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Volume 1: Natura Impact Statement

Cadamstown Solar Farm

11/10/2024

Kildare County Council - Inspection Purposes Only



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1. EXECUTIVE SUMMARY

- 1.1. Neo Environmental Ltd has been appointed by Cadamstown Solar Limited (the “Applicant”) to undertake a State 2 Appropriate Assessment or Natura Impact Statement (“NIS”) for a proposed solar farm development (the “Proposed Development”) within the townlands of Cadamstown, Ballina, Clonuff and Garrisker, Co. Kildare. (the “Application Site”)
- 1.2. A Stage 2 Natura Impact Statement (“NIS”) has been undertaken for a proposed solar farm in order to assess the impacts of the proposal on the integrity of Natura 2000 sites within 15km, considering the conservation objectives of the sites and their ecological structure and function.
- 1.3. The desk-based assessment identified five Special Areas of Conservation (“SAC’s”) and one Special Protection Area (“SPA’s”) within a 15km buffer around the Application Site. These consist of the Mount Hevey Bog SAC, The Long Derries, Edenderry SAC, Ballynafagh Lake SAC, Ballynafagh Bog SAC, The River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA.
- 1.4. The Stage 1 AA Screening Report concluded that there is hydrological connectivity and ecological connectivity between the Application Site and both, the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA. The remaining SACs possess no hydrological or ecological connectivity to the Application Site and were screened out of further assessment
- 1.5. With the implementation of integral design measures, mitigation and best practice construction methods, there will be no significant effects for any of the Natura 2000 Designated Sites assessed. The main qualifying features of these sites have been outlined and assessed in full in this report.
- 1.6. **The Stage 2 NIS has concluded that the Proposed Development will not adversely affect the integrity of the River Boyne and Blackwater SAC and the River Boyne and Blackwater SPA** due to suitable mitigation measures, inaugurated design measures and following best practice pollution prevention during the construction and operation phases.
- 1.7. It is considered that the Proposed Development will **not have a significant effect** upon any qualifying features, and therefore the integrity, of any Natura 2000 site connected with the Application Site.
- 1.8. It is therefore considered that the next stage (**Stage 3; Assessment of Alternatives**) of the **Appropriate Assessment is not required**.

2. INTRODUCTION

Background

- 2.1. Neo Environmental Ltd has been appointed by Cadamstown Solar Limited (the “Applicant”) to undertake a Natura Impact Statement (NIS) for a proposed solar farm development (the “Proposed Development”) within the townlands of Cadamstown, Ballina, Clonuff and Garrisker, Co. Kildare (“Application Site”).
- 2.2. Please see **Figures 4 and 5 of Volume 2** for the layout of the Application Site.
- 2.3. An Ecological Appraisal (“EcA”) and Biodiversity Management Plan (“BMP”) have also been undertaken for the Application Site and should be read in conjunction with this Ecological Appraisal.

Development Description

- 2.4. The proposed solar will consist of the construction of PV panels mounted on metal frames, access tracks (existing, new and upgraded), transformer stations and GRP enclosures, underground cabling, perimeter fencing with CCTV cameras and access gates, temporary construction compounds and all ancillary grid infrastructure and associated works.

Site Description

- 2.5. The area of the proposed Development (the “Application Site”) lies at an elevation of approximately 73 – 83m AOD and covers a total area of c. 173.3 hectares. It is centred at approximate Irish Grid Reference (ITM) X 670138 Y 740504 and is located c. 0.23km south of the M4 and c. 0.54 south of the R148. The Application Site is c. 9.55km southeast of the town of Kinnegad and c. 9.27km northeast of Edenderry. Smaller settlements such as Londwood and Enfield can be found c. 3.44km and 6.13km north and east of the proposed development respectively.
- 2.6. Comprising of 39 fields of agricultural land, the site is currently being used for a mix of arable and pasture farming with some cut over bogland in the northern area. The fields are bound by a mixture of trees, hedgerows and post-and-wire fencing with some pockets of forestry found within the landownership boundary and outside the development boundary.
- 2.7. The Application Site will be accessed from two existing access points and two new access points, two from the L5006, one will be located on the unnamed road to the south and one will be accessed from an unnamed road to the west of the Application Site.

- 2.8. There are three watercourses, the Clonuff Watercourse, Calfstown Watercourse and Glash Stream, that run along or within the Application Site, with the majority of field boundaries bound by drains.

ADOPTED DESIGN PRINCIPLES

- 2.9. Where possible, measures have been implemented as part of the iterative design process to prevent the various phases of the Application Site affecting sensitive ecological features. Measures incorporated into the Application Site design relevant to ecology include the following:

- A 5m buffer from hedgerows
- 2m / 5m buffers from field drains
- Tree buffers dependant on height
- Badger Setts 30m
- Overhead Line buffers 10m
- Flood Modelling
- Up to 0.6m – Panels Only
- 0.6m to 1.1m – Panels are to be raised
- Archaeology Buffers – Taken 10m from anomalies on Geophysics
- Woodland Buffers – 10m
- Areas were avoided due to the following:
 - Marsh
 - Existing Farm Houses & Receptors

Statement of Authority

- 2.10. The assessment has been conducted by experienced ecologists. All work has been carried out in line with the relevant professional guidance; Chartered Institute of Ecology and Environmental Management ("CIEEM") Guidelines for Ecological Impact Assessment and the Environment, Heritage and Local Government's Guidance on Appropriate Assessments.

- 2.11. Louis Maloney, who reviewed this report, is one of three Senior Ecologists at Neo Environmental. He has six years of professional ecological experience. This includes terrestrial and marine surveys covering a wide range of fauna and flora such as bird (2 years of surveying), mammal and vegetative surveys. In addition, Louis has been involved in the management of large variety of projects involving: Environmental Impact Assessment (“EIA”), Natura Impact Statement (“NIS”), Ecological Impact Assessment (“EcIA”), Biodiversity Management Plan (“BMP”) and Net Gain Assessment (“NGA”) reports. He holds a BSc in Marine Science from the National University of Ireland, and an MSc in Conservation Behaviour – Marine and Terrestrial Science. Louis is in the process of applying for a Full level membership with CIEEM.
- 2.12. Neska Connon is an Ecologist, with 2 years’ experience working and volunteering in the Ecology sector. She holds a BSc in Biological Sciences with Professional Studies and is working towards CIEEM membership. She has experience conducting bird surveys, bat surveys, and habitat surveys. Furthermore, Neska has contributed to a number of ecological reports including Biodiversity Checklists, Natura Impact Statements (“NIS”), and Ecological Impact Assessments (“EcIA”).
- 2.13. Kellie Kerr is an Ecologist with 1 year of professional experience in the ecology sector. Kellie holds a BSc Environmental Science (Hons) with Diploma in Professional Practice and is working towards CIEEM membership. Kellie has experience completing Phase 1, Fossitt, and protected species surveys. Kellie has authored and co-authored various ecological reports including Biodiversity Management Plan (BMP), Natura Impact Statement (NIS), Feasibility Study (FS) and Ecological Appraisal (EcA).
- 2.14. David Mulholland is a Graduate Ecologist with 2 years of experience working in the ecology and conservation sectors. David is a Qualifying member of CIEEM, holding a BSc (Hons) in Biological Sciences with Professional Studies, along with a MSc in Conservation Biology and Ecological Management. He has experience conducting Biodiversity Checklist Reports, Preliminary Roost Assessments, Dawn & Dusk Bat Surveys, Reconnaissance Bird Surveys along with aiding in the construction of Bat Survey Reports, Ecological Appraisals, Natura Impact Statements and Ornithology Reports.
- 2.15. Mark McBride is a Graduate Ecologist with 2 years of experience working in the ecology and conservation sectors. Mark holds a BSc (Hons) in Zoology with Professional Studies along with a MSc in Ecological Management and Conservation Biology at Queen’s University Belfast. He has experience in Phase 1 and Fossitt Habitat Surveys as well as Biodiversity Action Planning for a large all island quarry client at a previous consultancy. Furthermore, Mark has had input into a number of ecological reports including Natura Impact Statement (NIS), Ecological Appraisal (EcA) and Biodiversity Management Plan (BMP)
- 2.16. Dara Dunlop, who reviewed this report, is one of two Principal Ecologists at Neo Environmental. Dara Dunlop is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM), has circa 6 years’ experience in the ecology sector, including working for two ecological consultancies undertaking a range of protected species

surveys and extended phase 1 habitat surveys for various project types including energy, residential, commercial and aggregate across the UK and Ireland. Dara has authored a number of reports for various developments including EclAs, Protected Species Reports, Appropriate Assessment and Natura Impact Statement Reports.

3. LEGISLATION

Requirement for Appropriate Assessment

- 3.1. The requirement for Appropriate Assessment of plans or projects originates from Article 6 (3) and (4) of European Union (EU) Habitats Directive. This is implemented in Ireland through the European Communities (Natural Habitats) Regulations of 1997, and the European Communities (Birds and Natural Habitats) Regulations 2011 – 2015 (as amended). In particular, in relation to the planning consent process, in Part XAB of the Planning and Development Act 2000 – 2015 (as amended) where Section 177U sets out the requirements for Screening for AA.
- 3.2. The wording of Article 6 (3) of the Directive is as follows:
- “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. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”*
- 3.3. As outlined in the European Commission document ‘Assessment of plans and projects significantly affecting Natura 2000 sites’¹, any project that is not directly connected with or necessary to the management of a Natura 2000 site, but likely to have a significant effect upon it, either individually or cumulatively will be subject to Appropriate Assessment. Furthermore, the European Commission’s most recent guidance on Article 6: “Managing Natura 2000 sites: The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC”² has also been considered.
- 3.4. Where significant effects are uncertain or unknown at the screening stage an AA will be required, due to the need to apply the precautionary principle. Conversely, if a project will have impacts on a site, but these impacts will clearly not affect or undermine those conservation objectives, it is not considered that it will have a significant effect on the site concerned.
- 3.5. The aim of Stage 2, ‘Natura Impact Statement’ is to inform the assessment of the impacts of the Proposed Development on the integrity of the Natura 2000 site, considering the

¹ European Commission (2021) *Assessment of plans and projects in relation to Natura 2000 sites, Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats directive 92/43/EEC*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021XC1028%2802%29>

² Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat’s Directive 92/43/EEC (European Commission, 2018)

conservation objectives of the site and its ecological structure and function. This is done by considering the type of development and the conservation objectives of any Natura 2000 sites which may be impacted. The NIS will assess connectivity between the development and the Natura 2000 sites and their qualifying interests.

- 3.6. In addition, s177(T)1(b) and (2) of the Planning and Development Act 2000 (as amended) sets out the requirements for an NIS and states:

“s177(T) (1)(b) A Natura impact statement means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a Proposed Development, on its own or in combination with other plans or projects, for one or more than one F722 [European site], in view of the conservation objectives of the site or sites.

(2) Without prejudice to the generality of subsection (1), a Natura impact report or a Natura impact statement, as the case may be, shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one F722 [European site] in view of the conservation objectives of the site or sites.”

Mitigation

- 3.7. The European Commission (EC 2001) states that mitigation should not be considered during the AA (i.e. Stage 1) Screening stage. On 12th April 2018, the Courts of Justice of the EU (CJEU) ruled in case C-323/17 (*People over Wind v Coillte*) that measures intended to avoid or reduce a proposed plan or project's harmful effects on a European site ('mitigation measures') cannot be considered during the Screening for AA stage.
- 3.8. Therefore, unless it can be shown that the proposed plan or project would not have a significant effect on the conservation objectives of the relevant European site in the absence of mitigation, it is necessary to carry out a Stage 2 AA. Mitigation measures should be considered at Stage 2, when a 'full and precise analysis' can be carried out. This is contrary to the previous guidance whereby inherent mitigation at the screening stage could be considered.

The Precautionary Principal

- 3.9. The Precautionary Principle, is referenced in Article 191 of the Treaty on the Functioning of the EU, is defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as:

When human activities may lead to morally unacceptable harm [to the environment] that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis.

- 3.10. The reasoned employment of the 'Precautionary Principle' is fundamental to every AA.

4. ASSESSMENT METHODOLOGY

Stages of Appropriate Assessment

4.1. The Appropriate Assessment process comprises of four stages in order to identify whether proposals have the potential to significantly impact upon Natura 2000 designations. The stages are as follows:

- **Stage 1 Screening:** To determine the likelihood of significant impacts.
- **Stage 2 Natura Impact Statement:** To assess the impact of proposals on the integrity of the Natura 2000 site, considering the conservation objectives of the site and its ecological structure and function.
- **Stage 3 Assessment of alternatives:** Where significant impacts are anticipated despite mitigation measures, the proposal should progress to Stage 3 and consider alternatives or no longer proceed.
- **Stage 4 Assessment where no alternative exists and where adverse impacts remain:** The final stage involves examining whether there are imperative reasons of overriding public interest for allowing the proposal to adversely impact upon a Natura 2000 site.

Source – Pathway - Receptor Model

4.2. The 'source-pathway-receptor' conceptual model is a tool used for environmental assessment. In order for an effect to occur, all elements of this model must be linked. The removal or absence of one of the elements of the model results in there being no likelihood for the effect in question to occur. For example:

- Source(s), e.g., blasting;
- Pathway(s) e.g., vibration and noise; and,
- Receptor(s) e.g., disturbance of nesting birds.

4.3. For an NIS, this model is focused solely on the selection features of Natura 2000 sites as defined by National Parks and Wildlife Services (NPWS) and referenced within this report.

4.4. The Proposed Development may have the potential to result in a number of impacts, which could potentially affect the selection features of Natura 2000 sites. The analysis of these effects, using scientific knowledge and professional judgement, leads to the identification of a "zone of influence" for each effect (i.e., the distance at which the impact of the Proposed

Development could have potential effects, using professional judgement and published guidance).

Study Zone Identification

4.5. The 'Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities'³ states that the NIS should include the following:

- *"Any Natura 2000 sites within or adjacent to the plan or project area.*
- *Any Natura 2000 sites within the likely zone of impact of the plan or project.*
- *A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et. al., 2006). For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects. In some instances, connectivity may go beyond 15k and will also need to be considered.*
- *Natura 2000 sites that are more than 15km from the plan or project area depending on the likely impacts of the plan or project, and the sensitivities of the ecological receptors, bearing in mind the precautionary principle. In the case of sites with water dependent habitats or species, and a plan or project that could affect water quality or quantity, for example, it may be necessary to consider the full extent of the upstream and/or downstream catchment."*

4.6. It is considered that the ZOI for the Natura 2000 designated sites and their qualifying features will fall within a 15km radius of developments. However, this distance is a guidance only and a zone of influence of a Proposed Development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on a European site, having regard to its Qualifying Interests and Site Conservation Objectives. In accordance with the OPR Practice Note, PN01, the ZOI should be established on a case-by-case basis using the Source- Pathway Receptor framework and not by arbitrary distances (such as 15km).

4.7. The Zone of Influence may be determined by considering the Proposed Development's potential connectivity with European sites, in terms of:

- Nature, scale, timing and duration of works and possible impacts, nature and size of excavations, storage of materials, flat/sloping sites;

³ Department for Environment, Heritage and Local Government (2009) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Available at:
http://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf

- Distance and nature of pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
 - Sensitivity and location of ecological features.
- 4.8. Sites further than 15km from the Proposed Development with a hydrological connection have been considered. These sites are not considered to fall with ZOI, for reasons outlined below.
- 4.9. The potential for source pathway receptor connectivity is firstly identified through GIS interrogation and detailed information is then provided on sites with connectivity. European sites that are located within a potential Zone of Influence of the Proposed Development are listed in **Table 5-1**. Spatial boundary data on the Natura 2000 network were extracted from the NPWS website (www.npws.ie). This data was interrogated using GIS analysis to provide mapping, distances, locations and pathways to all sites of conservation concern including European sites.

Desk Study

- 4.10. Sources of material that were consulted as part of the desk study for the purposes of the assessment are as follows:
- National Parks & Wildlife Service (NPWS) natural heritage database for Natura 2000 sites within the 15km ZOI of the Application Site⁴;
 - NPWS site synopses, Natura 2000 Data Form and conservation objectives relating to each site and aerial images; Environmental Protection Agency (EPA) interactive maps⁵

Impact Assessment Process

- 4.11. The assessment process involves:
- Identifying and characterising Natura 2000 sites assessing whether any of these designated sites have any connectivity with the Proposed Development. If any site is found to have no connectivity, then these designated sites will be 'scoped out' or not considered further;
 - Using the Source-Pathway-Receptor model, assess whether there will be any significant impacts to any of the Natura 2000 site, in regard to changes that result from the construction, operation and decommissioning phases of a project. Qualifying features of

⁴ Environment, Heritage and Local Government (2009) Appropriate Assessment of Plan and Projects in Ireland. Available at: https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf

⁵ Available at: <https://gis.epa.ie/EPAMaps/>

a Natura 2000 site that lie outside of the ZOI and not subject to any impacts from the Proposed Development then these will be 'scoped out' or not considered further;

- Identify any significant impacts on the integrity of the Natura 2000 site from the development and 'in combination' with any other plans and projects within 5km;
- Identify the need for the Appropriate Assessment process to move to Stage 3: 'Assessment of alternatives' or, if there are no impacts from the development, the competent authority may allow the development to proceed, subject to other requirements being satisfied.

5. STAGE 1: APPROPRIATE ASSESSMENT SCREENING

- 5.1. In accordance with National Parks & Wildlife Service (“NPWS”) guidance⁶, all Natura 2000 sites located within 15km of the Application Site have been identified. In addition, where relevant, potentially connected Natura 2000 Designation Sites outside of the 15km have been identified and detailed within **Figure 1, Appendix A**. The potential impacts associated with the Proposed Development have been identified and assessed to determine if there is potential for the Proposed Development to affect the integrity of a Natura 2000 designated site. This has been done by considering the conservation objectives of Natura 2000 sites and their ecological structure and function. Those Natura 2000 sites which will not be significantly impacted upon (due to lack of connectivity) will be ruled out of any further assessment.
- 5.2. These impacts can depend more on the nature of impacts, sensitivity of receptors and causal linkage, rather than actual distances. The assessment below considers connectivity, either ecological, ornithological or hydrological, that may exist between the Proposed Development and the designated sites.

Identification of Natura 2000 Sites

- 5.3. The Proposed Development Site is not located within or directly adjacent to any Natura 2000 site. The designated features of each of the above sites have been outlined within **Table 5-1** below. **Figure 1 – Appendix A** of this report details the location of these sites in relation to the Proposed Development.

Table 5-1: Natura 2000 Designated Sites.

Site Code	Site Name	Qualifying Features	Distance (km), Direction	Connectivity with the Application Site Site
SAC				
002299	River Boyne And River Blackwater SAC	Alkaline fens [7230] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion,	3.25km north (at its closest point)	Hydrological and ecological connectivity

⁶ Environment, Heritage and Local Government (2009) Appropriate Assessment of Plan and Projects in Ireland. Available at: https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf

		<i>Alnion incanae</i> , <i>Salicion albae</i> [91E0] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]		
002342	Mount Hevey Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	7.2km northwest	No connectivity
000925	The Long Derries, Edenderry SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	9.91km southwest	No connectivity
001387	Ballynafagh Lake SAC	Alkaline fens [7230] <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016] <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]	13.83km southeast	No connectivity
000391	Ballynafagh Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	14.56km southeast	No connectivity
SPA				
004232	River Boyne and River Blackwater SPA	Kingfisher (<i>Alcedo atthis</i>) [A229]	3.25km north (at its closest point)	Hydrological connectivity

- 5.4. As shown in table 5-1, direct hydrological connectivity exists between the Proposed Development and the River Boyne and Blackwater SAC and the River Boyne and Blackwater SPA. The Clonuff Stream flows northwest through the application site into the nearby Glash Stream. The Application Site is 8.52km upstream of the River Boyne and Blackwater SAC/SPA and 3.25km overland from the SAC/SPAs. Therefore, there is the potential for hydrological and ecological connectivity between the Application site and the two Natura designated sites.
- 5.5. The River Boyne and Blackwater SAC is designated for the Annex 2 species Otter (*Lutra lutra*). Otter is a highly mobile species and can travel up to 40km along a waterbody. As the Clonuff stream runs through the application site and is within Otter foraging range of the SAC, there is a possibility otter could utilise the Application Site.
- 5.6. Therefore, the River Boyne and River Blackwater SAC has been brought through to Stage 2 of this report because of potential **ecological connectivity** between the Natura 2000 site and the Application Site. As there is potential for significant impacts upon a qualifying feature of this designated site, further assessment is required. Due the **direct hydrological connectivity** (8.52km downstream) between the Application Site and the SAC there is potential for construction contaminants to reach the SAC and have significant impacts on its aquatic environments. Therefore, further assessment is required. The River Boyne and River Blackwater SPA is of high ornithological importance for supporting a nationally important population of kingfisher. Kingfisher territories typically cover at least 1km of river, although they can extend over 3-5km depending on food availability. The Application Site sits 8.52km upstream of the SPA, outside Kingfisher foraging ranges. However, the Application Site sits 3.25km from the SPA overland which could offer agricultural grassland habitats Kingfisher may utilise as foraging grounds. Therefore, ornithological connectivity cannot be ruled out.
- 5.7. As the Application Site is within foraging range of Kingfisher, there is potential that the Proposed Development Site will be utilised by this species. Therefore, ornithological connectivity between the SPA and Application Site cannot be ruled out. **The potential for significant impacts by the Proposed Development on Kingfisher require it to be brought through to Stage 2 of this report.**
- 5.8. The Mount Hevey Bog SAC, The Long Derries, Edenderry SAC, Ballynafagh Lake SAC, Ballynafagh Bog SAC are also within 15km of the Proposed Development Site. However, there is **no ecological, ornithological or hydrological connectivity existing** between these SACs and the Proposed Development Site. The Mount Hevey Bog SAC, The Long Derries, Edenderry SAC, Ballynafagh Lake SAC, Ballynafagh Bog SAC have been **screened out** of further assessment within this report.
- 5.9. This AA Screening Assessment has concluded that **there is potential for the Proposed Development to have significant impacts** on the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA, due to potential hydrological, ornithological and ecological connectivity. Therefore, further assessment is required to determine the potential impacts the Proposed Development may have on the integrity of these sites.

6. STAGE 2 NATURA IMPACT STATEMENT

- 6.1. This Section discusses and evaluates the likely impacts of the Proposed Development affecting the Natura 2000 sites which are within the Zone of Influence ("ZoI") of the Proposed Development (i.e. there is some connection between the Proposed Development and the Natura 2000 site).
- 6.2. Potential impacts for ecological features associated with a Natura 2000 designated site from the construction, operation and decommissioning of a solar farm may occur from the contamination of surface and/or ground waters. Those features (species) which are ecologically connected to the Application Site, and are mobile, may be impacted through disturbance as well as loss of habitat through contamination of surface waters.
- 6.3. Aquatic systems and the species/habitats which are dependent on these systems are sensitive to pollution/contamination of surface waters. Pollution can result from any of the following entering a body of surface or groundwater:
- Poisonous, noxious or polluting matter;
 - Waste matter (including silt, cement, concrete, oil, petroleum spirit, chemicals, solvents, sewage and other polluting matter);
 - Other harmful activities detrimentally affecting the status of a waterbody.
- 6.4. The status of a waterbody can be affected not only by chemical pollution, but also by activities directly or indirectly affecting ecology, including changes in physio-chemical parameters such as temperature and turbidity or physical modification to the hydrology of a waterbody.
- 6.5. **Table 6-1** below details common water pollutants and their effect on the aquatic environment (*Table extracted from Ciria guidance*⁷).

Table 6-1: Common water pollutants and their effects on the aquatic environment

Potential polluting activity within Proposed Development	Common Pollutants	Adverse effect on aquatic environment
Landworks involving top soil removal and excavation	Silt.	Reduces water quality, clogs fish gills, covers aquatic plants, impacts aquatic invertebrates, leads to a reduction in prey for

⁷ Ciria (2015) Environmental good practice on site guide, fourth edition

		species and leads to degradation of habitat.
Landworks involving top soil removal and excavation	Bentonite (very fine silt)	Reduces water quality, clogs fish gills, covers aquatic plants, impacts aquatic invertebrates, leads to a reduction in prey for species and leads to degradation of habitat
Construction & operational activities including piling of solar panels	Cement or concrete wash water (highly alkaline)	Changes the chemical balance, is toxic to fish and other wildlife. This can lead to direct impacts for aquatic species (including otter), or indirect through loss of prey resources
Cleaning including wheel washing and boot washing stations. Cleaning of construction vehicles	Detergent	Removed dissolved oxygen, can be toxic to fish and other wildlife present within the aquatic environment
Oil and fuel leaks from construction vehicles and refuelling stations.	Hydrocarbons (e.g. oil, diesel)	Suffocates aquatic life, damaging to the wildlife (e.g. birds), and to water supplies including industrial abstractions
Leaks from restroom facilities	Sewage	Reduces water quality, is toxic to aquatic wildlife, and damages water supplies

- 6.6. Operations and activities that have the potential to impact on the water environment will be regularly monitored throughout the construction of the Proposed Development. This is to ensure compliance with planning conditions and environmental regulations.

- 6.7. The Site Manager is responsible for ensuring that all monitoring is carried out according to the Environmental Monitoring Programme, summarised in **Table 6-2**.

Table 6-2: Environmental Monitoring

Environmental Aspect	Monitoring Location	Monitoring Frequency	Monitoring Arrangements
Site housekeeping	Entire site	Daily	Visual inspection
Surface water courses	All water courses	After periods of rain Weekly, if no rain	Visual inspection
Fuels and chemicals – appropriate storage	Entire site	Daily	Visual inspection

- 6.8. These records and results will be maintained by the Site Manager and will be stored on site during the construction phase.

The River Boyne and River Blackwater SAC

- 6.9. The River Boyne and River Blackwater SAC is designated for its importance for the following Annex I habitats and Annex II species:

- Alkaline fens [7230]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

Conservation Objectives for the River Boyne and River Blackwater SAC⁸

- 6.10. The conservation objective of the SAC are;
- To maintain the favourable conservation condition of Alkaline fens

⁸ NPWS (2022) Conservation Objectives: River Boyne and River Blackwater SAC code002299 . Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage. Available at: <https://www.npws.ie/protected-sites/sac/002299>

- To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*);
- To restore the favourable conservation condition of River Lamprey (*Lampetra fluviatilis*);
- To restore the favourable conservation condition of Atlantic Salmon (*Salmo salar*) and
- To maintain the favourable conservation condition of Otter (*Lutra lutra*) in River Boyne and River Blackwater SAC.

6.11. **Table 6-3** below identifies the percentage of the extent of various habitat types within the SAC.

Table 6-3: Qualifying Habitats of the River Boyne and River Blackwater SAC and their extent within the site

Code	Qualifying Habitats	Extent and Character (%)
N06	Inland water bodies (Standing water, Running water)	30
N07	Bogs, Marshes, Water fringed vegetation, Fens	12
N09	Dry grassland, Steppes	1
N10	Humid grassland, Mesophile grassland	10
N14	Improved grassland	22
N16	Broad-leaved deciduous woodland	2
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	1
N19	Mixed woodland	7
N20	Artificial forest monoculture (e.g. Plantations of poplar or Exotic trees)	1
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	4
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	1
N15	Other arable land	1
N12	Extensive cereal cultures (including Rotation cultures with regular fallowing)	8
Total Habitat Cover		100

Threats and Pressures on the River Boyne and River Blackwater SAC

6.12. **Table 6-4** lists the threats, pressures and activities impacting River Boyne and River Blackwater SAC.

Table 6-4: Threats, pressures and activities impacting River Boyne and River Blackwater SAC

Code	Threats and Pressures	Rank	+/-	Inside/Outside
A03	Mowing / cutting of grassland	H	+	i
E02	Industrial or commercial areas	H	-	i
E03.4	Other discharges	H	-	i
H01	Pollution to surface waters (limnic, terrestrial, marine & brackish)	H	-	i
I01	Invasive non-native species	H	-	i
J02.15	Other human induced changes in hydraulic conditions	H	-	i
D01.05	Transportation and service corridors - bridge, viaduct	L	-	i
A01	Cultivation	M	-	i
A05.02	Stock feeding	M	-	o
A07	Use of biocides, hormones and chemicals	M	-	i
A08	Fertilisation	M	-	i
A10.01	Removal of hedges and copses or scrub	M	-	i
B01.02	Artificial planting on open ground (non-native trees)	M	-	i
C01.02	Loam and clay pits	M	-	i
D01.02	Roads, motorways	M	-	i
E01.04	Other patterns of habitation	M	-	i
E03.02	Disposal of industrial waste	M	-	l

E05	Storage of materials	M	-	i
G01	Outdoor sports and leisure activities, recreational activities	L	-	
G02.10	Storage of materials	M	-	l
G05.06	Tree surgery, felling for public safety, removal of roadside trees	L	-	i
G05	Other human intrusions and disturbances	L	-	i
J02	Human induced changes in hydraulic conditions	M	-	i
J02.05.02	modifying structures of inland water courses	H	+	i
J02.10	Management of aquatic and bank vegetation for drainage purposes	M	-	i
J02.11	Siltation rate changes, dumping, depositing of dredged deposits	M	-	i

(Rank: H = High, M = Medium, L = Low, I = inside, O = outside, B = both & +/- = Positive/Negative Impact)

Assessment of Likely Impacts Affecting the River Boyne and River Blackwater SAC

- 6.13. The River Boyne and River Blackwater SAC is located approximately 3.25km overland and 8.52km downstream of the Proposed Development Site and qualifies as an SAC for containing Annex I listed habitats and Annex II listed species outlined in **Table 5-1**. The River Boyne and River Blackwater SAC has hydrological connectivity and ecological connectivity with the Proposed Development Site.
- 6.14. There is ecological connectivity due to the qualifying mobile species, otter, salmon and river lamprey being able to utilise habitats available within the Proposed Development Boundary.
- 6.15. There is a direct hydrological connection between the Application Site and the SAC, and therefore there is a pathway for contaminants from the Proposed Development to enter the SAC.
- 6.16. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* and alkaline fens are both qualifying features of the River Boyne and River Blackwater SAC. These habitats are not found within the Application Site boundary. Nevertheless, as stated above, the SAC may be negatively

impacted due to potential contaminants entering the hydrological pathway within the Proposed Development Site.

- 6.17. While the River Boyne and Blackwater SAC is only 3.25km overland, the presence of the R148 and M4 roads heavily restricts the ability of Otter to commute directly to the Application Site. Otter are a highly mobile species and are therefore more likely to travel 8.52km upstream through the Glash and Clonuff streams to the application site. Therefore, the use of the Application Site by otter cannot be ruled out.
- 6.18. It cannot be ruled out that the stream within the Proposed Development site may be utilised by salmon and or river lamprey, both designated species of the River Boyne and River Blackwater SAC. According to EPA river mapping⁵, the Proposed Development is approximately 5.608km upstream of waters identified as capable to support salmon. This is in accordance with the River Network Routes designated as Designated Salmonid Waters under S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations 1988, 14th August 1988.
- 6.19. There is potential for the Clonuff stream within the Proposed Development Site, which could support commuting/foraging otter, river lamprey, and salmonids to be degraded if the waters were subjected to contamination.
- 6.20. No works will occur within or directly adjacent to waterways. Protection buffers of 10m along all watercourses and 2/5m buffers along all drainage ditches have been incorporated into the design of the Proposed Development. Other Adopted Design Principles included within the Proposed Development include SuDS and the use of silt traps within the ditches, which will minimise any effects from pollution. Operations and activities that have the potential to impact on the water environment will be regularly monitored throughout the construction of the Proposed Development by the Site Manager as outlined in **Table 6-2** above. There will be no loss of suitable habitat for River Lamprey and Salmonid species.
- 6.21. The potential occurrence of contaminants outlined within **Table 6-1** above and their capability of affecting water quality have been considered during the various phases of the Proposed Development.
- 6.22. Measures have been included within the Proposed Development Design to prevent pollution entering the aquatic environment. These are outlined below:
- Silt/Bentonite
 - During the construction and decommissioning phase, ground disturbance is limited to the Application Site. As part of the Proposed Development design, Sustainable Drainage Systems (SuDS) will be implemented to control surface water movement and prevent silt/bentonite entering the aquatic environment. These have been incorporated into the design of the Proposed Development and are required due to

relevant regional drainage policies in light of the objectives of the Water Framework Directive and associated water quality Directives and Regulations.

- This includes the use of silt traps at drainage ditches throughout the site.
 - Cement or concrete wash water
 - Best practice pollution prevention measures will be followed during the use of these materials during the construction phase, which will ensure cement/concrete wash water does not enter the aquatic environment.
 - This includes no use of wet concrete within 20m of the drainage ditch within the site.
 - Detergent
 - This material will not be used within the Application Site.
 - Hydrocarbons (e.g. oil, diesel)
 - During the construction phase, all work will be undertaken following best practice pollution prevention measures, which include suitable storage of oil/fuels and correct refuelling processes. This will prevent hydrocarbons entering the aquatic system.
 - Sewage
- 6.23. The only potential sewage produced within the Application Site will be from the welfare facilities provided for staff during the construction phase. These facilities shall include an appropriate storage facility for sewage, which shall be collected regularly by a licensed waste contractor. Therefore, sewage will not enter the local environment, including aquatic habitats.
- 6.24. An **Outline Construction Environmental Management Plan (OCEMP)** has been produced in support of this application (please see **Technical Appendix 8**), and this report outlines design and best practice measures for protecting the local environment, including terrestrial and aquatic habitats.
- 6.25. Despite the presence of these design and best practice measures, there is potential for otter to be present within the Proposed Development Site. Given the proximity of the Natura 2000 Designated Site, it is recommended that a **pre-commencement otter survey** be undertaken by a suitably experienced ecologist prior to the construction phase. Where holts/resting places are found, additional measures may be required to prevent significant effects for otter.
- 6.26. There is potential for any otters that may use the site during the construction phase to become trapped in trenches excavated during works. As part of the Proposed Development design, security fencing is to have mammal gates or 15cm gaps to allow free movement of otter throughout the site. All excavations during the construction phase of the Proposed

Development will be securely covered. Where this is not possible, a means of escape (for example a ramp) and daily checks must be included to allow safe exit from the excavation. This will prevent the accidental trapping of this species.

- 6.27. It is considered that due to the adopted design principles, best practice and mitigation measures the Proposed Development **will not result in significant adverse effects** for otter and Annex 1 Habitats of the SAC.
- 6.28. Further details on mitigation measures proposed for the drainage arrangements and waste management during the construction phase of the development are outlined below in **Section 7**.
- 6.29. With the implementation of best practice pollution prevention measures, integral design measures and proposed mitigation measures, it is considered any effects on the ecological receptors of the SAC would be **negligible**, and there is **no significant risk of hydrological contamination** on any of the Annex 1 habitats of River Boyne and River Blackwater SAC
- 6.30. With the implementation of best practice, design measures and mitigation, the Proposed Development **will not result in significant adverse effects** to the integrity of the River Boyne and River Blackwater SAC.

River Boyne and River Blackwater SPA

- 6.31. The River Boyne and River Blackwater SPA is designated for its importance for the following bird species listed as Special Conservation Interests:
- Kingfisher (*Alcedo atthis*) [A229]

Conservation Objectives for River Boyne and River Blackwater SPA

- 6.32. The conservation objective⁹ of the River Boyne and River Blackwater SPA is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

Character of the Qualifying Interests of the River Boyne and River Blackwater SPA

- 6.33. **Table 6-7** below identifies the percentage of the extent of various habitat types within the SPA.

⁹ NPWS (2022) Conservation objectives for River Boyne and River Blackwater SPA [004232]. Generic Version 9.0. Department of Housing, Local Government and Heritage. Available at: <https://www.npws.ie/protected-sites/spa/004232>

Table 6-7: Qualifying Habitats of the River Boyne and River Blackwater SPA and their extent within the site

Code	Qualifying Habitats	Extent and Character (%)
N06	Inland water bodies (Standing water, Running water)	50
N07	Bogs, Marshes, Water fringed vegetation, Fens	5
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	8
N09	Dry grassland, Steppes	2
N10	Humid grassland, Mesophile grassland	5
N12	Extensive cereal cultures (including Rotation cultures with regular fallowing)	10
N14	Improved grassland	12
N15	Other arable land	2
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	6
Total Habitat Cover		100

Threats and Pressures on River Boyne and River Blackwater SPA

6.34. **Table 6-8** lists the threats, pressures and activities impacting the River Boyne and River Blackwater SPA.

Table 6-8: Threats, pressures and activities impacting the River Boyne and River Blackwater SPA

Code	Threats and Pressures	Rank	+/-	Inside/Outside
D01.02	Paths, tracks, cycling tracks	H	-	o/i
J02	Human induced changes in hydraulic conditions	M	-	i
E01	Urbanised areas, human habitation	H	-	o
E01.03	Other industrial / commercial area	H	-	o
X	No threats or pressures	L	+	i

(Rank: H = High, M = Medium, L = Low, I = inside, O = outside, B = both & +/- = Positive/Negative Impact)

Assessment of Likely Impacts Affecting the River Boyne and River Blackwater SPA

- 6.35. The River Boyne and River Blackwater SPA is 3.25km north and 8.52km downstream of the Application Site. This SPA been designated for supporting Kingfisher under the E.U. Habitats Directive, which is detailed within **Table 5-1** above.
- 6.36. As outlined in the Stage 1 AA, the Application Site is located 3.25km overland from the River Boyne and Blackwater SPA, but lacks direct hydrological connectivity within the 3-5km core foraging range of Kingfisher. Kingfisher utilise riverine habitats for breeding, foraging and commuting purposes. The Application Site however, consists of primarily agricultural grassland and the Proposed Development will cause no disturbance to any drainage streams, watercourse habitats and will mitigate any sources of water contamination that could impact Kingfisher. **Therefore, we expect no significant impacts on this designated species due to the Proposed Development.**
- 6.37. No significant loss of suitable habitat (direct or indirect) is anticipated for this species through the construction of the Proposed Development. The Clonuff stream within the site is receiving a 10m buffer from any works, along with all drainage ditches buffered 2m. This will further reduce any potential of adverse effects should kingfisher ever be present within the site.
- 6.38. As previously discussed, the Application Site is hydrologically connected with the SPA via the Clonuff stream that runs through the Application Site approximately 8.52km upstream of the River Boyne and River Blackwater SPA.
- 6.39. As previously outlined, measures have been included within the Proposed Development Design to prevent pollution entering the aquatic environment. With the implementation of proposed integral design measures, it is considered that there is **no significant risk of hydrological contamination.**

Summary of Potential Impacts on Natura Sites within 15km

- 6.40. From the findings of the above assessment, it is considered that the Proposed Development will not adversely affect the integrity of the Natura 2000 sites within the study area. This is relevant for the construction, operation and decommissioning stages.

7. DESIGN, BEST PRACTICE AND MITIGATION MEASURES

- 7.1. Mitigation measures have been outlined to limit potential impacts for the qualifying features of Natura 2000 sites. These are outlined in **Table 7-1**:

Table 7-1: Design, best practice and mitigation measures

FEATURE	POTENTIAL IMPACT	PHASE OF DEVELOPMENT	MEASURES IMPLEMENTED
INTEGRAL DESIGN MEASURES			
Aquatic environment	Pollution	Construction	10m buffer from all watercourses and 2m from all drainage ditches.
Otter	Exclusion from foraging habitat	Construction	Security fencing to have mammal gates or a 15cm gap at base to allow free movement of otter through the site.
Salmon	Pollution	Construction	10m buffer from all watercourses
River Lamprey	Pollution	Construction	10m buffer from all watercourses
STANDARD BEST PRACTICE MEASURES			
Aquatic environment	Pollution	Construction	Best practice pollution prevention measures implemented prior to and throughout the construction phase to prevent contaminants entering the aquatic environment (outlined below). Best practice biosecurity measures to be implemented throughout the construction phase.

Otter	Accidental trapping within excavations	Construction	All excavations should be securely covered, or a suitable means of escape provided at the end of each working day.
Salmon	Pollution	Construction	Best practice pollution prevention measures implemented prior to and throughout the construction phase to prevent contaminants entering the aquatic environment.
River Lamprey	Pollution	Construction	Best practice pollution prevention measures implemented prior to and throughout the construction phase to prevent contaminants entering the aquatic environment.
MITIGATION MEASURES			
Otter	Disturbance	Pre-construction	Pre-commencement survey (Measures dependant on survey findings).

7.2. The measures outlined above will be implemented prior to or during the construction phase of the development. The pre-construction otter survey must be undertaken within 48 hours of construction start. Otter surveys can be carried out at any time of year but should be avoided following periods of prolonged heavy rainfall when spraints and other signs of otter may be washed away.

7.3. Furthermore, relevant guidance will be adhered to prior to and throughout the construction phase to prevent contaminants entering the aquatic environment. The following CIRIA (Construction Industry Research and Information Association) Guidance Documents have been considered:

- CIRIA Technical Note 138 'Planning to Reduce Noise Exposure in Construction' – a good source of guidance on design and assessment for noise control (ISBN 0 86017 317 8).
- Control of Water Pollution from Construction Sites (C532)
- Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648)
- Environmental Good Practice on Site (C692)

7.4. A Construction Method Statement (CMS) has been produced, the details of which are outlined with **Technical Appendix 8: Outline Construction Environmental Management Plan**.

7.5. The following activities will be undertaken during the construction phase:

- Erecting construction traffic signage;
- Creation on internal site tracks;
- Sustainable Drainage Systems (SuDS) installation;
- Erecting security fence;
- Erecting temporary construction compound;
- Site preparation, including mowing and marking out if required;
- Piling the frame supports into the ground;
- Affixing the mounting frames, inverters and panels;
- Concrete base formation for the transformer;
- Transformer station construction;
- Cable route trenching and cable laying;
- Connecting cables and backfilling trenches;
- Removal of construction compound; and

- Installation of ecological and landscape mitigation measures as outlined within the supporting Ecology and Landscape and Ecology Management Plan (LEMP) please see **Figure 1.13, Appendix 1A of Technical Appendix 1: Landscape and Visual Impact Assessment.**

Pollution Prevention

7.6. Suitable protection for watercourses potentially affected by the works will be installed prior to relevant works proceeding. These measures will be in-line with Environmental Protection Agency (EPA) Pollution Prevention Guidelines. Protection measures will include:

- Plant and equipment will be stored on dedicated hardstanding within the construction compound. This will minimise the risk of pollution caused by leakages occurring out of hours. Drip trays will be used where appropriate.
- All plant and equipment will utilise biodegradable hydraulic oil where possible.
- Spill kits will be readily available to all personnel. The spill kits will be of an appropriate size and type for the materials held on site.
- Diesel fuel will be stored in a bunded diesel bowser which will be located within a fenced off area in the construction compound.
- Refuelling and maintenance of vehicles and plant will take place in designated areas of hardstanding.
- All other chemicals will be stored within a storage contained with an accompanying COSHH Datasheet.
- Wastewater from the temporary staff toilets and washing facilities will be discharged to sealed containment systems and disposed via licensed contractors.
- Early seeding of embankments near watercourses would be undertaken to reduce the potential for sediment run-off.

7.7. All staff on site will be made aware of the pollution prevention measures being implemented throughout the construction and decommissioning phases using appropriate toolbox talks and the site induction.

Noise and Vibration

7.8. Operating plant noise will be kept within the standards and time periods dictated for the site. Any noncomplying plant will be stopped and stood down until it can be rectified or removed from the site.

- The British Standard which gives guidance on noise from construction and mineral working sites is BS 5228. This document does not specify absolute noise limits relating to construction activities; however, it does provide detailed guidance on the steps that can be taken to minimise potential noise & vibration effects. Reasonable mitigating measures are as follows: vehicles and machinery will be switched off when not in use.
- Operation of plant, including fitting and proper maintenance of silencers and/or enclosures, avoiding excessive and unnecessary revving of engines and parking of equipment in locations which avoid possible effects on residential properties.
- Traffic movement limited to:
 - 07.00 to 19.00 Monday to Friday.
 - 08.00 to 16.00 Saturdays.
 - Public holidays will be observed unless otherwise agreed with the local planning authority.
 - When loading and unloading material, attempts shall be made not to drop material from a height.

7.9. Any noise complaints shall immediately be directed to the site agent. Depending on the nature of the complaint, the initial response could be to immediately cease the activity until suitable mitigation measures have been put in place and agreed with the affected individual.

Dust

7.10. In order to control, prevent and minimise dirt on the access route and emissions of dust and other airborne contaminants during the construction works, the following measures will be implemented:

- Wheel washing equipment will be available and used on-site, as required to prevent the transfer of dirt and stones onto the public highway. All drivers will be required to check that their vehicle is free of dirt, stones and dust prior to departing from the site. Wheel washing will likely be a water bowser and power spray. It will not have any cleaning additives and will drain into the temporary drainage feature at the site compound.

- During windy conditions, any dust generating activities will be avoided or minimised, where practical.
- Any soil stockpiles will be covered when left for extended periods of time.
- Driving practices which minimise dust generation will be adopted.
- Loads into and out of the site will be covered where required.

Drainage Management Plan

- 7.11. The measures described below will be adopted during the construction phase in order to manage on-site drainage in accordance with current best practice and legislation.

Emergency Spill or Pollution Response

- 7.12. In the event of a liquid spill occurring on a construction site, the Contractor shall cease work immediately in the vicinity. Contractor's trained personnel shall do an appropriate PPE and as follows:

- Locate the source of the pollution and stop/contain any further flow if possible;
- If spillage is flammable, extinguish all ignition sources;
- Immediately deploy the spill kit in accordance with the manufacturer's instructions;
- Clean up the spill; and
- All used spill kit materials should be disposed of in the proper manner as outlined in spill summary procedures.

- 7.13. The Site Manager shall contact:

- The Client;
- Environmental Protection Agency ("EPA") 24-hour emergency incident line 1890 33 55 99; and
- Inland Fisheries 24-hour pollution line 1890 34 74 24. The pollution hotline number shall be referenced in the construction site rules and displayed in the Site Office and in the 'Emergency Preparedness and Response Plan'.

- 7.14. Each Contractor working with controlled substances shall supply appropriate spill kits which shall be kept on site. The spill kits shall be made accessible at all times to all site personnel.

- 7.15. In the event of a fire, all personnel must evacuate the site and assemble at the site entrance. The Site Manager is responsible for calling the Fire Service, who will handle the emergency.

Proposed Drainage Arrangements

- 7.16. As outlined within the supporting **Technical Appendix 4: Flood Risk & Drainage Impact Assessment**, SuDS will be installed as part of the site preliminary works prior to the main equipment deliveries. This SuDS feature will take the form of soakaway channels. The layout of the drainage design is indicated within **Figure 4.1-4.5, Appendix 4A of Technical Appendix 4.**¹⁰

Construction Phase

- 7.17. Due to the addition of the temporary construction compound during the construction phase, additional drainage measures will be implemented to help attenuate the increase in surface water flows if surface water is observed discharging from the construction compound.
- 7.18. Runoff from these areas is anticipated to have high silt loading due to mobilised soils from excavated surfaces, fines from track aggregate and sludge due to traffic.
- 7.19. Hardstanding runoff will be directed to a swale on each of the compound's lowest boundary. These drainage schemes will be removed at the end of the construction stage and the area reinstated.

Operational Phase

- 7.20. Any existing on-site drainage ditches or features will be cleared of blockages as part of the preliminary works and maintained throughout the construction period and will continue to intercept overland flows from the site.
- 7.21. It is proposed to construct multiple infiltration trenches / soakaway channels within the Application Site. The location of the soakaway channels have been chosen on the downward slope, near to the existing watercourses which run through the Application Site. The idea is to capture any overland flow in the SuDS device, prior to releasing into the natural surface water system.
- 7.22. The soakaway channels / infiltration trenches which will be of an overall length of approximately 1,779m, with a base width of 0.50m, a 0.50m design depth and a 0.15m freeboard. They will be filled with crushed rock with a void ratio of 20%. The soakaways will be implemented during the construction phase of the proposed solar farm and planted with vegetation to protect against soil erosion. They will be maintained throughout the lifespan of the Proposed Development, generally in accordance with the recommendations in the appropriate guidance.

¹⁰ McGhee, M (2024) Technical Appendix 4 - Flood Risk Assessment – Cadamstown Solar Farm

7.23. Additional drainage measures to be implemented on-site include the following:

- Solar Panels: current grass cover is to be retained or reinstated adjacent to and under panels in order to maximise bio-retention;
- Tracks: access tracks are to be unpaved and constructed from local stone. Temporary swales or similar shall be utilised to collect runoff from tracks with discharge to ground through percolation areas. Where swales are utilised, frequent checks of dams formed from gravels and other excavated material should be undertaken; and
- MW Power Stations and substations: the scale of these types of structures is unlikely to warrant a formalised drainage system. Runoff from this infrastructure and any associated hard standing should be directed to a percolation area for discharge to ground. Should surface water accumulate around any of these locations then a simple soakaway can be constructed to allow water soak into the underlying subsoils.

Drainage Mitigation

Clean Water Diversion

- 7.24. Where feasible, clean water (e.g. water that has yet to come into contact with any disturbed construction or working areas), will be kept separate from the watershed or intercepted by the solar farm construction drainage.
- 7.25. Up-gradient cut-off ditches and water diversion measures will be installed in order to intercept and divert clean water around construction compound area. These measures will be installed ahead of the main construction works. This will reduce or prevent the amount of potential silt-laden or polluted water that might require treatment.
- 7.26. Clean runoff that has been diverted around an area of working should be discharged into an area of vegetation for dispersion or infiltration, in accordance with SuDS techniques.
- 7.27. Sediment control measures, such as silt traps, gravel, sand bags, anchored straw bales or silt fencing might be required at the discharge point to prevent erosion at the outlet and aid dispersion of the diverted water.

Silt Control

- 7.28. Silt-laden runoff should be expected from any areas of recently exposed soil or rock. There is also potential for pollution to occur from machinery used in the solar farm construction.
- 7.29. Any introduced or artificial materials required (e.g. silt fencing, straw bales, sand bags etc.) that might need to be deployed onsite, will be removed on completion of the works.

- 7.30. Discharge from the silt control measures will be discharged into an area of vegetation for dispersion or infiltration, in accordance with SuDS techniques or discharged into the existing drainage network within the Application Site.

Waste Segregation and Storage

- 7.31. A specific segregation area within each of the temporary site construction compounds will be identified where the separation of materials will take place during both the construction and decommissioning phases. This area will allow for the separation of materials into those which can be reused, recycled or disposed.
- 7.32. All waste containers should be appropriate to the nature of the substances stored and should be secure to ensure no waste can escape. In addition, all waste containers should be appropriately labelled to ensure that it is clear to all construction staff what types of waste can be stored in each container. These containers should be located appropriately to reduce any potential hazards and to ensure no waste is released into the external environment.
- 7.33. Relevant waste and resource management procedures will be communicated to all construction operatives during the initial site induction, which is mandatory for all staff working on site. This will include instruction on the segregation, handling, re-use and return methods to be used by all parties at all appropriate stages of development. Where possible, waste will be eliminated, re-used or recycled as per the requirements of the waste hierarchy.

Storage of Fuels and Chemicals

- 7.34. As per Best Practice Guidance (BPGCS005)¹¹ all fuels, oils and chemicals on site will have a secondary containment system of 110% capacity and be located more than 20m from any watercourse (i.e. outside of the water course buffer).
- 7.35. A bunded diesel bowser will be located inside a fenced off area within the temporary construction compound. Any other chemicals will be stored within a storage container with an accompanying Control of Substances Hazardous to Health ("COSHH") Datasheet in accordance with health and safety regulations. If generators are used on site, these shall be bunded (the bund shall be capable of containing 110% of the fuel tank's capacity). The bund shall be kept empty of water.
- 7.36. Where chemicals are required on site, they must be placed in an appropriate bund to prevent ground contamination. All chemicals must be stored in a correctly marked container clearly identifying the contents. Where labels are worn off, they must have a new label placed on them or the contents transferred to a correctly marked container. All safety data sheets for all chemicals should be filed on site as part of the CEMP.

¹¹ Best Practice Guide BPGCS005 - Oil Storage Guidelines. Available at <http://www.envirocentre.ie/includes/documents/OilStorageBPG.pdf>;

- 7.37. Spill kits will be on site and, for ease of access, located in the site office. Contingency plans will be in place for dealing with a spillage should a spillage occur.

Refuelling

- 7.38. During construction, fuel and oil deliveries shall take place within the designated refuelling area within the Temporary Construction Compound, the location of this area falls outside the watercourse buffers (discussed subsequently). The Contractor shall supervise site deliveries to ensure that the correct amount of material is delivered to the correct tank and the level is checked prior to refilling to avoid spillage.
- 7.39. Where refuelling of vehicles on site is necessary, the following guidelines will be strictly adhered to:
- Mobile plant will be filled in a designated area, on an impermeable surface well away from any drains or watercourses;
 - A spill kit will be stored (and clearly marked) near refuelling areas;
 - A bunded tank / bowser will be used with capacity of the bund to be 110% of the fuel storage capacity;
 - Vehicles will never be left unattended during refuelling and drip trays should be located under all static plant vehicles;
 - Hoses and valves will be checked regularly for signs of wear, and will be turned off and securely locked when not in use;
 - Vehicles will not be left running unnecessarily and low emission fuels will be used where possible; and
 - Diesel pumps and similar equipment will be checked regularly and any accumulated oil removed for appropriate disposal.

Excavation and Earthworks

- 7.40. All excavation and earthworks will be carried out in accordance with BS6031:2009 Code of Practice for Earthworks.¹² Soil handling, extraction and management will be undertaken with regard to best practice guidelines such as Guidance on the Waste Management (Management of Waste from the Extractive Industries) Regulations 2012.¹³

¹² British Standards Institute (BSI), 2009. BS 6031:2009 Code of Practice for Earthworks

¹³ Environmental Protection Agency (EPA) 2012. Guidance on the Waste Management (Management of Waste from the Extractive Industries) Regulations 2012. Available at www.epa.ie

7.41. The following practices will be followed in relation to the excavation of cable trenches, topsoil stripping and any other earthworks:

- Any excavated material will be stored and re-used to infill excavations. Where the soil is to be re-used, this will be side casted. All side casted soil to be kept a minimum of 20m from any watercourse.
- Although unlikely, if any contaminated earth is uncovered, this will be stored separately and disposed of accordingly once the contaminant has been identified.
- Efforts will be made to ensure that water does not accumulate in excavated areas.
- All topsoil and subsoil will be stored separately, and care will be given to ensure the structure and quality of the soil is not damaged.
- The amount of exposed ground and soil stockpiles will be kept to a minimum and any stockpiles in place for an extended period of time will be allowed to re-vegetate naturally.
- Earthworks shall not occur during unsuitable weather conditions, including when soils are waterlogged or very dry.
- The Proposed Development does not propose to change ground levels and only small sections of land are to be regraded around the buildings and possibly at the access track edges; however, this will only be over a few metres.
- Any excavated soil which is not re-used or dispersed across the site and shall be stored on the impermeable surface at the construction compound and covered to prevent silt runoff and dust creation.

Concrete

7.42. Concrete will not be allowed to enter watercourses under any circumstances, and drainage from excavations in which concrete is being poured will not be discharged directly into existing watercourses without appropriate treatment and consent from the relevant authority. Delivery trucks, tools and equipment will be cleaned at the wheel wash facility located at the temporary site compound.

7.43. Buffers from the site watercourses of 10m have been incorporated into the design of the Proposed Development and therefore there will be no concrete being used within the immediate vicinity of a watercourse.

Monitoring

- 7.44. Operations and activities that have the potential to impact on the water environment will be regularly monitored throughout the construction of the Development. This is to ensure compliance with planning conditions and environmental regulations.

Residual impact

- 7.45. Once all the above-mentioned mitigation measures are in place, the likelihood of the Proposed Development impacting the designated sites is lowered. **It can therefore be concluded that the Proposed Development will not have a significant effect upon any qualifying features or Conservation Objective of the aforementioned Natura 2000 sites and no residual impact is expected.**

8. CONSIDERATION OF CUMULATIVE EFFECTS

CUMULATIVE EFFECTS

- 8.1. As well as singular effects, cumulative effects also need to be considered. Article 6 of the EU Habitats Directive and Regulation 15 of the European Communities (Natural Habitats) Regulations state that any plan or project that may, either alone or in combination with other plans or projects, significantly affects a Natura 2000 site, should be the subject of an Appropriate Assessment.
- 8.2. Cumulative effects can be an issue when proposals have a small impact on Natura 2000 sites. If other proposals also have a small impact, the combined result can have a significant impact on the Natura site.
- 8.3. The European Commission Habitats Directive and the Habitats Regulations 2011 require that the impacts on European sites be assessed for the plan or project in question and also in the presence of other plans and projects that could affect the same Natura 2000 sites.
- 8.4. This Natura Impact Statement has identified other plans and projects that could act in combination with the Proposed Development and its associated future elements, to identify if they pose likely significant effects on European sites.
- 8.5. It concludes that if these other Plans and Projects have undergone an appropriate assessment themselves and have either been adopted or consented following an AA then it cannot pose likely significant adverse effects on European sites.

Plans

- 8.6. A review of the following plans was undertaken:

National Planning Framework 2040

- 8.7. The National Planning Framework ("NPF") 2040 is a high-level, national vision and provides the strategic framework and principles to manage future population and economic growth in Ireland over the next 20 years. It informs the parameters for the preparation of Regional Spatial and Economic Strategies ("RSES") by each of the three Regional Assemblies, established under the Local Government Reform Act 2014.
- 8.8. In order to comply with the requirements of Article 6(3) of the EU Habitats Directive an AA screening was undertaken at an early stage in the drafting of the NPF.
- 8.9. Adopting the precautionary principle, it was concluded that a NIS should be prepared. An NIS was prepared by RPS on behalf of the Minister for Housing, Planning and Local Government.

The NIS considered the potential for the NPF to adversely affect the integrity of any Natura 2000 site(s); with regard to their qualifying interests, associated conservation status, the structure/function of the site(s) and the overall site(s) integrity. This was done in a two-stage process, initially assessing the draft NPF and subsequently assessing the changes made post consultation for the NPF.

- 8.10. The Minister of Housing, Planning and Local Government, having considered the AA and its conclusions determined that;

“The adoption and publication of the NPF as a replacement of the National Spatial Strategy for the purposes of section 2 of the Planning Development Act 2000 will not individually or in combination with any other plan or project adversely affect the integrity of any European Site (as defined).”

- 8.11. Thus, the in-combination impacts from the NPF, with the Proposed Development are **not predicted to result in any Likely Significant Effects** to any European site(s).

Regional Spatial and Economic Strategy for the Eastern and Midland Region

- 8.12. In order to comply with the requirements of Article 6 (3) of the EU Habitats Directive and Part XAB of the Planning and Development Act 2000 (as amended), the process of Screening for AA was undertaken at an early stage in the drafting of the RSES.

- 8.13. The AA Screening undertaken by ecologists at RPS on behalf of the Eastern and Midland Regional Assembly, assessed whether the RSES was likely to have significant effects on any European Sites within the Natura 2000 network, either alone or in combination with other plans and projects.

- 8.14. The screening concluded that an AA of the RSES was required, as the Plan is not directly connected with or necessary to the management of the sites as European sites and as it cannot be excluded, on the basis of objective information, that the Plan, individually or in combination with other plans or projects, would have a significant effect on a European site.

- 8.15. Therefore, adopting the precautionary principle, it was concluded that a NIR should be prepared. The NIR (prepared by RPS on behalf of the Eastern and Midland Regional Assembly) considered the potential for the RSES to adversely affect the integrity of any Natura 2000 site(s), with regard to their qualifying interests, associated conservation status, the structure/function of the site(s) and the overall site(s) integrity.

- 8.16. The Assembly determined that pursuant to Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000-2018, that the adoption and publication of the RSES as a replacement for the “Regional Planning Guidelines” for the purposes of Section 24 (4) of the Planning and Development Act 2000 (as amended) **would NOT either individually or in combination with any other plan or project adversely affect** the integrity of any European Site.

Kildare County Development Plan 2023-2029

- 8.17. An Appropriate Assessment was carried out for both the County Development and Local Area Plans within Kildare County Council. They conclude that assuming that both the County and Local Area Plan are implemented in accordance with the policies and objectives in both Plans then significant adverse effects on European sites will be avoided.
- 8.18. As the above plans **are NOT predicted to result in any significant effects** to any Natura 2000 sites, and there will be **no effects on Natura 2000 sites from the Proposed Development**, it has been concluded from the above assessments that there will be no in combination effect from the reviewed plans with the Proposed Development and associated future elements.

Projects

- 8.19. A search of the Kildare County Council planning portals was undertaken to identify key planning applications (projects) beyond the vicinity of Application Site within 5km.
- 8.20. There are a number of smaller projects in the wider area. These developments have been granted permission in most cases with conditions relating to sustainable development by the consenting authority in compliance with the relevant Kildare County Development Plan and in compliance with the consenting authority requirement with regard to the Habitats Directive. The development cannot have received planning permission without having met the consenting authority requirement in this regard.
- 8.21. The search included key developments preceding the date of issue of this report and excluded retention applications and incomplete, withdrawn or refused applications. The relevant projects with potential for in-combination likely significant effects on European sites are detailed in **Table 2-12**.

Table 2-12: Key Planning Applications within the surrounding area of the Proposed Development

Planning Reference	Project Type	Planning Status	Distance and Direction	Date Granted
TA190892	1. Demolition of existing dwelling. 2. Construction of 36 no. dwellings consisting of 12 no. 4-bed semi-detached dwellings, 1 no. 4-bed detached dwellings, 8 no. 3-bed semi-detached	Granted (Conditional)	3.7km North	11/09/2020

	dwelling, 5 no. 4-bed end terrace units, 3 no. 2-bed end terrace units			
18303249	110kV onsite electrical substation with associated electrical plant, electrical equipment, welfare facilities and waste water holding tank and security fencing. 110kV overhead line grid connection cabling, upgrade of existing tracks and provision of new site access roads with all associated site development and ancillary works.	Granted	10km South East	29/07/2020
221203	A ten-year planning permission to develop a renewable energy development. An Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) has been prepared. Revised by significant further information consisting of; Further Information Response Report; Updated Environmental Impact Assessment Report and Appendices; Updated Natura Impact Statement; Amended Planning Application Drawings, showing; amended access/amenity track (relocated to accommodate Marsh Fritillary habitat), updated amenity signage, clarification of road sectional drawings, additional	Granted	11.5km South East	10/07/2023

	substation cross section drawing. Updated photomontage booklet.			
2360266	Quarry development and associated processing previously permitted under P. Reg. Ref. No. 99/2042 and ABP Ref. PL09.123207) to include drilling, blasting, crushing and screening of rock; and lateral extension to same, with an overall extraction area of c. 6.2 hectares with no vertical deepening below the existing quarry floor	Granted (Appeal Pending)	4.1km West	13/02/2024
22488	The Provision of 68 No residential units comprising 59 No houses (10 No. 2 bed, 31 No. 3 bed and 18 No. 4 bed) and 9 No. maisonette apartments (8 No. 1 bed and 1 No. 2 bed) and a retail unit/cafe measuring 77.2 sq m, with heights ranging from two storeys.	Granted (Conditional)	5.0km East	09/04/2024
2460568	Development for a period of 10 years to construct and complete a solar PV energy development with a total site area of 80.9 hectares, comprising of the construction of PV panels mounted on metal frames, transformer stations, GRP units, internal access tracks etc.	In Planning	6.39km Southeast	

- 8.22. There are a large number of small residential and small commercial developments within the vicinity of the Proposed Development. These have not been assessed due to their small scale and nature.
- 8.23. Stage 2 Natura Impact Statements have been conducted for Planning Applications 221203, 2360266, and 2460568 (see Table 2-12. These applications were identified during Stage 2 NIS that they could have potential impacts) on the River Boyne and Blackwater SAC & SPA, similar to the Proposed Development. However, in both cases it was proven that no element of the projects, alone or in combination, would give rise to any impacts on the surrounding Natura 2000 sites.
- 8.24. Planning applications TA190892, 22488, and 18303249, mentioned in **Table 2-12** were assessed, with the planning report indicating they are sub-threshold and do not require Stage 1 Screening for Appropriate Assessment. These developments have no potential for significant cumulative impacts as they lack hydrological, ecological or ornithological connectivity to any designated sites. These factors, when combined with their small scale mean that **any possible impact they could have on the River Boyne and Blackwater SAC & SPA is negligible and unlikely to amount to anything significant in tandem with the Proposed Development.**
- 8.25. Having assessed all aspects of the development project, it has been concluded that, with design measures included in Proposed Development and the implementation of best practice measures, the Proposed Development will not have any significant direct or indirect cumulative impact on any Natura 2000 sites. This is due to the nature of the development, and the ecological conclusions reached in granting each cumulative development. **No likely significant cumulative effects will occur on the River Boyne and Blackwater SAC and the River Boyne and Blackwater SPA.**

9. CONCLUSION

- 9.1. Within the zone of influence ("ZOI") surrounding the Proposed Development Site there are six Natura 2000 Designated Sites, five Special Areas of Conservation ("SAC"s), and one Special Protection Areas ("SPA"s).
- 9.2. The AA Screening within this report concluded that there is hydrological connectivity between the Proposed Development Site and the River Boyne and River Blackwater SAC and SPA. In addition, there is ecological connectivity between the Proposed Development Site and the River Boyne and River Blackwater SAC.
- 9.3. With the implementation of integral design measures, mitigation and best practice construction methods, there will be no significant effects for any of the Natura 2000 Designated Sites assessed. The main qualifying features of these sites have been outlined and assessed in full in this report.
- 9.4. It is concluded that the Proposed Development **will not adversely affect the integrity of the any Natura 2000 site** due to measures inaugurated during the design phase and following relevant guidance to prevent pollution during the construction and operation phases. Pollution prevention measures, proposed drainage management and waste management measures and further mitigation has been outlined within the Mitigation section of this report.
- 9.5. Recommended survey work as part of the relevant mitigation measures has been provided within this report (**Table 7-1**).
- 9.6. With the implementation of these measures, along with ongoing monitoring to ensure compliance, it is considered that the Proposed Development **will not have a significant effect upon any qualifying features, and therefore the integrity, of the Natura 2000 sites** connected with the Proposed Development Site.
- 9.7. It is therefore considered that the next stage (Stage 3; Assessment of Alternatives) of the Appropriate Assessment is not required.

APPENDICES

Appendix A

- Figure 1– Natura 2000 Designated Sites

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Kildare County Council - Inspection Purposes Only

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