Non-Technical Summary

Harristown Solar Farm

1. INTRODUCTION

1.1. Lightsource Renewable Energy Ireland Ltd. ('the Applicant') is applying for Planning Permission for a proposed solar farm development (the "Proposed Development") on land at Harristown, Castlejordan and Clongall, Co. Meath (the "Application Site"). An application was submitted on the 17th October 2018 (**Planning Reference TA/181225**) and a Request for Further Information (RFI) was issued by Meath County Council on December 10th 2018.

1.2. A separate Strategic Infrastructural Development (SID) application will be submitted to An Bord Pleanála (ABP) for the grid substation element of the project and will not form part of this application, although the substation and associated works will be considered as part of the Environmental Impact Assessment Report (EIAR).

1.3. The RFI agrees that provisions are not made for solar farm developments in Schedule 5 of the Planning & Development Regulations 2001 (as amended) and therefore, mandatory Environmental Impact Assessment (EIA) would not be required. However, Meath County Council have determined under Article 103(1) of the Planning and Development Regulations 2001-2018, that the scale and nature of the Proposed Development and its proximity to, and connectivity with, the River Boyne Natura 2000 site and its surrounding environment require an Environmental Impact Assessment Report.

1.4. Therefore, in accordance with the requirements of the 2014 EIA Directive and the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018[1], Section 34(1A) of the Planning Development Act 2000 (as amended)[2] and Section 172(1) of the Planning Development Act 2000 (as amended)[3], the planning application is accompanied by an Environmental Impact Assessment Report Statement (EIAR).

1.5. The EIA process is a series of steps that must be taken to ensure environmental issues are captured and considered during all the stages of a proposed development, from early discussions through to implementation. The EIA process adhered to for the Proposed Development is outlined below.

SCREENING

1.6. Screening is a procedure used to determine whether a proposed development is likely to have significant effects upon the environment. The Proposed Development in question is not listed

[1] Department of Housing, Planning and Local Government (2018). Available at: https://www.housing.gov.ie/planning/guidelines/environmental-impact-assessment-eia/guidelines-planning-authorities-and-bord

[2] http://www.irishstatutebook.ie/eli/2000/act/30/section/34/enacted/en/html

[3] http://www.irishstatutebook.ie/eli/2000/act/30/section/172/enacted/en/html

under Article 92 of the regulations which defines 'sub threshold development' as "development of a type set out in Schedule 5 which does not exceed a quantity, area or other limit specified in that Schedule in respect of the relevant class of development;" and a 'mandatory' EIA is not required where development is identified as being sub-threshold.

1.7. The Proposed Development is not listed in Schedule 5 and therefore is not subject to a mandatory EIA nor is it sub-threshold. However, an EIAR was requested by Meath County Council to sufficiently and comprehensively assess the potential direct, residual and cumulative effects on, and outline suitable mitigation measures for, the River Boyne and Blackwater Special Area of Conservation (SAC) and Special Protection Area (SPA). This SAC and SPA have been assessed extensively within the accompanying **Natura Impact Statement (Item 1 Response of RFI Planning Reference TA/181225)** and **Volume 2 Chapter 5 Biodiversity** and it has been determined that impacts on these designations are not significant. Please refer to these reports for further information.

ENVIRONMENTAL ASSESSMENT

1.8. The purpose of the EIA process is to identify potentially significant environmental effects. The EIAR should include a description of the nature, scale and significance of effects. The technical assessments of the topics in the EIAR were undertaken to predict the potential effects associated with the Proposed Development during construction and operation. These assessments also informed the indicative site design for the masterplan process.

1.9. When assessing potential effects, it is important to distinguish between those that are significant and those that are non-significant. The significance of an effect depends principally upon the sensitivity and the value of the receptor, together with the magnitude of change of the receptor.

1.10. An assessment of a significant effect does not imply that the effect would be unacceptable. It provides an indication of activities for which further consideration or mitigation may be required. Where the EIA procedure shows that a project will have an adverse impact on the environment, it does not automatically follow that planning permission must be refused. It remains the task of the planning authority to judge each planning application on its merits within the context of the Development Plan, taking account of all material considerations, including the EIAR.

STRUCTURE OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1.11. The EIA has been coordinated by Neo Environmental with specialist input from Kaya Consulting (Hydrology Consultants). The Environmental Impact Assessment (EIA) is presented within the EIAR which comprises of the following:

Volume 1:

- Non-Technical Summary

Volume 2:

- EIAR Chapters
  - Chapter 1: Introduction;
  - Chapter 2: Alternatives Considered;
  - Chapter 3: Planning Policy;
  - Chapter 4: Population & Human Health;
  - Chapter 5: Biodiversity;
  - Chapter 6: Land, soil & water (hydrology and hydrogeology);
  - Chapter 7: Noise & Vibration;
  - Chapter 8: Landscape and Visual Impact Assessment;
  - Chapter 9: Material Assets;
  - Chapter 10: Archaeological, Architectural & Cultural Heritage;
  - Chapter 11: Air Quality & Climate;
  - Chapter 12: Resource & Waste Management; and
  - Chapter 13: Interactions of the foregoing
  - Chapter 14: Fibre Wrap
  - Chapter 15: Mitigation Table

Volume 3

- Technical Appendices
  - Technical Appendix 4.1: Glint and Glare Assessment
  - Technical Appendix 5.1: Biodiversity Management Plan
  - Technical Appendix 6.1: Flood Risk Assessment

- Technical Appendix 6.2: Drainage Impact Assessment
- Technical Appendix 6.3: Outline Construction Environment Plan
- Technical Appendix 8.1: Residential Visual Amenity Assessment
- Technical Appendix 9.1: Construction Traffic Management Plan

1.12. This Non-Technical Summary (NTS) summarises the findings of the EIA which are contained within the EIAR.

AVAILABILITY OF ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1.13. Copies of the EIAR, together with the planning application and other associated documents will be available for viewing at no cost from the Meath County Council planning website[4].

1.14. Hard copies of the Main EIAR report are available for purchase at a cost of €500.00 per copy (including postage and packaging) or on DVD (€25.00) and can be obtained by sending a request to the following address (enclosing a cheque or Bank transfer payable to Lightsource Renewable Energy Ireland Ltd.). Details can be provided on request.

REPRESENTATIONS TO THE APPLICATION

1.15. Comments on the planning application can be made in writing to Meath County Council accompanied by a fee of €20.00 within five weeks of the application registration date. All submissions or observations are a matter of public record and may also be placed on the Council's website.

[4] http://www.eplanning.ie/MeathCC/searchtypes

2. PROPOSED DEVELOPMENT

DEVELOPMENT DESCRIPTION

2.1. The Proposed Development will consist of the construction of PV panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound, battery storage and all ancillary grid infrastructure and associated works.

2.2. The components of the proposed development comprise of the following:

- Internal site tracks
- Solar PV arrays
- 110kV substation (including foul tank toilet)
- Two temporary construction compounds (including chemical toilets)
- 14 Inverter/Transformer AC units
- 14 Switchgear Substations
- Monitoring House
- Storage Container
- 16 Battery Containers
- 12 no. Infrared CCTV cameras and security fencing
- Deer fencing and security gates
- Underground cabling
- Composting Toilet
- Sustainable Drainage Systems (SuDS)
- Biodiversity Enhancement Measures. Please see **Technical Appendix 5.1 Biodiversity Management Plan (BMP)** for more details. Habitats that will be created at the proposed solar farm development will include:
  - Sections of species rich grass;

- Wild bird seed mixture;
- Wildflower meadow;
- Two Hibernacula;
- Two invertebrate hotels;
- Bird, bat and insect boxes; and
- Log and stone piles.

- **Landscape and Environmental Management Plan (LEMP):** This plan outlines the location, quantity and management of the recommended tree, hedge, grass and wildflower planting which will be part proposed landscaping of the project to help contain the development and enhance the biodiversity of the area. Please see **Figure 8.20 Appendix 8A.**

2.3. A 110kV substation will be located within Field 15 which is considered in a separate planning application to ABP. The substation elements will comprise a transformer and the following:

- A substation is the onsite point of connection from where electricity flows into the grid network via the connection cable and houses the switchgear which acts as a safety mechanism to protect the solar farm from any fault in the grid network and vice versa. It disconnects electrical circuits if there is a fault in the system, much like a household fuse box. The switch gear substation disconnects and controls the various sections/ circuits on the solar farm

2.4. Fibre wrap work will be carried out by ESB; however, this does not form part of the application. However, for completeness the potential effects from this have been included as part of this EIA. A fibre optic cable will be wrapped along the existing 110kV ESB transmission line running from the solar farm project at Harristown for circa 5.285km in a northwest direction to the Kinnegad 110kV electrical substation.

2.5. Fibre wrap provides a retro-fit solution for installing a fibre optic cable on overhead power lines. The cable is small and imposes minimal additional load on the overhead line conductors, poles and towers. The installation technique means that the fibre wrap can be deployed quickly and cost effectively, increasing network fibre capacity with minimum disruption to electricity supply services.

SITE DESCRIPTION

2.6. The area containing all elements of the Proposed Development (the "Application Site"), consists of 21 fields (including field 15 with the SID substation) currently used as pasture and covers a total area of 91.44 ha. The site lies at an elevation range of 66m— 71m AOD and is centred at approximate Irish Grid Reference (IGR) E260861 N238688. The River Boyne flows 0.19km to the east and 0.62km to the south of the site, forming the county border of Kildare and Offaly, respectively. Access will be via a pre-existing track which runs north to south through the site and connects to the L4091 north of the Application Site. The nearest settlement is the village of Castlejordan, which is located approximately 650m to the northwest of the site.

3. SUMMARY OF ENVIRONMENTAL EFFECTS

3.1. The following section provides a summary of the findings of the environmental assessment process which has been undertaken. The full assessments are contained **within Chapters 4 to 15 of the main EIAR (Volume 2)** and the accompanying Technical Appendices **(Volume 3)**.

POPULATION & HUMAN HEALTH

3.2. Impacts on population and Human Health were assessed under the following categories: population and employment levels, social infrastructure, traffic, health and safety (Air Quality Noise and vibration, Glint and Glare), natural resources and Landscape, amenity and tourism.

3.3. The Solar photovoltaic (PV) farm will optimise the use of radiation (daylight) from the sun to produce 43.2MW of energy for 30 to 35 years from this renewable resource. The Proposed Development is expected to generate enough clean energy each year to supply the electricity needs of approximately 10,833 homes per annum from this resource. This will offset 23,524 tonnes of CO_2 emissions which is the equivalent to taking 5,277 cars off the road per annum. Therefore, with the additional planting as detailed in the Landscape and Ecology Management Plan (LEMP; see **Figure 8.20 of Volume 2**) and **Technical Appendix 5.1**: BMP, the solar farm will have a **Long-Term Moderate Positive effect** to air quality for the duration of the operational phase. The use of the solar energy resource (radiation) to produce electricity is considered a Moderate Positive effect in terms of resource maximisation.

3.4. The **Long-Term Positive effects** from the production of renewable energy over 30-35 years at this Application Site, will far outweigh any negative effects on air quality or other natural resources resulting from the construction of the project.

3.5. It is expected that approximately 100—115 people will be employed in the construction of the solar farm with as much employed locally as possible, resulting in a **Slight Temporary Positive effect.**

3.6. In terms of glint and glare, Solar reflections are only possible at 25 of the 41 residential receptors assessed within a 1km study area of the Application Site. Glint and glare effects were assessed and deemed to be **Long-Term, Not Significant** for all of the 25 residential receptors.

3.7. Effects on one local road were assessed in detail using the bald-earth scenario and it was found that apart from one receptor, all effects for road users are **Long-Term Imperceptible**. The impact is deemed **Long-Term Slight Adverse** at this one road receptor, as the Proposed Development can be seen through small gaps in the vegetation. When the mitigation planting proposed is considered, the residual effect is deemed as **Long-Term Imperceptible**. There is

no potential for impacts on railway infrastructure, resulting in an Imperceptible effect for this asset.

3.8. Residual effects from noise are anticipated to remain as **Slight Long-Term Negative** effect while **no vibration is expected** during the operational phase, therefore **No Long-Term effects** (Imperceptible) are anticipated.

3.9. Overall, the Proposed Development's high degree of enclosure provided by surrounding field hedgerows and variations in topography, together with the relatively low scale of the Proposed structures, ensure the solar farm can be accommodated within the local landscape without causing any significant adverse effects upon landscape, amenity and tourism. Views of the Proposed Development will become less apparent as the mitigation boundary hedge becomes established reducing any effects for receptors to Long-Term **Slight Adverse.** The Proposed Development will not be visible from most recreational users or areas across the study zone.

3.10. There are no anticipated effects that would be deemed significant in terms of population and human health. All **residual effects are Not Significant or less** for the various elements including population, Employment, Social Infrastructure, Health and Safety (air quality and Traffic), Glint and Glare, Natural Resources, Noise and Vibration and Landscape, amenity and Tourism. The Proposed Development will result in **Positive effects for Air quality and Natural Resources**. It is considered that these positive effects will outweigh all of the non-significant negative effects.

3.11. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and no additional effects to population and human health are anticipated with the application of this system.

BIODIVERSITY

3.12. As part of this EIAR a desk-based assessment was undertaken to collate available ecological information for the site and the surrounding area. This included a search of Natura 2000 designated sites within 15km of the Application Site and all other statutory designated sites within a 5km radius. Information was also obtained on protected/notable species within this 2km radius.

3.13. The Proposed Development at Harristown does not lie within or directly adjacent to any statutory or non-statutory designated environmental sites. Within 15km of the Application Site boundary there are three Special Areas of Conservation (SACs) and one Special Protection Area (SPA). Within 5km of the Application Site boundary there is a single Natural Heritage Area (NHA).

3.14. Of the five environmental designated sites present within the relevant study areas only the River Boyne And River Blackwater SPA/SAC has connectivity with the Application Site. As no pathway for impacts exist between the Application Site and the other environmental designated sites, no impacts will occur. Therefore, these designated sites have not been considered further within the impact assessment contained within Chapter 5: Biodiversity.

3.15. Due to the separation distance (9.8km) between the Application Site and the River Boyne And River Blackwater SPA/SAC, it is considered that the effects from the Proposed Development to the aquatic environment within the SAC will be **Low Spatial and Short-term Temporal**. However, mitigation has been outlined within this report to further reduce the potential impacts, and ensure the Proposed Development **will not significantly affect** the integrity of the SAC. The residual effects of the Proposed Development will be of **Negligible Spatial and Negligible Temporal** for this SPA. Therefore, the effects on the SPA/SAC are **not significant** in the terms of EIA Regulations.

3.16. An extended phase 1 habitat survey was undertaken and identified seven habitat types. The main habitat type under the development footprint comprises of improved grassland (B4) fields, which are of low ecological value and offer a limited potential for supporting local wildlife.

3.17. The current extended phase 1 habitat survey with species scoping (2019) identified evidence of badger activity (setts and prints). During the previous surveys (2018) these signs were also recorded, along with evidence of otter activity (spraints).

3.18. Given that both species have been highlighted in the desk-based assessment, and evidence noted within the Application Site, it is considered that both otter and badger may be present at the time of construction. Therefore, mitigation including pre-construction badger and otter surveys are outlined.

3.19. Other species that were highlighted as potentially being impacted by the Proposed Development in the absence of mitigation includes breeding birds. However, the recommended pre-construction breeding bird survey (for works undertaken between March and August inclusive) will highlight the presence of any active nest, and allow for appropriate mitigation measures to be put in place to ensure no significant impacts for these species.

3.20. **No significant residual effects or cumulative impact effects** have been identified. With the implementation of mitigation and best practice measures outlined within the EIAR, it is considered that the proposed development will have a **Significant Positive Long-Term effect** upon local ecological receptors.

3.21. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and no additional effects to biodiversity are anticipated with the application of this system.

LAND, SOIL & WATER (HYDROLOGY AND HYDROGEOLOGY)

3.22. The aim of the Land, Soil and Water Chapter (Chapter 6) was to identify the geological, hydrogeological and hydrological conditions of the Application Site and surrounding area, to assess the potential impacts of the Proposed Development and to recommend mitigation measures where appropriate. It was prepared in accordance with 'Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Statements (Draft)'[5] document, prepared by the Environmental Protection Agency.

3.23. A comprehensive flood risk and drainage impact assessment has been included separately. The flood risk assessment concluded that the Proposed Development is wholly contained within flood zone C and is acceptable in planning policy terms, whilst implementation of the outlie drainage plan will ensure protection of downstream surface watercourses and rivers.

3.24. A desk-based assessment of the Application Site was undertaken to identify the geological, hydrological and hydrogeological baseline environment, utilising publicly available information. This was supplemented by a walkover survey on the 11th June 2018, the aim of which was to assess geological, hydrogeological and hydrological features within the Application Site which had been identified from the desk-based assessment, whilst also identifying any additional previously unrecorded features.

3.25. Available data was utilised to identify and categorise potential impacts likely to affect the geological, hydrological and hydrogeological environment as a result of the Proposed Development. The magnitude of potential impacts has been defined in accordance with the criteria provided in the EPA publication "Guidelines on the Information to be Contained in Environmental Impact Statements".

3.26. A number of the potential geological, hydrological and hydrogeological impacts identified as a result of the Proposed Development are considered to be significant, and therefore mitigation measures will be required. This was mainly due to the sensitivity of the River Boyne to the east of the Application Site as its designated in this area under the Salmonid Regulations (S.I. 293 / 1988). These mitigation measures have been outlined within Chapter 6 and the accompanying OCEMP, contained within Volume 3: Technical Appendix 6.3.

3.27. Due to the nature of the Proposed Development construction works which will be kept within the Application Site boundary, there is no potential for significant cumulative effects on lands, soils and water in combination with other local projects. Only localised excavation works of a shallow nature will take place, the output of which will be retained onsite and therefore will not contribute to any significant cumulative effects on geology.

5 Environmental Protection Agency (2017), *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*, Found at http://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf

3.28. It is considered that due to the nature of the Proposed Development and the geology, hydrology and hydrogeology assets located within the Application Site and within close proximity, potential effects will be **slight to imperceptible,** once the mitigation measures included within the associated technical appendices to this chapter are taken into account.

3.29. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and no additional effects to land, soil and water are anticipated with the application of this system.

NOISE & VIBRATION

3.30. A Noise and Vibration assessment was completed to identify and describe any likely significant noise and vibration effects on key receptors during the operational, construction, and decommissioning phases of the proposed solar farm.

3.31. A desk-based assessment has been conducted to identify Noise Sensitive Receptors (NSRs) where it is considered there is potential for increased noise effects due to the Proposed Development. There are 23 Noise Sensitive Receptors (NSR) dwellings within 500m of the Application Site with all receptors having a high sensitivity to noise and vibration except two which are the landowner's residences.

3.32. No baseline monitoring was conducted due to the relatively low levels of noise produced from the Proposed Development. However, the effects will be compared against a background noise level of 35dB, which is typical of a rural night time setting with no wind, according to the Environmental Protection Agency (EPA) Environmental Management Guidelines.

3.33. SoundPlan noise modelling software was utilised to determine the noise impact from the Proposed Development, while vibration effects at each receptor were predicted using the distance to the construction activity and a scaling factor based on the probability of the predicted value being exceeded.

3.34. The measures set out below will be implemented as part of the Proposed Development:

- Core working hours are proposed to be between 08.00 until 18.00, Monday to Friday and 08.00 until 16.00 on a Saturday (unless in exceptional circumstances where need arises to protect plant, personnel or the environment). In addition to this, a start-up and close down period for up to an hour before and after the core working hours is proposed. This does not include the operation of plant or machinery likely to cause a disturbance. Deliveries of plant and materials by HGV to site shall only take place by designated routes and within times agreed with the Council as agreed in the Construction Traffic Management Plan (CTMP), an outline of which is provided as **Technical Appendix 9.1**;

- Where practicable, the work programme will be phased, which would help to reduce the combined effects arising from several noisy operations;
- A dedicated person will be appointed for the management of the delivery booking system during the construction stage.

3.35. Application of the above measures to manage construction noise and vibration will ensure that effects are minimised as far as reasonably practicable.

3.36. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and negligible effects to noise and vibration are anticipated with the application of this system.

Noise Effects

3.37. Construction noise levels at any location will vary during the construction period as the combinations of plant as well as working distance from Noise Sensitive Receptors (NSR's) varies. The key activities which are considered to be those with the most potential to result in adverse noise effects:

- Construction of tracks and hardstanding areas;
- Installation of mounting frames (including piling);

3.38. Due to the large distance between these activities and the NSR's, noise would be barely perceptible and of **Low** impact. Effects will therefore be of **Slight Significance and Temporary** in terms of the EIAR Regulations.

3.39. In addition, given that most of the HGV movements are likely to only increase by 20 per day for a few weeks, these effects are considered to be temporary, and as such the effect of traffic noise upon NSRs will be temporary and **Low** impact and therefore result in a **Slight Adverse Temporary effect** in terms of the EIAR Regulations.

3.40. Mitigation is not required in order for effects to be not significant, as set out above. However, some construction/decommissioning phase mitigation measures have been outlined and are generally common practice.

3.41. The solar panels themselves do not generate noise. The main noise source associated with the Proposed Development will be the AC/transformer Units, battery storage area and substation. The solar part of the Proposed Development will be in operation during daylight hours only. During the summer months, the noise source will be in operation between 4am and 7am also. The battery storage and substation will likely be operational all day. Therefore, the noise impact assessment assumed continuous noise production as a worst-case scenario. The Proposed Development is predicted to have a **low impact** at five receptors within the study area and **a negligible impact** at all others which will result in **Slight Insignificant effects**,

respectively. This includes an assessment of the proposed substation which will form part of a separate SID Application to ABP.

Vibration Effects

3.42. Vibration from the construction of the access tracks is likely to come from compaction due to construction machinery. The closest new section of access track to be constructed lies 250m from the closest NSR. At this distance any vibration would be below background level and therefore of negligible impact. It would therefore have a **Not Significant Temporary effect** in terms of the EIAR Regulations. Vibration from piling (minimum 148m from closest NSR) would be below background noise levels and therefore of **temporary negligible impact** and have a **Not Significant Temporary effect.**

3.43. There will be no sources of vibration during the operation phase and therefore **No Significant effect** will occur.

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

3.44. A Landscape and Visual Impact Assessment (LVIA), has been produced to assess the potential direct and indirect effects of the Proposed Development upon the landscape resources, views and visual amenity within the existing landscape and visual baseline across a 5km study zone. The LVIA is found within **Volume 2: Chapter 8: Landscape and Visual** of the Environmental Impact Assessment Report (EIAR) produced by Neo Environmental. A supporting visual assessment of the potential changes upon the visual amenity of the 41 properties found within 1km of the Application Site was undertaken. This can be found within **Volume 3: Technical Appendix 8.1: Residential Visual Amenity Assessment** of the EIAR.

Landscape

3.45. The Proposed Development will be sited across approximately 91.44 hectares of pastureland within County Meath's Southwest Lowlands Landscape Character Area (LCA). Here it will add a new renewable energy feature into the rural landscape of the southwestern end of County Meath. The proposed design layout has intentionally fitted structures around the confines of the existing field system in order to minimise disturbance to this established landscape feature. The retained hedgerows will be strengthened with similar native species planting along their gaps as part of the mitigation measures as indicated on the Landscape and Ecology Management Plan (LEMP), **Volume 2: Figure 8.20**. Light grazing of the grassland between and beneath the solar arrays will occur which will allow then land to retain an agricultural use. These measures will help to assimilate the Proposed Development into this part of the Southwest Lowlands LCA.

3.46. Overall,the Proposed Development will have a localised **Moderate Adverse effect** on the characteristics of the immediate landscape while the potential effects on the rural

characteristics of the wider landscape of the 5km study zone are reduced to Slight Adverse. These adverse effects are not considered to be significant. As the mitigating planting becomes established it will help improve the condition of the retained field hedgerows and further contain the Proposed Development within the LCA, reducing the initial localised effects to Slight Adverse. The nature of the Proposed Development allows for the various structures to be removed off the lands with relative ease during its later decommissioning phase. The lands will then be returned to a suitable agricultural use with some field boundaries having become notably more enclosed by the growth of the new hedgerows, thus helping to reverse the original adverse effects.

3.47. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and no additional effects to landscape character are anticipated with the application of this system.

Visual

3.48. The desktop study produced a computer modelled bare earth scenario Zone of Theoretical Visibility (ZTV) indicating the Proposed Development's potential visibility across the 5km study zone. The fieldwork later determined the actual potential visibility would be significantly less than that calculated by the ZTV, as the Proposed Development will be contained within the local landscape by the surrounding hedgerows and trees, topographical fluctuations, rural housing and agricultural buildings.

3.49. The assessment considered potential views from 11 representative viewpoint which are representative of a number of receptors including local residents, recreational and road users. Many potential views of the Proposed Development were thus found to be limited to those receptors within the local area due to this level of natural screening. The majority of potential views experienced from residences are from those with elevated ground or upper floor views which look over the surrounding field hedgerows and trees across to the Application Site. Some of these receptors experience more oblique, heavily filtered ground level views, many of the nearest receptors will have no views of the Proposed Development, with the greatest views of the Proposed Development being experience by residential receptor next to Viewpoint 4.

3.50. Similarly, potential views by road users on these immediate local roads are greatly screened by the roadside banks and intervening field hedgerows. Any limited road views will be experienced from walkers on the L4091 Road within the townland of Harristown by Viewpoint 2 and 4. However, here they would need to stop and turn around to face towards Proposed Development. The proposed mitigating planting along the western boundary will help further reduce these views over time. The potential visibility of the Proposed Development from recreational users will be limited to users along the banks of the River Boyne next to Rahin Woods by Viewpoint 11. The proposed mitigation boundary planting will help to further enclose the Application Site and reduce the visibility of the solar farm's structures.

3.51. Overall, the Proposed Development will largely have **No Change** to the existing views of the majority of receptors found within the study zone. A small number of residents and road and recreational users will experience views of small portions of the Proposed Development's structures resulting in **Slight to Moderate Adverse** visual effects. These adverse effects are not considered to be significant. As the mitigating planting becomes established it will help to further filter out many of these views and reduce many of the initial predicted adverse effects. Some residual visual effects will occur from those receptors with more elevated views looking over sections of the Application Site's field boundaries.

3.52. There are no other known solar farm developments within the 5km study zone. The nearest being the approved not constructed solar farm at Kishawanny Lower, near to the town of Edenderry (Kildare CC Planning Ref: 17799), located approximately 5.15km to the southeast. The distance, fluctuations in the local topography and natural vegetation screening, ensures there will be no notable cumulative landscape or visual effects between either development.

3.53. The additional Residential Visual Amenity Assessment considered the Proposed Development's changes to the existing visual amenity of 41 residential receptors, all located along the immediate local minor roads and laneways. The majority of these receptors will not be able to view the Proposed Development due to it being screened by the intervening field hedgerows, resulting in **No Change** to their existing views. A total of 12 receptors will experience varying partial views of the Proposed Development, resulting in **Slight to Moderate adverse** effects and therefore not significant. Some of these receptor's initial views of the Proposed Development will be reduced as the mitigation hedgerow planting thickens out over time. These affected residential receptors views have also been previously considered within the viewpoint assessment of the LVIA.

3.54. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and negligible effects to visual amenity are anticipated with the application of this system.

MATERIAL ASSETS

3.55. Material assets are generally considered to be the physical resources in the environment, which may be of human or natural origin. This chapter assesses the potential impact of the Proposed Development on these resources, namely built services and infrastructure, roads

and traffic and waste management as defined in the Draft EPA EIA Guidelines (2017)[6]. The Draft EPA Advice Notes[7] adds. soils, ownership and access and tourism to this list.

3.56. Potential impacts of the Proposed Development upon local traffic and transport, as well as aviation, were included as part of the material assets assessment.

3.57. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and no additional effects to material assets are anticipated with the application of this system.

Traffic & Transport

3.58. Solar farm developments have limited impacts during the operational stages of the development, with the construction and decommissioning stages causing Temporary impacts on the local road network. A CTMP has been included within **Technical Appendix 9.1** and includes various mitigation measures for the construction period, which will also be relevant for the decommissioning period.

3.59. A site visit was undertaken on the 11th June 2018 where the proposed haul route and site access points were assessed (the proposed haul route can be viewed on **Technical Appendix 9.1: Figure 9.1.1**). The study area for this project includes the haul route from the M4 as it is assumed that the Motorway network can handle the various loads associated with the Proposed Development.

3.60. The potential effects of the traffic generated by the Proposed Development have been assessed with reference to the 'Guidelines for the Environmental Assessment of Road Traffic' (EART, 1992) published by the Institute of Environmental Management and Assessment (IEMA).

3.61. Following the application of a CTMP to mitigate effects on the Local Road Network, the Proposed Development has been assessed as having **No Significant residual effects** on the identified receptors in terms of the EIAR Regulations.

3.62. The potential impacts relating to traffic, severance, accidents and road safety, driver delay and pedestrian amenity, fear and intimidation have been assessed and where the effect has been identified as **Slight Adverse**, mitigation measures have been considered and identified. The resulting residual effects are deemed to be **Not Significant**.

[6] Environmental Protection Agency (EPA) *Draft Guidelines on Information to be contained in Environmental Impact Assessment Reports* (2017) Available at: https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf

[7] *EPA Draft Advice Notes for Preparing Environmental Impact Statements* (2015). Available at: https://www.epa.ie/pubs/consultation/reviewofdrafteisguidelinesadvicenotes/Draft%20Advice%20Notes%20for%20preparing%20an%20EIS.pdf

3.63. The residual impacts relating to the Proposed Development generated traffic have been reviewed and summarised. This assessment shows that the development effects are mainly insignificant and have been classified as **Not Significant** when related to both the staff and HGV movements.

3.64. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and negligible effects to traffic and transport are anticipated with the application of this system.

Aviation

3.65. Glint is only considered to be an issue with regards to aviation safety when the solar farm lies within close proximity to a runway, particularly when the aircraft is descending to land. En-route activities are not considered an issue as the flight will most likely be at a higher altitude than the solar reflection.

3.66. The buffer zones to identify aviation assets to be assessed varies depending on the safeguarding criteria of that asset. For large aerodromes a safeguarding zone of 30km is standard, however for small private airstrips this can be reduced to approximately 5km.

3.67. The FAA guidance states that for a solar PV development to obtain FAA approval or to receive no objection the following criteria must be met:

- Approach Paths
  - There should be no potential for glare or 'low potential for after-image' at any existing or future planned runway landing thresholds in order for the proposed Development to be acceptable.
- Air Traffic Control Tower
  - The FAA guidance states that no solar reflection towards the ATC tower should be produced by a proposed solar development, however this should be assessed on a site by site case and will depend on the operations at a particular aerodrome.
  - In order to determine the impact on the ATCT, the location and height of the tower will need to be fed into the SGHAT model and where there is a potential for 'low potential for After-Image' or more, then mitigation measures will be required.

3.68. There are no large aerodromes within 30km of the Application Site. Clonbullogue Airfield is located approximately 15.6km from the Application Site. As this small airstrip is outside the required 5km impact zone for small airstrips, it can be determined that the Proposed Development will have an **Imperceptible effect** upon this aviation asset.

ARCHAEOLOGICAL, ARCHITECTURAL HERITAGE & CULTURAL HERITAGE

3.69. The potential effects of the development proposals on heritage assets is a material consideration in the determination of the planning permission in principle application. An Archaeological, Architectural Heritage and Cultural Heritage Impact Assessment has been produced by Neo Environmental as part of the Environmental Impact Assessment. This involved the appraisal of potential direct and indirect effects upon heritage assets during the construction, operational and decommissioning phases. The potential for hitherto unknown archaeological remains within the site was also appraised.

3.70. Relevant sites within the sources comprising the historic environment record have been assessed within a 5km and 2km study zone around the Application Site boundary in order to evaluate the potential effects that the Proposed Development may have upon these assets. A Zone of Theoretical Visibility (ZTV) was calculated over the 5km study zone, which was used to identify areas where the Proposed Development could potentially be visible from.

3.71. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and no direct effects to known archaeological assets are anticipated with the application of this system.

Direct Effects

3.72. There are no recorded sites within the RMP, RPS and NIAH that are within or near to the Application Site that could be physically impacted by the Proposed Development. In addition, no features of archaeological significance were identified during the site visit or analysis of aerial photographs. As such, no direct effects upon known archaeological and heritage assets are anticipated.

3.73. Overall, the proposed footprint constitutes a relatively small percentage of the total area of the Application Site (91.44ha):

- 40,542.59m^2 for infrastructure (c. 4.43% of the Application Site area); and
- 330.34m^2 for piling (c. 0.04% of the Application Site area).

3.74. The total footprint of the Proposed Development is therefore 40,872.92m^2 or c. 4.47% of the Application Site area. As per the nature of archaeological remains, any direct impacts upon the archaeological resource are considered to be permanent.

3.75. The primary potential for sub-surface remains within the Application Site is derived from the former presence of numerous small buildings and a field system of many boundaries within Fields 11, 15 and 16. These buildings and boundaries were depicted on the OSI 6-inch historic map, comprising a cluster of small fields and enclosures with groups of associated buildings, possibly related to their agricultural landuse. Both the buildings and boundaries were

subsequently removed at some point in the 19th century, but cropmarks visible on aerial photography of the fields clearly line up with some of the former boundaries. As such, Fields 11, 15 and 16 have a heightened potential for encountering post-medieval remains associated with this landuse.

3.76. Based on the ground disturbance expected and the predominately low archaeological potential of the Application Site (with Fields 11, 15 and 16 having a moderate potential), the potential for the Proposed Development to directly affect hitherto unknown sub-surface archaeology across the site is anticipated to be **Moderate**, with the highest potential for impacting upon archaeology occurring during groundworks for the future 110kV substation in Field 15. However, as the presence of any such remains within the Application Site is currently unknown, specific direct impacts upon the archaeological resource in the absence of any mitigation measures cannot be accurately ascertained.

Indirect Effects

3.77. The main operational effects of the project would result from visual impacts upon the surrounding cultural heritage and archaeological remains. The setting and potential visual impact upon each of the designated heritage assets have therefore been assessed through a desk-based assessment.

- There was one NMSC identified within the 5km study zone around the Proposed Development. This asset was identified as being in the ZTV of the Proposed Development and impacts are anticipated to be **Imperceptible**.
- There were eight HGDLs identified within the 5km study zone that were within the ZTV of the Proposed Development. Of these assets, a **Slight Adverse** impact was assessed for Harristown House (NA02), while an **Imperceptible** impact was assessed for the other seven (NA03—NA07, NA09 & NA10).
- There were eight Protected Structures identified in the RPS/NIAH that are within the 2km study zone and the ZTV of the Proposed Development. Of these assets, a **Not Significant** impact was assessed for Harristown House (NA11) while an **Imperceptible** impact was assessed for the other seven (NA14—NA19 & NA21).
- There were 12 sites identified in the RMP that are within the 2km study zone and the ZTV of the Proposed Development. An **Imperceptible** impact was assessed for all 12 assets (NA22 – 24, NA26 – 33 & NA35).
- There were no ACAs or World Heritage Sites identified in their respective study zones.
- As no notable cumulative landscape or visual effects will occur as a result of the Proposed Development, no cumulative visual impacts are expected to occur on any of

the surrounding heritage assets previously identified. As such, **no cumulative visual effects** are anticipated on any surrounding heritage assets mentioned within the AAHIA.

Mitigation Measures

3.78. The potential for direct effects upon unknown sub-surface archaeology is anticipated to be moderate prior to any mitigation measures, with the highest potential for impacting upon archaeology occurring during groundworks for the future 110kV substation in Field 15. Fields 11, 15 and 16 have a heightened potential for encountering post-medieval agricultural remains derived from a cluster of small buildings and field boundaries in this location. As such, these fields would require archaeological investigation, either via trial trenching prior to the construction phase or archaeological monitoring during the construction phase, in order to establish the extent, age and character of any sub-surface remains within these fields. The implementation of an archaeological programme of works will ensure that any hitherto unknown sub-surface remains are sufficiently recorded and, if necessary, protected *in-situ*. There is limited scope to mitigate against the direct impacts from piling upon potential sub-surface archaeology as no foundation trenches will be required, limiting archaeological visibility. Any archaeological work required will be at the discretion of the NMS and Meath County Council.

3.79. Although visibility of the surrounding landscape is relatively restricted, some mitigation measures by design has been proposed within the Landscape and Visual Impact Assessment (see **Chapter 8: LVIA**). This includes the replacement of any hedgerow, trees or scrub planting that may be lost to accommodate the required site works, as well as the maintenance and rotational cutting of new planting in order to help thicken them out and retain their height at a minimum of 3m.

Residual Effects

3.80. As there are no recorded sites within or near to the Application Site that could be physically impacted by the Proposed Development, **no direct effects** upon known archaeological and heritage assets are anticipated.

3.81. Following the implementation of an appropriate archaeological programme of works, measures will be in place for the full recording or preservation of any sub-surface remains of significance that are identified within the Application Site. As such, residual direct impacts upon hitherto-unknown archaeology are anticipated to be **Not Significant**.

3.82. During the operational lifetime of the proposed development it is anticipated that maintaining the hedgerow screening effects present at the Application Site will ensure indirect effects upon the settings and views of the surrounding heritage assets remains at **Slight Adverse**.

AIR QUALITY & CLIMATE

3.83. The Application Site Lies within Air Quality Zone D and has an Air Quality Index for Health (AQIH) of 'Region: Rural East 2, Good'. The EPA aims to increase air quality monitoring and to provide more accessible air quality data for the general public and recommends WHO guideline values are transposed into EU and Irish law. It also recommends the government shifts focus to cleaner, renewable energy sources in the industrial and domestic realms and encourages a national campaign for greater energy efficiency as a whole, in order to reduce our dependency on fossil and solid fuels. These aims and recommendations are essential to improve our air quality and impede climate change. Solar farms can greatly help Ireland achieve these aims as they do not produce any emissions. The purpose of a solar PV farm is to encourage the reduction and dependency upon Co_2 emitting fossil fuels by supplying renewable clean energy to the National Grid.

3.84. While there may be minor, temporary emissions during the construction phase due to the increased traffic volumes and limited dust emissions, the Proposed Development is expected to generate approximately 43.2MW of clean energy each year which is the equivalent of supplying the electricity needs of approximately 10,833 homes per annum. This will offset 23,524 tonnes of Co_2 emissions which is the equivalent to taking 5,277 cars off the road per annum. Solar farms encourage the reduction of and dependency upon Co2 emitting fossil fuels and can help Ireland achieve its ambitious clean energy goals set out under the Paris Agreement and the Climate Action Plan.

3.85. The project will increase the biodiversity of the area through the implementation of a Biodiversity Management Plan (Please see **Technical Appendix 5.1**) which will include bird and bat boxes and two hibernacula and invertebrate hotels. **A Landscape and Environmental Management Plan (Figure 8.20)** will outline the vegetation management procedures for the lifetime of the development as well as detailing the screen planting of trees and hedgerows that will be introduced onto the site.

3.86. The Proposed Development will have a **Long-Term Slight Positive effect** on air quality and climate change.

3.87. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and no additional effects to air quality and climate are anticipated with the application of this system.

RESOURCE & WASTE MANAGEMENT

3.88. The construction phase will constitute the primary potential for impacts resulting from resource and waste management. An Outline Construction Environmental Management Plan

(OCEMP) has been produced (**Technical Appendix 6.3: OCEMP**) which will be used to manage waste segregation and management within the wider context of environmental management during the construction phase. Effects during the construction phase are expected to be **Temporary and Imperceptible.**

3.89. No notable waste is expected during the operational lifetime of the Proposed Development. Resources required during this phase involves the input of natural light/radiation and the output of electricity through the utilisation of on-site solar panels and infrastructure. Effects during the operational phase are expected to be **Temporary and Imperceptible.**

3.90. It is considered that the potential impacts during the decommissioning phase will be similar to those identified for the construction phase of the Proposed Development. Therefore, effects during the construction phase are expected to be **Temporary and Imperceptible.**

3.91. Effects arising from waste and resource management are anticipated to be mitigated by the implementation of the recommendations contained within the OCEMP (**Technical Appendix 6.3: OCEMP**). As such, no significant residual effects are expected.

3.92. **No Cumulative effects** are anticipated relevant to resource and waste management.

3.93. Despite the addition of a new proposed fibre wrap system for the connection, the current baselines associated with the existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site remain valid and negligible effects to resource and waste management are anticipated with the application of this system.

INTERACTIONS OF THE FOREGOING

3.94. **Chapters 4—15** assess the potential impacts and cumulative effects as well as their significance within their relevant disciplines. Chapter 13 discusses the interactions, if any, of these potential impacts and the magnitude of effects with each other, to determine if in combination, potential impacts will increase or remain the same. **Chapter 13** includes a table which lists the potential interactions (positive, negative, none) during the construction, operational and decommissioning phases.

3.95. Interactions are evident between:

- Population and Human Health with: Biodiversity, Noise and Vibration, Air Quality and Climate, Material Assets, Landscape & Visual Impact, Land, Soil & Water, Resource and Waste Management
- Landscape and Visual Impact with: Cultural Heritage and Biodiversity
- Biodiversity with: Land, Soil and Water, Air Quality and Climate, Noise and Vibration.

3.96. The interactions with the application of the SkyWrap fibre optic system are anticipated to be limited between:

- Noise and Vibration, Traffic and Transport, Landscape & Visual Impact, Land and Resource and Waste Management

3.97. Where potential interactions have been identified, appropriate mitigation measures have been recommended and can be found in Volume 2 Chapters 4---15.

FIBRE WRAP

3.98. A fibre optic cable will be wrapped along the existing 110kV ESB transmission line running from the solar farm project at Harristown for circa 5.285km in a northwest direction to the Kinnegad 110kV electrical substation.

3.99. The current baseline of the proposed fibre wrap route consists of an existing ESB overhead line which links the Kinnegad 110kV substation and crosses the solar farm development site. The line is located on agricultural lands for the majority of the route, plus an area of bog near the Lagan Cement Facility beside the substation. The overhead line also crosses two local roads for circa 10m.

3.100. The main potential impact is due to working at height and working with electrical cables. There is the potential for injury to workers during the construction stage. The potential impact could be of a high magnitude and therefore result in a significant effect of long-term duration, if standard health and safety and best practice measures are not adhered to. However, with the implementation of appropriate health and safety procedures, including risk assessments, method statements and on-site management, the residual potential for injury to workers during the construction stage is considered to indicate a slight temporary effect and no significant impacts upon worker safety are anticipated.

3.101. Residual visual impacts and noise impacts during the construction stage are anticipated to be unchanged from their pre-mitigation levels at slight temporary effects.

3.102. There will be imperceptible residual effects during the operational period.

3.103. There will be imperceptible residual effects during the decommissioning period.

4. CONCLUSION

4.1. This NTS has outlined the main findings of the EIA undertaken for the Proposed Development at Harristown, Castlejordan and Clongall. It is considered that with the implementation of the recommended mitigation measures outlined within each of the chapters of the EIAR, potential impacts on the receiving environment will be **of low to no significance.** Overall, the Proposed Development is anticipated to have **Slight Negative or Inert effects** on the surrounding environment and receptors during the construction period but this is just temporary in nature due to the short (six-months) build out phase. As the solar PV panels themselves do not generate noise or toxins and the site is considered unmanned during the operational phase (30-35 years), the Long-Term Positive Effects of increased air quality, biodiversity and renewable energy generation far outweigh the temporary negative effects.

4.2. **Significant Positive Long-Term Effects** are anticipated for local biodiversity and the project will increase Ireland's sustainable, locally generated, energy supply, by providing enough clean energy to power circa 10,833 homes per year. Growing our renewable energy generation capacity will both reduce our carbon emissions and enhance security of energy supply by lowering our reliance on volatile international fossil fuel markets. The proposal complies with and is supported by the relevant planning policy framework therefore, planning permission should be granted.

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