



Preliminary Environmental Information Report

Non-Technical Summary

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Future Energy Llanwern Limited

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1.0 Introduction

Overview

- 1.1.1 Future Energy Llanwern Limited (the Applicant) is seeking consent for the Future Energy Llanwern Solar Farm (the Proposed Development) within the administrative boundaries of Monmouthshire County Council and Newport City Council.
- 1.1.2 The Applicant has produced a Preliminary Environmental Information Report (PEIR) for the Proposed Development. This document is the non-technical summary (NTS) of the PEIR.

What is the Future Energy Llanwern Solar Farm?

- 1.1.3 The Applicant is seeking consent for the Proposed Development which would comprise the construction, operation, maintenance and decommissioning of a ground mounted solar farm with a generating capacity of over 350 Megawatts (MW) for a temporary period of 40 years within the Gwent Levels, defined as the Site.

The Applicant

- 1.1.4 The Proposed Development is being developed by Future Energy Llanwern Limited (FEL) with NextEnergy Solar Fund Limited (NESF) as the investor.
- 1.1.5 NESF is a specialised solar energy and energy storage investment company primarily investing in utility scale solar assets. As of September 2024, NESF has an installed capacity of over 983MW spread around 102 individual operating assets.

The EIA Regulations

- 1.1.6 Owing to the nature, size and location of the Proposed Development there is the potential for the Proposed Development to have significant effects on the environment and as such it requires a supporting Environmental Statement (ES). In line with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations 2017) (Ref 1-1), the Applicant provides notice that an ES will be prepared to support the Development Consent Order (DCO) Application.

EIA Scoping

- 1.1.7 'Scoping' is a process designed to ensure that the subsequent EIA is focused on the key impacts likely to give rise to significant effects, and to obtain agreement on the EIA approach and scope. As well as identifying elements to be considered in the EIA, scoping identifies those elements that are not considered necessary to assess further. This approach is in line with the general aim of undertaking proportionate EIA.
- 1.1.8 The first stage of scoping is the preparation of an EIA Scoping Report (see: **Appendix 1C**). This report gives an early indication of potential significant environmental effects and suggests what ought to be scoped in, or out, of the EIA.
- 1.1.9 The second stage is that this report is submitted to the relevant authorities and consultees, who write back with a 'Scoping Opinion' (**Appendix 1D**). This constitutes an early agreement between the Applicant and the consultees on which topics will be covered in the ES.

The Purpose of the PEIR

- 1.1.10 Preceding the ES, this PEIR document highlights the likely significant effects of the EIA undertaken to date.
- 1.1.11 The purpose of this PEIR document is to enable members of the public, consultation bodies, and other stakeholders to develop an informed view of the likely significant effects of the Proposed Development and to comment on particular aspects of interest. Feedback received throughout the application process will be incorporated by the project team to inform the ongoing development of the final design of the Proposed Development and the ES.
- 1.1.12 At this stage of the EIA, the Proposed Development is still undergoing design development and therefore the assessment of its effects will continue to evolve in response to consultation, as further information becomes available, and as more detailed assessment is undertaken. As such, information on the likely significant effects (material to the decision-making process) may change. However, the baseline information presented in the PEIR is considered to be sufficient to inform the preliminary assessment of the Proposed Development and informs the judgement of specialists undertaking the environmental studies.

2.0 The Site

2.1 Site Location

- 2.1.1 The PEIR Assessment Boundary (illustrated in **Figure 1-1**) is defined as the area within which the Proposed Development and associated infrastructure will be located, including the temporary and permanent construction and operational work areas.
- 2.1.2 The Site is located east of Newport and is within the Local Authority administrative areas of Monmouthshire County Council and Newport City Council.

2.2 Site Description

- 2.2.1 The total area of the PEIR Assessment Boundary is 547.69 hectares (ha).
- 2.2.2 The Site comprises agricultural fields which are predominantly used for grazing pasture and arable use. It should be noted that none of the fields proposed to support the Proposed Development fall within Best and Most Versatile Agricultural Land. The fields extend along the northern banks of the Severn Estuary and range in size across the Site and are irregularly shaped.

2.3 Key Constraints

- 2.3.1 Environmental Constraints are specific, often highly sensitive features that must be duly considered throughout the PEIR process. The key existing environmental constraints relevant to the Site are shown in **Figure 1-2**.
- 2.3.2 The Proposed Development lies within the Gwent Levels, which consists of a series of six Sites of Special Scientific Interest (SSSIs) and is registered as a Landscape of Outstanding Historic Interest in Wales (LOHI). The Site is located within the following four Gwent Levels SSSIs:
- Gwent Levels – Whitson;
 - Gwent Levels - Redwick and Llandevenny;
 - Gwent Levels - Nash and Goldcliff SSSI; and
 - Gwent Levels – Magor and Undy.
- 2.3.3 The Severn Estuary SSSI, Special Protection Areas (SPA), Special Areas of

Conservation (SAC) and Ramsar borders the southern boundary of the Site, the coastal flood defence seawall divides the Proposed Development and these designations. These sites are designated for their internationally important numbers of overwintering birds and supporting habitats.

- 2.3.4 There are several Scheduled Monuments within the surrounding area, the closest, at approximately 180m north of the Site. Two further Scheduled Monuments, Undy Churchyard Cross (MM126) and Relict Seawall alongside Collister Pill Reen (MM226) are situated within 1.0km of the Site, approximately 900m to the northeast of its eastern extent.
- 2.3.5 The M4 is located 1.9km to the north-east and can be accessed via the Causeway, which is a single-track lane which lies along the north-east border of the Site and the B4245.
- 2.3.6 There is a public right of way (PRoW) network running within and around the Site. The Wales Coastal Path is situated just outside the southern edge of the PEIR Assessment Boundary.

3.0 Project Description

3.1.1 This section sets out the details on the physical properties of the Proposed Development, as well as information on the construction, operation and decommissioning phases.

3.2 Project Need

3.2.1 There has been an increasing need for the UK to further invest and strengthen their renewable energy supply in response to numerous environmental challenges, the most pressing being the global climate emergency. The need for sources of renewable energy to meet the UK's rising energy demands whilst shifting to a Net Zero is well established and has strong legislative backing. Whilst the need to secure UK Energy Security is becoming increasingly important with the expected increase in energy demand to 2050.

3.2.2 Solar is one such source of energy generation that meets both these demands. The Proposed Development will deliver over 350 MW, and when calculated against other, more carbon intensive forms of energy generation, will result in a net reduction in GHG emissions of 98,968 tons of CO₂ equivalent (see **Chapter 6: Greenhouse Gases**).

3.3 Rochdale Envelope

3.3.1 As the design and implementation of Proposed Development is currently evolving, an envelope assessment has been undertaken. (Ref 3-1). This is an approach that allows for flexibility in approach as more information is gathered throughout the assessment process. As the full design is not yet decided upon, the 'worst case scenario' will be assessed.

3.4 Physical Components

3.4.1 The elements of the Proposed Development situated within the PEIR Assessment Boundary comprise the following (**Figures 2-1 to 2-29**):

- A solar farm area of 149.05 ha which includes:
 - Solar PV Modules;

- PV module mounting structures;
- Inverter units;
- Transformers;
- High voltage (HV) switchgear and control equipment;
- Onsite cabling;
- Electrical compound comprising a substation and transformer housing (options);
- Converter station and associated infrastructure (options);
- Fencing and security measures;
- Drainage;
- New internal access roads and bridges;
- Upgrades to existing access tracks;
- Temporary construction access tracks;
- Temporary construction compounds; and
- Environmental enhancements including Site reinstatement and habitat creation.

Solar PV Modules

3.4.2 The proposed solar PV modules have not been selected at the time of writing PEIR. A maximum panel parameter of up to 3.5 metres (m) at its highest point has been assessed. Each module will form one Solar Panel, the modules are fixed to a mounting structure in groups known as 'strings'. The modules will be fixed on a mounting structure, with the panels oriented towards the south at a slope of between 15 to 25 degrees from horizontal.

3.4.3 Each row of modules will be mounted on a galvanised steel frames, which will consist of screw piles up to 3m into the ground. There will be a separation distance of approximately 3m between the rows. Additionally, there will be a gap of 1-2cm between the panels to allow permeability of water and prevent accumulation of surface water runoff.

Inverters

3.4.4 Inverters are required to convert the DC electricity collected by the PV Modules into alternating current (AC) which allows the electricity generated to be exported to the National Grid. The Proposed Development will utilise string inverters which are

mounted to the Mounting Structures underneath the PV Modules and are required for every PV string. String Inverters are typically 700mm in length by 365mm in depth by 1,035mm in width.

Transformers

- 3.4.5 Transformers are required to step up the voltage of the electricity generated by the PV Modules before it reaches the onsite substations. The transformers will likely be located within containers and distributed throughout the Proposed Development. The containers will typically be 3.5m high, 5.8m wide and 2.2m in length.

Switchgears

- 3.4.6 Switchgears are the combination of disconnect switches and circuit breakers used to protect equipment. Switchgears will be housed within the same containers as the Transformer.

Onsite Cabling

- 3.4.7 The onsite cabling will comprise low voltage electrical cabling which will be used to connect the PV modules to the inverters . These cables will all be underground and installed via trenching.
- 3.4.8 Higher voltage cables will be required between the Transformers, Coupler Stations and the Grid Connection Infrastructure. These cables are likely to run centrally through the Site between transformer units and the Grid Connection Infrastructure.

Crossings

- 3.4.9 There are road, ditch/reen, footpaths, third party services, and other crossings along the cable routes. Each crossing will be individually reviewed/surveyed during detailed design to confirm the crossing methodology employed. The crossings include access track bridges, cable tray crossings / pipe bridges and Horizontal Directional Drilling (HDD) crossings.
- 3.4.10 Where low voltage cables converge upon a crossing point (either a drain or a reen) they will cross these sections via a cable tray / pipe. The utilisation of cable trays at crossing points has been identified to minimise the use of HDD and the

associated impacts. Where high voltage cables are required to cross reens and other obstacles this will be completed via HDD.

Substation

- 3.4.11 Substations play a key role for the delivery of electricity transmission throughout the National Grid transmission network. One of their key functions includes the conversion of electricity into different voltages, depending on the required output. The Proposed Development's substations will likely consist of electrical infrastructure such as transformers, switchgear and safety equipment.
- 3.4.12 The proposed substation design is being developed and refined through the iterative design process.

Site Access

- 3.4.13 The Proposed Development would be primarily accessed via the M4 and the A4810 down Broad Street Common through to North Row, which lies 403m north-east of the PEIR Boundary. The following access points are proposed as main site entrances:
- Site Entrance 1: the substation area would be accessed from Broad Street Common which runs through the PEIR Assessment Boundary between the Site and the National Grid National Grid Substation (ST 38552 85031);
 - Site Entrance 2: Access off the junction at North Row and Broad Street Common (ST 39852 85634);
 - Site Entrance 3: Access off Sea Street Lane (ST 41300 84044);
- 3.4.14 A number of secondary points of access to the Site will be required across the Proposed Development owing to the extent of individual land parcels that comprise the PEIR Assessment Boundary.

Internal Access Tracks

- 3.4.15 Within the Site, existing internal tracks, points of access and field gates would be utilised where practical, however, in some cases these tracks need to be upgraded, or new tracks would be constructed to provide access. Based on the current design there will be circa 22.8km of new access tracks required to support the Proposed Development and upgrades required to 5.5km of existing access tracks.

Green Infrastructure

- 3.4.16 The existing hedgerows, woodland, ditches and field margins will be retained within the layout of the Solar Panels, with the exception of breaks and/or crossings required for new access tracks, security fencing and cable routes or where to be removed in accordance with enhancement proposals.
- 3.4.17 Minimum offsets/buffers from the Solar Panels or security fencing will be incorporated within the design of the Proposed Development, with the exception of where access tracks, security fencing and or cable routes are required to cross an existing feature.

Fencing and Security Measures

- 3.4.18 A security fence with gated access will enclose the operational areas of the Proposed Development. CCTV infrastructure will consist of pole mounted cameras, positioned appropriately around the perimeter of the operational areas of the Proposed Development.

3.5 Construction Phase

Construction Programme

- 3.5.1 It is currently considered that construction will take approximately 4 years to complete.
- 3.5.2 Indicative hours for the construction work and any construction-related traffic movements to or from any site of the Proposed Development are as follows:
- 07:00 to 19:00 hours Monday to Friday;
 - 08:00 to 13:00 hours on Saturday.

Construction Compounds

- 3.5.3 Temporary Compounds will be used in the construction of the development. They constitute temporary works and will remain for the duration of the construction period. The compounds will include provisions for storage of materials, office and welfare spaces, etc.

Site reinstatement and Habitat Recreation

- 3.5.4 Upon completion of the construction phase, the temporary construction compounds and all other temporary works shall be dismantled and the topsoil reinstated to its original state, where not being panelled.

Waste

- 3.5.5 The Proposed Development is anticipated to generate 'spoil' from cable trenches, temporary construction compounds, internal roads and substation compounds. Any spoil material generated will be used throughout the construction phase and utilised across the Site. Examples include the backfilling of cable trenches, and reinstatement of temporary construction compounds.

Construction Environment Management Plan

- 3.5.6 A draft Outline Construction Environmental Management Plan (oCEMP) (see: **Appendix 2B**) has been prepared in support of this PEIR. A detailed CEMP will be prepared prior to construction.

3.6 Operational Phase

- 3.6.1 The Operational Phase of the Proposed Development is proposed to be 40 years, covering the period in which the Proposed Development will be generating electricity. From an operational perspective, activity within the Proposed Development will be minimal and would include vegetation management, equipment maintenance and replacement of any failing components and monitoring.

3.7 Decommissioning Phase

- 3.7.1 When the Operational phase ends, the Proposed Development will require decommissioning, which is expected to take 24 months. All equipment and infrastructure will be removed from Site and recycled or disposed of in accordance with good practice following the waste hierarchy, with materials being reused or recycled wherever possible.
- 3.7.2 The future of the substations would be agreed with National Grid prior to commencement of decommissioning.

3.7.3 The land within the PEIR Assessment Boundary will be returned to its original use after decommissioning; however, it is anticipated that all areas of habitat and biodiversity mitigation and enhancement will be left in-situ given they could contain protected species and so relevant licenses at the time would be required for any changes.

4.0 Alternatives and Design Development

4.1.1 In the first instance, a 'no development' scenario has not been considered as an alternative. This is because 'no development' is not considered to be a reasonable alternative to the Proposed Development as it would not deliver the proposed generation capacity and therefore not support the transition to net zero.

4.2 Site Evaluation

Requirements

4.2.1 There is no standardised approach to site selection for solar projects. However, securing a viable grid connection is a fundamental consideration in accordance with national planning policy.

4.2.2 The Proposed Development requires a large site area to accommodate the amount of PV Arrays necessary to make full use of the grid capacity and the grid connection on offer. The siting of the Proposed Development must also take account of key development management considerations and the operational needs and requirements of the Proposed Development.

Site Selection Process

4.2.3 The process for site selection and a review of potential other alternative sites was initially guided by a review of parameters which are key to ensuring the viability of a Solar Farm Development. These include:

- Proximity to the transmission network with available capacity;
- Consideration as to whether Ecological Designated Sites could be avoided;
- Satisfactory irradiance levels;
- Land use (urban and wooded locations excluded) and neighbouring land use;
- Topography;
- Availability of the land for the lifetime of the Proposed Development;
- Compatible uses and neighbouring uses;
- Landscape and visual considerations;

- Agricultural Land Classification; and
- Deliverability and accessibility of the Site.

4.2.4 When reviewing these sites, consideration has been given to key environmental and planning policy constraints, including the potential for environmental impacts to occur and conflicts with existing or proposed land uses.

4.2.5 Two alternative site options, within proximity to the National Grid Substation were identified by the Applicant and a full review of the viability of these sites is set out in **Chapter 3: Alternatives and Design Evolution**. Neither of the alternative sites were considered suitable, primarily because they featured smaller and irregular field boundaries, denser vegetation, and additional ecological designations.

Alternative Layouts

4.2.6 In addition to a review of the alternative sites, consideration was also given to how a site layout might be configured within the Site. Designs have evolved in response to the ongoing environmental impact assessment process, engagement with landowners and relevant statutory consultees. The initial feedback received during the Scoping stage of the EIA was also considered within the design of the Proposed Development.

4.2.7 There have been numerous changes to the design and layout of the Proposed Development, including implementing buffers and removing areas to be paneled close to the Wales Coast Path. The layout of the Proposed Development will continue to be developed and refined as the Applicant progresses through the PEIR and ES stages of the DCO Application.

5.0 EIA Methodology

5.1 Introduction

- 5.1.1 The EIA process begins by establishing the baseline environmental conditions via desk studies and surveys in each technical chapter to serve as comparison for predicted changes from the Proposed Development. Future baseline changes without development are also considered where relevant.
- 5.1.2 Whilst the spatial scope of the PEIR is defined by the PEIR Assessment Boundary (see **Figure 1-1**), the spatial scope of the assessment conducted by each topic varies depending on the context of that assessment.
- 5.1.3 Where adverse or beneficial effects are identified from the magnitude of change to the baseline conditions, the likely significant effects have been identified, these are categorised as the following:
- **Minor** – slight, very short or highly localised effect of no significant consequence;
 - **Moderate** – noticeable effect (by extent, duration or magnitude) which may be considered significant; and
 - **Major** – considerable effect (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards; considered significant
- 5.1.4 The EIA identifies mitigation measures which aim to avoid, reduce or mitigate adverse environmental effects. There are different mitigation measures which have been embedded into the design from early stages, classified as primary (design modifications), secondary (foreseeable measures), and tertiary (mandatory good practice measures).
- 5.1.5 As part of the EIA process and in line with The Planning Inspectorate guidance, other developments that are deemed likely to go ahead or are going ahead should be taken forward for consideration within a Cumulative Effects Assessment (CEA).
- 5.1.6 A Study Area of 10km was used for the assessment. A longlist has been brought together, and was shortened down to a shortlist. A preliminary assessment has been undertaken for the PEIR within each technical Chapter.

6.0 Chapter 6: Greenhouse Gases

6.1 Introduction

6.1.1 **Chapter 6: Greenhouse Gases** has considered the preliminary findings of the Proposed Development on greenhouse gas (GHG) emissions.

6.2 Baseline

6.2.1 The GHG emissions affect global atmospheric GHG concentrations and are not localised to a site-level baseline. For the Proposed Development, both baseline and future baseline GHG emissions can be considered zero since work is to be carried out on a greenfield site

6.3 Construction Effects

6.3.1 During construction of the Proposed Development, there will be direct GHG emissions, with 99.5% of these emissions relating to embodied carbon in the construction materials. The emissions of the construction phase are predicted to be 58,432 tCO₂e. This constitutes 0.1% of baseline GHG emissions within Welsh Carbon Budgets and 0.17% of total 2023 GHG emissions. On this basis the assessment of significance is Minor Adverse, **Not Significant**.

6.4 Operation Effects

6.4.1 During the operation phase emissions are predicted to be 9,732 tCO₂e, this is predominantly driven by component replacement over the lifetime of the Proposed Development. This constitutes 0.02% of baseline GHG emissions within Welsh Carbon Budgets and 0.03% of total 2023 GHG emissions. On this basis the assessment of significance is Negligible, **Not Significant**.

6.5 Decommissioning Effects

6.5.1 The decommissioning phase emissions are predicted to be 58,432 tCO₂e, due to similar level of works required as the construction phase, as all infrastructure is proposed to be removed from the Site. This constitutes 0.1% of baseline GHG emissions within Welsh Carbon Budgets and 0.17% of total 2023 GHG emissions. On this basis the assessment of significance is Minor Adverse, **Not Significant**.

6.5.2 Benefits and loads beyond the Proposed Development as a result of generated electricity are predicted to 225,564 tCO_{2e}. In the context of the overall Proposed Development this constitutes a net reduction in GHG emissions of 98,968 tCO_{2e}. Given the net reduction in GHG emissions achieved by the Proposed Development the overall significance of effect over the lifetime of the Proposed Development is assessed as Beneficial, and **Significant**.

7.0 Chapter 7: Cultural Heritage & Archaeology

7.1 Introduction

7.1.1 **Chapter 7: Cultural Heritage and Archaeology** sets out the preliminary assessment of significant effects of the Proposed Development on Cultural Heritage and Archaeology during construction, operation and decommissioning phases.

7.2 Baseline

7.2.1 A historic environment desk-based assessment has been undertaken which sets out the sources to be consulted in order to establish the archaeological baseline for the Site. The Site is primarily agricultural land, located within the Gwent Levels Registered Landscape of Outstanding Historic Interest. The Site is dominated by a network of drainage ditches (reens), reflecting the centuries of land reclamation and agricultural use.

7.2.2 There are no designated historic assets within the PEIR Assessment Boundary, however, there are 121 within 5km and the Redwick Conservation Area is located to the north of the Site. The Site contains seven Historic Landscape Character Areas and 43 non-designated historic assets and lies within an Archaeological Sensitive Area.

7.2.3 The Site has been assessed for its Archaeological Potential, moderate to high potential was noted for paleo-environmental, prehistoric, medieval and post-medieval features.

7.3 Construction Effects

7.3.1 As a result of construction activities there is predicted to be direct permanent loss or disturbance to known or unrecorded buried non-designated historic assets including:

- Moated Site;
- Moated sub-rectangular platform;
- Moated platform;

- Moated sub-rectangular platform;
- Small agricultural building;
- Footbridges, Redwick; and
- Footbridges near Goldcliff.

7.3.2 These will all result in a Moderate adverse, **Significant** effect due to the partial and/or total removal of the non-designated historic assets. No designated or non-designated above-ground historic assets within a 5km Study Area will be subject to significant effects.

7.3.3 It is considered that it will be possible to mitigate the impacts of the Proposed Development upon the buried archaeological resource through a staged programme of archaeological investigation and recording. This would be focussed in areas subject to notable ground disturbance and in areas of notable archaeological potential. Following the implementation of these measures the effects would be considered to be **Not Significant**.

7.4 Operation Effects

7.4.1 Through the operation phase of the Proposed Development there are predicted to be permanent changes to the setting of historic assets within the 5km Study Area. No designated above-ground historic assets within a 5km Study Area will be subject to significant effects from the operation of the Proposed Development. The effects on non-designated assets within, or immediately adjacent to, the Proposed Development during operation would be **Not Significant**.

7.5 Decommissioning Effects

7.5.1 Potential impacts on buried and above ground historic assets from decommissioning related activities would have already been realised as a result of the construction phase which will result in the permanent removal or degradation of buried and above ground assets. The removal of above ground infrastructure associated with the Proposed Development will revert the setting of above ground historic assets to their existing character, the effects are therefore considered to be Negligible and **Not Significant**.

7.6 Cumulative Assessment

7.6.1 A cumulative assessment has been undertaken to consider potential effects with other consented and proposed projects. Physical effects are considered unlikely, however, there are potential impacts to setting from operation effects from numerous developments. The submitted heritage assessments from Craig y Perthi Solar Farm and the Magor Net Zero project could result in cumulative effects on above ground historic assets. However, it is considered that these cumulative effects would be Minor adverse and **Not Significant**.

8.0 Chapter 8: Ecology

8.1 Introduction

- 8.1.1 Chapter 8: Ecology has considered the preliminary findings of the likely significant effects of the Proposed Development in relation to Ecology.

8.2 Baseline

- 8.2.1 To inform the PEIR, a number of surveys were undertaken, including a desk-based study, Phase 1 Habitat Survey and species-specific surveys for protected and notable fauna species.
- 8.2.2 The Proposed Development lies within 20m of the Severn Estuary Ramsar, Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). The River Usk SAC is within 3.7km. The Proposed Development overlaps with four of the Gwent Levels SSSIs: Magor and Undy SSSI, Redwick and Llandevenny SSSI, Whitson SSSI and Nash and Goldcliff SSSI. In addition, a further two SSSIs and one National Nature Reserve (NNR) lie within 3km of the Proposed Development, along with sixteen Sites of Importance in Nature Conservation (SINC) within 2km, none of which are within the PEIR Assessment Boundary.
- 8.2.3 Habitats within the PEIR Assessment Boundary are predominantly agricultural farmland including improved and semi-improved grassland used for grazing sheep and cattle, and arable land. These are bordered by a network of reens and ditches and collectively the habitat is classified as Coastal and Floodplain Grazing Marsh, a Habitat of Principal Importance (HPI). Native hedgerows are present on many of the boundaries, often causing shading to the reens and ditches, in particular where they are present on both sides.
- 8.2.4 Protected and notable fauna supported within the PEIR Assessment Boundary include great crested newt, badger, commuting and foraging bats, dormouse, European eel, terrestrial invertebrates including shrill carder bee, aquatic invertebrates, otter, water vole, common reptiles, brown hare, harvest mouse and hedgehog.

8.3 Construction Effects

- 8.3.1 During construction, the potential for environmental impacts such as dust, water pollution and siltation on receptors such as designated sites and habitats and species associated with the reens and ditch network will be subject to robust control measures set out in the outline Construction Environment Management Plan (oCEMP). Main reens and ditches will also be protected with 12.5m and 7m buffers respectively, to further slow/ capture run off and protect them from accidental damage. Therefore, the effect would be **Not Significant**.
- 8.3.2 The Proposed Development will result in the permanent loss of Coastal and Floodplain Grazing Marsh and hedgerow habitat due to the requirement for land take for new access tracks, improvements to existing access tracks, grid connection infrastructure, transformer stations, cable crossings and vehicular crossing points which would be a minor, adverse effect that is **Not Significant**. The effect will be reduced with the provision of 51.5ha mitigation land and enhancements to retained hedgerows. The design will be refined during the ES process to reduce the impacts of crossing points. Further consultation and engagement will also be undertaken and the design will be refined where appropriate, with an updated assessment reported within the ES.
- 8.3.3 There will be temporary effects on the Gwent Levels SSSI qualifying features shrill carder bee, reens and ditches and aquatic invertebrates during installation of cable/ vehicular crossing points but with the provision of the oCEMP, buffers and land set aside for mitigation this effect is reduced to **Not Significant** in EIA terms. Furthermore, a programme of works to enhance the ditch network will commence including a reduction in shading, desilting and reprofiling of banks.
- 8.3.4 The majority of effects on protected and notable species during construction will be controlled via the implementation of the oCEMP, for example pollution control, micro-siting and reducing crossings widths, pre-works checks for otter/ water vole/ badger, Ecological Clerk of Works (ECoW) during the removal of sensitive habitats, sensitive lighting and buffers to reens, ditches and hedgerows. Mitigation licences for dormouse and great crested newts will be obtained from NRW prior to the removal of habitats with any additional compensation detailed therein. Therefore, the effect would be **Not Significant**.

8.4 Operation Effects

- 8.4.1 Several of the effects during operation are considered to be beneficial due to the change in land management from intensive grazing and arable practices, which include fertilisers, pesticides and ploughing, to a low intensity grazing regime which will reduce siltation within the reen and ditch network and reduce nutrient inputs.
- 8.4.2 The Solar Arrays will be arranged to provide large buffers between and around the panels, to allow the grasslands to continue to exist with limited shading.
- 8.4.3 Habitat creation will include a 'bee highway', comprising over 5.5km of grassland adjacent to an existing reen, managed specifically for invertebrates including the shrill carder bee. 51.5ha of mitigation land will provide open fields with shallow pools of water (scrapes), ponds and diverse grassland to provide habitat for invertebrates, great crested newts and improve foraging for bats. Scrub will be planted to benefit dormouse and provide cover for other wildlife.
- 8.4.4 Ongoing management of the Proposed Development will follow a Landscape and Ecological Management Plan (LEMP), to include a programme of ditch enhancements, reduced grazing both within Solar Arrays and in buffers, areas of meadow management and sensitive hedgerow management.
- 8.4.5 The above measures will provide beneficial effects, which in some cases could be **Significant**. Adverse effects will occur to hedgerows, as by removing the southern side of double hedgerows to enhance reens/ ditches, there will be an overall loss of this habitat, which would be Minor, adverse and **Not Significant**.

8.5 Decommissioning Effects

- 8.5.1 The environmental effects associated with the decommissioning phase are expected to be similar to those during the construction phase.

8.6 Cumulative Assessment

- 8.6.1 An initial review of potential cumulative effects indicates that development with the potential to give rise to significant cumulative effects include the Battery Energy Storage System at Uksmouth Power Station, Llanwern Works, Rush Wall Solar Park and Magor Net Zero as a result of the net loss of Coastal and Floodplain Grazing

Marsh habitat. However, at this time, there is currently insufficient information on the amount of habitat loss to assess the likelihood of cumulative effects. Subject to the availability of appropriate information, assessment of likely significant cumulative effects will be presented in the ES.

9.0 Chapter 9: Ornithology

9.1 Introduction

- 9.1.1 **Chapter 9: Ornithology** has considered the preliminary findings of the likely significant effects of the Proposed Development in relation to ornithology.

9.2 Baseline Conditions

- 9.2.1 To inform the PEIR, a number of surveys were undertaken, including a desk-based study and three years of fieldwork covering breeding birds, wintering and passage birds, and nocturnal birds (in winter).
- 9.2.2 The Proposed Development lies within 20m of the Severn Estuary Ramsar, Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI), which are partially designated for wintering birds. In addition a further two SSSIs and one National Nature Reserve (NNR) lie within 3km of the Proposed Development, along with two SSSIs 14km and 24km from the Proposed Development which are important for birds. Seven Sites of Importance in Nature Conservation (SINC) lie within 2km are at least partially important for birds; none of which are within the PEIR Assessment Boundary.
- 9.2.3 During wintering bird surveys, 83 notable species were recorded on and adjacent to the PEIR Assessment Boundary, including five species that are specifically named in the SPA/ Ramsar designation (European white-fronted goose, dunlin, shelduck, gadwall and redshank). These were not recorded in regular or high enough numbers to suggest that the Proposed Development is important to maintain populations within the SPA/ Ramsar itself. The Proposed Development does support nationally important numbers (over 1% of the Welsh population) of shelduck, snipe and curlew in winter.
- 9.2.4 Birds supported on the Proposed Development during the breeding season include 68 notable species, 24 of which were confirmed as breeding. This included ground-nesting species such as skylark, curlew, oystercatcher, meadow pipit, gadwall and lapwing. Breeding Schedule 1 species include Cetti's warbler, barn owl and kingfisher.

9.3 Construction Effects

- 9.3.1 The Proposed Development has the potential to result in moderate adverse effects on certain wintering and breeding birds as a result of noise during construction due to screw piles for Solar Panels and Inverters. This could result in displacement from winter foraging grounds, loss of foraging habitat and abandonment of nest sites, depending on location and timing. Visual disturbance from machinery and personnel could have similar effects on sensitive species. This has the potential to be **Significant** and will be further assessed in the ES.
- 9.3.2 For less sensitive species, phasing of the development so that habitat is always available, and the retention of 10 key fields for birds (totalling 51.5ha) will ensure that adverse effects are temporary but **Not Significant**.
- 9.3.3 During construction, the potential for environmental impacts such as dust, water pollution and siltation on supporting habitat of birds within designated sites and the reen and ditch network will be subject to control measures set out in the outline Construction Environment Management Plan (oCEMP). Therefore, the effect would be **Not Significant**.
- 9.3.4 Species more reliant on the ditch/ reen network and associated habitats such as hedgerows and margins will be protected with 7 – 12.5m buffers and any nest sites buffered. The oCEMP also includes measures to avoid direct impacts on birds (such as loss of nests and eggs) through timing or a pre-works check by an Ecological Clerk of Works (ECoW). Furthermore the amount of hedgerow loss will continue to be minimised through the on-going design process. This will reduce adverse effects to **Not Significant**.

9.4 Operation Effects

- 9.4.1 During the operational phase 51.5ha of mitigation land will be managed in accordance with a Landscape and Ecology Management Plan (LEMP) to include low intensity grazing to provide an open but varied sward and scrapes to provide shallow pools of water for foraging winter birds and habitat for ground-nesting species such as lapwing. No access tracks for maintenance personnel and vehicles will be routed through or adjacent to bird mitigation fields, so that disturbance is limited to routine habitat management. 7 – 12.5m buffers around the reen/ ditch

network will be managed to provide suitable foraging habitat including tussocky grass for barn owl. This will reduce the effects to **Not Significant** for a number of bird species.

9.4.2 Due to potential hedgerow removal for re-en enhancement, there will be an overall loss of foraging habitat for wintering birds such as thrushes, however at this stage the total removal of double hedgerows is unknown. The presence of Solar Panels over 149ha of land may also reduce the area in which wintering birds forage. To compensate for hedgerow losses, defunct hedgerows will be gapped up and a LEMP implemented to ensure ongoing management focuses on restoring dense, continuous hedgerows. Scrub will be planted to create further areas of foraging. There is the potential for overall beneficial effects for some breeding and winter foraging species which could be **Significant**.

9.4.3 For species that rely on large, open fields across the Proposed Development e.g. skylark, snipe, there will be an overall loss of habitat. As well as 51.5ha mitigation land, the Proposed Development includes gaps and rides within the PV Arrays (3m between rows) to break up the panel surfaces, and grassland will still persist under the PV Arrays, between blocks of Solar Panels, in rides and field margins/buffers. The change to management to reduce agricultural inputs (e.g. fertilisers) and a reduction in soil compaction from over-grazing will support a more diverse food source (invertebrates and vegetation) for species that forage within grassland. The overall loss however will be minor adverse and **Not Significant**.

9.5 Decommissioning Effects

9.5.1 The environmental effects associated with the decommissioning phase are expected to be similar to those during the construction phase.

9.6 Cumulative Assessment

9.6.1 An initial review of potential cumulative effects indicates that development with the potential to give rise to significant cumulative effects include the Battery Energy Storage System at Uskmouth Power Station, West of Docks Way Disposal Site, Gwent Europark, Magor Brewery, Northwick Landfill, Severn Road, Craig y Perthi Solar Farm and Magor Net Zero. The main impacts relate to birds (in particular winter birds associated with designated sites) being displaced from multiple sites

concurrently due to construction being undertaken at the same time. Subject to the availability of appropriate information, the assessment of likely significant cumulative effects will be presented in the ES.

10.0 Chapter 10: Water Environment

10.1 Introduction

10.1.1 **Chapter 10: Water Environment** has considered the preliminary findings of the likely significant effects of the Proposed Development in relation to the Water Environment.

10.2 Baseline Conditions

10.2.1 The Study Area and Site includes several key waterbodies including the Severn Estuary which is located to the south of the Site, and Monks Ditch, Windmill Reen and Mill Reen which are located within the Site, Mill Reen is a main river. Other watercourses, drainage ditches and reens are present extensively throughout the PEIR Assessment Boundary. These watercourses are the key drainage feature of the Site and surrounding area.

10.2.2 As noted above, the PEIR Assessment Boundary overlaps with several SSSIs, as noted in **Chapter 8: Ecology**, within the Gwent Levels, which support diverse aquatic and terrestrial wildlife and is located within proximity to the Severn Estuary SSSI, SPA, SAC and Ramsar.

10.2.3 The entire Site is located within Flood Zone 3 (high tidal flood risk), however, much of the Site benefits from flood defences. Fluvial (river) flood risk is generally low, however, there are small areas at medium to high risk. With regard to groundwater the Site is underlain by tidal flat deposits and mudstone, with naturally high groundwater tables and is designated as a Secondary Aquifer./

10.3 Construction Effects

10.3.1 As a result of construction activities, namely the construction of crossing points for both cables and access tracks there will be increased risk of sedimentation, pollution and the potential for damage to existing watercourse attributes on surface water receptors. The effects range from Negligible and **Not Significant** to Minor or Moderate and **Significant**.

10.3.2 Effects on groundwater receptors may occur through impacts on groundwater quantity and quality due to intrusive earthworks that extend below the ground water

table. Effects on receptors range from negligible not significant to Moderate and **Significant** due to the presence of Magor Marsh Nature Reserve 600m to the north.

10.3.3 With regard to flood risk from temporary construction works, it is assessed that effects would range from Negligible to Minor and **Not Significant**, due to the temporary nature of the works and the benefits of the existing flood defences.

10.4 Operation Effects

10.4.1 Effects on surface water receptors, such as the Severn Estuary and drainage ditches / reens are concluded to be Minor and **Not Significant**, due to the implementation of a suitable surface water drainage system which will mitigate the risk of pollution during operation.

10.4.2 Effects on groundwater would be Neutral and **Not Significant**, as the surface water drainage system will incorporate appropriate pollution control measures and it is deemed that the below ground infrastructure would not interrupt natural groundwater levels or flow.

10.4.3 With regard to the impact on flood risk receptors as part of the Operation of the Proposed Development, it has been assessed that effects range from Neutral to Minor and **Not Significant** due to the implementation of a suitable surface water drainage system that will look to limit runoff to no more than the baseline scenario.

10.5 Decommissioning Effects

10.5.1 Due to the similarity between the construction and decommissioning phases of the Proposed Development, the effects associated with the decommissioning phase are assumed to be the same as the construction phase.

10.6 Cumulative Assessment

10.6.1 The cumulative assessment focussed on developments within a 1.5km Study Area, the assessment concluded that with the implementation of embedded mitigation and standard planning controls, for the other developments, the Proposed Development would not result in significant cumulative effects on the Water Environment.

11.0 Chapter 11: Landscape & Visual

11.1 Introduction

11.1.1 **Chapter 11: Landscape and Visual** has considered the preliminary findings of the likely significant effects of the Proposed Development in relation to the Landscape and Visual Environment.

11.2 Baseline Conditions

11.2.1 The host character area containing the Site is National Landscape Character Area 34 – Gwent Levels, which covers the majority of the Study Area. Due to the coastal nature of the Site, there is potential for impacts on the Seascape Character, these areas include all parts of Welsh inshore waters where land-sea interaction is focussed, the National Marine Character Area of relevance for this Site is MCA 29: Severn Estuary (Wales). The Local Landscape Character Areas and descriptions of LANDMAP and the Registered Historic Landscape are set out in **Section 11.6 of Chapter 11: Landscape and Visual**

11.2.2 The visual receptor baseline is informed by the Zone of Theoretical Visibility, assessment was focussed on the following:

- Views from settlements namely Redwick and Undy;
- Views from scattered residential properties outside settlements such as those in Whitson and Summerleaze;
- Views experienced whilst travelling through the landscape by road users, walkers, horse riders and cyclists for example including the Wales Coast Path and National Cycle Network; and
- Views from tourist and recreational destinations.

11.3 Construction Effects

11.3.1 Effects during the construction phase are limited to the introduction of construction machinery and an expanding feature across the landscape, which will result in a change to Landscape Character. Visual effects will be associated with the change of the views experienced by the receptor, during the construction phase this will be a result of the introduction of construction machinery and installation of panels. Landscape and Visual effects that have been concluded as **Significant** include:

- Significant Landscape effects:
 - Seven LANDMAP Aspect Areas;
 - LCA2: Caldicot Levels Special Landscape Area
- Significant Visual effects:
 - Seven residential receptors;
 - Six recreational receptors; and
 - Three transport route receptors.

11.4 Operation Effects

11.4.1 Through the operation of the Proposed Development there would be a change to the landscape character of the locality with the installation of the utility scale solar farm. With regard to visual effects, impacts are associated with changes to views and the introduction of new features within the landscape. **Significant** effects have been concluded on:

- Significant Landscape effects:
 - Seven LANDMAP Aspect Areas;
 - LCA2: Caldicot Levels Special Landscape Area
- Significant Visual effects:
 - Six residential receptors; and
 - Five recreational receptors.

11.5 Decommissioning Effects

11.5.1 During the decommissioning phase of the Proposed Development, impacts on landscape and visual receptors will be similar to those described under the construction effects section. This would result in **Significant** effects on:

- Significant Landscape effects:
 - Seven LANDMAP Aspect Areas;
- Significant Visual effects:
 - Seven residential receptors; and
 - Four recreational receptors.

11.6 Cumulative Assessment

- 11.6.1 The developments which have informed the LVIA cumulative assessment are all located within 1km from the PEIR Assessment Boundary. These are all considered developments that will be perceived within shared views from sensitive receptors.
- 11.6.2 The two developments identified as potentially resulting in cumulative effects are the Rush Wall Solar Park Ltd and Magor Net Zero. During the Construction Phase, additional construction activities will be visible and audible within the Landscape Character Area. These changes are assessed to increase the magnitude of landscape change during the Operational Phase from moderate adverse to major/moderate adverse (**Significant**) on LCA A2: Caldicot Level. With regards to visual effects, it is anticipated that visual receptors may experience change from the cumulative developments but these are concluded to be **Not Significant**.

12.0 Chapter 12: Glint & Glare

12.1 Introduction

12.1.1 **Chapter 12: Glint and Glare** sets out the preliminary findings of the likely significant effects of the Proposed Development on potential glint and glare receptors.

12.2 Baseline

12.2.1 Glint and glare assessments focus on receptors which may be sensitive to glint or glare. The Site is currently used primarily for agricultural purposes including pasture and arable farming, and it is surrounded mainly by other farms and fields as well as several villages, including Goldcliff and Whitson to the west, Redwick to the north, Undy and Magor to the north-east. The sensitive receptors within the Study Area include road users and dwellings.

12.3 Construction Effects

12.3.1 Construction effects were scoped out of this assessment due to the specific nature of the glint and glare assessment. Potential impacts associated with glint and glare will occur during the operation of the Proposed Development.

12.4 Operation Effects

12.4.1 For all of the assessed route receptors the results of the assessment showed that no significant glare requiring mitigation will be created as a result of the Proposed Development. For 1 route receptor the assessment showed no impact; for 2 route receptors the assessment showed Negligible impact; and for 9 route receptors the assessment showed minor adverse impact and therefore **Not Significant**.

12.4.2 With regards to the dwelling receptors assessed the results demonstrated that no significant glare requiring mitigation will be created as a result of the Proposed Development. For 31 dwelling receptors the assessment showed no impact; for 33 dwelling receptors the assessment showed negligible impact; and for 49 dwelling receptors the assessment showed minor adverse impact and therefore **Not Significant**.

12.5 Decommissioning Effects

12.5.1 Decommissioning effects were scoped out of this assessment due to the specific nature of the glint and glare assessment. Potential impacts associated with glint and glare will occur during the operation of the Proposed Development.

12.6 Cumulative Effects

12.6.1 The cumulative schemes located within 1km of the PEIR Assessment Boundary have been considered as part of the cumulative assessment. The review identified that in terms of glint and glare impacts as a result of the Proposed Development, the potential effects of cumulative schemes are considered acceptable with either no impact or negligible impact and therefore **Not Significant**, indicating that no mitigation is considered necessary.

13.0 Chapter 13: Noise & Vibration

13.1 Introduction

13.1.1 **Chapter 13: Noise and Vibration** presents the preliminary results of the assessment of the likely significant effects of the Proposed Development to human receptors with respect to noise and vibration.

13.2 Baseline

13.2.1 A desk-based review was undertaken to identify sensitive receptors within the Study Area, the key receptors mainly included properties within proximity of the Proposed Development and the Wales Coast Path.

13.2.2 The environment in the local area of the receptors identified above is rural but also contains a significant industrial element and important transport infrastructure. The majority of the receptors are isolated dwellings which are located a significant distance from nearby settlements and major noise sources

13.2.3 Baseline noise monitoring was undertaken at six representative locations to characterise the existing acoustic environment.

13.3 Construction Effects

13.3.1 The preliminary assessment of construction phase effects indicates that, subject to control measures set out in the outline Construction Environment Management Plan, no likely significant effects would occur. The assessment indicates if percussive piling is required, there could be potentially significant effects, but **Not Significant** effects in terms of building damage. To ensure effects to sensitive receptors are not significant, residents in close proximity to percussive piling should be informed of the nature and duration of the proposed works.

13.4 Operation Effects

13.4.1 The preliminary assessment of operational phase effects indicates that, without additional mitigation measures, likely significant effects could occur at nearby dwellings during the evening and night-time. Noise control measures for infrastructure can be specified in order to reduce noise levels and avoid significant

effects. Indicative requirements for mitigation measures to control noise outlined in the mitigation strategy will be confirmed in an updated operation Noise Management Plan. Subject to the implementation of the mitigation strategy, the effects at dwellings due to operational noise would be **Not Significant**.

- 13.4.2 An assessment of operational noise effects at the Wales Coast Path indicates that, without additional mitigation, there would not be any significant effects to users of the path. However, as additional mitigation is required to reduce operational noise at dwellings, operational noise levels at the Wales Coast Path will likely be lower than those assessed.

13.5 Decommissioning Effects

- 13.5.1 The environmental effects associated with the decommissioning phase are expected to be similar to those during the construction phase.

13.6 Cumulative Effects

- 13.6.1 An initial review of potential cumulative effects indicates that the only development with the potential to give rise to significant cumulative effects is the Magor Net Zero development. However, at this time, there is currently insufficient information available on the Magor Net Zero scheme to assess the likelihood of cumulative effects. Subject to the availability of appropriate information, assessment of likely significant cumulative effects will be presented in the ES.

14.0 Chapter 14: Socio-economics, Tourism & Recreation

14.1 Introduction

14.1.1 **Chapter 14: Socio-economics, Tourism and Recreation** reports the outcome of the preliminary assessment of likely significant effects arising from the Proposed Development upon socio-economics, tourism and recreation receptors.

14.2 Baseline

14.2.1 The Proposed Development spans both Monmouthshire and Newport administrative areas, these areas have a working age population and economic activity rates comparable to Wales and Great Britain, however, job density levels are slightly below the Great Britain average.

14.2.2 The Site is located in an area with a Public Rights of Way Network, with local walking/cycling/horse-riding routes, and notable routes include the Wales Coast Path and National Cycle Network Route 4. Other important local routes include the promoted Redwick Circular Route.

14.3 Construction Effects

14.3.1 Farming activity in the area will be impacted by the loss of available land within the PEIR Assessment Boundary, through construction, operation and decommissioning. A full assessment on Agricultural Viability will be provided within the Environmental Statement. For socio-economics and the labour market, the Proposed Development may lead to a moderate, probably **Significant**, beneficial effect upon Construction jobs.

14.3.2 For recreation, the Proposed Development may lead to:

- a moderate, probably **Significant**, adverse effect upon the Wales Coast Path (within Study Area) during construction;
- a Major, **Significant**, adverse effect upon the Wales Coast Path (within Study Area) during operation;
- **Significant**, adverse effect upon NCN Route 4 (within Study Area) during both construction and operation;

- **Significant to Not Significant** adverse effect upon some routes in the local PRow network; and
- probably **Significant**, adverse effect upon the Redwick Circular Route (promoted walk) during both construction and operation.

14.3.3 For tourism, the Proposed Development may lead to:

- **Significant**, adverse effect upon the Wales Coast Path (within Study Area) during both construction and operation; and
- **Significant**, adverse effect upon the Redwick Circular Route during both construction and operation.

14.4 Operation Effects

14.4.1 For recreation, the Proposed Development may lead to:

- **Significant**, adverse effect upon the Wales Coast Path (within Study Area) during operation;
- **Significant**, adverse effect upon NCN Route 4 (within Study Area) during operation;
- **Significant to Not Significant** adverse effect upon some routes in the local PRow network; and
- a Moderate, probably **Significant**, adverse effect upon the Redwick Circular Route (promoted walk) during operation.

14.4.2 For tourism, the Proposed Development may lead to:

- **Significant**, adverse effect upon the Wales Coast Path (within Study Area) during both construction and operation; and
- **Significant**, adverse effect upon the Redwick Circular Route during both construction and operation.

14.5 Decommissioning Effects

14.5.1 Given the similarity between the effects associated with the construction and decommissioning phases the environmental impacts are expected to be similar.

14.6 Cumulative Effects

14.6.1 Cumulative Effects and Mitigation and Enhancement measures will be considered at the ES stage.

15.0 Chapter 15: Transport & Access

15.1 Introduction

15.1.1 **Chapter 15: Transport and Access** presents the assessment of the likely significant effects of the Proposed Development on Transport and Traffic and the extent to which this may affect the relevant surrounding sensitive receptors, such as road users or Public Rights of Way (PROW) users.

15.2 Baseline Conditions

15.2.1 The Site is served by major roads including the M4 (4 km north), M48, A4810 (1 km away), and several local roads. These provide primary access for construction and operational traffic. Surrounding the site are unclassified, single-lane rural roads, farm tracks, and residential access routes, with varying speed limits. Numerous footpaths and green lanes cross the site, including routes in both Newport and Monmouthshire. The Wales Coast Path runs adjacent to the southern PEIR Assessment Boundary.

15.2.2 Automatic Traffic Counts surveys were undertaken at 19 locations and provide baseline traffic volumes.

15.3 Construction Effects

15.3.1 The main conclusion to be drawn at this stage of the assessment is that the Proposed Development may result in a slight adverse impact, which is deemed **Not Significant**, on:

- users of local PROWs, the Wales Coast Path and National Cycle Network Route 4 within Study Area in relation to non-motorised user amenity and delay, and fear and intimidation during the construction and decommissioning phases; and
- users of the local highway network in relation to road vehicle driver and passenger delay during the operational phase.

15.3.2 The Proposed Development is likely to have a neutral effect on users of the local highway network and users of local PROWs, the Wales Coast Path and National Cycle Network Route 4 within Study Area in relation to severance, and road user and pedestrian safety, during the construction and decommissioning phases.

15.3.3 A comprehensive assessment of the volume of construction traffic movements and distribution will be undertaken within the Environmental Statement.

15.4 Operation Effects

15.4.1 During the operational phase, the workforce is anticipated to be between 11 and 22 full or part-time operation and maintenance staff. With minor increases in traffic when replacement infrastructure is required, however, all links are anticipated to have neutral effect that is **Not Significant**.

15.5 Decommissioning Effects

15.5.1 The Construction Effects described above are anticipated to occur during the decommissioning phase due to the similar nature and extent of the activities associated with decommissioning.

15.6 Cumulative Effects

15.6.1 A detailed cumulative assessment will be undertaken within the Environmental Statement. The Cumulative Short List has been reviewed and it has been determined that any potential cumulative effects on traffic and transport within the Study Area are unlikely to be significant and would be temporary.

16.0 Chapter 16: Ground Conditions

16.1 Introduction

16.1.1 **Chapter 16: Ground Conditions** reports the outcome of the preliminary assessment of likely significant effects arising from the Proposed Development upon ground conditions receptors.

16.2 Baseline Conditions

16.2.1 The Site is within the Gwent Levels, a flat, low-lying, reclaimed landscape used mainly for agriculture. According to the Welsh Government Predictive Agricultural Land Classification Map, the Site does not contain any Best and Most Versatile (BMV) land. Most of the area is classified as Subgrade 3B, with some Grade 4 land.

16.2.2 The area consists mainly of Holocene tidal flat deposits (mud and sand), underlain by Mercia Mudstone Group bedrock. Some localised peat layers exist, and made ground is likely near infrastructure and reclaimed areas. Most of the Site is agricultural and expected to be free from significant contamination, but potential sources include agricultural activities, substations, and proximity to historic industrial sites (steelworks, sewage works).

16.3 Construction Effects

16.3.1 The Proposed Development will result in a moderate adverse effects on soil resources due to the requirement for land take involving permanent soil removal or soil sealing, to construct the grid connection infrastructure, transformer stations, new permanent access tracks, and improve existing access tracks. Given that the total area required is comprised of linear elements (access roads) across a large area, with smaller areas needed for the proposed grid connection and transformer stations local to the solar equipment it is concluded that the effect is **Not Significant** in EIA terms.

16.3.2 During construction and decommissioning, and potentially during operation (maintenance), there will be a requirement for soil disturbance and temporary soil removal. With implementation of the embedded measures, the magnitude of the impact that temporary development activities relating to the Proposed Development

on soil resources will be reduced and the effect is slight adverse which is **Not Significant**.

16.3.3 The potential for effects on land contamination receptors has been considered in relation to the creation of new contaminant migration pathways due to ground disturbance during construction, operation, or maintenance, and the potential release of hazardous chemicals to ground from the materials or substances used in the Proposed Development (e.g., through their accidental damage, or wear and tear). With the embedded mitigation measures, effects on land contamination receptors should be Negligible, and **Not Significant** in EIA terms.

16.4 Operation Effects

16.4.1 Following the completion of construction the full area of permanent and temporary land take will have been completed and therefore, the assessment for loss of soils through removal or sealing is consistent with that set out above. Similarly the assessment of temporary soil disturbance and land contamination assessed above is worst case and no further impacts would occur during operation.

16.4.2 During operation most existing soils will be retained within the Proposed Development in and around the solar equipment. Where soils are excavated, they will generally be restored. This will enable soil functions other than agricultural functions to continue, there is potential for soil health improvements. The change to soil health during operation is expected to be Negligible and **Not Significant**.

16.5 Decommissioning Effects

16.5.1 The effects set out in the construction and operation phases are deemed worst case and are representative of the effects predicted for the decommissioning effects assessment.

16.6 Cumulative Effects

16.6.1 The cumulative assessment considers the effect of the Proposed Development on the permanent loss of soil resources and farmland in combination with other developments within 250m of the PEIR Assessment Boundary. Review of other developments on agricultural land confirms that these include mitigation measures

to limit impacts on soils. These measures will limit the potential for significant cumulative effects in relation to damage to soils

16.6.2 In relation to land contamination, it is assumed that the other developments will be designed and constructed in accordance with the applicable legislative requirements and statutory guidance for land contamination.

17.0 Chapter 17: Other Environmental Topics

17.1 Introduction

17.1.1 **Chapter 17: Other Environmental Topics** collates the preliminary assessment of other environmental topics that do not warrant individual Chapters.

17.1.2 The assessment covers:

- Air Quality;
- Land Use;
- Major Accidents or Disasters;
- Human Health and Population;
- Telecommunications, Television Reception and Utilities;
- Electromagnetic Fields;
- Waste; and
- Assessment of Heath and Radiation.

17.1.3 Due to the nature of these assessments they have not been separated into construction, operation and decommissioning, rather, where relevant the phase at which the impact would occur has been highlighted.

17.1.4 Further assessment for Air Quality has been scoped out of this Preliminary Environmental Information Report, additionally, effects for Land Use, Major Accidents and Disasters, Human Health and Population and Electromagnetic fields are assessed in other technical chapters.

17.2 Assessment

Telecommunications, Television Reception and Utilities

17.2.1 The Proposed Development is unlikely to interfere with telecommunications infrastructure. As such no effects are anticipated during the construction, operation and decommissioning phases of the Proposed Development.

17.2.2 The Proposed Development consists of fixed low-lying infrastructure, as such it is considered unlikely to interfere with digital television signals. As such, no effects are anticipated during the construction, operation and decommissioning phases of the

Proposed Development.

- 17.2.3 There are no predicted effects on utilities as a result of the construction, operation or decommissioning phases of the Proposed Development as the layout has been designed to avoid all known below ground infrastructure.

Waste

- 17.2.4 Waste during the construction phase will be managed by detailed CEMP which will be in line with relevant legislation and guidance. An outline CEMP (oCEMP) has been prepared to support this PEIR (**Appendix 2A**) and sets out the plan for recycling and waste disposal for the Proposed Development. It highlights the commitment to the circular economy, recycling. Thus, it is considered that there is a low possibility of a significant impact. As such, it is not anticipated to result in a significant effect.
- 17.2.5 As the amount of staff on Site and the expected maintenance and replacement of parts are both expected to be low, it is unlikely there will be a significant effect generated by operational waste.
- 17.2.6 Decommissioning waste is anticipated to be similar or greater, given the requirement to remove and recycle infrastructure from within the Site, than those identified within the construction phase, therefore the effects are anticipated to be similar or greater. An (oDEMP) has been prepared to support this PEIR (**Appendix 2B**) and sets out the plan for recycling and waste disposal for the Proposed Development.

Heat and Radiation

- 17.2.7 Effects relating to heat and radiation are only relevant to the operation phase of the Proposed Development and have potential to occur due to the potential heat effects associated with the introduction of Solar Panels.
- 17.2.8 The installation of Solar Panels has potential to increase local surface temperatures, however, this is comparable to other hard surfaces and does not pose a significant risk to human health. The buffers adjacent to reens and ditches (between 7m – 12.5m) will help to regulate temperature and mitigate any localised warming. Therefore, any effects from heat are anticipated to be **Not Significant**.

18.0 Chapter 18: Cumulative Effects and Interactions

18.1 Introduction

18.1.1 **Chapter 18: Cumulative Effects and Interactions** reports the assessment for cumulative effects and effect interactions as a result of the Proposed Development.

18.1.2 There are two types of cumulative effect assessed within this PEIR:

- Effect interactions (also known as intra-project effects) which have the potential to arise where several different effects resulting from the Proposed Development have the potential to affect a single receptor – for example a residence experiencing an increase in noise from construction and a change in its visual setting.
- The potential for other developments (which are reasonably foreseeable and/ or consented), within proximity to the Proposed Development, which would result in effects on the same receptor. Individual topic assessments have been undertaken within each technical chapter of this PEIR.

18.1.3 The Cumulative Effects Assessment for each technical chapter has been set out within the relevant sections of this Non-Technical Summary, so therefore, it will not be repeated here. This assessment focusses on the effect interactions which may arise as a result of the Proposed Development.

18.2 Assessment

18.2.1 Intra-project effects identified through this PEIR focus on the interaction of the Proposed Development with visual receptors, which have been assessed within both **Chapter 11: Landscape and Visual Impact Assessment** and **Chapter 14: Socio-economics, Tourism and Recreation**. While this results in significant effect interactions on these receptors, both assessments assess the same impact on the receptor, visual effects. Therefore, due to the interconnected nature of the assessments of these chapters, it is assumed that where there is a conclusion of significance within **Chapter 11: Landscape and Visual Impact Assessment**, that there would also be a significant effect concluded within **Chapter 14: Socio-economics, Tourism and Recreation**.

18.2.2 With regard to effect interactions between **Chapter 11: Landscape and Visual**

Impact Assessment and **Chapter 13: Noise and Vibration**, mitigation measures have been proposed and further measures are being identified to reduce potential noise emissions to within acceptable limits. It is anticipated that following the introduction of these additional mitigation measures, that the effects would be non-significant and therefore there would be no significant effect interactions on these receptors.

- 18.2.3 Upon consideration of the information available for the PEIR, it has been concluded there is potential for significant effect interactions as a result of the Proposed Development. Further mitigation measures will be identified through the iterative design process and the final conclusions on effect interactions will be set out in the ES.

19.0 References

- Ref 1-1 The Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2017). Available at:
https://www.legislation.gov.uk/uksi/2017/572/pdfs/uksi_20170572_en.pdf
[Accessed November 2025].
- Ref 3-1 UK Gov (2008). Nationally Significant Infrastructure Projects – Advice Note Nine: Rochdale Envelope. Available at:
(<https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope>) [Accessed November 2025].