of Existing Weir Condition 2018 nos. 0073-0078'). The effects of this are that the normal flow in the river no longer flows over the weir but instead is funnelled through the southernmost arches of the bridges towards Mill Race channel in front of O'Neill Crowley Quay where it then flows through the breaches in the weir. The report states that the volume of water in the river in most flow conditions are such that velocities in this channel and at the breaches in the weir are not conducive to the free passage of fish. It is also stated that the Town Council received Notice under section 116 of the Fisheries (Consolidation) Act 1959 of the need to undertake immediate repairs to the fish ladder on the weir in order to reduce the barrier effect of the weir on migratory fish. The report includes a summary of the nine options considered for weir remediation works, the preferred option, the engineering basis for the design of the works, benefits of the development and a summary of the detailed investigations/studies carried out along with construction methodology. The report refers to the following technical reports:
    - Conservation Engineer's report.
    - Fish Pass Hydraulic Design Review.
    - CFD Modelling Report.
    - Flood Risk Assessment.
- EIA Screening Report (Section 7). Includes a Determination by Cork County Council that EIA is not required as the works do not involve a class of development set out in Part 1 and Part 2 of Schedule 5 of the Planning and Development Regulations, 2001 (as amended).
- AA Screening Report (Section 8). Concludes that it is not possible to rule of the possibility of significant effects on the River Blackwater (Cork/Waterford)

SAC and that a NIS is required. The potential for significant effects on Blackwater Callows SPA are screened out.

- NIS (Section 9) – Concludes that with the implementation of mitigation measures, the development will not adversely affect, directly or indirectly or the integrity of any European site alone or in combination with other plans and programmes.
- Ecological Impact Assessment (Section 10). Refers to short term (negative) and long term (positive) impacts on terrestrial and aquatic habitats, mitigation measures to minimise impacts on aquatic ecology, the overall net positive impact on fish populations and the absence of significant impacts on water quality.
- Public Consultation Summary Report (Section 11).
- Landscape and Visual Impact Assessment (Section 12). Refers to residual visual and landscape impacts associated with the introduction of a fish pass structure into an area of public open space, the initial loss of trees and a section of open grass recreation area.
- Underwater Archaeology Impact Assessment (Section 13). Generally refers to the likely positive impacts of the development on underwater cultural heritage. Refers to the risk of damage to unrecorded archaeological remains and recommends archaeological monitoring of works.
- Parent Construction Environmental Management Plan and Outline Construction Management Plan (Sections 14 and 15). Provides a draft version of these 'live' construction management plans.
- DAU Recommendations in respect of archaeology and nature conservation (Section 16).

4.0 **Planning History**

4.1. There is no planning history associated with the site. However, the OPW has carried out flood alleviation works to the north and south of the River Blackwater in the town, completed in 2011 and 2015 respectively, and in the autumn of 2020 carried out emergency riverbed stabilisation works to mitigate against the excessive scour that was occurring as a result of the high velocities through the breach in the weir (see Drawing 19011-TJOC-PL-XX-DR-C-0060 – Rev 02).

5.0 Legislative and Policy Context

5.1. **The EU Habitats Directive (92/43/EEC):** This Directive deals with the Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union. Article 6(3) and 6(4) require an appropriate assessment of the likely significant effects of a proposed development on its own and in combination with other plans and projects which may have an effect on a European Site (SAC or SPA).

5.2. **European Communities (Birds and Natural Habitats) Regulations 2011:** These Regulations consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in CJEU judgements. The Regulations in particular require in Reg 42(21) that where an appropriate assessment has already been carried out by a 'first' public authority for the same project (under a separate code of legislation) then a 'second' public authority considering that project for appropriate assessment under its own code of legislation is required to take account of the appropriate assessment of the first authority.

5.3. **National nature conservation designations:** The Department of Culture, Heritage and the Gaeltacht and the National Parks and Wildlife Service are responsible for the designation of conservation sites throughout the country. The three main types of designation are Natural Heritage Areas (NHA), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) and the latter two form part of the European Natura 2000 Network.

5.4. The subject site falls within the Blackwater River (Cork/Waterford) SAC (site code 002170). It also lies c.1.2km upstream of the Blackwater Callows SPA (site code 004094).

5.5. **Planning and Development Acts 2000 (as amended):** Part XAB of the Planning and Development Acts 2000-2017 sets out the requirements for the appropriate assessment of developments which could have an effect on a European site or its conservation objectives.

- 177(AE) sets out the requirements for the appropriate assessment of developments carried out by or on behalf of local authorities.

- Section 177(AE) (1) requires a local authority to prepare, or cause to be prepared, a Natura impact statement in respect of the proposed development.
- Section 177(AE) (2) states that a proposed development in respect of which an appropriate assessment is required shall not be carried out unless the Board has approved it with or without modifications.
- Section 177(AE) (3) states that where a Natura impact assessment has been prepared pursuant to subsection (1), the local authority shall apply to the Board for approval and the provisions of Part XAB shall apply to the carrying out of the appropriate assessment.
- Section 177(V) (3) states that a competent authority shall give consent for a proposed development only after having determined that the proposed development shall not adversely affect the integrity of a European site.
- Section 177AE (6) (a) states that before making a decision in respect of a proposed development the Board shall consider the NIS, any submissions or observations received and any other information relating to:
    - The likely effects on the environment.
    - The likely consequences for the proper planning and sustainable development of the area.
    - The likely significant effects on a European site.

5.6. **National Planning Framework/Regional Planning Guidelines**

- Architectural Heritage Protection Guidelines. Refers to the main features of the Planning and Development Act 2000 (as amended) and to the requirement for planning authorities (PA) to create a record of protected structures and to the responsibilities given to owners to maintain them and the additional powers given to PAs to ensure that protected structures are not endangered.

- The EU Water Framework Directive (2000/60/EC) requires all Member States to protect and improve water quality in all waters so that we achieve good ecological status by 2015 or, at the latest, by 2027. It was given legal effect in Ireland by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003). It applies to rivers, lakes, groundwater, and transitional coastal waters. The Directive requires that management plans be prepared on

a river basin basis and specifies a structured method for developing these plans.

- River Basin Management Plans are required to set out actions to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2027. The current RBMP for the State is the River Basin Management Plan 2018-2021. The third Draft River Basin Management Plan for the period 2022-2027 is currently in being prepared.

5.7. **Cork County Development Plan 2022-2028**

5.8. In volume 1, *Main Policy Material*, Fermoy is identified as a 'Ring Town' with an associated Strategic Aim to provide a better balance of development between the town and its rural hinterland and fulfil the role of the town as an economic and employment centre for the rural hinterland (Table CS 2-7). The vision for Fermoy, as set out in Volume 3 North Cork (section 1.4.1) includes to '*deliver an enhanced natural and built environment and range of facilities to make the town a more attractive place to live*'. The northern part of the site is zoned as 'Green Infrastructure' and various policy objectives apply including Policy Objective GI 14-1 to create and safeguard an integrated and coherent green infrastructure for the County. Under Biodiversity and Environment Policy Objective BE 15-2a, sites of natural heritage interest, including national and European sites, are afforded protection. Built and Cultural Heritage Policy Objective HE 16-14, affords protection to structures identified in the Plan of special interest in the Record of Protected Structures. At no. 02068 '*Weir and Limestone Quay Wall. River Blackwater'* at Fermoy are included in the Record of Protected Structures. The limestone quay wall was delisted in a variation of the Fermoy County Development Plan. A new quay wall was constructed in front of the existing quay wall as part of the Fermoy South Drainage Scheme flood defence works (section 5.1 Technical Engineering Report).

5.9. In volume 3, *North Cork*, the site is designated as green infrastructure and zoned Greenbelt. Green Infrastructure Policies FY-GC-02 and FY-GC-05 apply. These refer to the use of the lands for open space for informal public recreation. They also refer to the inclusion of part of the River Blackwate SAC within the zoning and that the SAC supports habitats of ecological value and should be protected. Under Water Management, in section 1.4.55, the Plan states *'Fermoy Weir has deteriorated*

in recent years. Cork County Council are working with other stake holders to address this issue. The final design solution will provide for free passage of migrating fish'.

6.0 The Natura Impact Statement

6.1. Section 9 of the application documents provides Cork County Council's Natural Impact Statement (NIS). It provides a scientific examination the proposed development and the potential for effects on European sites. The NIS refers to the regulatory context for the development and to the conclusions of the screening exercise, which concluded that an NIS was required. It sets out the methodology for the NIS, the options considered in the development of the project and provides a description of the preferred option (proposed development), construction methodology and landscape plan. The report provides baseline information on the ecology and habitats in the influence of the development and provides an assessment of potential impacts and mitigation measures to address likely effects. The report objectively concludes, with no reasonable scientific doubt, that following an examination, analysis and evaluation of relevant information, with the implementation of mitigation measures, the development will not adversely affect, directly or indirectly, the integrity of any European site alone or in combination with other plans or projects.

6.2. The NIS was accompanied by appendices which include:

- Aquatic Baseline report for Fermoy Weir,
- Survey of the Freshwater Pearl Mussel at Fermoy Bridge,
- Tree Survey and Arboricultural impact assessment Fermoy Weir Development,
- Hydraulic design review and fish bypass channel assessment,
- Ecology Operational Monitoring Review, and
- Invasive Species Management Plan.

7.0 Consultations

7.1. The application was circulated to the following bodies by the local authority:

- Department of Environment, Climate and Communications.

- Minister for Agriculture, Food and the Marine.
- Minister of Housing, Local Government and Heritage.
- Health and Safety Authority.
- Environmental Protection Agency.
- Inland Fisheries Ireland
- Waterways Ireland
- The Heritage Council.
- An Chomhairle Ealaíon.
- Fáilte Ireland.
- An Taisce.
- National Transport Authority.
- Transport Infrastructure Ireland.
- Office of Public Works.
- Irish Water.
- Minister for Tourism, Culture, Arts, Gaeltacht, Sport and Media.

7.2. Responses were received from the following bodies.

7.3. **Inland Fisheries Ireland**

- Recommend further investigation of 'do nothing' and 'stabilise remaining section of existing weir' options on the grounds that water velocities would not be a barrier to the migration of salmon or lamprey (using bottom and edge effects).
- Restate that the removal of the weir would be the most beneficial option from a fisheries perspective, returning the river to its natural hydro morphological state, allowing free passage of aquatic organisms, sediment transport and improved continuity in riparian zone.
- The breach of the weir appears to have improved migration of salmon (and Sea Lamprey) upstream in the river and the funnelling of water to the east of the breach facilitates the downstream migration of salmon smolts (refer to reports including AMBER 202 D4.2 Report of Case Studies Demonstrating the Effects of Barrier Removal, Mitigation and Installation). Location of fish pass flush with northern bank may delay salmon fish passage and the solution should be supported by an analysis of upstream and downstream migration of

fish. Repair of the weir would result in the loss of 'restored' habitat that has occurred with the breach and be detrimental to the spawning habitat that has been present in the upstream area since 2016 (breach). The works should be subject to EIA as there is a real likelihood of significant effects on the environment as a result of the works.

- Reinstating the weir will result in a significant impediment to fish migration and natural river processes within an SAC. Mitigation measures in the application (use of bypass channel) are only considered when removal partial removal of a weir are not possible. In this regard, removal has already taken place.
- As a result of the breach at Fermoy weir, the free passage of migrant fish has been significantly improved.

7.4. **OPW**

- Flood relief scheme for Fermoy carried out by OPW under Fermoy North and South Flood Relief Schemes.
- Red line boundary includes the locations of a number of features or elements on the River Blackwater Fermoy North and South Flood Relief Schemes. Any interference with these requires consent of the Commissioners of Public Works (outside planning process).
- Any works to modify a weir may also need the consent of the Commissioners under section 47 of the arterial Drainage Act of 1945.
- Detailed comments made on drawings, construction methodology and technical aspects of the Flood Risk Assessment (adequacy and need for further work), with the potential for construction works and development (e.g. planting) to impact on flow capacity and adverse effects on flood levels in the area.

7.5. **An Taisce**

- All issues raised by the Department of Heritage (28th February 2020, see Section 16 of application documents) should be addressed. Potential impacts to Blackwater River (Cork/Waterford) SAC and full compliance with Article 6(3) should be demonstrated.
- River Blackwater at risk of not meeting good status. Full assessment of development against Article 4, 4(1)(c) and 5 of the WFD is therefore required

(including protection of water dependent Natura 2000 sites). Cites case law C-461/13 Weser where CJEU held that member states are required to refuse authorisation for a project where it may cause deterioration of the status or attainment of good quality of a surface water body (unless derogation granted).

7.6. **Department of Housing, Local Government and Heritage**

- Underwater archaeology – Recommend conditions to include implementation of proposed mitigation measures, monitoring of groundworks and spreading of all excavated material for metal detection and protection of heritage assets.
- Nature conservation – Refer to the conservation interests of the Blackwater River (Cork/Waterford) SAC, the conservation objectives for these species and the requirements that the proposed fish pass allows access upstream by species of conservation interest. It states that a particular challenge will be to ensure the fish pass is suitable for Twaite shad and recommends that the Board seek site specific advice from IFI in relation to the efficacy of the fish pass for this and other species (in particular with velocities in bypass).
- NIS
  - Alluvial woodland. It refers to the potential alluvial woodland referenced in the NIS, comprising a small island on south bank and larger area on northern bank, c.1-2km upstream of the development and considers that in neither cases alluvial woodland occurs (due to dominance of non-native species).
  - Alternatives. If Board seeking FI it would be beneficial to have a summary table of advantages and disadvantages of the various alternatives assessed. All alternative options should be included, including fish pass in the existing breach.
  - Indirect effects. Biosecurity measures need to be in place to ensure that Crayfish plague is not introduced by kayaks and canoes in upstream stretches of the river.
  - Monitoring. Should be conditioned, in particular proposed eDNA monitoring of efficacy of fish pass.

7.7. **TII**

- Serious concerns regarding stability of Fermoy Bridge as a consequence of the proposed works (risk of scour). Recommend a revised approach to construction (points 1 to 4 of submission).
- 1865 bridge is likely to be built on shallow foundations and be particularly vulnerable to scour (foundation levels not known). Stonework piers and abutments have suffered mortar loss and minor scour at one of the piers. Scour is the most critical defect and most common failure mode for bridges. Dredging of river immediately adjacent to upstream side of bridge and construction of new embankment and fish passage at weir are likely to expose bridge piers to scour and create risk to stability. Works do not demonstrate that they address the requirement of maintaining structural integrity and therefore meet requirements for public safety.
- Advise that the applicant is required to comply with Technical Standards for alterations to road structures (Technical Approval of Road Structures on Motorways and other National Roads for structures, TII, 2009, DN-STR-03001).

8.0 **Public Submissions**

- Simon Beckett – Weir was originally installed to power the mill on mill island. With mill not operating, this has made the weir 100% redundant yet weir continued to flood the town on a regular basis. Since the weir was breached the river has not breached its banks like it used to. EU Directive requires all unnecessary obstructions to the path of migratory fish species to be removed if not needed. Wier should be left to nature. Town would be improved with natural river running through it. New weir will result in flooding of town in exceptional weather events. To rebuild the weir would be a waste of money.

8.1. **Applicant Response**

8.2. The applicant's response to the submission is set out in the document '*Response to ABP submissions, March 2023'.*

- IFI – IFI has ignored the heritage aspects of the project. No supporting data provided by IFI re velocity of flows or data on fish counts downstream or upstream of the weir. Applicant's hydraulic model has had regard to

percentile flows at downstream and upstream gauges in the river. From the analysis the velocities across a wide range of conditions are >2m/s and these levels are maintained along the Mill race channel, therefore acting as a barrier to fish movement. Emergency works were carried out by OPO to stabilise the river bed and banks in the vicinity of the O'Neill Crowley Quay due to bed and bank erosion that had occurred as a result of the breach. The emergency works did not reduce the velocities in front of O'Neil Crowley Quay but stabilised the bed and bank material. Expert evidence supports the suitability of the fish pass for the migration of fish. AMBER report, referred to by IFI, includes a list of valid concerns likely to surface in the context of any proposals to impact on a barrier (see page 11 of submission) and notes that any management of the weir at Fermoy consists of requirements to accommodate passage of fish species in line with SAC status, ensure integrity of infrastructure and recreational needs. Development satisfied these requirements. Do nothing scenario does not satisfy the requirements. Loss of habitat referred to by IFI is of no benefit if it cannot be accessed by fish.

- OPW
    - Other legislation. Applicant is aware of its obligations to obtain consent under the separate legislation, Section 9 of the Arterial Drainage (Amendment) Act 1995 and Section 47 of the Arterial Drainage Act of 1945. Consent under these Acts will be sought if required by the OPW, following a grant of planning permission, having regard to any conditions or revisions included with such a grant.
    - Planting. Development will result in loss of existing trees and there is an obligation to provide compensatory planting. Landscaping design can be adjusted to take account of OPW concerns but screening needs to be provided to limit access to the side of the fish bypass channel and shade to fish. Roughness coefficients used for the riverbank in the area of the fish bypass in the hydraulic model for the development includes the proposed landscaping scheme. Flood Risk Assessment (FRA) amended to include potential for flood risk hazard from planting within the flood plain, taking into account removal of barriers to flow by removal of existing trees and proposed landscaping.

- Drawings. Corrections made.
- Level of weir wall. Top of weir upstream of bridge will be 21.45mOD (existing 21.20-21.46). Downstream Mill Race end of weir will be raised by 100mm higher than rest of weir to distribute flow over the weir more evenly. 43% of AADF will flow through bypass channel (entrance height 21.20mOD). Overall net increase in cross sectional area at weir is 6.4m^2. Predicted flood levels at flood defences are lower than existing scenario as a result of increased cross sectional area of flow, with the exception of some localised areas in 2 year and 5 year return period events.
- Interferences with flood plain. Construction works/footprint can be agreed with OPW under Section 9 and section 47 consents.
- FRA – FRA amended to take account of comments made by OPW, including reference to a review of the Fermoy North and South Flood Relief Schemes, design flow rates for Fermoy Flood Relief Scheme and OPW trigger levels for Flood Relief Scheme. HEC-RAS model calibrated against observed flood data and a revised FRA prepared. Modelling exercise with additional data concludes that the development will have no adverse impact on flood levels across the range of flood events apart of from a couple of localised locations upstream of weir works for the Q2 and Q5 flows (page 24 of applicant's response).

- An Taisce – All matters raised have been addressed in the NIS. Obligations in respect of referenced articles in the WFD and Surface Water Regulations have been considered in the NIS and in the proposals for the development.

- DHLGH
  - Underwater Archaeology – Obligation to spread and metal detect all excavated deposits should be qualified to apply to such layers or levels of excavated material as required by the supervising archaeologist. Designation of weir as a PS ignored in DHLGH submission.

- Nature conservation – Requirements for appropriate flow conditions have been included in NIS for Twaite shad and other species.
- NIS – Advantages and disadvantages of various alternatives assessed in NIS were identified in general terms on the Options report (section 4.2 NIS). The NIS and Table 4-12 of the CEMP identify mitigation and measures to prevent spread of crayfish plague during construction. The requirements can be incorporated into a permanent information display boards at access points in the vicinity of the development to inform would be river users post construction. A condition to undertake eDNA monitoring post construction would be acceptable.

- TII – Level 2 Scour Assessment report prepared which concluded that velocities at the bridge in the design event (1 in 200 year plus climate change allowance) do not exceed the threshold velocity for bed erosion based on the material observed to be present in the riverbed at the bridge. Findings accepted by TII (Appendix A and B).
- Public submissions – Evidence of flood events since the 2016 breach do not support the submission that since the breach '*the river has not come near to breaking its banks like it used to'* (see flow and gauge levels in submission). In extreme flood events the weir is drowned by flood events and has a minimal impact on flood levels. Weir is a PS and Cork CC is obliged to protect and maintain it. Leisure and recreational activities have developed in the town as a result of the weir.

9.0 **Assessment**

9.1. As per the requirements of section 177AE(6), this section of the report considers the NIS submitted and the submission made under three:- likely consequences for the proper planning and sustainable development of the area, likely effects on the environment and appropriate assessment.

10.0 The likely consequences for the proper planning and sustainable development of the area

10.1. Policies of the current Cork County Development Plan identify Fermoy as one of two Main Towns in the county, with an associated Strategic Aim to provide a better balance of development between its town and its rural hinterland and fulfil the role of the town as an economic and employment centre for the rural hinterland (Table CS 2-7). The vision for Fermoy, as set out in Volume 3 North Cork (section 1.4.1) includes to '*deliver an enhanced natural and built environment and range of facilities to make the town a more attractive place to live*'. The town's Green Infrastructure is designated largely along the banks of the River Blackwater, with the river also designated as a Special Area of Conservation, and afforded protection under water quality and natural heritage policies of the Plan.

10.2. The existing weir is identified in the Plan as a Protected Structure (no. 02068) and policies of the Plan afford protection to such structures. Further, under section 58 of the Planning and Development Act, 2000 (as amended) the owner of the weir, the applicant/Cork County Council is obliged to ensure that the structure is not endangered.

10.3. In section 1.3 of the Technical Engineering Report (section 3 of application documents) it is also stated that Fermoy Town Council received a Notice under Section 116 of the Fisheries (Consolidation) Act 1959 from the Department of Communications, Energy and Natural Resources advising them of the need to undertake immediate repairs to the fish ladder on the weir in order to reduce the barrier effect of the weir on migratory fish species.

10.4. The proposed development comprises remedial works to the existing Fermoy weir and the construction of a new fish bypass on the River Blackmore, with the fish bypass to facilitate the passage of fish up and downstream of the weir.

10.5. The existing weir, with salmon leap, was originally constructed to provide water to the mill complex to the east of the weir which commenced operation in 1802. The Conservation Engineering Report (Appendix B of Section 5 of the application documents) charts the history of the weir and reports on its current poor state of repair, including breaches which occurred in c.2018. The report provides

photographs of the weir in 1841 to 1917 (Appendix A) and summarises various survey work that has been carried out since 2011. This includes topographical and bathymetrical survey of the weir, underwater archaeological survey and archaeological impact assessment, photographic survey and technical inspections. The report clearly indicates the extent of disrepair of the weir, with erosion and further deterioration since the initial breach in 2016, and this is evident in photographs of the site included in the report and from the inspection of the site.

10.6. Whilst the mill no longer exists and water is no longer regularly channelled through the mill race, the lasting effect of the weir has been to increase water levels upstream and to facilitate recreational activities on the River in Fermoy Town, including use of the river by Fermoy Rowing Club and other stakeholders (as indicated in the summary of consultations – Public Consultation Summary Report, section 11 of documents). In addition, there have been consequences for velocities in the river which has resulted in bed and bank erosion (with bed and bank stabilisation works were carried out in 2020 by OPW) and technical assessments by the applicant indicate high velocities in the area of the weir which act as a barrier to the movement of fish species (although this issue is not accepted by IFI).

10.7. The Engineering Technical Report to Accompany the Planning Application (Section 6 of application documentation) sets out the different options examined for remedial works, in the context that works to remediate and reinstate the weir can only be progressed if the issue of fish passage is addressed. Options considered by the applicant and presented for public consultation are:

- O1 – Do nothing.
- O2 – Stabilise remaining section of existing weir.
- O3 – Remediate existing fish pass.
- O4 – Complete removal of existing weir.
- O5 – Construct an In-River Rock Ramp.
- O6 – Construct Fish Ramp (Rock Ramp) in existing breach.
- O7 – Construct a Near Natural Bypass Channel.
- O8 – Bypass River around weir.
- O9 – Construct a Rough Channel Pool Bypass.
- Chester Weir.

10.8. The different options are set out in Section 3.5 of the Engineering Technical Report and in Section 4 of the NIS. Options to do nothing, stabilise the remaining section of the weir, complete removal and bypass the river around the weir are discounted primarily on the grounds that velocities are high and prevent the upstream migration of fish, the options do not meet conservation objectives for the restoration of the protected structure or recreation requirements in the town. The proposals to remediate the existing fish pass is discounted on the grounds that the design of the fish pass is at odds with current technical requirements and would not, if remediated, enable all fish species to pass.

10.9. Construction of an in river rock ramp is discounted on the grounds that it would require removal of a significant part of the remaining protected structure and may impact on Bridge by virtue of scour.

10.10. Construction of a fish ramp in the existing breach is discounted on the grounds that it would be located at a suboptimal location i.e. at the downstream end of the weir. Ideally fish passage should be provided for at the furthest point upstream on the obstruction.

10.11. Construction of a near natural (meandering) bypass channel was discounted on the grounds that IFI advised that it would not satisfy the requirement for passage of migratory fish species listed as qualifying interests for the Blackwater River (Cork/Waterford) SAC (see section 4.2.7 of Engineering Technical Report) and could lead to increased poaching and/or predation.

10.12. The Chester weir option is discounted on the grounds that the location is not tidal (as per location of Chester weir on River Dee), would impact on protected structure may cause scour and was not favoured by IFI (would not meet flow requirements, fish may have difficulty finding entrance).

10.13. The options identified by the applicant are not unreasonable in the context of the applicant seeking to meet multiple objectives i.e. to have regard to the Protected Structure status of the weir, the location of the development in an SAC and need to facilitate the passage of fish species, the recreational use of the river in the town and the visual effects of any works, the potential for scour and effects on the integrity of Kent Bridge and the potential for effects on flood defence works.

10.14. Further, the conclusions drawn in the assessment of the different options, against the stated objectives, are not unreasonable, with the proposed development Option 9 having the potential to satisfy all objectives. Design has progressed therefore with this option and the Conservation Engineering Report provides recommendations in respect of best conservation practices to guide restoration works, with the main ethos being to retain as much of the existing fabric as possible and keep interventions to a minimum.

10.15. In submissions on the development, it is argued that any interventions are more limited with the river allowed to return to a more natural state, enabling free movement by aquatic organisms and to prevent flooding of the town.

10.16. Whilst I acknowledge the merits of these arguments notably from a fisheries perspective (which are also considered in the AA section of this report), I am mindful of the wider policy context for the development which includes a statutory requirement to prevent damage to Protected Structures, policy objectives in respect of Fermoy town to deliver an enhanced natural and built environment and the established recreational use of the river associated with the management of water levels in the river. The proposed development supports these wider objectives, and subject to the absence of significant effects on the environment (including flood risk) and European sites, which are considered below, I consider that it is consistent with the proper planning and sustainable development of the area.

11.0 The likely effects on the environment

11.1. **Environmental Impact Assessment.** In their submission to the Board (received, 2nd August 2022), IFI argue that environmental impact assessment of the development is required due to the likelihood of significant environmental effects.

11.2. Part 1 and 2 of Schedule 5 of the Planning and Development Regulations, 2001 (as amended) set out certain classes of development which require environmental impact assessment. These include water infrastructure projects, such as:

- Dams and other installations designed for the holding back or permanent storage of water (where new or additional water to be held back is >10 million cubic metres, Class 15, Part 1),

- Canalisation and flood relief works (Class 10(f)(ii), Part 2), and
- Dams and other installations to hold or store water on a long term basis (where the new or extended area of water to be impounded would be >30ha, Class 10(g), Part 2).

11.3. The proposed development does not comprise a development which falls within any of the classes listed, including the water infrastructure projects referred to here. There is no requirement therefore for environmental impact assessment and the need for environmental impact assessment can be excluded at preliminary examination and a screening determination is not required.

11.4. Notwithstanding this conclusion, the environmental effects of the development on different parameters are examined in this section of the report and the potential for effects on European sites is considered in section 12.

11.5. **Population and Human Health.** The proposed development has potential to give rise to noise, dust, water pollution, increase in traffic and congestion and visual changes to the public domain during construction, with the risk of environmental effects on the local population in terms of amenity and human health. During operation, proposed landscaping will mature and the level of water in the river upstream of the weir will be slightly elevated relative to existing levels, consequent of the breaches in the weir.

11.6. The Preliminary Construction Stage Environmental Management Plan and Outline Construction Methodology set out the applicant's methodology for the construction works (in Sections 13 and 14 of documents submitted). The Construction Stage CEMP includes sub plans in respect of construction compound management, traffic management, noise, vibration and water quality management (amongst others), arrangements for monitoring of effects and a Preliminary Environmental Incident Response Plan. Arrangements include pedestrian safety measures (Parent Traffic Management Plan) and the emission limits stated refer to standard thresholds to prevent adverse effects.

11.7. Subject to the detailed implementation of the proposed measures, I am satisfied that adverse effects arising from the short term construction works will not give rise to any significant adverse effects on population and human health. Visual effects of the development are considered under landscape. Changes in the urban landscape will

occur in the short term with significant localised negative effects. However, with the maturation of proposed landscaping and remediation of the weir, in the longer term the development will have a positive impact on population via improvements in urban landscape/visual amenity.

11.8. **Biodiversity.** The assessment of potential effects on European sites is considered in the appropriate assessment section of this report. This section considers the potential for wider effects of the development on biodiversity. However, there is an element of overlap with section 12 by virtue of habitats and species present and potential effects.

11.9. ***Baseline***. Section 10 of the applicant's documentation comprises an Ecological Impact Assessment (EcIA). It describes and evaluates the habitats in the area of the site and addresses potential impacts of the development on the ecology of the site and the surrounding area. The report is based on desk survey and fieldwork and follows the structure and advice notes in respect of the preparation of EIARs. Appraisal of impacts follows NRA and CIEEM guidelines.

11.10. The subject site lies c.750m downstream of Blackwater Valley (The Beech Wood) pNHA (site code 001797) and c.375m upstream of Blackwater River Callows pNHA (site code 000073). The River Blackwater, main channel, is designated as a salmonid river and the appeal site lies within the Freshwater Pearl Mussel sensitive area. The River supports resident Brown Trout, a population and Sea Trout and valuable population of Atlantic Salmon.

11.11. Aquatic baseline report. The Aquatic baseline report for Fermoy Weir is based on walkover survey, aerial drone survey, SONAR survey, electrofishing, eDNA analysis (shad species), survey of white-clawed crayfish, Freshwater pearl mussel and otter and biological water quality evaluation (macro-invertebrates). Habitats are described by reference to survey sections A to E of the development area (Figure 9). Sections A and B upstream of the weir were dominated by homogenous deep glide habitat and limited instream macrophytes. Section C was dominated by faster and more heterogenous flows, including fast glide habitat, deep pool, riffle and shallow glide present and small islands of exposed gravel and cobble and richer macrophyte community. Section D was dominated by very fast glide and pool habitat and

increased macrophyte community. Section E, comprising the Mill Race, comprised standing water with diverse macrophyte community.

11.12. All aquatic survey areas (sections A to D of the river) were considered of International Importance as they form part of the River Blackwater (Cork/Waterford SAC) and of high value given the presence of qualifying interest *Lampetra* sp. ammocoetes, Atlantic salmon, White-clawed Crayfish and Otter (with an otter holt c.300m east of the development site) and Annex I habitats '*Water courses of plain to montane levels, with submerged or floating vegetation of Ranunculion fluitantis and Callitricho-Batrachion or aquatic mosses [3260]*' (sections C and D) and '*Hydrophilous tall herb fringe communities of planes and of the montane to alpine level [6430]*' (sections C and D). Section E (Mill Race) supported Otter and herbaceous vegetation representative of Annex I habitat 6430 (above) and was considered of local importance (higher value). No Freshwater Pearl Mussel were recorded within the surveyed area and suitable habitat was considered to be poor or sub-optimal. Shad species was not detected in eDNA analysis at the location (section 7.7.1).

11.13. Habitats and species. Habitats are mapped in Figure 10 of the EcIA and comprise depositing lowland river, scrub, amenity grassland/dry meadows and grassy verges, buildings and artificial surfaces, scrub/tall herb swap and canal. Table 15 summarises the ecological value of the habitats. Of note, the depositing lowland river is considered of International Importance along with the tall herb/swamp communities identified on the vegetated gravel islands located in the river downstream of the weir identified. These are described as a vulnerable European habitat, subject to wetting and drying and supporting the Annex I habitat 6430. Good examples of Annex I habitat 6430 was also found in the Mill Race channel.

11.14. No rare or endanger species of flora were identified in site surveys.

11.15. The development site is identified as one of potential importance to bat species, given its location within the River Blackwater channel (providing foraging habitat and commuting pathways into the wider landscape for bats), features of value for bats within the development site i.e. woodland, treelines and the River Blackwater channel and previous surveys carried out in 2007 for the Fermoy Flood Relief Scheme which found high levels of bat activity particularly in the vicinity of Fermoy

bridge (with Soprano Pipistrelle, Common Pipistrelle, Leisler's and Daubenton's Bat recorded) but no bat roosts.

11.16. For the subject development, a Bat Activity Survey (Bat Detector Survey) was carried out in 2021 upstream and downstream of Fermoy Bridge (May and September). It confirms the use of the site by bat species (high value at a local level) for foraging including by Soprano Pipistrelle and Common Pipistrelle and to a lesser extent Leisler's Bat, Daubenton's bat and Brown Long-eared Bat. Survey of trees to be removed were considered unlikely to provide significant bat roosts (but not excluded).

11.17. The applicant's otter survey found signs of feeding, breeding and resting sites in the vicinity of the weir, with spraint, three couch sites and a holt present (c.300m east of development boundary) (Figure 12).

11.18. Having regard to the habitats present on site, the development site was considered to be of local value (lower importance) for Pygmy Shrew, Red Squirrel, hedgehog, and negligible value for badger, Irish hare, Fallow deer, Common Frog or reptiles.

11.19. A small, wooded island within the River Blackwater channel c.700m upstream was identified as potentially supporting Alluvial woodland habitat but due to a significant presence of non-native species was not considered to be a significant example of Annex I habitat.

11.20. Birds. Bird species recorded during site surveys are set out in Table 6 EcIA, including Little Egret (Annex I Birds Directive), Grey Wagtail (red list) and Goldcrest, Lesser Black-Backed Gull, Mallard, Mute Swan and Swallow (amber list). Overall the development site was considered to be of Local Importance (Higher value) for birds. The River Blackwater is stated to have the potential to provide additional habitat for more specialised species such as Kingfisher. Breeding Kingfisher has been recorded in proximity to the study area (NDBC). However, no signs of the species or nesting sites were recorded during site surveys (p. 64-5, EcIA). The EcIA considers that the riverbanks bordering the site area either man made or too low to provide nesting habitat, but the instream vegetation particularly downstream of the bridge provides potential foraging habitat.

11.21. Invasive species. Himalayan Balsam and Japanese Knotweed were located within the development site (Figure 13) and Dace (an invasive fish species) during electrofishing surveys, with potential to impact on native salmonids.

11.22. Water quality. EPA ecological status of the Blackwater upstream, at the development site and downstream of the site is reported as is 'Fair' or Q4 (Figure 16 and Table 11). The site lies within the Blackwater (Munster) _190 sub-basin, with Good status 2013 – 2018 and not at risk of failing to meet WFD water quality objectives (3rd Cycle). Downstream of the site (c.2km) the Blackwater falls within the Blackwater (Munster)_200 sub-basin, also with Good status 2013-2018 and Not at Risk (3rd Cycle). Biological monitoring of water quality in the survey area (Figure 9, EcIA), with Moderate WFD status in three locations (S1, S2 and S4) and Good WFD status in one (S3).

11.23. ***Potential Impacts***. Potential ecological impacts are identified as:

- Net loss of terrestrial habitat including trees.
- Temporary loss of aquatic habitat during construction.
- Noise, disturbance and lighting during construction with displacement effects of birds and mammals e.g. Little Egret, Otter, other birds and mammals including bats.
- Increased dust with localised impacts on vegetation and habitats.
- Disturbance to fish and invertebrate species from works within/near aquatic habitats.
- Unregulated discharge of sediment laden runoff, disturbance of river bed and riparian zone, smothering of habitats, with impacts on fisheries habitat, macroinvertebrate habitat and aquatic ecology (including during flood events).
- Spills of hydrocarbons etc. with impacts during construction on ground and surface water with resultant effects on aquatic ecology.

11.24. ***Evaluation of impacts***. The EcIA considers the likely effect of 'do nothing' (section 9.1). The most significant effects are the high velocities in the river due to the breaches in the weir which do not enable fish passage for all species and potential for adverse effects species and habitats with the uncontrolled release of silt that has accumulated up stream of the weir, with its continued degradation.

11.25. Evaluation of impacts for the proposed development are:

11.26. Habitats. Direct impacts on habitats are considered to be negative and long term, ranging from slight to moderate (Table 15). Moderate impacts occur with the loss of the treeline along the northern bank (predominantly non-native trees) and temporary impacts on river habitat (no permanent loss). No direct effects on tall herb swap habitat is predicted (as downstream of Bridge and works).

11.27. Indirect impacts on alluvial woodland (c.700m upstream of the site) are considered to by slight positive with restoration of established water levels. The EcIA acknowledges that damming of the river during construction, and with the completed works, the hydrological regime of the river has the potential to affect river habitat including '*Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation*'. However, overall the EcIA considers that there is not likely to be any significant change in the amount of this habitat as rivers are dynamic systems and the more controlled flow conditions will favour the development of the habitat in some areas and be determinantal in others, with overall the habitat less likely to be affected by extreme fluctuations in flow patterns (i.e. with continued deterioration of weir).

11.28. Fauna. The EcIA considers that the development will give rise to short term temporary loss of river *otter* habitat and resting/feeding areas along the weir structure as well as temporary displacement during construction works (noise, disturbance). Mitigation measures are set out in section 14.12. These include pre-construction survey to determine use of or new holts/couches, exclusions zones around otter holts, derogation licence if required and ecological clerk of works to ensure no impediments to movement between feeding areas etc. With mitigation measures, including measures to minimise impacts on water quality (and therefore prey), no significant impacts on otter species are anticipated to occur. With operation, it is acknowledged that there will be some loss of habitat but this is not considered to be significant in the context of the wider area of the site. Operation of the weir will not require lighting or result in operational noise.

11.29. During construction, removal of c. 30 trees along the northern bank of the Blackwater, in the area of the fish bypass, will result in the loss of foraging habitat for *bat species* and the potential for connectivity between foraging habitats (no bats recorded emerging from trees in footprint of fish bypass channel in survey work). Lighting has the potential to deter foraging by some species and during construction

it will be directed away from the tree lines and the areas of the River Blackwater outside the immediate working area. Overall impact during construction is predicted to be negative, moderate and short term. During operation, with the maturing of proposed landscaping (to include native tree species) and provision of bat boxes, impacts of the development on bat species is considered to be not significant.

11.30. Loss of trees on the northern bank of the River will also result in the loss of nesting and roosting habitats for *birds* and some displacement with noise and disturbance. Mitigation measures include a pre-construction bird survey (to include Kingfisher), avoidance of impacts on any breeding species (e.g. nests) and keeping noise and light levels to a minimum, effects are predicted to be short term, slight and negative. During operation, noise/lighting will cease and the landscape plan will provide foraging and nesting resources for the local bird population, with no significant impacts.

11.31. Impacts on *other mammals* during construction is considered to be short term (loss of habitat, noise and disturbance), negative and slight. In the longer term operational impacts will not be significant (habituation of mammals to urban setting, implementation of landscape plan).

11.32. *Aquatic species.* Direct impacts during construction works on *fish species* will be prevented by removing fish, including juvenile lamprey, sequencing of works to preserve river flows for the movement of fish (minimum depth maintained) and no work at night (when main surges in migration are likely to occur). Other proposed mitigation measures include:

- Short term nature of works to be carried out in the dry,
- Seasonal restrictions pertaining to the project, to be carried out between July and September (page 71, EcIA),
- Site specific mitigation measures including in respect of water quality,
- Reinstatement of the river bed, and
- Landscaping to provide riparian vegetation (to provide protection from predators and sunlight and increase invertebrate prey for fish species).

11.33. Subject to these measures no direct impact on fish species are predicted to occur during construction (including from mobilisation of silt).

11.34. With operation there is predicted to be no decline in the extent and distribution of spawning beds or long term impacts on spawning habitat, distribution, population structure or breeding success of fish species in the medium to long term. Overall long term impact on fish and invertebrate habitat is considered to be slight, negative and short term.

11.35. During operation, the fish bypass channel has been designed to provide passage for all fish species including Atlantic salmon, lamprey species, Twait Shad and crayfish. Modelled velocities. These conclusions are supported by technical analysis presented in Section 6, Engineering Technical Report and associated appendices C and D. Appendix C provides a technical review of the hydraulic design of the fish bypass (supported by computational modelling exercise in Appendix C).

11.36. The technical review provides details on swim speeds of key fish species and generic swim depths and assessment of the predicted design flows of the fish bypass against these parameters and other criteria in respect of fish bypass design (e.g. location of entrance). The report concludes that the fish bypass will generally provide suitable hydraulic passage for a range of target fish species. However, it indicates excessive velocities in two of five inlet gaps.

11.37. The EcIA states that these can be reduced by introducing perturbation boulders upstream of the inlets of these gaps, with the exact configuration and orientation of boulders best established in situ when the channel has been constructed. No impact on fish predation is anticipated over and above other sections of the main river channel. Impact of the fish passage on all fish species during operation is considered to be positive, significant and long term. Monitoring to verify the hydraulic performance of the bypass channel is proposed along with monitoring of the relative abundance and distribution of fish communities within the river following construction of the fish bypass (see AA section of this report for species specific monitoring).

11.38. A *Biosecurity* Management Plan is proposed to prevent the introduction of Crayfish plague to the Blackwater. The fish bypass system will have a neutral effect on Dace species.

11.39. *Other fauna*. White-clawed crayfish will be removed the river substrate prior to works commencing. The development is likely to reduce crevices which provide

refuges for the species (e.g. within the weir). The EcIA state that Crayfish are gradually colonising the River Blackwater and there is likely to be large areas of habitat available to the species. It is also stated that rock armour is likely to provide suitable refuges for the species and White-clawed Crayfish are likely to recolonise the area after works ar complete. Overall impact is considered to be negative, not significant long term. No Freshwater Pearl Mussel have not been recorded in the development area and there are no know areas of active recruitment downstream of the works and mitigation measures will prevent significant deposition of fine material into the River. Impact on Freshwater Pearl Mussel will be neutral, not significant and long term.

11.40. Terrestrial invasive species. With the implementation of the Invasive Species Management Plan (Appendix 5, EcIA), the report considers that there will be no movement of soil or plant material potentially containing fragments of these species outside of the currently contaminated area.

11.41. Water quality. During construction a range of standard mitigation measures (including those for working in a riverine environment) are proposed to prevent the impact of accidental spills and hydrocarbon contamination (section 14.3, EcIA). With the implementation of these, no significant impacts on water quality from hydrocarbons are anticipated. Similarly, mitigation measures are proposed to manage the risk of siltation (to include surface Water Management System and discharge to green areas) and cement pollution are proposed for construction works. These include site specific measures and use of temporary dams for works to be carried out in a dry environment (section 14.4, EcIA).

11.42. During operation, the Scour Assessment Report (Appendix A of applicant's response to submissions) indicates that velocities around Fermoy Bridge pier are unlikely to cause scour (low risk), with no potential for adverse effect on the bridge stability or aquatic or riparian habitats (movement of sediment). Similarly, the flood risk assessment (see below) has concluded that there is no increase in flood risk or increase in water levels alongside flood defences. Monitoring of water quality and the efficiency of the fish bypass channel is also proposed, as discussed above.

11.43. Cumulative. Section 13 of the EcIA examines the potential for cumulative impacts and considers that the development will not give rise to risk of long term noise or

disturbance effects or impacts on water quality or, therefore, of significant cumulative impacts. During operation, the development will allow the free passage of fish through this area of Blackwater River, with Fermoy Weir and Clondulane Weir (5km downstream of Fermoy) identified as barriers to fish passage. A application to remove 50m of Clondulane Weir is referred to the EcIA, with potential for positive cumulative effects.

11.44. Mitigation. These are referred to in section 14 of the EcIA and as discussed above include designed-in measures, best practice and site specific measures for inclusion in an outline Construction Management Plan and parent Construction Environmental Management Plan, with oversight by an Ecological Clerk of Works. Monitoring measures include a water quality monitoring programme testing and modification (if required) of the rough channel pool passes, in conjunction with IFI.

11.45. **Assessment.**

11.46. Having regard to the foregoing, notably the detailed survey data upon which the assessment of likely effects is made, the proposed construction methodology (bank and in-river works), modest and/or temporary land take and mitigation measures and the updated modelling of the likely velocities in the fish bypass system (which are discussed further in the AA section of this report), I am satisfied that the proposed development, whilst having a short term, temporary negative impact on the ecology of the development site and Blackwater River, will not have a significant long term effect on the river system, its riparian environment or associated species of flora and fauna. However, I am mindful of the dynamic environment of the river habitat and would recommend that during construction and with the operation of the proposed development, efficacy of mitigation measures and effects on river ecology are monitored, reported on an any significant deviations from predicted effects, addressed.

11.47. **Land, soil, water, air and climate.**

11.48. *Land and soil*. The proposed development has a very modest land take, with a minor increase in the extent of the river and a corresponding inconsequential loss of river bank area. Dredging and reprofiling of the river bed will also occur over a small area, with no potential for significant effects on geological resource.

11.49. *Water*. Effects on water quality have been discussed above and are further considered in the AA section of this report. Subject to the strict implementation of mitigation measures, I am satisfied that no adverse effects on water quality will arise for the reasons stated. Flood risk is considered below.

11.50. *Air.* Construction works will give rise to short term effects on noise, vibration and air quality (potential for dust emissions). However, if managed in accordance with mitigation measures, which include reference to standard emission limits, effects will be short term and not significant.

11.51. *Climate*. The development will have an inconsequential impact on climate and with climate change is likely to provide a more stable riverine environment for any significant change in weather patterns (compared to the existing and unstable weir).

11.52. *Flood Risk***.** The application documents (Appendix E, Section 6) provides a Flood Risk Assessment report (June 2022). This is subsequently updated in response to the submissions made (Appendix F of submission to Board, 3rd March 2023). In addition, the applicant comments on the submission by Simon Beckett in relation to flood risk (section 3, response document, 3rd March 2023).

11.53. The revised FRA provides an assessment of the effect of the development on flood risk, both upstream and downstream of the proposed development and includes the likely effect of the development on the trigger levels for erecting the OPW Fermoy flood defence scheme barriers. It is based on detailed design of the proposed weir with crest of crump weir at 21.45mOD, Mill Race wall at 21.55mOD and proposed fish bypass crest level of 21.20mOD.

11.54. The proposed development, considered as a navigation facility for fish, is classed as a water compatible development (section 2.3, FRA). The weir also previously maintained the water level upstream which facilitated activities such as rowing, and the weir itself promoted tourism in the town. The remedial works are therefore also categorised as water compatible development (water based recreation and tourism (Table 2.2, FRA).

11.55. The appeal site is situated in Flood Zone A (OPW National Flood Hazard Mapping), with the town susceptible to fluvial flooding from the River Blackwater. Flood extent is shown in the Southern Western CFRAM Study Map 'Fermoy – Flood Extent', appendix C of FRA in the context of flood defence works. These were carried out in

the town in 2009 (North) and 2014 (South) with works including construction of flood defence walls, embankments and the installation of demountable flood barriers erected prior to an impending flood event. The flood defence works have been designed to protect the town of Fermoy from flooding up to a 1% AEP flood event (1 in 100 year flood event i.e. Medium Probability Fluvial flood event).

11.56. During flood conditions, where the demountable flood barriers are erected, the proposed development would be submerged. As a water compatible development, this is not considered to be inappropriate.

11.57. The FRA rules out risks that the development would be at risk of pluvial flooding (all past flood events associated with fluvial flooding) or increase the risk of flooding elsewhere, by interfering with overland flow routes (development would be submerged). The issue of tidal flooding is also ruled out at an early stage due to distance of the site, c.50km, from the coast.

11.58. The FRA refers to the operation of the subject development only with construction work in the flood plain will be agreed with OPW under Section 9 and Section 47 (if required) consents (see comments below).

11.59. The assessment of potential impacts of the development on upstream and downstream flooding is based on a site specific hydraulic model of the river extending c.365m upstream and c.380m downstream of Kent Bridge (2D HEC-RAS). The revised FRA (and input data for the model) has been informed by additional flow data for the River measured at Fermoy gauge 18107 (HECRAS Modelling output locations existing layout – Drawing no. -0089, Appendix D, revised FRA) for the period 2006 to 2021, provided by OPW, and other data sets including the observed data referred to in the 2014 Jacob Babtie Report, to establish a rating curve for the river. After assessment and discussion with the OPW, final design flows are those set out in Table 4-1 with data abstracted from the gauges in the area for flood events in December 2015 (prior to breaches) and 2021 (post breaches) used to calibrate the model. The surface of the hydraulic model is developed using a range of datasets set out in section 5.3.2 which include aerial survey, weir survey and flood defence and emergency works.

11.60. Hydraulic modelling of water levels for a range of return periods, ranging from 1 in 2 year to 1 in 200 year flood events, is carried out for existing (but with weir intact to

enable a like by like comparison) and proposed scenarios, with results presented in Table 5-4 and 5-5. It is predicted in the assessment that the proposed scheme does not increase the risk of flooding in the year 5 up to 1 in 100 year storm events. However, localised increases in water level at gauge 18107 and 18117 (at Fermoy Bridge and downstream of bridge, see Drawing -0089) occur up to 40mm at 10%ile to 1:2 year return periods. These levels are considered to be minor with no risk of upstream or downstream flooding.

11.61. In Tables 5-6 to 5-9 predicted outputs from the modelling exercise are reviewed against the trigger levels for the Fermoy North and South Flood Defence Schemes to assess if the proposal would have a negative impact on the levels associated with flood protocols (with no flood defence system in place for 1 in 2 year and 1 in 5 year flood events, as flood defence barriers are not erected for floods of this magnitude). The Tables should be read in conjunction with drawing – 0089 'Hercras Modelling Output Locations Existing Layout' for location of flood defences.

11.62. It is evident from the exercise that the levels predicted for the proposed development are lower than the existing scenario (prior to breach in 2016) for most return periods, with small increases in levels for lower flood events (as a consequence of redirection of flows around the Bypass channel), with no significant impact on the trigger level for erection of flood defence barriers or the level of protection afforded by the barriers.

11.63. Table 5-10 indicates the results of the assessment of effects of the proposed development on the freeboard at certain barriers, with increases in freeboard for all locations and no increased risk of flooding.

11.64. Risk to upstream and downstream lands are ruled out due to the lower water levels generally predicted for most flood events. Table 5-12 provides consideration of lower flood events, with slightly higher levels (c.10mm) for the existing and proposed scenarios, with localised effects only i.e. under low flow conditions there will be no increase in flood depths upstream or downstream of the development.

11.65. Section 5.5 of the FRA refers to the comments by OPW that proposed landscaping may impede flood flows. The FRA states that compensatory planting is required to replace the trees removed on the north side of the river and to provide shade and

cover the fish bypass, but that the landscaping plan can be modified to address the OPW concerns.

11.66. **Assessment.**

11.67. Having regard to the detailed modelling exercise carried out by the applicant, which was carried out in consultation with the OPW and which included calibration with actual flood events, I am satisfied that the applicant has provided sufficient data to support the conclusions that the proposed development is not likely to result in a greater risk of flooding upstream or downstream of the site or any negative impact on the OPW flood defence scheme installed at Fermoy. I note that the OPW has not carried out a full review of the additional data provided by the applicant. However, neither has it raised any subsequent in principle objection to it (see email to applicant dated 1st March 2023 from the OPW, Appendix G to applicant's response to submissions).

11.68. With regard to landscaping between the fish bypass and the flood defence embankment, it is evident in the application documents that c.30 no. trees will be removed from the northern bank of the river to facilitate the development. These are likely to have an existing effect on flows within the flood plain. I also note that the applicant's comments (section 6.3H applicant's response to submissions) that modelling parameters for roughness of the river bank reflect the presence of isolated trees within the floodplain and local areas of denser planting along the bypass channel.

11.69. Having regard to the existing scenario, modelling of proposed scenario and visual impact of the proposed works and in the interest of biodiversity and to provide shade to the fish by pass, I am satisfied that compensatory planting should be provided in the area between the fish by pass and the flood defence embankment. This is a matter which can be addressed by condition.

11.70. *Other matters raised by OPW*. The OPW make certain comments on the proposed development on their submissions to the Board (see section 7.0 above). A number of these comments refer to further permissions/consents that the applicant will be required to obtain. These matters fall outside of the planning system and are not considered here. The OPW also make detailed comments on the planning drawings submitted and flood risk. The applicant responds to these matters in their

submission to the Board dated 3rd March 2023. I address these matters in turn below:

- Planting between the fish bypass and flood defence embankment and risk of reduced flow capacity in floodplain - Addressed above.
- Stability of materials used to construct fish bypass and its build up - In response the applicant states that the armour stone size in drawing no. 19011-TJOC-PLXX-DR-0054 Rev C02 was incorrectly shown as 100m rather than 1000mm. This has been corrected in Appendix C of the submission. The revised plan indicates weir stones of 500x1000x1600 but otherwise no change to dimensions of stones used to construct the by-pass channel. I also note that the drawings indicate that the channel will be constructed by materials excavated from the downstream channel, which is welcomed by OPW in their submission.
- Labelling of drawings – The applicant includes revised Drawing 19011-TJOC-PL-XX-DR-C-0060 showing labels on plan to match those on drawing -0063. This matter has therefore been adequately addressed.
- Proposed weir levels are c.350mm higher than existing levels (indicated on drawing no. 19011-TJOC-PL-XX-DR-C-0063) – In response the applicant accepts that the crest of the weir upstream of the bridge and Mill Race end of the weir will be higher than existing. However, this will be offset by an increase in the volume of water flowing through the wider by pass channel (net increase in cross section of weir of 6.4m^2) and the increased levels have been included within the hydraulic model with overall lower flood levels than existing (except for some localised areas in the 2 year and 5 year return periods). Having regard to my comments above in respect of the Flood Risk Assessment, I am satisfied that the proposed increase in weir height, to be offset by increase in width, will not have an adverse effect on upstream or downstream flooding or flood levels.
- Location of spoil heaps, site accommodation and location of ‘works’ in the floodplain between the river and the flood defence embankment, with potential for obstruction flows and increase in flood levels (drawing nos. -0084, -0085 and -0086) – The applicant states that (a) the location of site facilities (to be

located at first floor) should have referred to 10%AEP not 1% AEP, (b) the modelling undertaken in the submission does not include for the construction phase of the development, (c) works will take place in the summer months and (d) equipment and loose materials can be removed in the event of a warning of a significant flood event in this period. Further, it is stated that the location of office accommodation and arrangements for temporary works can be agreed with the OPW in advance of Section 9 and Section 47 consent under the Arterial Drainage Acts. Given the short term nature of construction works and subject to the location of such accommodation remaining within the red line boundary of the site, I am satisfied that the detailed location site accommodation, temporary works and spoil heaps can be dealt with by condition, requiring the applicant to agree location with the OPW in advance of construction.

11.71. In public submission on the application (Beckett) it is argued that the breach of the weir has been associated with a reduction in flood events in Fermoy. In response the applicant refers the Board to a flood event of December 2015 (pre-breach) where a maximum flood level of 26.756mOD was recorded (gauge 18106) and a subsequent flood event in February 2021 (post breach) where a maximum flood level of 26.53mOD was recorded (gauge 18106). In both cases flood defences were erected. I am satisfied therefore that the presence of the breach has not prevented flood events. This is not unexpected as, under high flow and flood conditions, the weir would be underwater and would not impede flows.

11.72. **Material assets, cultural heritage and landscape.**

11.73. The proposed development will have a positive impact on Fermoy Weir, facilitating the restoration of a Protected Structure. TII have raised concerns regarding the effect of the development on bridge stability, DAU have made recommendations in respect of archaeology. These are discussed below alongside the landscape effects of the development.

11.74. **Kent Bridge**. TII raised concerns in their submissions on the application regarding the potential for hydraulic effects of the proposed development on bridge stability/integrity. Subsequent to the submission, the applicant has engaged with TII and carried out a Level 2 Scour Assessment Report in accordance with the UK's

BD97/12 'The assessment of scour and other hydraulic actions at bridges' (Appendix A of applicant's response to submissions). The scour assessment concludes that the velocities at the bridge in the design event (1 in 200 year plus climate change allowance) does not exceed the threshold velocity for bed erosion based on the material observed to be present in the riverbed at the bridge.

11.75. I have reviewed the Scour Assessment Report and its findings. It is stated that the primary purpose of the Level 2 Scour Assessment is to calculate the estimated scour depth corresponding to the Assessment Flow, and to compare this with the foundation level. The report refers to previous principal inspections and underwater inspections of the bridge (which included channel bed and scour assessments), walkover survey and the 2D hydraulic modelling of existing and proposed flows in the river carried out as part of the FRA (above). Having regard to the physical characteristics of the bridge and channel bed, predicted flow depth and velocity, the report calculates that for 0.5%AEP (1 in 200 year flood event with climate change), the risk of scouring is low. The Scour Assessment Calculations (Appendix D) refer to OPW flow data and HEC-RAS modelled data, with both calculations concluding low risk of scour.

11.76. The methodology and calculations included in the Scour Assessment Report and its conclusions have been accepted by TII (Appendix B of applicant's response to submissions, email to applicant from TII dated 17th October 2022). However, two other issues are raised in respect of the development:

(a) the applicant's intention to dredge the river upstream of span 3 and 4 (1 being north and 7 being south) and the potential of this to cause scour and undermine piers and exacerbate an area of scour identified at pier 3 in the 2017 survey, and

(b) the effect of temporary works on pier 5 (construction of embankment).

11.77. The applicant addresses these matters by email to TII dated 9th November 2022 (Appendix B).

11.78. With regard to dredging the applicant states that the proposal to dredge the riverbed upstream of the bridge (downstream of weir) is intended to provide a resting pool for fish prior to entry to the fish bypass section. This pool has been altered such that there is no reduction in riverbed levels within 10m of the bridge (upstream face). The

2018 survey of the weir identified an existing pool in the river bed downstream of the weir in the area of the proposed resting pool. The lowest level of the bed then identified was 17.55mOD, Malin, which is lower than the bed level now proposed for the resting pool, 18.55mOD (these alterations are reflected in drawing -0053 Rev C02, 'Proposed Fish Bypass', Appendix C of applicant's response to submissions). It is also stated that the area of scour identified at Pier 3 in the 2017 survey was no longer present in the Scour Assessment Report 2022. Any localised depressions in the riverbed identified at the bridge piers during the course of construction works will be infilled with natural riverbed material in accordance with a method statement approved by TII, IFI and NPWS prior to commencement.

11.79. Having regard to the foregoing, and having regard to the dynamic nature of the river environment, I am satisfied that the applicant has addressed the risk of scour from the provision of a resting pool and that it is appropriate that any filling of natural depressions be addressed by the interested parties as proposed. The matter can be addressed by condition.

11.80. With regard to the embankment issue, the applicant states that it is not proposed to remove the existing embankment which forms the weir structure upstream and immediately downstream of the bridge, which wraps around pier 5. Instead, as described in the Conservation Engineer's Report it is proposed to remove concrete screed from the surface of the weir, replace missing stones, grout inject and point masonry with Prompt natural cement (a rapid setting material that is suited to a marine environment). At the downstream end of the weir structure at Pier 5, the weir does not extend along the north side of the pier (see Figure 2, Appendix B of applicant's response to submissions). Construction methodology is removal of concrete screed from top of weir at either end of pier, reinstatement of cobbles and stone, pointing of joints with Prompt natural cement and rock armour filled trench for toe of embankment to be reduced in depth as it approaches the vicinity of the bridge pier. The applicant's response to the submission states that a detailed construction method statement will be developed and submitted to TII for agreement prior to construction.

11.81. Having regard to the foregoing, I am satisfied that the approach taken by the applicant in respect of works in the vicinity of the bridge and proposals to agree detailed construction method statements in advance of works with TII, are in

principle acceptable and not likely to result in scour or otherwise damage the bridge. The matter can be addressed by condition.

11.82. **Archaeology**. On file is an Underwater Archaeological Impact Assessment of the subject development (Section 13 of application). It identifies a generally positive effects on the character/appearance of the weir (slight negative effect on setting of weir with new fish bypass) and underwater cultural heritage but that construction works have potential to negatively impact on previously unrecorded archaeological remains that may be buried in the riverbed. The Assessment sets out mitigation measures (section 7 of Assessment) including archaeological monitoring of all excavation works.

11.83. The observations of the application by the DAU in respect of underwater archaeology, recommend conditions in respect of implementation of mitigation measures (section 7 of assessment), monitoring of all groundworks in accordance with prescribed format to include that all excavated material be spread and metal detected under licence to recover any archaeological remains.

11.84. The recommendations of the DAU are considered to be acceptable by the applicant with a caveat that the obligation to spread and metal detect all excavated deposits should be qualified to apply to such layers or levels of excavated material as required by the supervising archaeologist. This approach seems reasonable and can be addressed by condition.

11.85. **Landscape effects**. Section 12 of the application documents include a Landscape and Visual Impact Assessment (LVIA). It states that the site is situated within a landscape of High Value and within an attractive urban environment that contains national monuments and protected structures. The site incorporates amenity open space, a landscaped grass area with seating, a line of mature poplar trees and riverside deciduous planting. The LVIA concludes that the development will have a negative impact on the landscape and a level of negative visual impact on receptors, given its location in an urban area and visibility. It is stated that the main landscape and visual impacts will occur during the construction stage with the removal of trees, tree surgery and excavations in the park setting. In the longer term there would be the loss of amenity space where part of the grass open area will be used for the fish bypass. The positive aspects of the development are considered to be the

remediation of the deteriorating weir which is an important feature in the centre of the town and potential for inclusion of native species planting, promoting biodiversity, and replacing existing non-native planting. Photomontages of the subject development are included in the LVIA from 7 viewpoints in the area of the site.

11.86. Having regard to inspection of the appeal site, I am satisfied that the selected views of the site demonstrate the most significant visual and landscape effects of the development. Further, I would accept the analysis presented in the LVIA that greatest effects will occur during construction with the loss of mature trees which make a significant contribution to the townscape of Fermoy and views from, to and across Kent Bridge and the Blackwater River (view 01, 02, 03, 04 05 and 06). These effects will persist until the proposed landscaping matures and demonstrate the necessity of replacement planting, in the interest of visual amenity.

12.0 Appropriate Assessment

12.1. **The likely significant effects on a European site:** The areas addressed in this section are as follows:

- Compliance with Articles 6(3) of the EU Habitats Directive
- The Natura Impact Statement
- Appropriate Assessment

12.2. **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.

12.3. **The Natura Impact Statement .** The application was accompanied by a 'Report in Support of Appropriate Assessment Screening' (May 2022) and a Natura Impact Statement (NIS) 'Fermoy Weir Remediation and Fish Bypass channel' (May 2022).

The AA Screening Report is included in Section 8 of the application documents. The Report concludes that the possibility of significant effects on the Blackwater River (Cork/Waterford) SAC cannot be ruled out and therefore an Appropriate Assessment is required.

12.4. Than NIS 'Fermoy Weir Remediation and Fish Bypass channel' May 2022, outlined the methodology used for assessing potential impacts on the habitats and species within the River Blackwater (Cork/Waterford) SAC and options considered for the weir remediation and fish bypass channel. It describes the final design and baseline information on the existing environment, with regard to extensive survey work (section 6.2 and 6.3 of the NIS, and associated appendices). It assesses potential impacts of the development on the European site alone and in combination with other plans and projects and sets out mitigation measures.

12.5. The NIS was informed by the following studies, surveys and consultations:

- A desk top study.
- Extensive ecological and habitat survey work, including Terrestrial Habitat Assessment, Aquatic Habitat Assessment, Macrophyte Survey, Biological Water Quality assessment, Tree Survey, Alluvial woodland assessment, Otter survey 250m upstream and downstream of the weir, electrofishing survey, environmental DNA analysis in respect of Twaite Shad, White-clawed Crayfish survey and Freshwater Pearl Mussel survey (6.2 and 6.3, NIS).
- Consultations with the National Parks and Wildlife Service (section 2.3 NIS).

12.6. The report concludes, objectively, that following an examination, analysis and evaluation of relevant information, including the particular nature of the predicted effects from the proposed development and with the implementation of mitigation measures, the construction, operation and decommissioning of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans and projects and states that there is no reasonable scientific doubt in relation to the conclusion.

12.7. Having reviewed the NIS and the supporting documentation, I am satisfied that it provides adequate information in respect of the baseline conditions, clearly identify the potential impacts, and uses best scientific information and knowledge. Details of

mitigation measures are provided and they are summarised in Section 8 of the NIS. I am satisfied therefore that the information is sufficient to allow for appropriate assessment of the proposed development (see further analysis below).

12.8. **Submissions.** The following submission have been made in respect of the proposed development, in respect of the potential for effects of European sites:

- IFI – Consider that as a result of the breach at Fermoy weir, the free passage of migrant fish has been significantly improved and that the applicant give further considerations to alternative options, do nothing and stabilise the remaining section of the existing weir. Reinstating the weir will result in a significant impediment to fish migration and natural river processes within an SAC.
- An Taisce – All issues raised by the DHGL&H should be addressed in respect of impacts on the Blackwater River (Cork/Waterford) SAC and full compliance with Article 6(3) be demonstrated. River Blackwater at risk of not meeting good status. Full assessment of development against Article 4, 4(1)(c) and 5 of the WFD is therefore required (including protection of water dependent Natura 2000 sites).
- DHLG&H - Proposed fish pass to allows access upstream by species of conservation interest, in particular fish pass to be suitable for Twaite shad. Recommends that the Board seek site specific advice from IFI in relation to the efficacy of the fish pass for this and other species (in particular velocities in bypass). Alluvial woodland. It refers to the potential alluvial woodland referenced in the NIS, small island on south bank and larger area on northern bank, c.1-2km upstream and considers that in neither cases alluvial woodland occurs (due to dominance of non-native species). If Board seeking FI it would be beneficial to have a summary table of advantages and disadvantages of the various alternatives assessed. All alternative options should be included, including fish pass in existing breach. Biosecurity measures need to be in place to ensure that Crayfish plague is not introduced by kayaks and canoes in upstream stretches of the river. Monitoring should be conditioned, in particular proposed eDNA monitoring of efficacy of fish pass.

- Public submissions - EU Directive requires all unnecessary obstructions to the path of migratory fish species to be removed if not needed. Wier should be left to nature.

12.9. **Appropriate Assessment**

Screening

12.10. The proposed development is not directly connected with or necessary to the management of any European site.

12.11. Having regard to the information and submissions available, nature, size and location of the proposed development, its likely direct, indirect and cumulative effects, the source pathway receptor principle and sensitivities of the ecological receptors the following European Site is considered relevant to include for the purposes of initial screening for the requirement for Stage 2 appropriate assessment on the basis of likely significant effects.

Table 1: European sites considered for Stage 1 screening.

European site (SAC/SPA)	Qualifying Interests/Conservation Objective to maintain or restore favourable conservation condition	Distance
Blackwater River (Cork/Waterford) SAC (site code 002170)	Habitats: • Estuaries [1130]/Maintain. • Mudflats and sandflats not covered by seawater at low tide [1140]/Maintain. • Perennial vegetation of stony banks [1220]/Maintain. • Salicornia and other annuals colonising mud and sand [1310]/Maintain. • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]/Restore. • Mediterranean salt meadows (Juncetalia maritimi) [1410]/Maintain. • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]/Maintain. • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]/Restore. • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]/Restore.	Development site is within SAC

European site (SAC/SPA)	Qualifying Interests/Conservation Objective to maintain or restore favourable conservation condition	Distance
	• *Taxus baccata woods of the British Isles [91A0]/under review. Species: • Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]/Restore. • Austropotamobius pallipes (White-clawed Crayfish) [1092]/Maintain. • Petromyzon marinus (Sea Lamprey) [1095]/Restore. • Lampetra planeri (Brook Lamprey) [1096]/Maintain. • Lampetra fluviatilis (River Lamprey) [1099]/Maintain. • Alosa fallax fallax (Twaite Shad) [1103]/Restore. • Salmo salar (Salmon) [1106]/Maintain. • Lutra lutra (Otter) [1355]/Restore. • Trichomanes speciosum (Killarney Fern) [1421]/Maintain.	
Blackwater Callows SPA (site code 004094)	Species/habitat: • Whooper Swan (Cygnus cygnus) [A038]/Maintain/restore. • Wigeon (Anas penelope) [A050] • Teal (Anas crecca) [A052] • Black-tailed Godwit (Limosa limosa) [A156] • Wetland and Waterbirds [A999]	1.4km north west (1.6km downstream)

12.12. Having regard to the location of the subject development within River Blackwater and the boundary of the Blackwater River (Cork/Waterford) SAC, the nature of the proposed development which comprises construction work within the river and its banks and the qualifying interests of the European site which includes aquatic habitats and mobile species which could be affected by construction works and operation of the development, I would conclude that a Stage 2 Appropriate Assessment is required for the subject development in relation to the SAC.

12.13. With regard to Blackwater Callows SPA, this site is c.1.2km north east of the appeal site, c.1.6km by water, the Conservation Objectives for this site are '*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA*' and '*To maintain or restore the favourable conservation condition of the wetland habitat at Blackwater Callows SPA as a*

resource for the regularly-occurring migratory waterbirds that utilise it'. Potential impacts on the SPA are examined in the AA Screening Report in respect of loss of *ex situ* foraging habitat, disturbance and impacts on water quality during construction.

12.14. The Screening Report considers the use of the site by SCI associated with the SPA. It maintains that SCI could potentially forage in the vicinity of the proposed development site, including the amenity grassland. Teal is recorded within 2km of the site, but there are no records of any other SCI species in the 2km grid square which overlaps with the site (W89E, NBDC, 2021) or signs of the species during any site visits or survey work (see baseline data for birds in EIA section of this report). The Screening Report considers that habitat loss associated with the amenity grassland would not be significant as it is too small to provide critical foraging for any SCI species and any species utilising the site is already likely to be habituated to noise and disturbance from the urban location of the site. Impacts by way of loss of *ex situ* foraging habitat and disturbance are therefore screened out and having regard to the location of the development, nature of the habitats on site and absence of demonstrable use by the SCI of the SPA. Having regard to the evidence base presented, this conclusion is not unreasonable.

12.15. The Screening Report rules out the effects of significant effects on water quality due to dilution and the distance of the subject site from the SPA. Whilst such effects at this distance are unlikely, works are carried out within the river bed and there is potential for contamination by both sediment, hydrocarbons and cement. The main means of controlling effects is by appropriate construction practices and mitigation measures. As mitigation measures cannot be considered during screening, this SPA is therefore carried forward for appropriate assessment on a conservative basis.

12.16. Given the distances between the subject site and other European sites and the absence of any pathway to connect the subject site to these, the potential for adverse effects on other European sites can be screened out.

Appropriate Assessment

1. Blackwater River (Cork/Waterford) SAC (site code 002170)

12.17. *Description of site*: The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. The site consists of

the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which include the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun. The portions of the Blackwater and its tributaries that fall within this SAC flow through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. The River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively. Two SPAs are also located within the site, Blackwater Callows and Blackwater Estuary, under the Birds Directive.

12.18. *SCI's and Conservation Objectives.* The site is selected as an SAC for the habitats and species listed in Table 1 above. Conservation objectives for each qualifying interest are to maintain or restore the favourable conservation condition of the QI by reference to specific attributes, measures and targets (Tables 4 and 5, NIS). The favourable conservation status of a species is achieved when population data indicates that it is maintaining itself, and the natural range is neither being reduced or likely to be reduced for the foreseeable future and there is likely to be a sufficiently large habitat to maintain its population on a long term basis. For fish species (Lamprey, Atlantic salmon and Twaite shad) measures include percentage of accessible river.

12.19. *Potential effects.* Potential direct and indirect effects on Estuaries, Mudflats and Sandflats, Perennial vegetation with stony banks, Salicornia, Atlantic Salt meadows and Mediterranean salt meadows can all be screened out due to the distance of these SCIs from the subject site (>25km, see NPWS Maps for location of SCIs), and no potential for direct effects (e.g. land take), indirect effects (e.g. noise, disturbance, effects on water quality) or for cumulative effects. Similarly, oak woodland and Killarney Fern are screened out in the NIS due to absence of Old Oak sessile woodland in proximity to the site and specific habitat requirements for Killarney Fern (Table 1, NIS and location of species – see Map 10 of NPWS Conservation Objectives).

12.20. Potential direct, indirect and cumulative effects on remaining QIs/SCIs may arise from the following:

- Habitat loss.
- Impacts on water quality.
- Noise and disturbance.
- Direct injury/mortality.
- Barriers to movement.
- Lighting.
- Spread of invasive species and biosecurity risks.
- Impacts on hydrological regime.
- Increased predation.
- In combination effects.

12.21. ***Loss of Habitat: Terrestrial***

12.22. Baseline data on terrestrial habitats in the development area include amenity grassland, dry meadows and grassy verges and treelines (mostly non-native trees). These are not qualifying interests of the Blackwater (Cork/Waterford SAC) and there will therefore be no direct loss of terrestrial habitat from the SAC (construction or operation). However, construction of the fish bypass will extend into adjoining terrestrial habitat with the loss of trees and bankside vegetation providing cover for fish, invertebrates and Otter. This has the potential to give rise to indirect effects on QIs of the site, notably fish species. The applicant proposes a Landscaping Plan for the development to include revegetation of the bank environment and riparian enhancement to the north and south of the fish bypass channel. This approach seems reasonable and has been discussed above, in the context of flood risk, and if implemented would satisfactorily mitigate the loss of existing mature vegetation alongside the river. No potential holts or couches for Otter were recorded in the terrestrial habitat area and loss of trees is unlikely to significantly impact on this species.

12.23. With the slight increase in water levels with the subject development, upstream of the weir, the NIS considers that this may have a positive effect on the area of poor quality alluvial woodland c.700m upstream of the development. I note that in submissions on the development, NPWS consider that alluvial woodland does not occur at this location due to the due to dominance of non-native species. Downstream of the works there are no areas of alluvial woodland in proximity to the

development and there is no significant impact on water levels. I am satisfied therefore that the development will have no significant effect on this QI.

12.24. The survey aquatic habitat found examples of Annex I habitat '*Hydrophilous tall herb fringe communities of plains and montane to alpine levels [6430]*' downstream of the weir in survey areas C, D and E. These areas fall outside of the construction area and it is stated in the NIS that the habitat will be largely avoided. I also note that it is not habitat which has been identified as a QI of the Blackwater River (Cork/Waterford) SAC.

12.25. ***Loss of Habitat: Aquatic.***

12.26. The proposed development takes place in the main channel of the River Blackwater. Potential impacts on aquatic habitats relate to physical alterations to the riverbed habitat/morphology and smothering of habitats due to resuspension of sediments, both during construction and operation.

12.27. Survey of aquatic habitats found macrophyte communities representative of '*Watercourses of plain to montane levels with Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]'* habitat, within section C and D of the weir (Figure 7 and section 6.3.1 of NIS). The NIS refers to the NPWS, 2012 Conservation Objectives for the SAC which notes (under Attribute Habitat Distribution) that no high conservation value subtypes of the qualifying habitat are known to occur in the SAC.

12.28. The NIS refers to the conservation objectives for the habitat. I note that these include no decline in habitat distribution, maintain appropriate flow regime, ensure substratum is dominated by particle size ranges appropriate to habitat, maintain low concentration of nutrients in water column, maintain vegetation composition, maintain active floodplain at and upstream of habitat.

12.29. Further, the NIS states:

- Temporary damming of the weir will lead to temporary impacts on small areas of this habitat,
- The current hydrological regime of the river is unstable and reinstatement will stabilise hydrological conditions downstream of the weir.
- While vegetation is likely to recolonise the area, weirs can modify flow in complex ways and this may result in loss species that are sensitive to ponding

or slow flows (e.g. *Ranunculion fluitantis).* Predicting loss of habitat due to changes in flow downstream and upstream of the weir is difficult.

- However, the macrophytes recorded within the development site and/or survey area represent a common sub-type of the Annex I habitat and no rare sub-types were recorded during site surveys.
- The habitat can occur over a wide range of physical conditions.
- Whilst impacts will occur on river substrate, the restored structures and substrate will be comparable to what was present prior to the breach and subsequent erosion.

12.30. The NIS also refers to the potential for effects upstream and downstream of the site on this QI by virtue of changes in hydrological regime. It notes that rivers are dynamic systems, with for instance the breach in the weir significantly altering flow patterns. The report accepts that the remediation works may result in changes in distribution pattern of the habitat but that these changes will not necessarily be either positive or negative. The report considers that the stability that will be provided by the development, favouring the development of the habitat in some areas and not in others. The report also notes that the velocities downstream of the fish pass will be lower than those currently generated which may encourage colonization by Ranunculus and Callitriche species.

12.31. Under hydrological regime, I note that the NPWS Conservation Objectives report for the site states that due to regular disturbance (through variations in flow) river macrophytes rarely reach a climax condition but frequently occur as transient communities, with a natural (relatively unmodified) flow regime required.

12.32. The proposed development will provide a modification to the flow regime in the area of the site. It is possible that the development will result in consequences for channel geomorphology and flow patterns that are less favourable to this habitat type than existing. Notwithstanding this, as stated by the applicant and set out in mitigation measures, the restored structure and substrate will be comparable with existing, and the flow regime (overall velocities) are not anticipated to change significantly. Having regard to these factors, the common sub-type of macrophytes identified, absence of rare sub-types, the dynamic nature of the natural river environment and transient nature of the community and notably, the very modest

area of the SAC affected, I am satisfied that the subject development is not likely to have a significant adverse effect on this QI. However, as recommended elsewhere in this report, detailed monitoring of effects of the development should be required, with remediation of any significant effects arising.

12.33. ***Loss of Habitat for QIs.*** Loss of habitat during construction and operation has the potential to impact on the QIs of the River Blackwater (Cork/Waterford) SAC and reduce the area for foraging and breeding habitat. Assuming a worst case scenario, the NIS identifies a potential direct, short term impact on a mix of potential adult, spawning and nursery habitat for Atlantic Salmon within the reinstatement works area, lamprey spawning and White-Clawed crayfish (based on the use of the development site as identified by survey in section 6.3.1-5, 6.5-6.7). No live Freshwater Pearl Mussels were found in the section of the river within 100m upstream and downstream of Fermoy Bridge and direct impacts on Freshwater Pearl Mussel habitats are ruled out.

12.34. Proposed mitigation measures include:

- Reuse of riverbed material for backfill in the reinstated bed area.
- Construction works to take place between July and September (to prevent damage to spawning and early juvenile salmonids) (section 7.1.3, NIS).
- Diversion of flows away from works areas by use of measures to minimise and deposition of resuspending sediments (e.g. water management system, settlement areas, silt curtains).
- Fish to be removed from area of river within barriers/dams/silt curtain envelope.
- White-clawed crayfish to be trapped and relocated outside of works area.

12.35. As the proposed works will take place between July and September, the NIS acknowledges that this period will overlap with the period in which Sea Lamprey spawn (June to mid-July, section 7.5.3 NIS). However, whilst Sea Lamprey are known to spawn in the area, the NIS refers to the absence of Sea Lamprey spawning areas during sites surveys. Impacts on Sea Lamprey spawning are therefore not considered to be significant. Shad spawn between early April and the end of June and Twaite Shad populations only occur downstream of the site, hence no adverse impacts are predicted on this species.

12.36. Post construction, rock armour and the surface of the remediated weir will provide habitat/opportunities for Crayfish and fish species are expected to rapidly recolonise suitable areas. The NIS considers that consequently, not significant impacts on long-term population dynamics will occur.

12.37. Having regard to the foregoing, notably the timing of construction works, absence of spawning areas identified, short term nature of works and detailed construction methodology (to include reuse of riverbed material), and modest effects of flow regime in terms of predicted velocities and depth, I am satisfied that the development will not result in any significant impact on QIs of the River Blackwater (Cork/Waterford) SAC as a consequence of loss of habitat.

12.38. ***Impacts on Water Quality.*** Potential adverse effects on water quality arising from use and/or accidental spillage of hydrocarbons, concrete and silt could give rise to adverse effects on the aquatic qualifying interests of the SAC by way of impacts on water quality (e.g. toxicity to fish species, Lamprey, Atlantic Salmon and Twaite Shad and White-clawed Crayfish) and smothering of spawning areas, changes to riverbed habitat making it unsuitable for Freshwater Pearl Mussel. Impacts may also arise for Brown Trout, an important component of Freshwater Pearl Mussel. Significant impacts on White-clawed Crayfish and on fish stocks could impact on Otter (loss of prey). Impacts on water quality could also adversely affect QI habitats of the SAC.

12.39. Section 6.5.5 of the NIS presented the results of the eDNA survey and concluded that shad species distribution is likely to be to the tidal limit of the River. Consequently, with the effects of dilution, no adverse effects on this species is considered likely to occur. Given the distance involve, this conclusion is not unreasonable.

12.40. In respect of Freshwater Pearl Mussel, the NIS refers to the requirement for high biological water quality status to support populations of the species (in particular juveniles). Further, based on the Q value of the River Blackwater in the area of the site, confirmed by biological monitoring conditions, it is considered that water quality conditions do not exist to support functioning populations of Freshwater Pearl Mussel in the vicinity of the site.

12.41. To prevent impacts on remaining QIs, Section 8 of the NIS sets out mitigation measures hydrocarbon, waste and silt management. Measures include dry working,

construction of the fish bypass in within terrestrial habitats, provision of water management system and water quality monitoring system and other standard and best construction practices. Subject to detailed implementation of these measures, I am satisfied that adverse effects on water quality either upstream or downstream of the subject site will arise with consequently no likelihood of adverse effects of the QI of the SAC, including downstream conditions for potential Freshwater Pearl Mussel (section 7.4.3, NIS).

12.42. ***Noise, Disturbance and Lighting.*** Construction activities have potential to impact on Otter, identified as occurring in the development site with spraint and couch sites evident and a holt recorded 180m downstream of the weir (Figure 10, NIS). The weir structure is identified as important for resting/feeding.

12.43. Potential impact on Otter arise from disturbance during construction (including from sheet piling along the northern banks of the river), reduced connectivity between areas upstream and downstream of the development, changes in feeding behaviour and with this the risk of reproductive success and impact on overall populations in the SAC. As Otter are nocturnal and habituation to noise/disturbance in the existing urban environment, they not considered to be sensitive to noise and light during daylight hours, except for breeding and resting sites.

12.44. As the works will take place in an area with potential to disturb two Otter couches, the applicant will seek a derogation licence from the NPWS for construction works. In addition, mitigation measures include:

- Construction, and associated lighting, to be confined to normal working hours.
- During construction, any lighting will be directed away from treelines and areas of the River outside of the immediate working area.
- A buffer zone of 150m will be maintained between the Otter hold and construction works (Figure 1).
- No piling downstream of the bridge, with not potential for vibration impacts on the holt.

12.45. After construction it is anticipated that Otter will continue to use the weir face as a feeding and resting area. No operational lighting will be required.

12.46. Having regard to the foregoing, the temporary nature of construction works, detailed construction methodology, application to NWPS for a derogation licence, I am

satisfied that significant impacts on Otter will not arise as a result of disturbance/noise.

12.47. ***Direct injury/mortality.*** Survey of the subject site identified suitable habitat for, and the presence of Atlantic salmon, Lamprey species and White-clawed Crayfish in the development site area. There was no evidence of Twaite Shad or Freshwater Pearl Mussel.

12.48. The NIS states that there is potential therefore for direct mortality impacts on fish species including QI species during construction. Works will be undertaken in a phased manner with remediation of weir upstream, construction of fish bypass and remediation of downstream weir (section 5.3.2). I note that elsewhere in the application documents and in Section 8 of the NIS (page 121), an alternative sequence is proposed i.e. fish bypass, remediation of weir upstream followed by remediation of weir downstream. Whilst this issue should be addressed by condition, I am satisfied that a phased approach would enable maintenance of on-going fish passage throughout the construction phase, including at night when the main surges of migratory fish are likely.

12.49. The NIS states that there is also potential for Atlantic salmon and Brook lamprey to become trapped within silt curtain envelopes, but that the area is small and an electrofishing salvage operation will be carried out in advance of construction to remove any fish that become enclosed in the works area, with sheet piling and bunds directing river flow from the works area. Fish, including juvenile lamprey in sediments, White-clawed Crayfish will also be removed from the area of the river within barriers and dams. Subject to these measures and additional measures set out in Section 8, which include that works will be carried out in accordance with IFI '*Guidelines on protection of fisheries during construction works in and adjacent to waters'* I am satisfied that no significant effects by way of injury or mortality will arise on the aquatic QIs of the SAC or by way of indirect effects e.g. as a consequence of impacts on prey species such as Brown Trout and European Eel are likely to arise.

12.50. ***Barriers to movement.*** The NIS acknowledges the potential for barrier effects to occur with *construction* works, in particular to Atlantic Salmon and Lamprey species. Mitigations include maintenance of flow levels to enable movement of fish species, undisturbed night time passage, timing of works (as above) to low flow periods in line

with IFI guidelines etc. With mitigation measures, no significant impact on migration for QI species is anticipated. This conclusion is not unreasonable having regard to proposed phasing and timing of construction works, construction methodology and mitigation measures.

12.51. During *operation,* the NIS states that the fish bypass has been designed to provide passage for all fish species including Atlantic salmon, lamprey species, Twaite Shad and White-clawed Crayfish. The design of the fish bypass has been reviewed by Royal HaskoningDHV (RHDHV) with assessment and analysis in two reports:

- Technical Note 'Computational Fluid Dynamics Modelling Report', Appendix D of the NIS. This technical report provides details of the computational model of the fish bypass and assesses the likely performance of the fish bypass. It concludes that the proposed design does perform hydraulically as intended, although some sections of the bypass channel exceed maximum velocities for fish passage, set out in 'Fish Passes, Design, Dimensions and Monitoring' guidance document (DVWK, 200), which states '*Except for special cases flow velocity should not exceed 2ms^{-1}'.* Whilst modelled velocities are conservative and only two of the five gaps are affected, the report recommends additional measures to improve the design e.g. perturbance boulders to disrupt the flow and slow velocities in the upper pools in front of gaps at the weir where velocities are highest.
- 'Hydraulic Design Review' included in Appendix C of the Engineering Technical Report (section 6) and Appendix 6 of the NIS. This report presents a review of the hydraulic design of the fish bypass, in terms of target species (Salmon, Sea/Brown Trout, European Eel, Coarse fish, Lamprey species, Allis Shad and Twaite Shad), fish passage flow criteria and suitability of proposed design (sections 3 and 5 and Tables 1 to 3 of report). The report concludes that the fish bypass design will provide suitable hydraulic conditions for passage of a range of target fish species. In its commentary (Table 3) it is stated that the fish pass may not be suitable for shad which has very specific requirements, but that it does include a minimum free gap of 0.5m width in boulder bars which meets the minimum gap for the species (0.45m, IFM Fish Pass Manual). In conclusion, the report stated that the characteristics of irregular rough-channel pools cannot be calculated accurately and

modification should be allowed for during construction phase and post construction monitoring of the efficacy of the fish pass for the various target species, particularly for Shad.

12.52. Subsequent to the RHDHV reports, the applicant commissioned Trex Ecology to carry out a high level review of the passage conditions within the SAC for relevant receptors and to identify suitable post operational monitoring approaches to determine the efficacy of the bypass channel for fish migration.

12.53. The report (Appendix 7, NIS) advises that (a) overall the fish pass should be easily found and potentially passable at migratory flows, (b) fish may gather at the toe of each pre-weir and the bottom of the pass waiting better conditions and cover is therefore vital, and (c) monitoring of the fish pass performance in the 'real world' may also be necessary and (d) final design should include some ability to reorder structures in response to observed velocities.

12.54. Operational monitoring assumptions are set out in section 3.2 of the Report and are that (i) efficacy of fish pass for migratory fish species to successfully pass beyond the Fermoy weir, (ii) all species are relevant but shad is of particular interest, and (iii) only upstream migrating fish to be included in the monitoring package.

12.55. Monitoring options are considered in section 3.3. Cost is excessive for a number of options, which are therefore discounted. Remaining options include counters and eDNA assessment, with appropriate baseline assessment and post operational monitoring (see section 3.4). Further, due to the discussed limitations in respect of monitoring (in particular in terms of quantity of fish), the report recommends additional monitoring of the hydraulic performance of the fish bypass via an impeller to assess flow velocities at Q95 flows (lowest modelled flows). Notably the report states that post construction adaption of a fish pass is common (section 3.5).

12.56. As per the recommendations of these technical reports, mitigation measures set out in section 8.15 of the NIS include slight modifications to perturbance boulders, if required, to be agreed with IFI prior to implementation, monitoring of flows within the fish bypass channel at entrance and exit points, removal of any significant accumulation of debris and the Trex Ecology monitoring arrangements referred to above.

12.57. Subject to the foregoing, and with the implementation of mitigation measures, the NIS concludes that there will be no adverse effect on the QI species by virtue of barriers to movement, imposed by the subject development. Based on the scientific information presented, notably the technical reviews of the efficacy of the fish bypass channel, I am satisfied that the applicant has adequately demonstrated that the subject development will not give rise to an adverse impact on QIs of the SAC as a consequence of barriers to movement.

12.58. Notwithstanding this conclusion, in the course of the application, IFI raises concerns regarding the principle of the proposed development, on the grounds that existing conditions facilitate the passage of fish. I set out, and comment on these arguments, below.

12.59. In response to the application to the Board, IFI advise that two options, 'do nothing' and 'stabilise remaining section of the weir' are explored further on the grounds that the options have been ruled out by the applicant because water velocity in the existing scenario to fast to facilitate upstream movement of QI of fish species. In contrast, IFI is of the view that the velocity readings in 2019, of 0.35-1.62m^{-1}, would not be an impediment to salmon and, whilst above the thresholds for lamprey, passage could be achieved by bottom and edge effects. IFI restate their view that the removal of the weir would be the most beneficial option from a fisheries perspective, returning the river to a more natural hydromorphological state and allowing the free movement of aquatic organisms (QIs of the SAC and others). The submission makes reference to the EU Biodiversity Strategy for 2030 and the wider benefits to ecosystems, such as flood protection, water purification and recreational opportunities, of restoration of natural river functions.

12.60. The IFI submission also notes the fewer signs of adult salmon activity in the environs of the weir and fewer signs of a concentration of Sea Lamprey redds immediately downstream of the weir, indicating conditions of free passage to movement upstream with the breach of the weir. IFI refer the Sea Lamprey redds recorded in their survey work upstream of the breached weir in newly generated riffle habitat in their survey *AMBER 202 D4.2 Report of Case Studies Demonstrating the Effects of Barrier Removal, Mitigation and Installation*. Similarly, it is stated that funnelling conditions appear to facilitate the downstream migration of salmon smolts. It is argued that location of the fish bypass along the northern bank has the potential to delay or

divert downstream migrants and that the application should be supported by analysis of upstream and downstream migration of fish. IFI argue that the breaching of the weir has exposed a significant area of new habitat for salmon c.3.8km upstream of Fermoy (glide, riffle and side arm river habitat) with loss of this habitat, which supports significant numbers of salmon fry and parr and the spawning of adult sea lamprey, with the proposed development and associated raising of water level.

12.61. IFI argue that currently there is limited fish passage at Fermoy weir and that reinstatement will result in a significant impediment to fish passage and natural river processes, within an SAC. Mitigation measures outlined in the application (use of fish bypass channel) are only considered when removal or partial removal is not possible. In this regard partial removal is already in place. IFI considers that breach of the weir has significantly improved free passage of migrant fish and that further consideration should be given to options of do nothing and stabilise remaining sections.

12.62. In response to the issues raised in submission by IFI, the applicant argues:

- Subsequent to the breach, OPW have carried out emergency works downstream of the weir due to excessive velocities which were undermining flood defences on the south bank of the river.
- IFI have provided no supporting data of velocity readings or associated flow conditions.
- Hydraulic modelling of flow through the breach and in the channel upstream of the breach (Drawing no. 2961-730, Appendix E of submission) indicate sustained velocities in excess of 2m/s extending for a distance in excess of 30m upstream of the breach across a range of flow conditions and extending along Mill Race channel.
- No data on fish counts downstream or upstream of the weir at Fermoy were made available to the applicant by IFI.
- The FAO DVWK guidance document '*Fish Passes, Design, Dimensions and Monitoring'* which is referenced in the Engineering Technical Report notes that Fish Ramps (which include the rough channel bypass) are suitable for downstream migration of fish.

- The Trex Ecology, Fermoy Fish Pass Operational Monitoring report, concurs that with a sizable proportion of flow to the pass, most fish which migrate downstream (resident fish, salmonid kelts, salmonid smolts, adult eel juvenile lamprey, juvenile shad) will stand a good chance of moving through the pass.
- The report *AMBER 202 D4.2 Report of Case Studies Demonstrating the Effects of Barrier Removal, Mitigation and Installation*, is referenced in the application documents (Trex Ecology Operational Monitoring review report, Appendix 7, NIS). It notes valid concerns that will surface in the context of any proposals to impact on a barrier including cultural/architectural issues, bank stability issues, other bone fide users of the impounded water. The proposed development is consistent with the requirements set out in the AMBER report for management of the weir i.e. upstream and downstream movement of fish species in line with SAC status, integrity of infrastructure and recreational use/amenity value of the river. Removal of the weir or do nothing scenario, do not satisfy these wider objectives.
- Restoring glide and riffle habitat (upstream of weir) is of not benefit if fish cannot pass through the breach due to high velocities.

12.63. I have given consideration to the concerns raised by IFI and I would accept that the development represents an artificial intervention in a natural system, hinders restoration of the river to its natural hydromorphological state and has potential implications for upstream habitat that has been created by the breach in the weir.

12.64. Notwithstanding this conclusion in respect of the development, I am also minded that the intervention (weir) has been in place for c.200 years and as stated earlier in this report, the applicant has brought forward the subject development to meet multiple objectives i.e. cultural heritage, urban development, recreational and ecological. The AMBER report referred to by parties reports on seven case studies demonstrating the effects of barrier removal, mitigation and installation. Case study 6 is in respect of barrier removal at Clondulane and Fermoy weirs. The report identifies increased habitat availability upstream of the weir for species of SCI, following the breach. The report also acknowledges that to provide optimal compliance with hydromorphology aspirations of the WFD, barrier removal should be the target, however, it states that this may not be feasible in every case by virtue of a range of valid concerns, including competing policy objectives.

12.65. For the reasons stated, I am satisfied that the applicant has put forward a reasonable case for the proposed preferred option of fish bypass and that this option is acceptable subject to absence of significant environmental effects including significant effects on any European site.

12.66. Further, having regard to the scientific information which has been presented by the applicant, supported by modelling and peer reviewed, I am satisfied that subject to the implementation of all mitigation measures, the fish bypass will enable the movement of all SCI fish species associated with the River Blackmore (Cork/Waterford) SAC. I would also recommend that the monitoring exercise extend to the downstream movement of fish species, which is not explicitly referred to in the proposed monitoring regime.

12.67. ***Spread of invasive species and biosecurity.*** Mitigation measures to prevent the risk of spread of invasive species and importation of Crayfish plague are referred to in section 7.9 of the NIS and set out in sections 8.11 and 8.14 of the NIS. Measures are standard and subject to detailed implementation, I am satisfied that there are no significant risks to integrity of the SAC or negative effects on conservation objectives, by virtue of spread of invasive species or introduction of Crayfish plague.

12.68. **Mitigation measures**

12.69. This have been discussed in the context of specific impacts, above, and are listed in section 8 of the NIS.

12.70. **In-combination Effects**

12.71. Section 7.18 of the NIS sets out details of other plans and projects that that may give rise to in-combination effects on the SAC. In summary the plans and programmes referred to provide a policy context which safeguards the integrity of European sites and which aims to improve water quality in the catchment. Clondulane Weir is identified in Table 17 as a barrier to the migration of QI species of the River Blackwater SAC. It is c. 5km downstream of Fermoy. An application for removal of 50m section of the weir has been made to Cork County Council. Its removal is likely to have a net positive impact on the conservation interests of the Blackwater River and there is therefore potential for positive in combination effects with the proposed development.

12.72. Other potential in-combination effects arise from the interaction of impacts. However, with the proposed mitigation measures to include seasonal restrictions in line with IFI recommendations, no significant in-combination effects are predicted.

12.73. Having regard to the location of the subject development in a busy urban area, the protective wider policy context for the development which will regulate the potential for adverse effects of any other project proposed in the vicinity (none identified in NIS) and the comprehensive suite of mitigation measures proposed, I am satisfied that no significant adverse cumulative effects will arise to the detriment of the QIs of the SAC. Further, there is potential that the subject development in combination with the works to Clondulane Weir will have a net positive impact on the SAC.

12.74. **AA Conclusion Blackwater River (Cork/Waterford) SAC.** Having regard to the foregoing, the scientific information presented, analysed and peer reviewed (efficacy of fish bypass), I am satisfied therefore 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.

2. Blackwater Callows SPA (site code 004094).

12.75. *Description of site*: The Blackwater Callows SPA comprises the stretch of the River Blackwater that runs in a west to east direction between Fermoy and Lismore in Counties Cork and Waterford, a distance of almost 25 km. The site includes the river channel and strips of seasonally flooded grassland within the flood plain. Sandstone ridges, which run parallel to the river, confine the area of flooding to a relatively narrow corridor. The river channel has a well-developed aquatic plant community, which includes such species as Pond Water-crowfoot (Ranunculus peltatus), Canadian Pondweed (Elodea canadensis) and a variety of pondweeds (Potamogeton spp.), watermilfoils (Myriophyllum spp.) and water-starworts (Callitriche spp.). The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Wigeon, Teal and Black-tailed Godwit. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

12.76. *SCI's and Conservation Objectives.* The site is selected as SPA for the habitats and species listed in Table 1 above. Conservation objectives are generic and are '*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'* and '*To maintain or restore the favourable conservation condition of the wetland habitat at Blackwater Callows SPA as a resource for the regularly-occurring migratory waterbirds that utilise it'*.

12.77. *Potential effects.* Potential direct, indirect and cumulative effects on the qualifying interests arise from any significant impact on water quality. The potential for adverse effects on water quality during construction and operation have been discussed above. Subject to detailed implementation of these measures, I am satisfied that no adverse effects on water quality downstream of the subject site will arise. Consequently, I am satisfied that there is no likelihood of adverse effects of the QI of the SPA.

12.78. **AA Conclusion Blackwater Callows SPA:** I am satisfied therefore 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.

12.79. **Appropriate Assessment Conclusions:** Having regard to detailed design of the subject development and implementation of the full suite of mitigation measures, to include monitoring efficacy of the fish bypass for movement of all species of conservation interest upstream and downstream, I consider that it is 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 and projects would not adversely affect the integrity of the European site no. 002170 or site no. 004094, or any other European site, in view of the site's Conservation Objectives.

13.0 Recommendation

13.1. On the basis of the above assessment, I recommend that the Board approve the proposed development subject to the reasons and considerations below and subject to conditions including requiring compliance with the submitted details and with the mitigation measures as set out in the application documents and NIS.

Reasons and Considerations

In coming to its decision, the Board had regard to the following:

(a) the EU Habitats Directive (92/43/EEC),

(b) the European Union (Birds and Natural Habitats) Regulations 2011-2015,

(c) 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 a European Site,

(d) the conservation objectives, qualifying interests and special conservation interests for the River Blackwater (Cork/Waterford) SAC (site code 002170) and Blackwater Callows SPA (site code 004094),

(e) the policies and objectives of the Cork County Development Plan, 2022-2028,

(f) the nature and extent of the proposed works as set out in the application for approval,

(g) the information submitted in relation to the potential impacts on habitats, flora and fauna, including the Natura Impact Statement,

(h) the submissions and observations received in relation to the proposed development, and

(i) the report and recommendation of the person appointed by the Board to make a report and recommendation on the matter.

Appropriate Assessment:

The Board agreed with and adopted the screening assessment and conclusion carried out in the Inspector's report that the River Blackwater (Cork/Waterford) SAC (site code 002170) and Blackwater Callows SPA (site code 004094), are the only European Sites in respect of which the proposed development has the potential to have a significant effect.

The Board considered the Natura Impact Statement and associated documentation submitted with the application for approval, the mitigation measures contained therein, the submissions and observations on file, and the Inspector's assessment. The Board completed an appropriate assessment of the implications of the proposed

development for the affected European Sites, namely the for the River Blackwater (Cork/Waterford) SAC (site code 002170) and Blackwater Callows SPA (site code 004094), in view of the site's conservation objectives. The Board considered that the information before it was adequate to allow the carrying out of an appropriate assessment. In completing the appropriate assessment, the Board considered, in particular, the following:

i. the likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects,

ii. the mitigation measures which are included as part of the current proposal, and

iii. the conservation objectives for the European Sites.

In completing the appropriate assessment, the Board accepted and adopted the appropriate assessment carried out in the Inspector's report in respect of the potential effects 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, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of the site's conservation objectives.

Proper Planning and Sustainable Development/Likely effects on the environment:

It is considered that, subject to compliance with the conditions set out below, the proposed development would not have significant negative effects on the environment or the community in the vicinity, would not give rise to a risk of pollution, would not be detrimental to the visual or landscape amenities of the area, would not seriously injure the amenities of property in the vicinity, would not adversely impact on the cultural, archaeological and built heritage of the area and would not interfere with the existing land uses in the area. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Conditions

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, except as may otherwise be required in order to comply with the following conditions. Where any mitigation measures set out in the Natura Impact Statement or any conditions of approval require further details to be prepared by or on behalf of the local authority, these details shall be placed on the file and retained as part of the public record.

   Reason: In the interest of clarity and the proper planning and sustainable development of the area and to ensure the protection of the environment.

2. (i) The mitigation and monitoring measures outlined in the plans and particulars relating to the proposed development, including but not limited to those set out section 8 of the NIS, shall be implemented in full or as may be required in order to comply with the following conditions.

   (ii) Prior to the commencement of development the following shall be prepared by the local authority and placed on file and retained as part of the public record:

   a. A schedule of all mitigation measures set out in the application documentation,

   b. details of a time schedule for implementation of mitigation measures and associated monitoring, and

   c. details of monitoring carried out in accordance with the schedule.

   (iii) Arrangements for monitoring shall include reporting on the efficacy of mitigation measures in respect of riverine habitats and the migration of fish species up and down stream, with measures to include eDNA monitoring and/or other arrangements as required by IFI. Any significant deviation from predicted effects shall be immediately remedied.

   (iv) Post construction mitigation measures to prevent the spread of crayfish plague shall be incorporated on permanent information display boards at access points in the vicinity of the development.

Reason: In the interest of protecting the environment, the protection of European Sites and in the interest of public health.

3. Prior to the commencement of development, the local authority, or any agent acting on its behalf, shall prepare in consultation with the relevant statutory agencies, a Construction Environmental Management Plan (CEMP), incorporating all mitigation measures indicated in the Natura Impact Statement and demonstration of proposals to adhere to best practice and protocols. The CEMP shall include:

    i. Phased arrangements for construction works to facilitate fish passage for duration of works, to be agreed with IFI prior to commencement.
    ii. Method statement in respect of proposed weir remediation works in proximity to Kent Bridge, to be agreed with TII prior to commencement.
    iii. Specific proposals as to how the measures outlined in the CEMP will be measured and monitored for effectiveness.

    Reason: In the interest of road safety, protecting biodiversity and European Sites.

4. Prior to the commencement of development, details of measures to protect fisheries and water quality of the river systems shall be outlined and placed on file. These shall include:

    i. In-channel works shall adhere to the timing restrictions set out in the NIS (July to September).
    ii. Replacement planting alongside the fish bypass, to be agreed with IFI and OPW prior to commencement.
    iii. Location of temporary works and spoil heaps, to be agreed with OPW prior to commencement.
    iv. Method statement for the infilling, with natural riverbed material, of any localised depressions in the riverbed identified at the bridge piers during the course of construction works, to be agreed TII, IFI and NPWS prior to commencement.

v. Full regard shall be had to Inland Fisheries Ireland's published guidelines for construction works near waterways (Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, 2016).

vi. A programme of water quality monitoring shall be prepared in consultation with the contractor, the local authority and relevant statutory agencies and the programme shall be implemented thereafter.

Reason: In the interest of the protecting of receiving water quality, fisheries and aquatic habitats.

5. The County Council and any agent acting on its behalf shall ensure that 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 ensure the protection of the European sites.

6. A suitably qualified ecologist shall be retained by the local authority to oversee the site set up and construction of the proposed development and implementation of mitigation measures relating to ecology set out in NIS and application documentation. The ecologist shall be present during site construction works. Upon completion of works, an ecological report of the site works shall be prepared by the appointed ecologist to be kept on file as part of the public record.

Reason: In the interest of nature conservation and the protection of terrestrial and aquatic biodiversity.

7. The County Council and any agent acting on its behalf shall facilitate the preservation, recording, protection or removal of archaeological materials or features that may exist within the site. A suitably qualified archaeologist shall be appointed by the County Council to oversee the site set-up and construction of the proposed development and the archaeologist shall be present on site during construction works. All excavated material, as

required by the supervising archaeologist, be spread and metal detected under licence to recover any archaeological remains.

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.

Deirdre MacGabhann

Planning Inspector

11th July 2023