Inspector's Addendum Report
ABP 313424-22

Development	Solar PV Energy development.
Location	Rathduff, Thomastown Demesne South, Co. Tipperary.
Planning Authority	Tipperary County Council.
Planning Authority Reg. Ref.	211014
Applicant(s)	Renewable Energy Systems (RES).
Type of Application	Permission
Date of Site Inspection	21/08/24
Inspector	Pauline Fitzpatrick

1.0 Introduction

1.1. This is the 2nd addendum report to the Inspector's report in respect of ABP 313424-22 dated 9th January 2022 *(sic)*. The 1st addendum report is dated 8th November, 2023.

1.2. The Board in its direction dated 21/11/23 stated that it is of the opinion that:-

"the grid connection, while not part of the subject planning application, does form an integral part of the overall proposed project by connecting the solar panels to the national grid. In that regard, therefore, the Board considers that the grid connection should form part of the Appropriate Assessment screening. You are therefore requested to submit to An Bord Pleanála an appropriate level of detail in relation to the (i) intended construction, operation and decommissioning methodology for the grid connection and (ii) receiving environment along the indicated grid connection route to examine the likelihood of the overall proposed development having a significant effect on the qualifying interest(s) of a European Site".

1.3. This report considers the applicant's response to the above request and the submissions received following circulation of the said documentation under section 131.

2.0 Applicant's Response

2.1. The applicant in its response received 31/01/24 submitted a Natura Impact Statement in which consideration is given to the proposed grid connection of c. 4.1 km which does not form part of the application.

2.2. It concludes that the proposed development and indicative grid connection route will not adversely affect the integrity of any Natura 2000 designated site due to measures inaugurated during the design phase and following relevant guidance to prevent pollution during the construction and operation phases. With the implementation of the detailed pollution prevention and drainage management and waste management measures, along with ongoing monitoring to ensure compliance, it is considered that the proposed development will not have a significant effect on any qualifying features and, therefore, the integrity of the Natura 2000 sites connected with the application site.

2.3. Following a request from the Board dated 26/02/24 revised public notices were issued.

3.0 3rd Party Responses

By way of a section 131 notice parties to the appeal were invited to make submissions on the applicant's submission. Observations have been received from:

- Noel & Jean Morrisey
- John & Caroline Bourke
- Caroline Bourke
- Michael & Mary Joyce
- Denis Pollard
- Amy & Olivia Marnane
- Con Marnane
- Carol, Emma & Daisy Welsh
- Margaret Kennedy
- Mary Alice O'Connor
- Cliodhna Hanley & Maeve Hanley
- South Tipperary Solar Farm Concern Group
- Maria Bailey
- Roma Coonan
- Good Herdsmen Ltd.
- Chris Bailey
- Maureen & Tony Walsh
- Jim Keane

There is a significant overlap and commonality in the issues raised in the submissions received. To avoid undue repetition and for ease of reading the contents are summarised as follows:

3.1. Natura Impact Assessment

- The NIS is a desktop study which appears totally inadequate for a development on such a sensitive site. There are inaccuracies in the report in terms of the site description. The authors of the NIS do not have sufficient experience and expertise.
- The NIS lacks the scientific information and evidence required to make a determination that there will be no impact on the integrity of a European site. There are obvious gaps and insufficient scientific information to make a determination.
- There has been no consideration of the conservation objectives relevant to specific species and habitat types including their relevant attributes, measures and targets as they relate to the Lower Suir SAC. This is contrary to the requirements of Article 6(3) of the Habitats Directive.
- Section 1.29 of the NIS states that the development may have potential to result in a number of impacts affecting Natura sites which is contradicted in section 1.4 of the Executive Summary where it states that it is determined that the development will not have any adverse effects on the integrity of said sites.
- There is an open drain in field 4 which flows onto adjoining lands and constructed wetlands and then into the river Fidaghta. It is often full of water with audible flows of water under the road into the ditch on the opposite side. Waterlogging has also been noted in the area. No follow up survey was undertaken of the drainage ditches when water may be present to see if species are supported.
- No updated ecological site visit or ecological survey work was carried out along the grid connection route for the purposes of the revised NIS submission. The survey work completed relates only to the fields within the site boundary and does not extend beyond it to include the grid connection. The site visits referenced September 2019 and April 2021 are not sufficient.

Site visits and visits to the SAC should have been undertaken on a seasonal basis.

- Alluvial forest exists within the River Fidaghta which has not been referenced in the NIS despite acknowledging that the River Fidaghta is hydrologically connected to the proposed development (1.52 km away). It will be directly affected by the proposal.
- No species survey of the river Fidaghta is referenced in the NIS.
- It is admitted that further survey work is required for otter. Such work should have been completed as part of the NIS. The use of the site and along the grid connection route by otter cannot be ruled out. The gap in the site fence and toxic materials to be used will impact on otter.
- Daily inspection of the site and possibly weekly inspection of surface water courses is inadequate. A suitably qualified person should check the Fidaghta and Suir water quality at suitable intervals.
- It is queried whether the measures proposed to address potential pollution during the construction phase are sufficient.
- Decommissioning phase has not been assessed.
- The maintenance and cleaning of the PV modules is not addressed. It should have been included in stage 3 post construction mitigation measures. The solar farm will utilise special track equipment with cleaning detergent. Details are required of plans to mitigate run off into the local river which links to the River Suir.
- The PV solar modules house extremely toxic and harmful compounds. The possibility of damage to one of the estimated 44000 panels proposed to be installed over its lifetime, by way of weather, fire or criminal damage is a high probability.
- No mitigation measures in place in the event of a fire in the invertor substation modules and transformer containers. No details given as to source of water for firefighters.
- The NIS is not user friendly. Vague and poorly considered responses.

3.2. **Other Issues**

- A more robust EIA Screening Report is required. That submitted is inadequate.
- The grid connection requires permission and cannot rely on a section 5 declaration.
- Hare, fox, and squirrel have not been mentioned.
- Impact on badger, bat and birds.
- Concern about crime/theft should machinery be kept on site during construction.
- Fuel leakages to local waterways. It is queried how many storage units/tanks will be on the site.
- Query as to plans to mitigate dust during construction.
- Monitoring of noise levels.
- Construction hours have been increased since local authority decision.
- Health and safety concerns re construction traffic.
- Confirmation required if generators are to be used on site. Noise and fire hazard.
- Suitably qualified person should oversee environmental monitoring.
- Excavation of the road is likely to compromise an already vulnerable drinking water supply.
- The grid connection will add to concerns in terms of traffic, access and quality of life. Local farmers' and horse owners' livelihoods should be protected. Access for emergency services queried.
- Previous requests regarding access arrangements, hedgerow retention and planting have not been met.
- The applicant did not engage with the community.
- There is potential for bats on the site.
- Non-compliance with the Tipperary County Council Green and Blue Futures Programme.

4.0 Policy Context

4.1. The Board is advised that subsequent to the original inspector's report and the 1st addendum report the Climate Action 2024 has been published. It reiterates and reinforces the objectives of the previous 2023 iteration. To meet the challenges posed by the climate crisis and achieve further emissions reductions a major step up is required and the acceleration and increased deployment of renewable energy is one of three key measures.

4.2. For the solar electricity sector a target of 5GW by 2025 is set with a target of 8 GW by 2030.

5.0 Assessment

5.1. At the outset I note that 3rd Parties to the appeal raised matters in addition to those pertaining to appropriate assessment. I note the issues raised and consider that they have been addressed by the inspector in her report dated 9th January 2022 and her addendum report dated 8th November, 2023.

5.2. This addendum report pertains to the matter of appropriate assessment for the proposed solar farm development in conjunction with the grid connection as delineated on the plans accompanying the application, only. As noted the grid connection is indicative, only, does not form part of the application for permission, may be subject to amendment/change and may be subject to a separate application for permission at which stage it would, itself, be subject to assessment with regard to the proper planning and sustainable development of the area and to the requirements in terms of appropriate assessment.

Appropriate Assessment: Screening Determination

Stage 1, Article 6(3) of Habitats Directive

5.3. I have considered the Solar PV Energy development and indicative grid connection in light of the requirements of S177U of the Planning and Development Act 2000 as amended.

5.4. The application is accompanied by an Appropriate Assessment Screening report supplemented by a Natura Impact Statement submitted with the applicant's response to the grounds of appeal, as amended in response to the Board's Direction seeking information on the grid connection. The information presented in the reports informs this screening determination.

Description of the Proposed Development

5.5. It is proposed to construct a solar energy development on a site comprising of 4 no. fields of improved agricultural grassland. A detailed description of the development is provided in section 3 of the inspector's report with specifications of the proposal provided in other planning documents provided by the applicant.

5.6. In summary the solar PV Energy development with a total size of 42.68 hectares, is to include solar panels mounted on steel support structures, associated cabling and ducting, inverter/transformer stations, a substation, security fencing, CCTV and other infrastructure, permeable access tracks, 1 no. existing agricultural field entrance which will be upgraded with works to improve a junction of two public roads, landscaping and ancillary works. A temporary construction compound is also proposed. Field No. 4 has drains along the western (roadside) and southern boundaries which were noted to be dry on day of inspection.

5.7. The grid connection, which does not form part of the application, would consist of a 38kV underground cable from the proposed solar farm to the existing Tipperary substation to the north-west. It would be c. 4.1km in length and is to be installed along public roads and private agricultural land. The NIS in section 1.38 refers to the route by-passing a stream whilst section 1.64 refers to the road network crossing three streams. I identified one water crossing in the townland of Ballyglasheen. At such crossings Horizontal Direction Drilling (HDD) will be required Such drilling is used to install cable ducts under an obstacle where standard installation methods are not possible.

Consultations and submissions

5.8. No relevant nature conservation body made a submission.

5.9. Submissions from 3rd parties raised issues including the following related to the appropriate assessment process:

- Hydrological connection to the River Suir SAC and potential for impacts on qualifying species.
- Adequacy of NIS with gaps and insufficient scientific information to make a determination.

European Sites

5.10. 1 no. European site was identified as being located within a potential zone of influence of the proposed development. The Lower River Suir SAC (site code 02137) is approx. 1.5km to the nearest point of the proposed development site. The site is c. 900 metres to the north of the Fidaghta River at its nearest point. From this point the river joins the River Suir c.4.2km to the east (hydrologic distance). The indicative grid connection route along public roads and agricultural land would cross 1 watercourse in the townland of Ballyglasheen which joins the Fidaghta River 0.9km to the south. A hydrologic distance of 7.5km is calculated from this watercourse crossing point to the River Suir SAC at its nearest point.

European Site	Qualifying Interests	Distance	Connections
Lower River Suir SAC (site code 002137)	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	4.2 km hydrologic distance	Yes, via drainage channels and indicative grid connection stream crossing

	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Taxus baccata woods of the British Isles [91J0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaite Shad) [1103] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]		

5.11. I note that the applicant included a greater number of European sites in its initial screening consideration with sites within 15km of the development site considered. There is no ecological justification for such a wide consideration of sites, and I have only included those sites with any possible ecological connection or pathway in this screening determination.

5.12. Ecological surveys were undertaken by the applicant on 2nd September 2019 and 15th April 2021 of the solar farm site. The applicant determined that the proposed development has potential ecological connectivity for otter with the habitats identified during the surveys considered to have the potential to support commuting otter. It also concluded that the potential for hydrological connectivity cannot be ruled out due to the site's proximity to the Fidaghta river.

Likely Impacts of the Project

5.13. The proposed development will not result in any direct effects on the SAC.

5.14. However, due to the size and scale and proximity of the proposed development and indicative grid connection, impacts generated by their construction, operation and decommissioning require consideration.

5.15. The source-pathway-receptor model is used in determining possible impacts and effects.

5.16. Sources of impact include:

- Release of sediment and other pollutants during construction stage.
- Release of surface water run-off and pollutants during operational phase.
- Release of sediment and other pollutants during decommissioning stage.
- Barrier to otter in foraging/commuting.

Likely significant effects on the European site in view of the conservation objectives

5.17. I note that the only means of hydrological connection to the solar farm site is by means of the drains which run along the western and southern boundaries of field 4. The substrate of the drains, which are mostly dry, is unsuitable for any mobile freshwater species QIs including lamprey, twaite swad and salmon.

5.18. The nearest extent of the proposed solar farm is approx. 0.9km to the north of the Fidaghta river which is c.4.2km hydrologic distance from the River Suir at the nearest point.

5.19. I consider that the construction and decommissioning requirements which incorporate standard best practice measures include but are not limited to pollution prevention, waste management and environmental monitoring. I have examined the

documentation submitted with the application including the Outline Construction and Environment Plan (Appendix 7), Flood Risk and Drainage Impact Assessment (Appendix 4) and Ecological Impact Assessment (Appendix 2) and I am satisfied that the reference to best practice pollution prevention and biosecurity measures in the NIS as submitted with the appeal response and in response to the Board's direction are not intended to address any likely significant effects on qualifying interests and would not be considered to comprise mitigation measures. They comprise standard pollution controls that would be employed regardless of proximity to a European site and effectiveness of same. In particular the proposed drainage strategy including SuDS is not designed in the context of ensuring no potential effects on the European sites, is an inherent part of the design of the proposed development and does not constitute mitigation in the context of AA screening.

5.20. In terms of otter a scoping survey undertaken during the extended phase 1 habitat survey did not find evidence of otter activity within or adjacent to the solar farm site. The drainage ditches on the site are considered too narrow to support the species with the improved agricultural grassland of the site of limited value to it. The drainage ditch on the opposite side of the road (3 metres from the site) is identified as only being wide enough to occasionally support commuting otter with suitable habitat for foraging/commuting otter noted in the survey area. It was therefore considered that potential impacts to foraging/commuting otter could arise.

5.21. I would concur with the inspector in section 9.9 of her report in which she considers that the 10 cm gap under fences is for the protection of badger, and I refer the Board to section 2.138 of the Ecological Impact Assessment in this regard. I also confirm, and as noted by the inspector, that the drawings show the proposed fence to be set back from the western and southern site boundaries and there is clear passage available for any otter, if present. The under fence gap is not relevant to the passage of otter along the ditches as access would not be impeded.

5.22. On the basis of the above I submit that there is a very low probability or possibility of impacts of such magnitude during either the construction, operational or decommissioning phases of the proposed solar farm development that could result in significant effects on the Lower River Suir SAC in view of the conservation objectives of the site.

5.23. The indicative grid connection route will cross a stream which discharges into the Fidaghta stream which then discharges into the River Suir. As the river Suir is designated for freshwater species including lamprey species, salmon and habitats including alluvial forest that require high water quality these sensitive receptors are, therefore, at possible risk via the pathways identified, particularly during the construction phase. The stream may also be used by otter thereby potential impacts on the species arising from impacts on water quality and knock-on impacts on biomass is also identified. Disturbance arising from construction works may also arise. I note the measures provided in the amended NIS in terms of grid connection construction and HHD. I would submit that they represent best practice measures that would be employed regardless of proximity to a European site and effectiveness of same. Notwithstanding, these measures are not identified elsewhere in the documentation accompanying the application including the outline Construction and Environment Management Plan. Under these circumstances it is considered that undertaking an appropriate assessment stage 2 to be the relevant procedure.

AA Screening Conclusion

5.24. Based on the information provided in the screening report, site visit, review of the conservation objectives and supporting documents, I consider that in the absence of mitigation measures beyond best practice construction methods, the proposed development in terms of the indicative grid connection route has the potential to result in the following impacts:

- potential damage to the River Suir associated with escapement of silt and inadvertent spillages of hydrocarbons and/or chemicals during construction phase of the grid connection with qualifying interest habitats and species dependent on water quality. An impact of sufficient magnitude could undermine the site's conservation objectives
- potential disturbance risks to otter which could be associated with increased noise, additional lighting and increased human activity at construction stage.

5.25. Such impacts could be significant in terms of the stated conservation objectives of the SAC when considered on their own and in combination with other projects and plans in relation to pollution related pressures and disturbance on qualifying interest habitats and species.

5.26. In accordance with Section 177U of the Planning and Development Act 2000 (as amended) and on the basis of objective information provided by the applicant, I conclude that the indicative grid connection route serving the proposed development could result in significant effects on the Lower River Suir SAC, in view of the conservation objectives of a number of qualifying interest features of the site.

5.27. It is therefore determined that appropriate assessment of the indicative grid connection, alone, is required.

5.28. No measures intended to avoid or reduce harmful effects on European sites were taken into account in reaching this conclusion.

Appropriate Assessment of Implications of the Proposed Development

5.29. The River Suir and its tributaries flow through the counties of Tipperary, Kilkenny and Waterford. Lower River Suir SAC consists of the freshwater stretches of the River Suir immediately south of Thurles, Co. Tipperary and the tidal stretches as far as the confluence with the Barrow/Nore in Co. Waterford, along with many tributaries, including the Clodiagh, Multeen and Aherlow. Much of the system flows over carboniferous limestone, though towards Waterford the geology changes to Old Red Sandstone.

5.30. Given the nature and scale of the proposed construction of the grid connection, the potential for effects on surface water quality as a result of suspended solids discharged has been identified in the absence of mitigation. The potential for effects on otter have also been identified.

5.31. The majority of the proposed grid connection is to be installed along the public road network. The road network has 1 stream crossing with the NIS referencing 3 locations where Horizontal Directional Drilling (HDD) is required which will take place within the road corridor. The proposed 38kV underground cable will be installed in an excavated trench, typically 1200mm deep with variations for service and watercourse crossings. The base of the excavated trench will be lined. The methodology for HDD is detailed in the amended NIS. The proposed development does not involve the draining or modification of any watercourse.

5.32. ***Mitigation Measures***

Grid Connection

- Preparation of a targeted method statement outlining the construction methodology and incorporating the mitigation and control measures.
- At watercourse crossings, the contractor will be required to adhere to the environmental control measures outlined within the planning application and accompanying reports with a detailed CEMP to be prepared prior to commencement of development.
- Where the cable route intersects any small culverts, the culvert will remain in place and the ducting will be installed above it with minimum separation distances provided in accordance with ESB and Irish Water specifications.
- No installation will take place during extreme weather warnings. No construction personnel, operation or maintenance personnel will be permitted to carry out any works during extreme flood events.
- No more than a 100 metre stretch of trench will be opened at any one time within the roadway. The next 100 metre section will only be excavated once the majority of reinstatement has been completed on the first.
- Where required, grass will be reinstated by either seeding or by replacing with grass turf.
- The works area for the HDD entry side exit side will be fenced off during HHD implementation.
- Drilling rig and fluid handling units located on one side of the crossing will be stored on double bunded 0.5mm PVC bunds which will contain any accidental fluid spills and storm water run-off.
- Excavated material from the entry and exit pits (1m x 1m x 2m) will be temporarily stored within the works area and used for reinstatement or disposed to a licensed facility.
- The HHD pilot bore will be undertaken using a wireline guidance system. Assembly will be set up by the drilling team and steering engineer.
- The pilot bore will be drilled to the pre-determined profile and alignment under the watercourse crossings.
- The works will be monitored by the steering engineer and drill team to ensure that modelled stresses and pressures are not exceeded.

- The drilled cuttings will be flushed back by drilling fluid to the entry and exit pits and recycled for re-use. The drilling fluid will be disposed of to a licensed facility.
- The entry and exit pits will be reinstated to Tipperary County Council's specifications.
- On completion the trenches will be backfilled, and land reinstated in accordance with Tipperary County Council's requirements.

Otter

- Pre-commencement otter survey to be undertaken by a suitably qualified ecologist prior to the construction phase.

Comment

5.33. Please see Table 1 below which provides a summary of the appropriate assessment for ease of reference.

5.34. 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.

5.35. I note the contention by 3rd parties that further site investigations should have been undertaken for the grid connection route and the discrepancy in terms of anticipated water crossings in the NIS. In carrying out appropriate assessment the Board is not limited to the NIS and shall take account of other matters which includes supplemental and additional information furnished, submissions and other relevant information. I consider that there is sufficient detail available to allow for a proper assessment and that the NIS is adequate and the assessment proportionate to the development type and likely impact mechanisms that could be generated.

5.36. I do not consider that given the scale and type of development entailed in the grid connection cabling with low levels of ground works, largely within the public road corridor, that it has the potential to pose a significant risk to the attainment of the conservation objectives for the QIs of the Lower River Suir SAC when mitigation measures are applied.

5.37. 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 the QI species and habitats dependent on high levels of water quality in the control of sedimentation and construction related pollutants and would reduce possible effects to a non-significant level whereby adverse effects can be prevented.

Potential In-Combination Effects

5.38. Potential indirect in-combination effects relate to damage to QI habitats and species because of accidental spillages and sediment run off during the works. In the absence of mitigation this could give rise to contamination with resultant impacts on water quality, fisheries and the availability of prey species for otter, having regard to the various plans or projects in the wider area, both domestic and commercial and including the proposed solar farm development which the indicative grid connection is to serve. However, having regard to the implementation of the mitigation measures, I am satisfied that there would be no adverse cumulative effects on the European site or its QI habitats and species.

Residual Effects

5.39. Taking account of the mitigation measures outlined above and the limited scale of the proposed development I consider that there is no potential for residual adverse effects on any of the QI species or habitats or the overall integrity of the Lower River Suir SAC.

Conclusion

5.40. Based on the information presented on the indicative grid connection, likely impact mechanisms, assessment of impacts and mitigation and control measures proposed I consider that it will not prevent or delay the attainment of the conservation objectives for the Lower River Suir SAC and adverse effects can be excluded with confidence for the water quality dependent species and habitats including white clawed crayfish, lamprey species, Salmon, Otter and Alluvial Forests.

5.41. Having regard to the nature, scale and location of the proposed works associated with the indicative grid connection route to serve the proposed development, 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 grid connection route, individually or in combination with other plans and projects would not adversely affect the integrity of the aforementioned European site, or any other European site, in view of the site's Conservation Objectives.

5.42. 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.

6.0 **Recommendation**

I endorse the inspector's recommendation in her report dated 09/01/22 subject to an additional condition as follows:

Condition

This permission shall not be construed as any form of consent or agreement to a connection to the national grid or to the routing or nature of any such connection.

Reason: In the interest of clarity.

I confirm that this report represents my professional planning assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought to influence, directly or indirectly, the exercise of my professional judgement in an improper or inappropriate way.

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Pauline Fitzpatrick
Senior Planning Inspector
August, 2024

Table 2: Lower River Suir SAC (site code 002137)					
Summary of Key issues that could give rise to adverse effects: • **Impacts to water quality through construction related pollution events during grid connection installation (e.g. chemicals, oil/fuel, cementitious materials etc.) or sediments/silt run-off.** • **Disturbance and or displacement of otter due to potential water quality impacts during construction or disturbance of foraging/commuting routes during grid connection installation.**					
Conservation Objectives: [Lower River Suir Conservation Objectives (npws.ie)]					
Summary of Appropriate Assessment					
Qualifying Interest feature **Maintain (M)** **Restore (R)**	**Conservation Objectives Targets and attributes**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) **(R)** **Map 3**	- Habitat distribution: No decline, subject to natural processes. See map 3 for mapped known extent - Habitat area: area stable at 33.42 ha or increased subject to natural processes - Physical structure: sediment supply: maintain natural circulation of sediments & organic matter without obstructions. Maintain creek and pan structure, subject	The nearest mapped locations of this habitat are in excess of 90km downstream of the subject site and indicative grid connection route. Having regard to size, scale and nature of the proposed development, no potential indirect impacts	None	None required	**Yes**

	to natural processes. Maintain natural tidal regime - Vegetation cover: Maintain the range of coastal habitats including transitional zones, subject to natural processes. Maintain structural variation within sward - Vegetation structure: Maintain more than 90% of the area outside of creeks vegetated - Vegetation composition: Maintain range of sub-communities with typical species. No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1% where it is known to occur.	during construction of the grid connection are anticipated on this QI.			
Mediterranean salt meadows (Juncetalia maritimi) (R)	- Habitat distribution: No decline, subject to natural processes. - Habitat area: area stable or increasing subject to natural processes - Physical structure: maintain natural circulation of sediments & organic matter without obstructions. Maintain creek and pan structure, subject to natural processes. Maintain natural tidal regime	The nearest examples of this habitat are located in excess of 90km hydrologically downstream of the subject site and the indicative grid connection route. Having regard to size, scale and nature of the proposed development, no	None	None required	**Yes**

	- Vegetation cover: Maintain the range of coastal habitats including transitional zones, subject to natural processes. Maintain structural variation in the sward - Vegetation structure: Maintain more than 90% of the area outside of creeks vegetated - Vegetation composition: Maintain range of sub-communities with typical species. No significant expansion of common cordgrass (Spartina anglica), with an annual spread of less than 1% where it is known to occur.	potential indirect impacts during construction of the grid connection are anticipated on this QI.			
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation **(M)** (Map 6)	- Habitat distribution: No decline, subject to natural processes. - Habitat area: Area stable or increasing, subject to natural processes. - Hydrological regime: river flow: Maintain appropriate river and groundwater hydrological regimes. Maintain natural tidal regime - Substratum composition: particle size range: Maintain appropriate substratum	The locations of the habitat type are not mapped. It is assumed that the River Suir downstream of the proposed development may potentially support the habitat. Precautionary principle – assume present Siltation or pollution during grid connection	None	See Section 5.32 above. No instream works are proposed. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

	particle size range, quantity and quality, subject to natural processes - Water quality: various: Maintain appropriate water quality to support the natural structure and functioning of the habitat - Typical species: Maintain typical species in good condition, including appropriate distribution and abundance - Floodplain connectivity: Maintain floodplain connectivity necessary to support the typical species and vegetation composition of the habitat - Fringing Habitats: Maintain marginal fringing habitats that support the typical species and vegetation composition of the habitat.	construction could negatively impact water quality.		impacts to water quality.	
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] (M)	- Habitat distribution: No decline, subject to natural processes. - Habitat area: Area stable or increasing, subject to natural processes. - Hydrological regime: flooding: Maintain appropriate hydrological regimes	The locations of the habitat type are not mapped. It is assumed that the River Suir downstream of the proposed development	None	See Section 5.32 above. No instream works are proposed. Best practice drainage and pollution	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent

	Vegetation composition: At least 3 positive indicator species present. Cover of positive indicator species at least 40%. Cover of non-native species not more than 1%. Cover of negative indicator species not more than 33%. Cover of scrub, bracken (Pteridium aquilinum) and heath not more than 5%. - Vegetation Structure: Height: Herb height at least 50cm Physical Structure: Cover of bare soil not more than 10%. Area of the habitat showing signs of serious grazing or disturbance less than 20m²	may potentially support the habitat. Precautionary principle – assume present Siltation or pollution during grid connection construction could negatively impact water quality.		prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality.	direct or indirect effects on integrity.
* Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) **(R)** (Map 5)	- Habitat area: Area stable or increasing, subject to natural processes, at least 32.9ha for sites surveyed - Habitat distribution: No decline. - Woodland size: Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size - Woodland structure: cover and height: Diverse structure with a relatively closed	2 no. mapped locations of the QI. The nearest mapped location is excess of 60km hydrologically downstream. Further unsurveyed areas of alluvial forest are present within the SAC. Reference made by appellants to alluvial forest	None.	See Section 5.32 above. No instream works are proposed. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

	canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer. Maintain diversity and extent of community types. Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy - Hydrological regime: Flooding depth/height of water table: Appropriate hydrological regime necessary for maintenance of alluvial vegetation - Woodland structure: At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder). No decline in veteran trees. No decline in indicators of local distinctiveness: - Vegetation composition: No decline in native tree cover not less than 95%. A variety of typical native species present, depending on woodland type, including alder (Alnus glutinosa), willows (Salix	habitat where Fidaghta River meets River Suir. Precautionary principle – assume present Siltation or pollution during grid connection construction could negatively impact water quality.		impacts to water quality.	

	spp), oak (Quercus robur), ash (Fraxinus excelsior) and birch (Betula pubescens). Negative indicator species, particularly non-native invasive species, absent or under control				
Old sessile oak woods with Ilex and Blechnum in the British Isles **(R)** (Map 4)	- Habitat area: Area stable or increasing, subject to natural processes, at least 29.3ha for sites surveyed. - Habitat distribution: No decline. - Woodland size: Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size - Woodland structure: Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer. Maintain diversity and extent of community types. Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy. At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both	There are 2 mapped locations of this terrestrial QI. One is upstream of the proposed development; the 2nd is in excess of 28km from the subject site. Having regard to size, scale and nature of the proposed development, no potential indirect impacts during construction of the grid connection are anticipated on this QI.	None	None required	**Yes**

	categories should include stems greater than 40cm diameter. No decline in veteran trees. No decline in indicators of local distinctiveness. No decline in native tree cover, not less than 95% - Vegetation composition: A variety of typical native species present, depending on woodland type, including oak (Quercus petraea) and birch (Betula pubescens). Negative indicator species, particularly non-native invasive species, absent or under control				
Taxus baccata woods of the British Isles [91J0] (R)	- Habitat area: stable or increasing subject to natural processes. - Habitat distribution: No decline. - Woodland size: Area stable or increasing subject to natural processes. - Woodland structure: Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and herb and bryophyte layer. Maintain diversity and extent of community types. Seedlings, saplings and pole age-classes occur in	This terrestrial habitat has not been mapped in detail for Lower River Suir SAC. The total area of the qualifying habitat is unknown. Unsurveyed areas may be present within the SAC. Having regard to size, scale and nature of the proposed development, no potential indirect impacts during construction of the	None	None required	**Yes**

	adequate proportions to ensure survival of woodland canopy. At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder). No decline in veteran trees. No decline in indicators of local distinctiveness. - Vegetation composition: No decline in native tree cover not less than 95%. A variety of typical native species present, depending on woodland type, including yew (Taxus baccata) and ash (Fraxinus excelsior). Negative indicator species, particularly non-native invasive species, absent or under control	grid connection are anticipated on this QI.			
Freshwater Pearl Mussel Margaritifera margaritifera (R) (Map 6)	- Distribution: Restore distribution to 10.4km. See map 6 - Population size: restore population to at least 10,000 adult mussels. - Population structure: Restore to at least 20% of each population no more than 65mm in length; and at least 5% of each	The conservation objectives apply to the Clodiagh freshwater pearl mussel. The mapped QI is in excess of 70km downstream in the Clodiagh catchment.	None	None required	**Yes**

	population no more than 30mm in length. No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution - Suitable habitat: Restore suitable habitat in more than 8.8km in the Clodiagh system and any additional stretches necessary for salmonid spawning. Restore condition of suitable habitat. - Water Quality: Restore water quality - macroinvertebrates: EQR greater than 0.90 (Q4-5 or Q5); phytobenthos: EQR greater than 0.93. - Substratum quality: Restore substratum quality - filamentous algae: absent or trace (less than 5%); macrophytes: absent or trace (less than 5%) - stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment – Restore oxygen availability to no more than 20% decline from water column to 5cm depth in substrate.	No potential indirect impacts during construction of the grid connection are anticipated on this QI.			

	- Hydrological regime: Maintain appropriate hydrological regime - Host Fish: Maintain sufficient juvenile salmonids to host glochidial larvae. - Fringing habitat: area and condition: Restore the area and condition of fringing habitats necessary to support the population.				
Austropotamobius pallipes (White-clawed Crayfish) [1092] (M) Map 7	- Distribution: No reduction from baseline. - Population structure:recruitment: Juveniles and/or females with eggs in all occupied tributaries. - Negative indicator species: No alien crayfish species. - Disease: No instances of disease. - Water quality: At least Q3-4 at all sites sampled by EPA. - Habitat quality: heterogeneity: No reduction in habitat heterogeneity or habitat quality.	White-clawed crayfish (Austropotamobius pallipes) occurs extensively on the River Suir and on many of its tributaries. On the River Suir main channel, the species has been recorded on almost the entire length of non-tidal river. The nearest mapped QI downstream of the proposed development is c. 13km (hydrologic distance.		See Section 5.32 above No instream works are proposed. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

		Precautionary principle – assume present Siltation or pollution during grid connection construction could negatively impact water quality.			
Atlantic Salmon Salmo salar **(R)**	- Distribution: extent of anadromy: 100% of river channels down to second order accessible from estuary - Adult spawning fish: Conservation Limit (CL) for each system consistently exceeded - Salmon fry abundance: Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling - Out-migrating smolt abundance: No significant decline - Number and distribution of redds: No decline in number and distribution of spawning redds due to anthropogenic causes	Artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas Precautionary approach adopted. Siltation or pollution during grid connection construction could negatively impact water quality.	None	See section 5.32 above. No instream works are proposed. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity

	- Water quality: At least Q4 at all sites sampled by EPA				
Twaite Shad Alosa fallax **(R)**	- Distribution: extent of anadromy: Greater than 75% of main stem length of rivers accessible from estuary - Population structure- age classes: More than one age class present - Extent and distribution of spawning habitat: No decline in extent and distribution of spawning habitats - Water quality- oxygen levels: No lower than 5mg/l - Spawning habitat quality: Filamentous algae; macrophytes; sediment: Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth	The species is mainly restricted to estuarine habitats migrating upstream to spawn. Having regard to size, scale and nature of the proposed development, no potential indirect impacts during construction, of the grid connection are anticipated on this QI.	None	None required	**Yes**
River Lamprey Lampetra fluviatilis **(R)**	- Distribution: Access to all water courses down to 1st order streams - Population structure of juveniles: At least three age/size groups of river/brook lamprey present	Locations of Lamprey species are not mapped. It is therefore assumed that freshwater habitats downstream of the	None	See section 5.32 above. No instream works are proposed.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures

	- Juvenile density in fine sediment: Mean catchment juvenile density of brook/river lamprey at least 2/m² - Extent and distribution of spawning habitat: No decline in extent and distribution of spawning beds - Availability of juvenile habitat: More than 50% of sample sites positive	proposed development are capable of supporting lamprey. Precautionary principle – assume present Siltation or pollution during grid connection construction could negatively impact water quality.		Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality.	proposed to prevent direct or indirect effects on integrity
Brook Lamprey Lampetra planeri **(R)**	- Distribution: Access to all water courses down to first order streams - Population structure of juveniles: At least three age/size groups of brook/river lamprey present - Juvenile density in fine sediment: Mean catchment juvenile density of brook/river lamprey at least 2/m² - Extent and distribution of spawning habitat: No decline in extent and distribution of spawning beds - Availability of juvenile habitat: More than 50% of sample sites positive	Locations of Lamprey species are not mapped. It is therefore assumed that freshwater habitats downstream of the proposed development are capable of supporting lamprey. Precautionary principle – assume present Siltation or pollution during grid connection construction could	None	See section 5.32 above. No instream works are proposed. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity

		negatively impact water quality.			
Sea Lamprey Petromyzon marinus **(R)**	- Distribution: extent of anadromy: Greater than 75% of main stem length of rivers accessible from estuary. - Population structure of juveniles: At least three age/size groups present - Juvenile density in fine sediment: Juvenile density at least 1/m² - Extent and distribution of spawning habitat: No decline in extent and distribution of spawning beds. - Availability of juvenile habitat: More than 50% of sample sites positive	Artificial barriers can block or cause difficulties to lampreys' upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. Float-over surveys by Inland Fisheries Ireland (IFI) point to little success of sea lamprey adults in passing the weirs in Clonmel in Lower River Suir SAC. Having regard to size, scale and nature of the proposed development, no potential indirect impacts during construction of the grid connection are anticipated on this QI.	None	None required	**Yes**
Otter Lutra lutra (M)	- Distribution: No significant decline	Watercourse on grid connection route maybe	None	See section 5.32 above.	**Yes**

	- Extent of terrestrial habitat: No significant decline. Area mapped and calculated as 116.17ha above high water mark (HWM); 712.27ha along river banks. - Extent of marine habitat: No significant decline. Area mapped and calculated as 712.27ha. - Extent of freshwater (river) habitat: No significant decline. Length mapped and calculated as 382.31km - Couching sites and holts: No significant decline - Fish biomass available: No significant decline - Barriers to connectivity: No significant increase	suitable for foraging/commuting Siltation or pollution during grid connection works could result in deterioration of water quality, reducing fish biomass availability. Disturbance due to noise, dust and lighting during the construction phase.		No instream works Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality and consequently fish biomass. Construction during daylight hours only.	No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Overall conclusion: **Integrity test**: Following the implementation of mitigation measures, the construction and operation of the grid connection serving the proposed solar farm development will not adversely affect the integrity of the Lower River Suir SAC in light of the site's Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.					