



Your Ref: 19011-TJOC-ZZ-XX-LT-C-3000
Our Ref: **G Pre00324/2019**
(Please quote in all related correspondence)

28/02/2020

Suite D,
Penrose House,
Penrose Quay,
CorkVia
email

Re: Fermoy Weir Remediation and Fish Bypass Project.

A chara

On behalf of the Department of Culture, Heritage and the Gaeltacht, I refer to correspondence received in connection with the above.

Outlined below are heritage-related observations/recommendations of the Department under the stated heading(s).

Archaeology

It is noted that it is intended to engage the services of an underwater archaeologist to carry out the necessary archaeological assessment for the proposed works. This is to be welcomed. The Underwater Archaeological Impact Assessment (UAIA) shall contain the following:

- A detailed underwater archaeological assessment of the weir structure, riverbed, river bank and bridge structure, should the latter also be included in the footprint of the proposed works. The UAIA shall also include assessing the potential impact on underwater cultural heritage of any proposed access and egress routes for plant and machinery into the river, including haul roads, etc.
- The assessment shall comprise visual assessment, including photographic survey of the structures and riverbed and shall be accompanied by a hand held metal detection survey.
- A measured, scaled and geo-referenced drawn and photogrammetric survey of the weir as it currently presents, accompanied by a detailed descriptive record.
- It shall be noted that timbers were identified in the riverbed previously in the proximity of the existing bridge that may form part of earlier structures, either for an earlier bridge or earlier weir or other, previously unidentified feature. The



location of the timbers shall be confirmed and if within the footprint of proposed works or any associated works (e.g. for vehicular access to river, etc.) then shall form part of the UAIA assessment.

- A detailed desktop assessment that consults with all known and relevant sources shall inform the UAIA from the outset and shall seek to identify potential for previously unknown underwater cultural heritage to be present in the riverbed so as to enable avoidance of any impact on heritage.
- The desktop study shall consult results of previous UAIA's and other relevant archaeological assessments and shall also include accessing the Topographical files in the National Museum of Ireland and also local sources to include artefactual finds from the River Blackwater in that area. Several finds have been recovered in the past by divers that indicated the potential for more material culture to be present in the underwater environment within the footprint of the proposed works.
- A detailed impact statement shall be included in the UAIA, addressing all propose options for the remediation and repair project, and shall put forward informed recommendations addressing each option to propose avoidance, as the preferred option, or archaeological mitigation of unavoidable impacts on the underwater cultural heritage.

The engaged underwater archaeologist shall comply with the following:

- Be suitably qualified and suitably experienced (have a track record in the assessment and recording of weir structures or similar structures).
- Shall submit a detailed method statement to accompany the applications for Dive Survey Licence and Detection Device Licences.
- Shall comply with all Health and Safety Authority Regulations pertaining to diving at work.

Nature Conservation

The proposed works are within and immediately adjacent to the following European site: the Blackwater River (Cork/Waterford) candidate Special Area of Conservation (cSAC) (2170). Conservation objectives for this site is available at <https://www.npws.ie/protected-sites/sac/002170> and apply amongst others to the habitat type alluvial woodland and to the freshwater species salmon, sea lamprey, river lamprey, brook lamprey, Twaite shad, otter and white-clawed crayfish.



It is a conservation objective for both sea lamprey and Twaite shad to *restore* their favourable conservation condition in the Munster Blackwater River, by making more than 75% of the main channel length of the river accessible to these species from the Blackwater Estuary¹. This means that repair of the Fermoy weir can only be permitted where the fish pass will allow upstream access to both Twaite shad and lamprey. The design requirements for shad will be more demanding in terms of design, because, unlike salmonids, they are unable to swim against any plunging water, and they swim in shoals rather than individually. Also the flow velocities will need to avoid circumstances where shad will swim back down the fish-pass and they can abandon an unsuitable fish-pass after entry². Velocity barriers of 4.15 m/s for 6.1m or 4.5 m/s for 5m have been cited as passable by American shad³. Larnier and Travade (2002)⁴ provide design recommendations for shad fish passways and large numbers of shad have successfully passed designs used in Bergerac (France)⁵ for instance, but it is recommended to obtain site-specific advice from IFI in relation to the efficacy of the proposed fish-pass for Twaite shad and other fish species.

In order to fully assess alternatives, it is recommended that the impacts four other options on the above European site are also assessed in the NIS and ecological impact assessment, in addition to those proposed:

- 'Do-nothing' option.
- Complete or partial permanent weir removal.
- Stabilization of current breach.
- Construction of the fish pass in the breached weir area of the river channel.

Predictions of the effectiveness of fish pass options for each species based on monitoring evidence from other weir fish passes should be included.

¹ NPWS (2012) *Conservation objectives: Blackwater River (Cork/Waterford) SAC 002170*. Version 1.0. https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002170.pdf

² Castros-Santos, T. (2012) Adaptive fishway design: a framework and rationale for effective evaluations. Pp. 76-90. In: Bundesanstalt für Gewässerkunde (Hrsg.): *Monitoring, Funktionskontrollen und Qualitätssicherung an Fischaufstiegsanlagen. 2. Kolloquium zur Herstellung der ökologischen Durchgängigkeit der Bundeswasserstraßen am 07./08. Juni 2011 in Koblenz*. – Veranstaltungen 7/2012, Koblenz, August 2012.

³ Haro, A. and Castro-Santos, T. (2012) Passage of American shad: Paradigms and realities. *Marine and coastal fisheries: Dynamics, management and ecosystem science* **4**: 252-261.

⁴ Larnier, M. and Travade, F. (2002) The design of fishways for shad. *Bulletin Français de la Pêche et de la Pisciculture* **364** (Supplement): 135-146.

⁵ Travade, F. et al. (1998) Feedback on four fishpass instalations recently built on two rivers in southwest France. Pp. 146-170. ICES Annual Science Conference 1996.



It is recommended that the following conservation issues and questions are addressed in the Natura Impact Statement (NIS):

- The predicted velocity of water flow in the fish pass during lamprey and shad upstream migration, based on seasonal data.
- The predicted efficacy of the fish-pass design to allow upstream access to Twaite shad, lamprey species and eel (as an important prey of otter).
- The exact restored height of the proposed weir compared to that of the original (damaged) weir.
- Any OPW amendments to the works.
- In-combination assessment with changes to Condulane and other weirs in the cSAC, upstream and downstream.
- The need for regular downstream gravel removal as part of weir maintenance.
- Sediment deposition upstream of the weir.
- Effects on invasive species, such as dace.
- Potential for increased heron, cormorant or mink predation at the fish-pass.
- Creation of nest sites and roosting ledges on any new or replacement structures.
- Waste management plan for construction and excavation wastes.
- Mitigation measures to avoid silt release.
- Biosecurity precautions, particularly in relation to crayfish plague.
- Effects of lighting on fish-pass effectiveness.

Depending on the predicted changes in flow and velocity as a result of the preferred works option, it is recommended that the following be considered as part of survey work for the NIS and ecological impact assessment:

- Occurrence of alluvial woodland (up to 3km upstream and 2km downstream of weir)
– please contact NPWS (regional ecologist) if there are any issues with the interpretation of this habitat type.
- Occurrence of water crowfoot / starwort community (up to 1 km below the weir).
- Presence of freshwater pearl mussel (up to 150m below the weir).
- Presence of white-clawed crayfish (up to 150m below the weir).
- Presence of breeding otter (up to 150m above and below the weir).



- Spawning and juvenile habitat of lamprey species (up to 150m below the weir) - the advice of IFI should be followed in relation to survey and impact assessment for these species.
- Salmon and Twait shad: The advice of IFI should be followed as to whether these species need to be surveyed.
- Presence of breeding river birds: kingfisher (Birds Directive Annex 1 species), grey wagtail (amber listed species) and dipper (up to 100m above and below the weir).
- Presence of invasive species (e.g. Japanese knotweed, Himalayan balsam, giant hogweed) in works area.

It is recommended that proposals for the monitoring of the efficacy of the fish-pass, particularly in relation to Twait shad access, are included in the NIS. The use of eDNA could be considered, as primers for Twait shad have been developed by UCD⁶.

You are requested to send further communications to this Department's Development Applications Unit (DAU) at manager.dau@chg.gov.ie (team monitored); if this is not possible, correspondence may alternatively be sent to:

The Manager
Development Applications Unit (DAU)
Department of Culture, Heritage and the Gaeltacht
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

Connor Rooney
Development Applications Unit

⁶ Aktinson, S., *et al.* (2017) Assessment of the extent and impact of obstacles on freshwater hydromorphology and connectivity in Ireland.
http://www.ucd.ie/reconnect/t4media/National_Water_Event_2017_S_Atkinson_FINAL.pdf