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**To:** Tomás Bradley  
**From:** Dr Maeve Flynn, Inspectorate Ecologist  
**Re:** Board Request related to Appropriate Assessment  
**Date:** 08/03/2024

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## **1.0 Background**

ABP 317188-23 refers to the construction of a solar farm and associated works in the townlands of Bishopstown, Bridgetown, Ballyhest and Ballyneale, Carrick-on-Suir, Co. Waterford. A Natura Impact Statement (NIS) was submitted with the application.

In considering the case (board meeting on 25/01/24) the Board noted concerns highlighted in the appeal submissions related to the adequacy of the NIS and assessment and conclusion regarding the likelihood of the development having a significant effect on the Qualifying Interests (QI) of lower River Suir Special Area of Conservation (SAC- site code 002137) including QIs in the Clodiagh River.

Given the detailed scientific and technical nature of the submissions, the Board sought a supplementary report from the Inspectorate Ecologist on the issues raised in respect of this matter.

## **2.0 Scope of this report**

This supplemental report aims to address the issues raised by the Board namely:

- Adequacy of the Natura Impact Statement (NIS)
- Implications of the proposed development in relation to the integrity of the Lower River Suir SAC with particular reference to protected aquatic species including Freshwater Pearl Mussel (*Margaritifera margaritifera*) in the Clodiagh River.

I have taken account of issues and concerns raised in submissions related to the NIS and potential impacts on aquatic species listed as qualifying interests for the Lower River Suir SAC. In particular, I have taken account of the submission which included an opinion on the assessment of Freshwater Pearl Mussel (FWPM) by Dr Evelyn Moorkens, an expert in this species with knowledge of the Clodiagh FWPM population.

I have examined the following documents prepared by Tobin Consulting Engineers as part of my assessment:

- Natura Impact Statement (February 2023)
- Planning and Environmental Report-PERC (February 2023)
- Construction and Environmental Management Plan -CEMP (February 2023)
- Drawings including Site Master Plan (Drawing No 11341-2004A)
- Response to Third Party Appeals ABP-317188 -23 (05/07/2023)

In addition, I have had regard to the following:

- Conservation Objectives: Lower River Suir SAC 002137. NPWS (2017) Version 1<sup>1</sup>
- The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments<sup>2</sup> specifically: 1029 Freshwater pearl mussel (*Margaritifera margaritifera*) pg. 211-241.
- EPA Maps (<https://gis.epa.ie/EPAMaps/> accessed 20/02/2024)

### 3.0 Key issues

#### The development

The proposed solar farm application area is 141 hectares (ha) across a number of land parcels. The area of solar panels within the site totals approximately 73 ha. The project includes the standard infrastructure for such development including linear arrays of solar PV panels mounted on steel supported structures with associated cabling and ducting, inverter and transformer substations, perimeter fencing and access gates, permeable gravel access track, temporary construction compound/material storage areas and all associated ancillary development services and work. It is planned to connect the project into the national grid via the permitted

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<sup>1</sup> [ConservationObjectives.rdl \(npws.ie\)](https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf)

<sup>2</sup> [https://www.npws.ie/sites/default/files/publications/pdf/NPWS\\_2019\\_Vol3\\_Species\\_Article17.pdf](https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf)

110kV Mothel Solar Farm (Phase 1) substation by means of an underground 38 kV tail fed cable.

### **Freshwater Pearl Mussel (*Margaritifera margaritifera*)**

The proposed solar farm is located within a defined *Margaritifera* sensitive catchment area, the catchment of the Clodiagh River. The Clodiagh River is a tributary of the river Suir and part of the Lower River Suir SAC. Conservation objectives for Freshwater Pearl mussel, a qualifying interest of the SAC are related specifically to the Clodiagh river and are listed on The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009. (S.I. 296 of 2009). The site-specific conservation objectives are for the restoration of the favourable conservation condition of FWPM and supporting habitat conditions in the Clodiagh River.

Two minor watercourses, both direct tributaries of the Clodiagh River are present within the proposed solar farm site. The streams named as Ballygarret and Mothel Streams in the PERC are part of the Clodiagh (Portlaw)-040 WFD water body. WFD assessments show 'Good' water quality results since 2007 and is currently defined as a 'Not at Risk' waterbody with 'Good' ecological status.

These streams form an ecological and hydrological connection between the proposed development site to the Lower River Suir SAC where they join the Clodiagh River. In the case of the Ballygarret stream that runs through the centre of the site, the boundary of the SAC is within 700m at the closest point and a longer receptor path of greater than 1.5 km exists between the more eastern stream – Mothel stream with the SAC.

Ecological surveys at the site showed that riparian habitat was unsuitable for FWPM but potentially suitable for other species including, White-clawed crayfish- Brook and River Lamprey, salmonids and signs of Otter activity were recorded.

## **4.0 Adequacy of the Natura Impact Statement:**

### **Summary of the NIS**

The NIS has been prepared by qualified and experienced Ecologists from TOBIN Consulting Engineers to inform Appropriate Assessment in line with standard guidance. The preceding screening stage of the AA process determined that the likelihood for significant effects could not be ruled out for the Lower River Suir SAC and that AA was required.

Potential Impact mechanisms identified in screening stage include:

- Release of sediments and pollutants into surface waters from groundworks, machinery movements and construction works.
- Use of concrete on site and risk of entry to surface water

- Increased silt loading
- Spread of invasive species due to construction works.
- Disturbance of fauna
- Accidental mortality of wildlife from construction machinery

The site-specific conservation objectives of the Lower River Suir are detailed with potential for adverse effects identified (see Table 6.1 of NIS). The potential for adverse effects on QI features is considered greatest at the construction phase, primarily related to impacts on in-stream riparian habitat via uncontrolled ingress of silt laden surface water and construction related pollution. Potential for adverse effects (in the absence of any mitigation) is excluded for all QI habitats and is confined to the following freshwater species that are within a likely zone of influence of the proposed development or have been recorded within the Clodiagh River:

- Freshwater pearl mussel (*Margaritifera margaritifera*)- restore favourable conservation condition.
- White-clawed Crayfish (*Austropotamobius pallipes*)- maintain favourable conservation condition.
- Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*)- restore favourable conservation condition.
- Twait Shad (*Alosa fallax*)- restore favourable conservation condition.
- Atlantic Salmon (*Salmo salar*) - restore favourable conservation condition.
- Otter (*Lutra lutra*)- maintain favourable conservation condition.

The focus of mitigation measures proposed are at preventing ingress of pollutants and silt into surface water and receiving watercourses. This is to be achieved via design (avoidance), supervision by an Ecological Clerk of works, application of specific mitigation measures and monitoring effectiveness of measures. Detail is provided on sediment control, concrete and hydrocarbon control, an emergency response plan and general biosecurity measures. Measures include:

- Avoidance measures include a protective buffer zone 10m from streams and ditches, all facilities, compounds, ground works and all soil management areas are at >50m from any drain or water feature.
- A clear span pre-cast culvert across Ballygarret stream- avoiding in-stream disturbance.
- Management of silt including installation of silt fencing (double row referenced but locations not specified)
- Management of construction pollutants in terms of standard and best practice (CIRIA, storage, fuelling, management of machinery, concrete management)
- Water quality monitoring – including total suspended solids, turbidity, pH, dissolved oxygen, hydrocarbons, visual inspections,

- All measures to be implemented under supervision via the CEMP.

In combination effects with other developments in the area are considered and excluded.

The applicant concludes that:

‘Following the application of the detailed mitigation measures, potential significant adverse effects will be avoided or reduced. Consequently, it is determined that there will be no risk of adverse effects on Qualifying Interest habitats and species, nor on the overall site integrity, nor in the attainment of their specific conservation objectives for the Lower River Suir SAC’.

The Board will note that the test for Appropriate Assessment is *exclusion* of adverse effects on the integrity of the European site. That is the case where there is no reasonable scientific doubt remaining as to the absence of such effects.

The applicants’ statement that potential significant adverse effects will *be avoided or reduced* is not the test and the Board should ensure that they are satisfied that this means that any effects are reduced to a non-significant level.

### **Scientific submissions on the NIS**

In the opinion submitted by Dr Moorkens, she is critical of the NIS and considers it inadequate from the perspective of FWPM. She highlights the main threats and pressures to the species in the Clodiagh catchment and considers that the applicant has not engaged in addressing these concerns and that the development does not address the obligations set out in the conservation objectives for the restoration of FWPM in the Lower River Suir SAC. She considers that the conservation objectives have not been fully engaged with and is critical of measures cited from the CEMP, considering them inadequate for the purpose of FWPM.

The main pressures and threats on the FWPM include (from Dr Moorkens submission and Article 17 reporting):

- modification of hydrological conditions-changes in hydrological regime, particularly reduced base flow, but also increased scour at high flows, have been demonstrated to impact significantly on populations in Ireland (from land drainage),
- pollution with fine sediment and nutrients leading to excessive nutrients and fine sediments levels in rivers (agriculture is a primary source)

The applicant had the opportunity to respond to submissions and addressed Dr Moorkens concerns, and these are presented in Response Document to Third Party Appeals (Tobin July 2023).

## Consideration of adequacy of the NIS

Overall, I consider that the NIS is adequate, prepared in line with standard practice and the assessment proportionate to the development type and likely impact mechanisms that could be generated.

Dr Moorkens observations are highly relevant to the wider catchment area given the threats and pressures recorded for FWMP. However, based on my review of the proposed development, I do not consider that given the scale and type of development with low levels of ground works that it has the potential to pose a significant risk to the attainment of the conservation objectives for the FWMP or any other QI of the Lower River Suir SAC when standard mitigation measures are applied.

In carrying out AA the Board is not limited to the NIS and shall take into account other matters which includes supplemental and additional information furnished, submissions and any other relevant information. Having reviewed the NIS and the PERC including sections assessing soils and geology (chapter 10), water (chapter 11) and flood risk assessment (chapter 12), I am satisfied that there will be limited alterations to the geological environment, surface water or groundwater environment as a result of the proposed works within the site. The natural drainage on the majority of the site is good, based on mineral soils and it is assumed that this will not be impacted by the development. The flood risk assessment demonstrates that surface water runoff will be limited greenfield runoff rates. Therefore, I consider that concerns regarding alterations to the hydrological and hydrogeological environment are addressed and that the development does not pose a threat to the hydrological regime or flow velocities required for FWMP or any other protected aquatic species in the receiving watercourses connected to the Lower River Suir SAC. The target in the site-specific conservation objectives is to *maintain appropriate hydrological regime* and the proposed development will not impact on the achievement of this target.

I agree that NIS would have benefited from considering the mitigation measures in view of the conservation objectives with consideration of threats and pressures for the individual QI features and FWPM in particular. However, it is clear that the preventative measures which are aimed at interrupting the source-pathway-receptor are targeted at the key threats to protected aquatic species and by arresting these pathways or reducing possible effects to a non-significant level, adverse effects can be prevented.

Dr Moorkens is also critical of the CEMP, however the sections quoted in the submission are just one aspect of an overall robust mitigation plan. I consider the mitigation measures as detailed to be standard, best practice and with the stated level of supervision and monitoring, will be implementable and effective in achieving their aims. The measures address the main threats to FWPM and other QI species dependant on high levels of water quality and control for sedimentation and construction related pollutants. The applicant recommends that a double layer of silt

fencing should be erected, and this should be ensured by way of condition. The proposal will not generate hydromorphological changes and nutrient enrichment is likely to be reduced due to a reduction in agriculture inputs as a result of the change of land use.

## **5.0 Implications of the proposed development in relation to the integrity of the Lower River Suir SAC with particular reference to protected aquatic species including Freshwater Pearl Mussel (*Margaritifera margaritifera*) in the Clodiagh River.**

In order to avoid an adverse effect on site integrity, the conservation status of a habitat or species if favorable must be preserved, and if unfavorable, must not be further harmed or made more difficult to restore to the original condition.

With regard to FWPM, it is clear that conservation objectives are not being met for the Lower River Suir SAC. Most recent surveys show severe declines in the Clodiagh population. There is no recruitment of young mussels and low levels of extant adult population with only 67 mature individuals counted at five stations, indicating that this is among the populations considered in danger of extinction. As detailed in the site-specific conservation objectives, Moorkens and Killeen (2020)<sup>3</sup> and in Article 17 reporting<sup>4</sup>, heavy sedimentation, hydromorphological changes and nutrient enrichment are all affecting the habitat condition of the river.

Where conservation objectives are not being met a proposed development must demonstrate that it will either provide a reduction in relevant pollutants or not add to the pollution load so as not to impede the achievement of the conservation objectives. Adverse effects on site integrity can be excluded even if the proposal is not actually contributing to an improvement as it is not making the situation worse or impeding measures which should be delivered under Article 6(1) or 6(2)<sup>5</sup>.

I consider that the overall project design, pollution control, mitigation and monitoring with ecological supervision of the construction phase in particular, will effectively prevent the risk of any additional pollution load to the Clodiagh River. While agricultural activities can continue on the site, it will be at a reduced intensity to the current baseline. While not expressed in the NIS, the removal of intensive grassland

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<sup>3</sup> Moorkens, E.A. & Killeen, I.J. (2020) Monitoring Populations of the Freshwater Pearl Mussel, *Margaritifera margaritifera*, Stage 3 and Stage 4 Survey. Irish Wildlife Manuals, No. 122. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland

<sup>4</sup> [https://www.npws.ie/sites/default/files/publications/pdf/NPWS\\_2019\\_Vol3\\_Species\\_Article17.pdf](https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf)

<sup>5</sup> Tyldesley, D and Chapman, C. (2013) The Habitats Regulation Assessment Handbook (January 2024 Edition) DTA Publications Limited, UK.

management and cattle grazing from some 140ha over the lifetime of the operation of the Solar farm will reduce the nutrient loading of the catchment. The applicant has demonstrated that the proposed development will not result in any significant changes to the hydrology or hydrogeology of the site. No alterations to the current drainage system are proposed, therefore the proposed development will not affect the current hydrological regime and flow variability in the receiving Clodiagh River.

## **6.0 Conclusion**

Based on the information presented on the proposed development, likely impact mechanisms, assessment of impacts and mitigation and control measures proposed, I consider that the proposed solar farm will not prevent or delay the attainment of conservation objectives for the Lower River Suir SAC including Freshwater pearl mussel, a QI feature restricted to the Clodiagh River. Similarly, the proposal will not affect the achievement of conservation objectives for other QI freshwater species and adverse effects can be excluded with confidence for white clawed crayfish, lamprey species, Salmon, Twaité Shad and Otter.

Therefore, adverse effects on the overall site integrity of the Lower River Suir SAC can be excluded and there is no reasonable scientific doubt as to the absence of such effects from the project alone or in combination with other plans or projects.

Signed:

8<sup>th</sup> March 2024

Dr Maeve Flynn MCIEEM

Inspectorate Ecologist