1 NON-TECHNICAL SUMMARY

INTRODUCTION

1.1 This report is the Non-Technical Summary (NTS) of the Environmental Statement (ES) which has been prepared by a team of technical specialists in accordance with the statutory procedures set out in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (Wales) (hereafter referred to as the 'EIA Regulations'). The ES is a written report setting out the predicted likely significant effects on the environment as a result of the proposed development.

1.2 The ES and this NTS have been prepared to accompany a planning application seeking to build a solar park on the Gwent Levels, near Redwick. The proposal is classed as a Development of National Significance (DNS) and will be submitted to the Planning Inspectorate for examination.

1.3 This NTS is a summary of the main findings of the ES in a clear and concise manner to assist the public in understanding what the likely significant environmental effects of the proposed development on the environment are likely to be.

EXISTING SITE AND SURROUNDING CONTEXT

Site Location

1.4 The site, made up of several agricultural fields, is located on the Gwent levels in south Wales and lies within the Redwick Community Council and the Newport City Council local authority area. Part of the site's eastern boundary borders Cold Harbour Reen, which marks the boundary between Newport City Council and Monmouthshire County Council (Figure NTS-1).

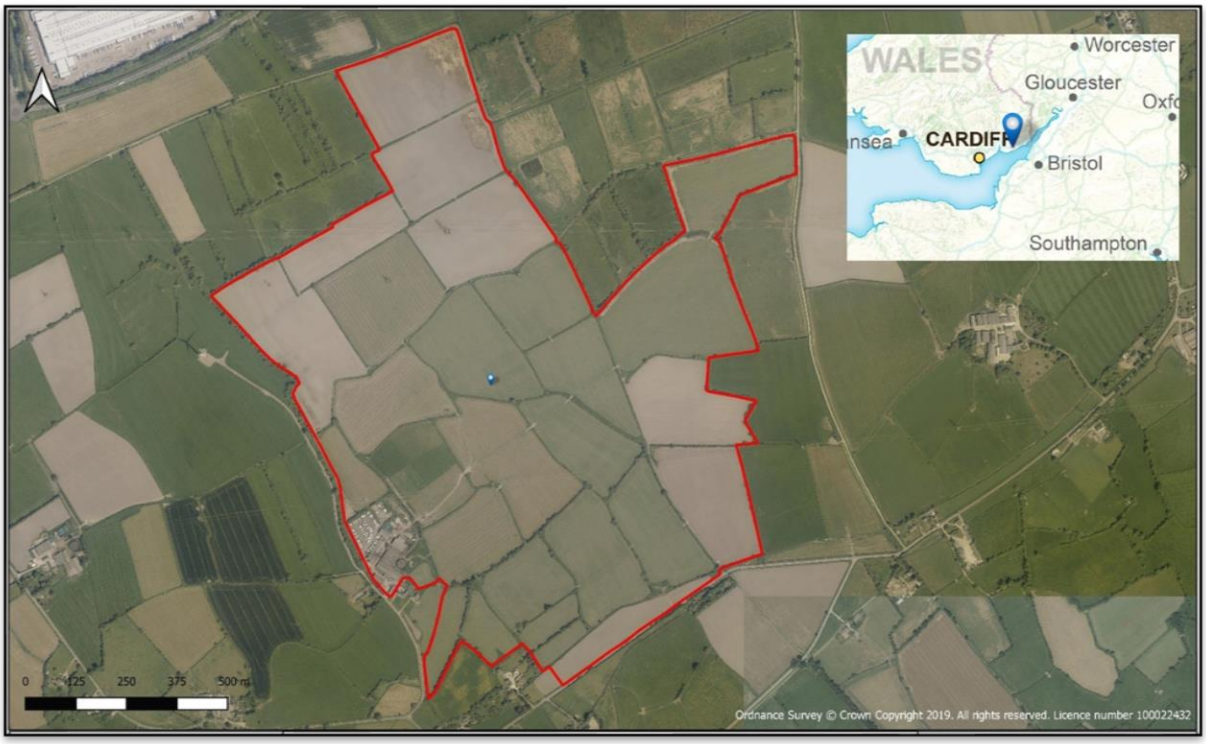


Figure NTS-1-1 Site Location

1.5 The Gwent Levels are a distinctive geographical zone made up of low-lying, flat and expansive coastal plain extending up to the Severn Estuary. Its elevation is typically between 5 – 6 metres above sea level.

Land Use

1.6 The site is located on farmland less than a kilometre north of the centre of Redwick village and over one kilometre from the banks of the Severn Estuary. It is made up of irregular shaped fields of variable sizes over a total area of over 100 hectares.

1.7 The fields on site are bordered by drainage channels (called reens) or agricultural ditches, situated adjacent to or in between hedgerows (Figure NTS-2). The farmland is drained by the reen system, within which water flows slowly towards the Severn Estuary. The water level within reens is controlled by a series of sluices; separate boards which may be raised or lowered.

1.8 The main reens on the site or adjacent to the site are the Ynys Mead Reen, Cockenton Reen, Longlands Reen, Blackwall West Reen and Rush Wall South Reen (Figure NTS-3). These are maintained by Natural Resources Wales (NRW). As such, NRW require access to these reens at all times.

Figure NTS-2: Example of reen on site (left) and Backwall Track, eastern site boundary (right)

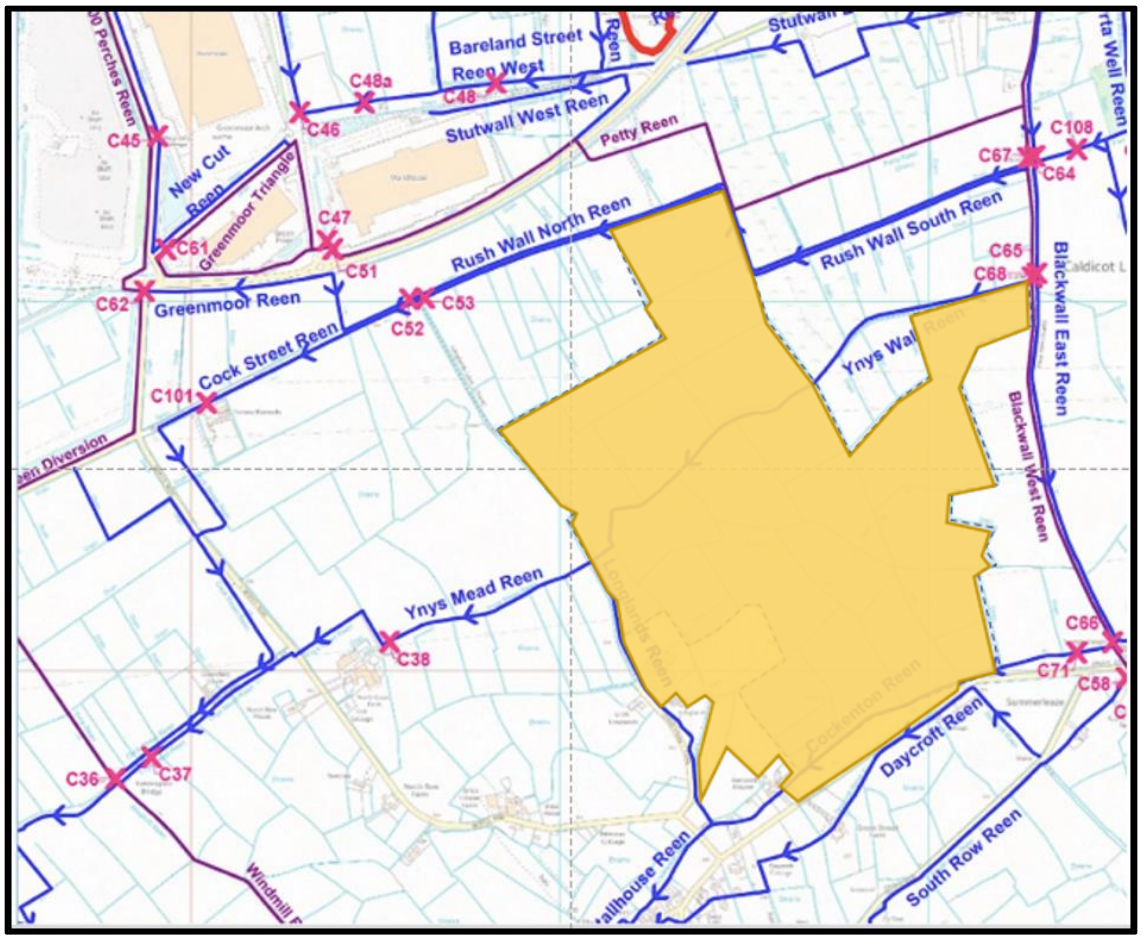


Figure NTS-3 Excerpt of map detailing reens managed by NRW[1].

1.9 Crossing the site in an east-west orientation are three sets of overhead lines and their associated pylons (Figure NTS-4). These overhead lines connect to a substation approximately 5 kilometres to the east.

Figure NTS-4 Maize crop stubble (Left), housed cattle at Longlands Farm (Middle), Longlands Farm Farmyard (Right)

1.10 Grass and maize are grown on the fields and used as feed for the dairy herd kept on the farm (Figure NTS-4).

1.11 There is a single operational wind turbine (named 'Longlands Lane Wind Turbine) on land adjacent to the site and to the northwest (Figure NTS-5).

Figure NTS-5: Site photographs of Longlands Lane Wind Turbine (Right), Permissive Path from Longlands Farm (Bottom left) to Rush Wall (Top left)

Ecological Designations

1.12 The site is subject to several ecological designations, both statutory and non-statutory, as detailed below.

Statutory Designations

1.13 The site is within the Gwent Levels Site of Special Scientific Interest (SSSI) - Redwick and Llandevenny unit. This site was designated for the following reasons:

- Aquatic invertebrates and plants associated with the reen network.
- Terrestrial invertebrates along reen banks and associated with hedgerows.

1.14 The Severn Estuary Special Protection Area (SPA) to the south has several nationally and internationally important designated sites:

- Severn Estuary SPA - designated due to its importance during the spring and autumn migration periods for waders moving up the west coast of Britain, as well as in winter for large numbers of waterbirds, especially swans, ducks and waders.
- Severn Estuary Ramsar - of particular importance for the run of migratory fish between the sea and rivers via the estuary, and migratory birds during spring and autumn migrations.
- Severn Estuary SSSI – important for its estuarine fauna including water fowl, migratory fish, invertebrates. Important for wintering and passage birds.

Non-Statutory Designations

1.15 Land adjacent to the east of the site is part of Magor Marsh Gwent Wildlife Trust Reserve.

Landscape

1.16 The proposed development site, including the majority of the wider levels landscape, is within the Gwent Levels Landscape of Historic Interest. The Caldicot Levels Special Landscape Area also covers the proposed development site, including the wider levels landscape.

1.17 In addition, the proposed development site and the majority of the wider levels landscape are recognised as largely 'outstanding' and 'high' value in all five LANDMAP aspect areas. LANDMAP is a unique national information system, devised by the Countryside Council for Wales (now Natural Resources Wales), allowing information relating to various landscapes across Wales to be collected and organised into a nationally consistent dataset, enabling landscape quality to be taken into account in decision making.

Public Rights of Way

1.18 There are no public rights of way across the site, though there are two adopted green lanes adjacent to site. The first leads north from the northern end of Longlands Lane for 1.25km before joining Rush Wall track. The second green lane runs along Blackwall Track, whilst an unclassified track continues along the Rush Wall route to the north (Figure NTS-6).

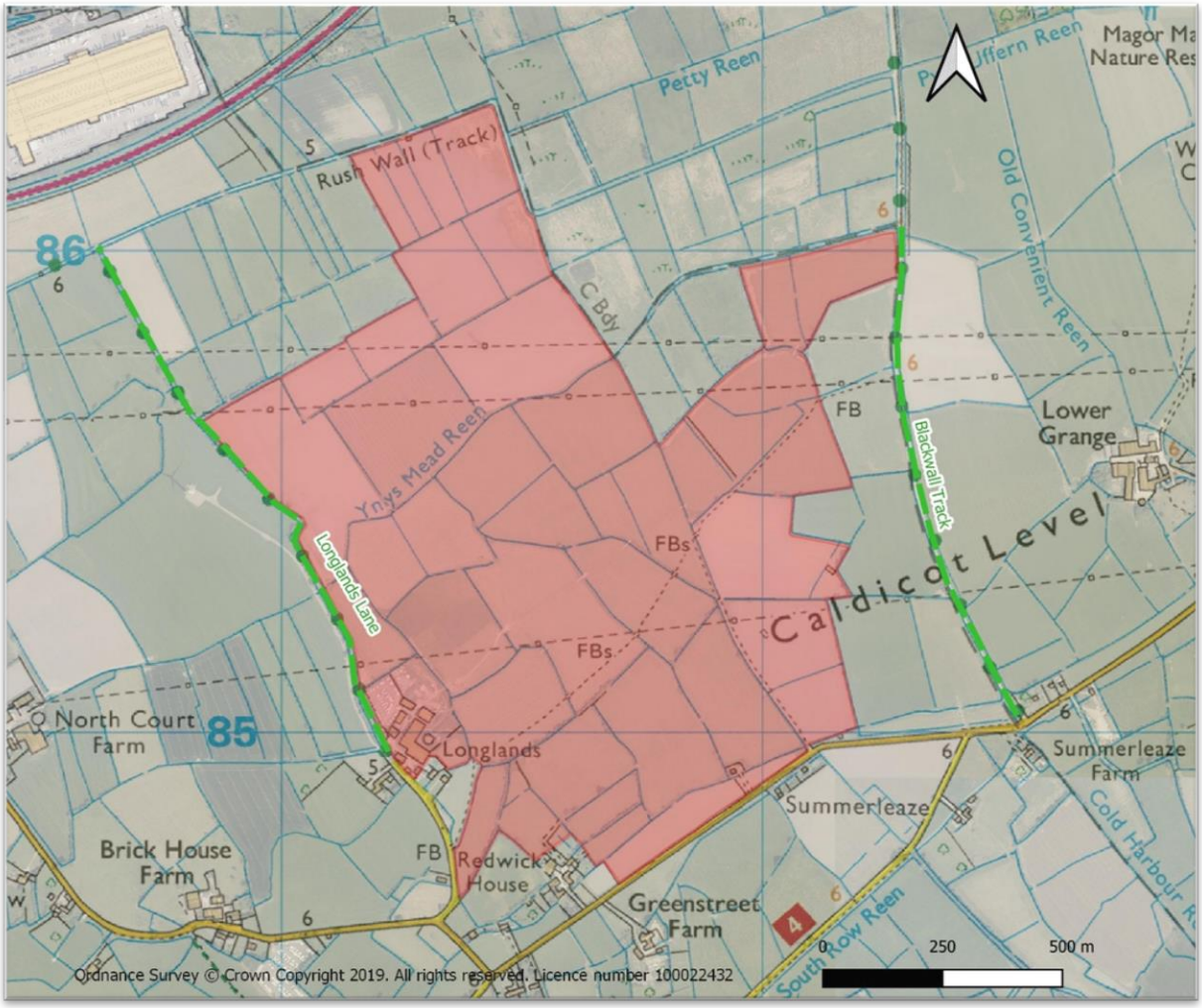


Figure NTS-6 Public Rights of Way

Flood Risk

1.19 The site is shown by the Natural Resources Wales Development Advice Map to be within Flood Zone C1, defined as "*areas of the floodplain which are developed and served by significant infrastructure, including flood defences*".

Water Quality

1.20 Water within the reens on the site is classed ecologically as eutrophic standing water, due to the near-static nature of water flow within them.

PROPOSED DEVELOPMENT DESCRIPTION

Rush Wall Solar Park

1.21 The proposal is for the installation of a solar park with an approximate design capacity of 75MW. Development includes ancillary electrical equipment and infrastructure, access tracks, security fencing and CCTV.

1.22 The proposed layout of the solar park is shown in the Planning Layout (Drawing no. 1578-0201-00).

1.23 Solar panels silently convert sunlight to electrical energy. They generate direct current (DC) that is converted by the inverter hardware to alternating current (AC) that can be used by the electricity grid. Photovoltaic systems are rated for capacity in watts (or kW or MW) with the designation 'peak' (e.g. kWp, MWp). The peak capacity of individual panels is established by measuring their performance under internationally recognised standard conditions that include temperature and wavelength of sunlight. The actual output of a system will be determined by latitude, local weather and site conditions.

1.24 The solar park would comprise:

- A series of string inverters fixed to the mounting frame on the reverse of the panels;
- 43 transformers, spread evenly across the site;
- Compacted gravel tracks to allow vehicular access between fields;
- A substation access track with a cement based top layer;
- Fencing and gates to enclose the panels within each field;
- Security and monitoring CCTV mounted on posts within each field;
- Underground cabling to connect the panels to the substation; and
- A substation within a security-fenced concrete-based compound measuring approximately 50m x 40m at the centre of the site adjacent to an existing pylon. A T-off connection (i.e. an overhead wire) would provide the point of connection from the substation to the existing 132kV pylon on site. A 10m high single pole communications antenna may also be required at the substation.

Figure NTS-7: Solar PV Panel (left) and substation with point to connection to 132kV pylon (right)

Construction of the Development

1.25 Construction is expected to take approximately 18-20 weeks, depending on weather and ground conditions, as well as other technical and environmental factors and is likely to consist of the following principal operations:

- Installation of a temporary construction compound and site office facilities;
- Construction of site tracks;
- Excavation of cable trenches and cable laying adjacent to the site tracks
- Construction of substation and invertor hardstanding areas;
- Construction of the substation buildings/compounds;
- Installation of panels and invertors; and
- Reinstatement of land where required.

1.26 Construction would be undertaken in accordance with a Construction Environmental Management Plan (CEMP). The CEMP includes strategies and control measures identified for managing the potential environmental impacts of construction and limiting disturbance from construction activities as far as reasonably practicable. These measures would form the basis of more detailed plans and method statements likely to be required as pre-commencement planning conditions.

Cable Trenching

1.27 The main groundworks entail trenching for the installation of underground cables to connect groups of solar panels to the substation. The cable trenching details are shown on Figure NTS-8. The deepest trenching would be approximately 1.2m deep for the high voltage cables.

1.28 Where required, temporary matts may also be used in localised areas during the construction phase to reduce ground disturbance.

Figure NTS-8: Temporary access tracks, similar to those to be used (left), digging trenches (middle) and HC, DV and communications cables in an excavated trench (right)

1.29 Where it is necessary for cables to traverse reens and/or ditches, horizontal directional drilling would be utilised to bore cables beneath ditches and reens to minimize disturbance.

Panel Installation

1.30 A railing sub-structure would be piled into the ground, frames attached and then the solar panels mounted to the frames (Figure NTS-9). The ground disturbance from piling for the panel supports is expected to be up to 2.5m below ground level. The standard height of panels and mounting systems is 2.6m above ground level (to the top of the panel/rail system), with the exception of panels located on lower ground in the north and west of the site where the panels would be between 2.8m and 3.0m above ground level to account for potential future flood risk.

Figure NTS-9: Panel supports (Left) and frames ready for solar panels to be fitted (Right)

Supporting Infrastructure

1.31 An area for the base of the substation would be excavated prior to the hard-standing plinth concrete pour, after which the associated substation infrastructure would be installed (as can be seen in Figure NTS-10). The ground disturbance associated with the substation is expected to be up to 2m below ground level.

Figure NTS-10: Substation compound under construction

1.32 The transformers, spread evenly across the site, would be raised off the ground on hard-standing plinths and 'bunded' with excavated soil.

Access Tracks

1.33 Compacted gravel tracks would be constructed to facilitate vehicular access between fields. In addition to this, a substation access track with a cement based top layer (a statutory requirement of the electricity distribution network operator, Western Power Distribution) would be constructed, allowing operational access via Longlands Farm. All access tracks would remain in use throughout the operational phase of the project.

1.34 It is proposed that access between the farmyard and project area makes use of an existing trackway directly adjacent to Longlands Reen.

Access to Site

1.35 Components would be delivered to site using the existing road network. Traffic would follow a designated route between Junction 23A of the M4 and the site access point on Green Street via the A4810 and North Row, as shown in Figure NTS-11.

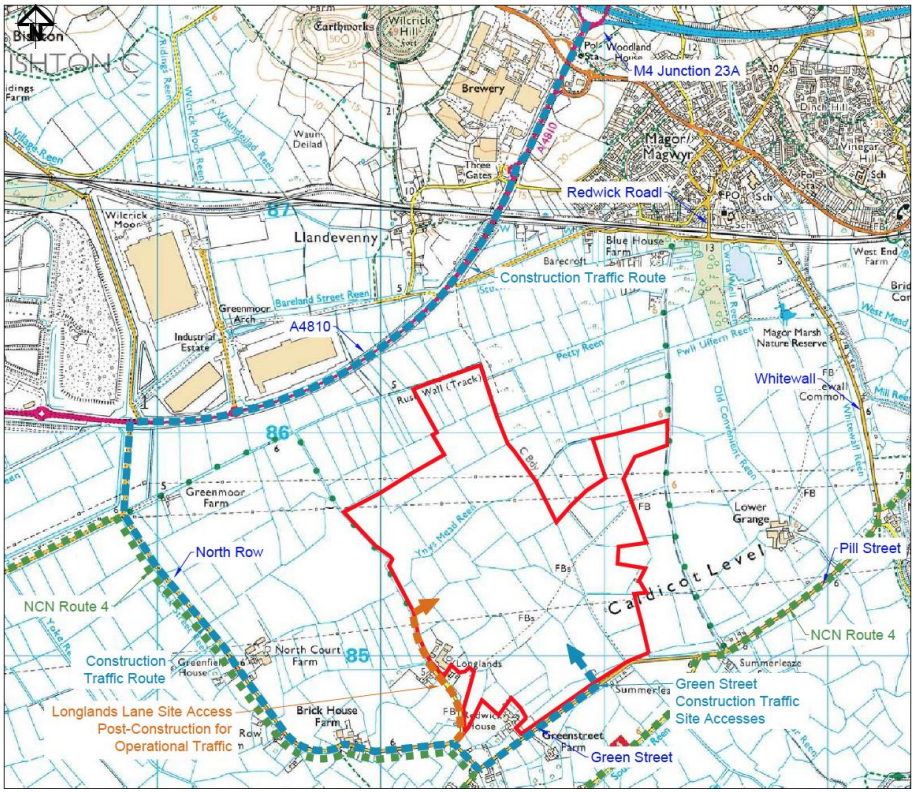


Figure NTS-11: Proposed construction phase access to site

1.36 The construction phase is likely to span 18-20 weeks. Construction (and decommissioning) traffic would adhere to a strict construction traffic route. From the M4's junction 23A, construction traffic would follow the A4810, turn left onto North Row and left again onto Green Street before accessing the site. Departing traffic would follow the same route back to the M4.

1.37 All deliveries to site would be spread over the duration of the construction period. The construction traffic would, at most, result in an additional 38 daily vehicle movements. This equates, on average, to around 5 to 6 additional vehicle movements per hour (based on an 8-hour day).

1.38 A Construction Traffic Management Plan (CTMP) would be adhered to. The CTMP sets out the control measures for managing potential adverse effects associated with construction related traffic and would form the basis of more detailed plans and method statements likely to be required as a pre-commencement planning condition.

Operation and Maintenance

1.39 Once operational, there is likely to be minimal activity on site, particularly when compared to the construction phase. Much of the monitoring of the site is carried out remotely, though it is expected that the site would be visited at least once a month for inspection and may be regularly visited should livestock be grazing on site. Whilst other site visits would fluctuate based on planned and reactive maintenance, activity on site would remain relatively low, typically in the range of 4-5 days per month. Typical tasks carried out throughout the operational phase and their respective frequencies are detailed in the table below:

Table 1-2: Typical operational maintenance program

Frequency	Maintenance/Operational Task
Daily	Maintenance of livestock by farmer, if required. Remote plant performance checks
Monthly	Visual inspection of: Substation housing; Panel array; Ground conditions; Drainage/swales; Security perimeter; and CCTV cameras.
Bi-Annually	Grass-cutting and planting maintenance (if required)
Annually	Inspection and routine maintenance of inverters, modules, mounting systems and substation equipment. Grounds maintenance including hedge-cutting, ecological monitoring and spot weed control.

1.40 In order to avoid or reduce the potential for adverse environmental effects during operation, management is required to maintain ecological, hydrological or landscape enhancements. These are set out in a Landscape and Ecological Management Plan (LEMP) prepared specifically for this development. The LEMP would form the basis of more detailed plans and method statements likely to be required as a pre-commencement planning condition.

Decommissioning

1.41 The solar park would have a minimum lifetime of 35 years. During decommissioning the above ground infrastructure (solar panels and supports, substation, inverters, switchgear, CCTV & fencing) and the underground cabling would be removed from site. Tracks would be removed, unless the landowner wished for them to be retained. The site is to be returned to its former agricultural land use.

ALTERNATIVES AND DESIGN EVOLUTION

1.42 The EIA Regulations require that an ES should include: '*An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects'*.

1.43 The proposed site is a preferred option for solar energy for several reasons, including the fact that it offers ease of connection to the national grid on site, ideal topography for ease of construction, avoiding best and most versatile agricultural land, proximity to the major road network, and good irradiance due to the southerly location near the coast.

1.44 The applicant did not study alternative sites but has taken account of environmental effects through adjusting the design and layout on site as follows:

- Solar panels have been located away from the southern areas of the development which are closer to residential dwellings and Redwick village. A 300m minimum buffer is in place to the nearest residence (besides the landowner);
- Existing field boundaries would be retained and protected;
- During construction, operation and decommissioning, all infrastructure (solar panels, access tracks, fencing, etc.) would be offset from reens, ditches and hedgerows. These exclusion zones would be established 7m from ditches and 12.5m from reens;
- Solar panel array and related infrastructure designed to place all vulnerable equipment at an elevation based upon resilience to a 0.1% Annual Exceedance Probability flood event, i.e. a one in a thousand chance of being exceeded in any year;
- Root protection areas around trees and hedgerows would be undisturbed;
- On-site access tracks would utilise existing hedgerow gaps, gates and reen crossings to reduce damage and disturbance and retain the landscape character, pattern and landscape elements;
- Horizontal directional drilling would be utilised to bore cables beneath reens to minimize disturbance;
- With the exception of the foundations for the inverters and substation and the substation access track, use of concrete would be minimal to reduce impacts on drainage. Gravel-filled soakaways would be created around concreate bases to provide compensatory capacity;
- All field access tracks would be constructed such that they are permeable to water; and
- Specific fields would be kept free of infrastructure and managed specifically to encourage Lapwing breeding and over-wintering habitat.

ENVIRONMENTAL IMPACT ASSESSMENT

EIA Process and Methodology

1.45 EIA is a process that identifies the likely significant effects on the environment (both beneficial and adverse) of a proposed development and proposes mitigation to avoid or reduce any likely significant adverse environmental effects. It is an iterative process which proactively seeks to integrate mitigation within the development proposals in order to avoid significant adverse effects from arising.

1.46 The EIA process involved the following key steps:

- Consultation was undertaken with Newport City Council and key stakeholders;
- Collection, use and assessment of the most up-to-date information related to the site;
- Interpretation of the proposed development and commitments presented within the development design as the basis for the individual technical assessments;
- Use of relevant guidance and good practice methods to predict the potential nature, scale and significance of likely environmental effects; and
- Reporting of the results of the EIA process in the ES in a transparent way, to provide the information required to inform the decision-making process.

1.47 In terms of significance, effects are described using the following scale:

- **Substantial**: Only adverse effects are normally assigned this level of significance. They represent key factors in the decision making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity;
- **Major**: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision making process;
- **Moderate**: These beneficial or adverse effects may be important, but are not likely to be key decision making factors. The cumulative effects of such factors may influence decision making if they lead to an increase in the overall adverse effect on a particular resource or receptor;
- **Minor**: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision making process, but are important in enhancing the subsequent design of the development; and
- **Negligible**: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Scoping

1.48 The scoping process provides an opportunity for early engagement to identify the issues to be addressed during EIA. The scoping of an EIA is an important preliminary procedure, which sets the context for the EIA process.

1.49 The EIA Scoping Report was formally submitted to the Planning Expectorate (PINS) Wales on 18 December 2018 requesting an EIA Scoping Opinion. The EIA Scoping Report set out a description of the emerging proposed development; the potential key environmental impacts and likely effects to be considered as part of the EIA; as well as the proposed approach that would be adopted for the EIA including the proposed scopes and assessment methodologies to predict the effects and to assess the significance in each case.

1.50 A formal Scoping Direction was provided on 12 February 2019 by the Planning Inspectorate, Wales, having consulted with Newport City Council, Monmouthshire County Council, Natural Resources Wales and Cadw.

1.51 Through this process the following topics were identified for assessment in the EIA:

- Ecology and Ornithology;
- Climate Change;

- Groundwater;
- Surface Water Flooding;
- Construction noise;
- Landscape Character and Visual Impact;
- Historic Environment (including Archaeology); and
- Transport (Road Users).

1.52 Effects on other aspects of the environment are not likely to be significant, as identified in PINS Scoping Direction. These are:

- Tidal Flooding
- Glint and Glare;
- Construction vibration;
- Agricultural Land Quality; and
- Contaminated Land.

Consultation

1.53 The project lies within the administrative area of Newport City Council. However, as the development borders, in part, the Monmouthshire County Council boundary, both were consulted at Scoping stage.

1.54 The project team has undertaken consultation with, or requested information from, a number of organisations (such as Natural Resources Wales and the Gwent-Glamorgan Archaeological Trust) and have consulted the relevant experts within Newport City Council, on the approach to EIA.

1.55 In addition, as part of the consultation process, the applicant has engaged with the local community in order to inform local people about the project, to explain the development and its likely effects and to take on board any concerns or issues raised. This consultation included an open day at Redwick Village Hall in September 2019.

SUMMARY OF LIKELY ENVIRONMENTAL EFFECTS

Ecology

Construction and Decommissioning

1.56 The Gwent Levels – Redwick and Llandevenny Site of Special Scientific Interest (SSSI) is designated due to its unique reen and ditch habitat, the insects and other invertebrates that occupy the area including Shrill Carder Bee.

1.57 As the majority of the habitats supporting these features and species on site would be retained in an undeveloped buffer zone outside the solar park footprint, the construction (and later decommissioning) of the solar park is likely to have very little impact on them. This includes interest features of Local, National and International nature conservation sites, habitats such as hedgerows and reens, bats, amphibians, water voles, and aquatic plants and invertebrates.

1.58 In addition, the above would be ensured through the application of good practice techniques and adherence to well-designed method statements. These would be managed through a Construction Environmental Managemental Plan (CEMP). The CEMP would form the basis of more detailed plans and method statements likely to be required as a pre-commencement planning condition.

Operation

1.59 As is the case during contruction, the solar park is unlikely to impact on valued ecological features on site as the undeveloped buffer zone would remain throughout operation. In addition, enhancement measures have been incorporated into the design of the solar park including, the removal of shading vegetation along some of the reens to improve water quality, infilling gaps in hedgerows, the provision of the margins of several fields for Shrill Carder Bee enhancement and grassland management to boost biodiversity (Figure NTS-12).

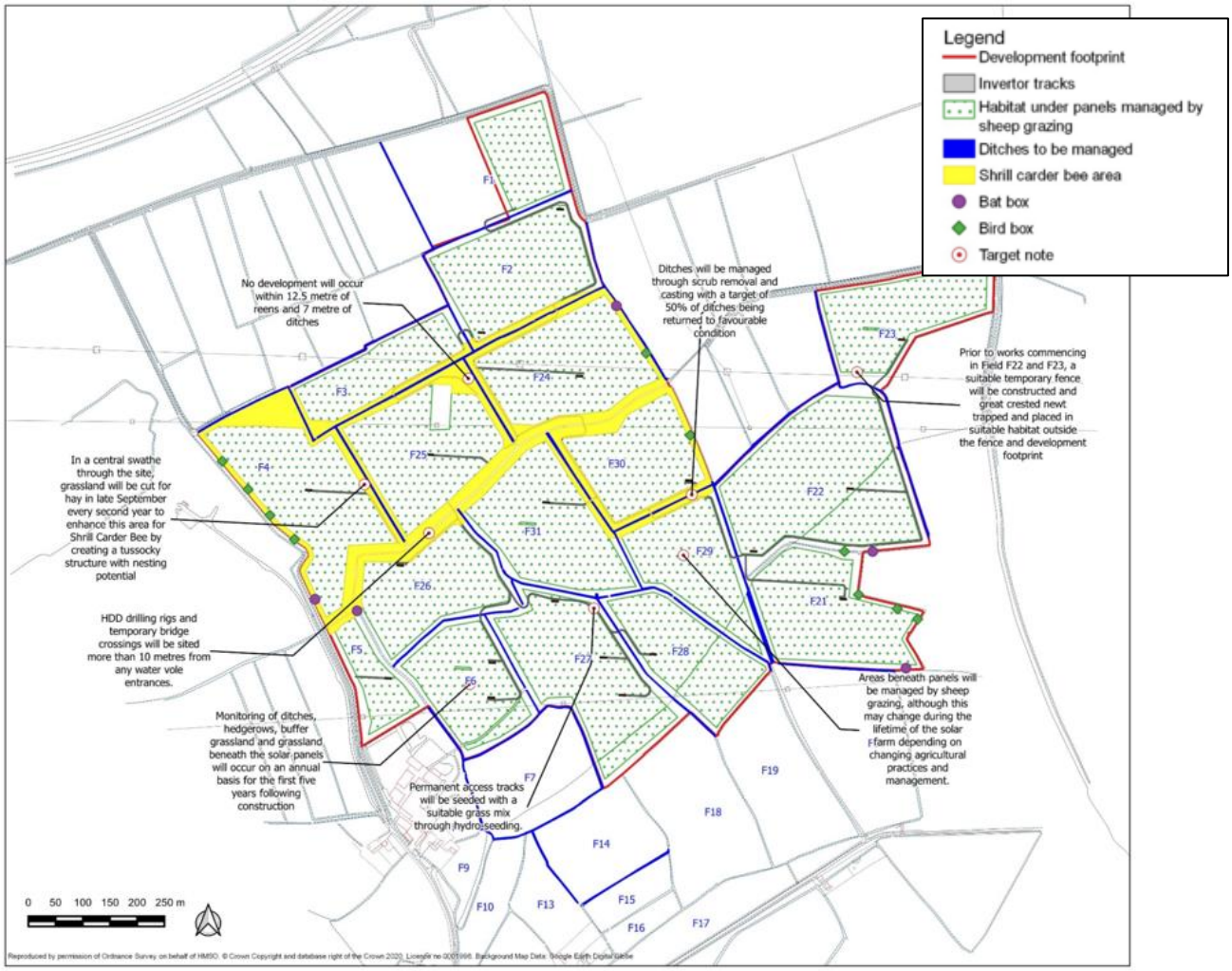


Figure NTS-12 Ecological mitigation and enhancement summary

1.60 The ongoing management of the landscape and ecological features on site, including details of enhancements and hedgerow and reen management, is detailed within a draft Landscape and Ecological Management Plan

(LEMP). The LEMP would form the basis of more detailed plans and method statements likely to be required as a pre-commencement planning condition.

Ornithology

Construction and Decommissioning

1.61 There is potential for construction to impact bird species through disturbance or habitat loss. To counter this, a 12.5 metre wide exclusion zones would be established adjacent to all reens and a 7 metre exclusion width would be applied next to all ditches on site to reduce disturbance to hedgerow and marshland/water nesting birds. In terms of ground-nesting birds, the provision and establishment of a large area of land managed to provide suitable summer and winter habitat for Lapwing and other ground nesting birds prior to the start of works would greatly reduce potential effects on birds with the overall effect being of minor/negligible significance (Figure NTS-13).

1.62 Following decommissioning of the solar park the site is to be returned to its former agricultural land use.

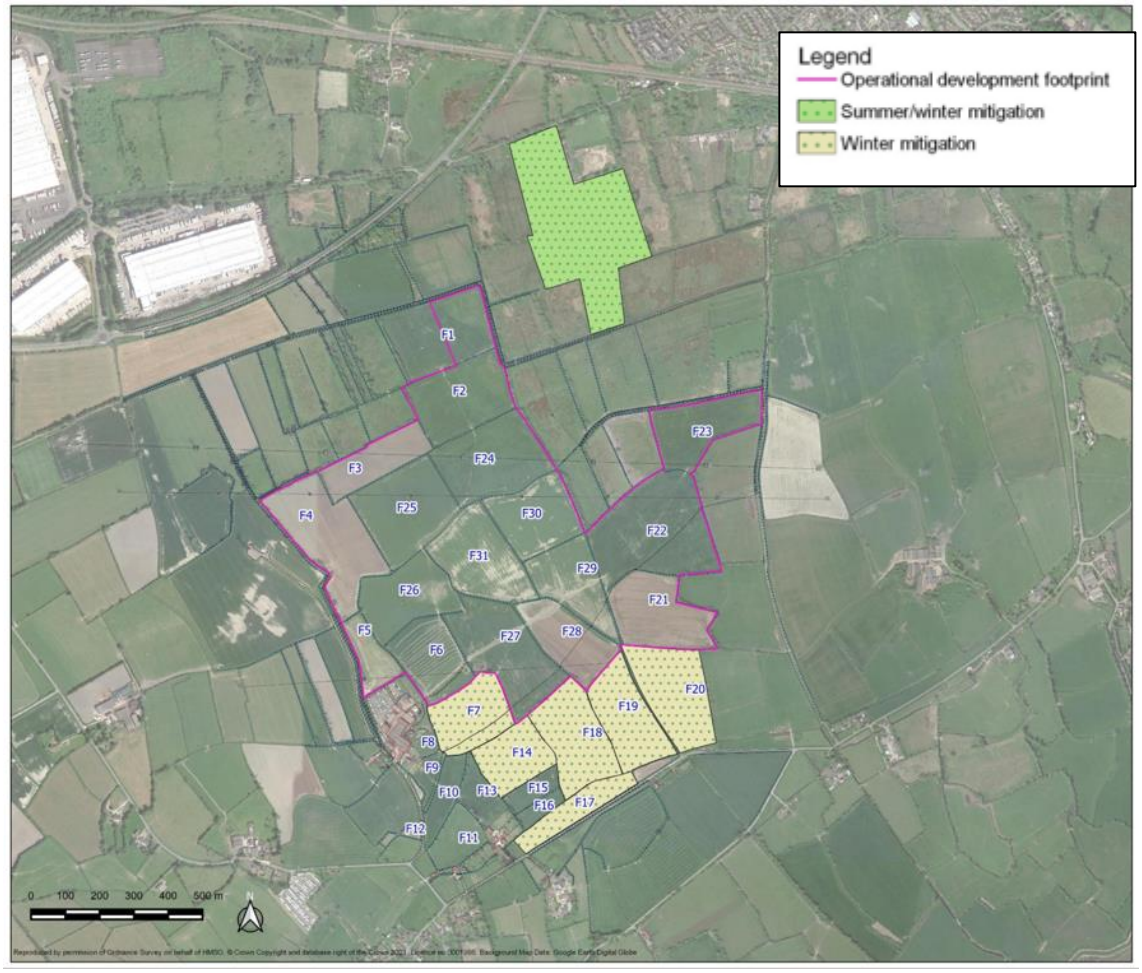


Figure NTS-13 Lapwing mitigation areas

Operation

1.63 The mitigation areas established to provide suitable habitat for Lapwing would remain throughout the operation of the solar park, thus neutralising any potential effects on these birds associated with the solar park.

1.64 New nesting opportunities would be created comprising bird nesting boxes fixed to suitable trees on the field boundaries (Figure NTS-12).

1.65 In addition, an important enhancement for the majority of birds would be gained through changes in land management, and the creation of wide buffers to boundary features. These would provide ecological enhancement for birds.

1.66 The ongoing management of the landscape and ecological features on site, including the Lapwing mitigation areas, is detailed within a Landscape and Ecological Management Plan (LEMP). The LEMP would form the basis of more detailed plans and method statements likely to be required as a pre-commencement planning condition.

Climate Change

1.67 The proposed solar park would produce enough clean renewable electricity to power 18,755 homes per year*[1], and provide a saving of 16,611 CO^{2}[!]. The EIA did not consider a full life-cycle analysis as it is widely scientifically accepted that, under normal conditions, over its lifetime a solar photovoltaic system produces many times more energy (and hence greenhouse gases) than was required in its manufacture and installation.

1.68 Whilst the operational life of a solar park is not considered to be long when compared with, for example, a residential development, the design of the solar park itself and any associated mitigation, enhancement or compensation has considered resilience to projected climate change within its operational life. At the forefront of its design evolution has been the aim to 'future-proof' the solar park against climate change related flood risk.

1.69 Extensive flood modelling has been carried out in the form of a Flood Consequences Assessment which predict future flood levels relating to climate change. As a result, the solar park has been specifically designed to elevate solar panels, inverters and other critical infrastructure across specific areas of the site where required.

1*Based on an annual average domestic consumption per household (Great Britain) of 3,799 kWh. Source BEIS, Regional and Local authority electricity consumption statics 2018.*

! Based on 'Emissions associated with the generation of electricity at a power station (Electricity generation factors do not include transmission and distribution). Source BEIS, Greenhouse gas reporting: conversion factors 2020.

Water Quality

Construction and Decommissioning

1.70 The critical receptor with respect to water quality is the water within the reens and ditches, which is the key underpinning feature of the Gwent Levels – Redwick to Llandevenny SSSI. The planned solar park construction requires work to be undertaken in the vicinity of the reens and ditches on site, presenting two key hazards in the form of pollution from fuels, oils and other chemicals that are being used on site and impact from sediment created by exposed soils being eroded by rainfall and subsequently flowing into the watercourses.

1.71 In order to mitigate the potential impacts to watercourses during construction, the applicant has committed to use of best practice in environmental controls during the construction period, as documented in a Construction Environmental Management Plan (CEMP). The CEMP sets out the protocols that would be employed and adhered to during the construction of the solar park in order to manage and mitigate impacts to the water environment. Such mitigation includes the 12.5 metre wide exclusion zones adjacent to all reens and a 7 metre wide exclusion zone next to all ditches on site (Figure NTS-14), in addition to measures such as the use of silt-fencing, phased working in line with forecasted weather conditions and utilising existing field/reen crossing points. A planning condition is expected requesting the submission and approval of the final and detailed CEMP.

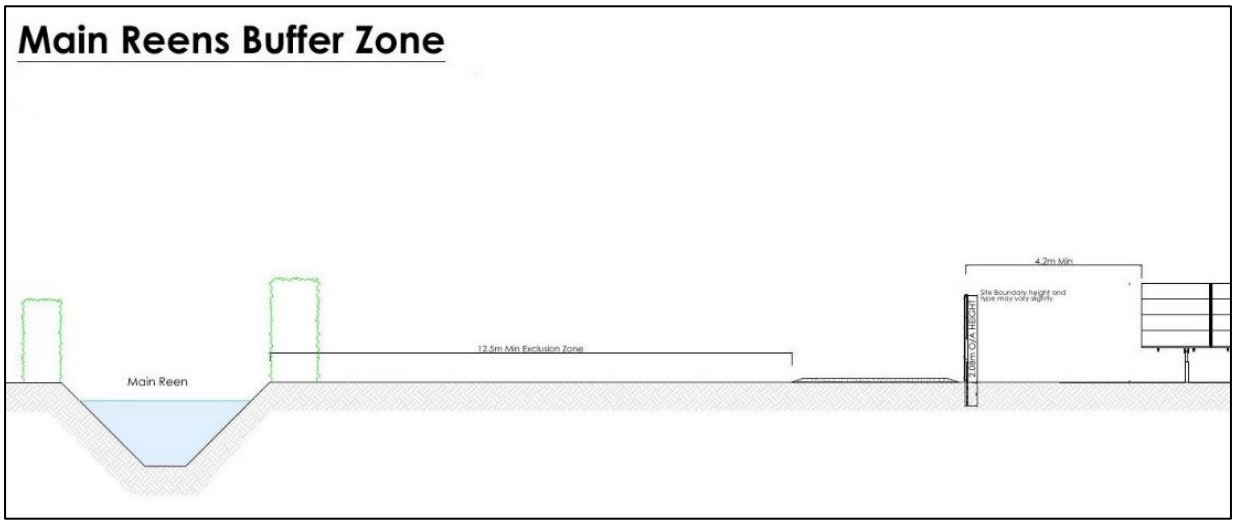


Figure NTS-14 Illustration depicting 12.5m exclusion zone adjacent to main reens

Operation

1.72 The proposed development has been designed such that the reens can continue to be maintained by Natural Resources Wales without change to current methods.

1.73 During operation, the land would be used much less intensively than is currently the case. Whereas the land is currently ploughed and trafficked on an annual basis and much of it (an estimated 50%) is left as bare soil through the winter months, once the solar park is operational the land would be given over to grazing pasture, with little trafficking and no ploughing or bare soil. This change in land management represents a beneficial

effect on the water quality in the reens and ditches on site through the reduction of silt/sediment and the reduction in the use fertilizers and pesticides across the site.

Surface Water Flooding and Drainage

Construction and Decommissioning

1.74 Construction activities have the potential to impact the water level management across the site through increased run-off due to ground compaction and soil erosion caused by heavy machinery. Ground compaction is unlikely to have any major effect on the drainage across the site as the use of heavy machinery during construction is considered to be no worse than current land management practices, whereby soil compaction occurs in association with agricultural vehicles during crop and livestock management routines.

1.75 The potential increase in site run-off has also been mitigated through the design of the solar park whereby all trackways would be constructed to be permeable (i.e. unsealed), and as such would maintain infiltration capacity, and all other areas surrounding and beneath the solar panels would be retained as grassland, thereby reducing the proportion of bare ground.

Operation

1.76 The solar park has been designed such that the land surrounding and beneath the solar panels would be retained as grassland grazing. Upon completion of the construction phase, fields that are currently used to produce forage maize (approximately 50% of the land based on recent aerial photography) would become vegetated year-round. The grass within the solar park boundary would be allowed to grow and would not be cropped or harvested. As a result, there would not be periods of bare soil.

1.77 In order to 'future-proof' the solar park, extensive flood modelling has been carried out in the form of a Flood Consequences Assessment which predict future flood levels relating to climate change. As a result, the solar park has been specifically designed to elevate solar panels, inverters and other critical infrastructure across specific areas of the site where required.

Landscape Character and Visual Impact

Landscape Character

1.78 The area surrounding the site consists of fields divided by a mixture of ditches, fences and hedgerows with trees. This sits within a flat landscape along the Severn Estuary which rises to the north where the area is made up of well vegetated hills, ridges and valleys. The landscape is already influenced by development including numerous lines of pylons and scattered operational wind energy schemes.

1.79 The majority of effects on landscape character and designations would be neutral. This is largely because of the enclosure provided by the surrounding lines of dense hedgerows and trees within the flat landscape and the vegetation focused around residential properties, settlements and transport corridors. The solar park would not dramatically change the characteristics of the wider landscape or affect the integrity or setting of landscape relevant designations. The development would fit within the existing field pattern and would not be out of scale with the surrounding landscape.

Figure NTS-15 Existing view from Whitewall Lane in Gwent Levels Landscape of Historical Interest (Viewpoint 9)

1.80 The proposed development has been informed by and respected the regular and distinctive landscape pattern although there would be an increase in built elements within the Gwent Levels Landscape of Historic Interest, albeit contained within and largely enclosed by the characteristic regular network of fields, divided by reens and lines of vegetation. This increase in built elements represents an effect of moderate significance to the perceived landscape character. However, it is only in very close proximity that the proposed solar park has potential to be perceived in such a way. In addition, from the very few locations that the proposed development will be perceived within the Gwent Levels Landscape of Historic Interest, it would always be perceived adjacent to or in combination with other built elements including pylons and wind energy schemes.

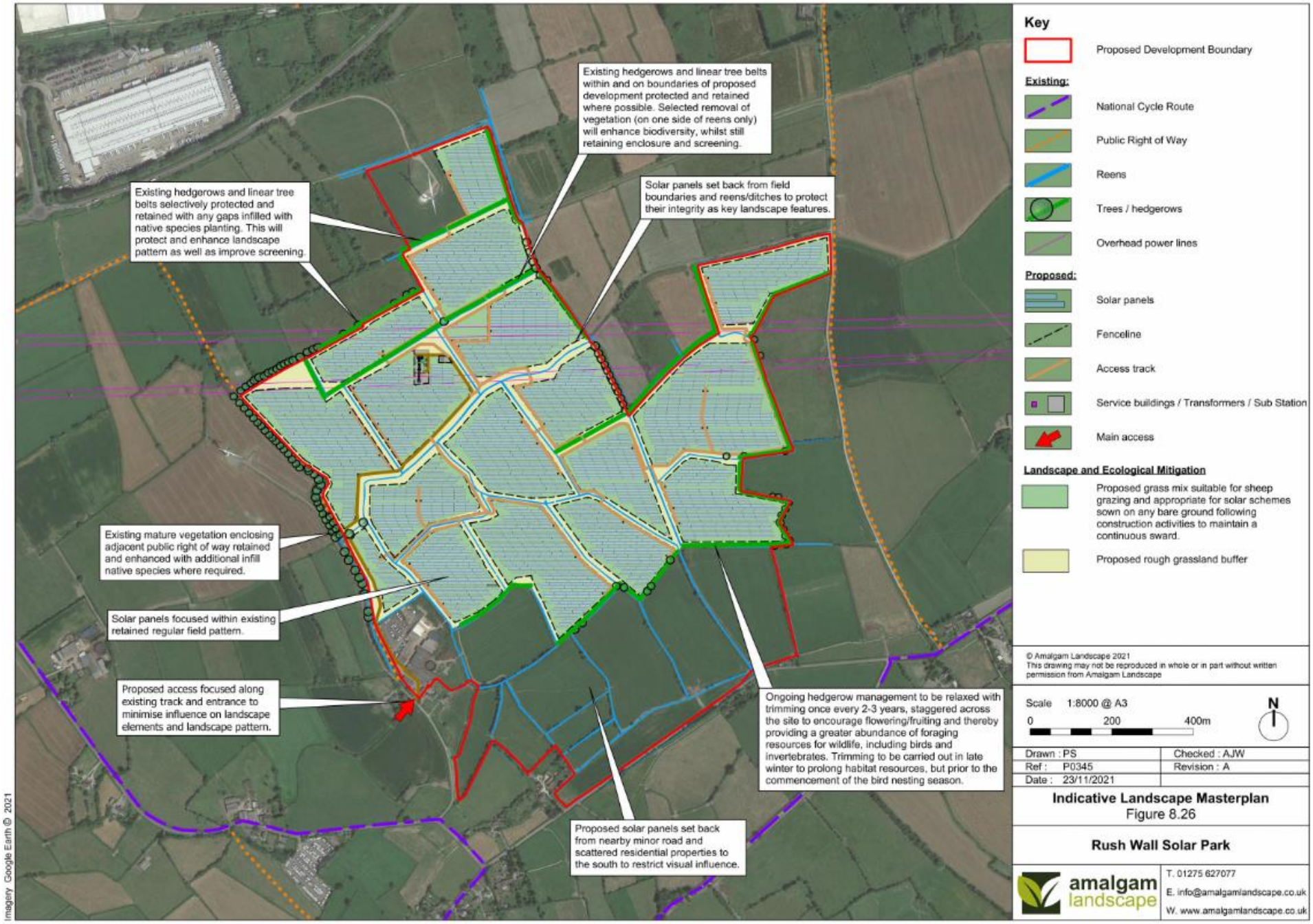
1.81 For the vast majority of the Gwent Levels Landscape of Historic Interest, the proposed development would not influence the wider setting or integrity

1.82 Whilst the perceived change in the landscape represents a potential adverse effect, the focus within the development design on restoring the reens, a characteristic feature of the landscape, would result in moderate beneficial effects to the cultural landscape and landscape habitats.

Visual Impact

1.83 Views of the site from public areas would largely only be seen from the public right of way that borders the site immediately to the east and glimpsed from the largely enclosed public right of way immediately to the west. Visually, this represents an effect of moderate significance, however, very quickly exposed views of the proposed development from the public right of way would diminish due to screening by well-established, dense vegetation in the intervening landscape, as well as surrounding the site itself. Long distance views are largely restricted to 'artificial' high points within the landscape, such as bridges or from selected exposed and open locations as the landform rises to the north.

1.84 A leading role was played by the Chartered Landscape Architect in informing the design, including input on the extent of the site, site layout and development design as well as determining the landscape mitigation measures. The Landscape Masterplan (below), shows how planting would help to restrict potential views of the proposed development, particularly for those receptors in close proximity.


Existing hedgerows and linear tree belts within and on boundaries of proposed development protected and retained where possible. Selected removal of vegetation (on one side of reens only) will enhance biodiversity, whilst still retaining enclosure and screening.
Existing hedgerows and linear tree belts selectively protected and retained with any gaps infilled with native species planting. This will protect and enhance landscape pattern as well as improve screening.
Solar panels set back from field boundaries and reens/ditches to protect their integrity as key landscape features.
Existing mature vegetation enclosing adjacent public right of way retained and enhanced with additional infill native species where required.
Solar panels focused within existing retained regular field pattern.
Proposed access focused along existing track and entrance to minimise influence on landscape elements and landscape pattern.
Ongoing hedgerow management to be relaxed with trimming once every 2-3 years, staggered across the site to encourage flowering/fruiting and thereby providing a greater abundance of foraging resources for wildlife, including birds and invertebrates. Trimming to be carried out in late winter to prolong habitat resources, but prior to the commencement of the bird nesting season.
Proposed solar panels set back from nearby minor road and scattered residential properties to the south to restrict visual influence.
Imagery Google Earth © 2021
Key
Proposed Development Boundary
Existing:
National Cycle Route
Public Right of Way
Reens
Trees / hedgerows
Overhead power lines
Proposed:
Solar panels
Fenceline
Access track
Service buildings / Transformers / Sub Station
Main access
Landscape and Ecological Mitigation
Proposed grass mix suitable for sheep grazing and appropriate for solar schemes sown on any bare ground following construction activities to maintain a continuous sward.
Proposed rough grassland buffer
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Scale 1:8000 @ A3
0 200 400m
N
Drawn : PS
Checked : AJW
Ref : P0345
Revision : A
Date : 23/11/2021
Indicative Landscape Masterplan
Figure 8.26
Rush Wall Solar Park
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Historic Environment (including Archaeology)

Archaeological Remains

1.85 There is potential that excavation works and piling (installation of mounting frames supporting the solar panels) may impact buried archaeology. In order to mitigate this an archaeological watching brief would be carried out during construction works whereby an Archaeologist would be on site to supervise certain construction activities depending on their location and type. Where possible, piling and/or excavation depths would be reduced in order to avoid impacts. A pre-commencement planning condition is expected outlining the requirement for an Archaeological Watching Brief and a further palaeoenvironmental auger survey focused on sampling areas of shallower peat deposits.

Historic Buildings

1.86 No archaeological assets have been identified as Historic Buildings within the proposed development area. With regards to Historic Buildings within the vicinity, the proposed solar park would not affect the setting of these due to the overriding topography and built landscape.

Historic Landscape

1.87 The site lies within the Caldicot area of the Registered Historic Landscape of the Gwent Levels. As such, there is potential for the proposed solar park to affect the historic landscape of the Gwent Levels – that is, the perceptions that draw attention to evidence of the past and how it has shaped the current landscape.

1.88 The northern part of the site lies within the Northern Redwick Historic Landscape Characterisation area, the remainder is within Redwick Historic Landscape Characterisation area. The proposed solar park would have an indirect (non-physical) effect of moderate significance on these areas due to the change of setting and land use within these areas and the resultant effect in one's perception of the environment. This effect is temporary and reversible in nature as, following decommissioning of the solar park, the site is to be reinstated to its former land use. Measures have been taken to reduce the direct effect of the development on the HLCAs namely the field patterns, drainage features and boundaries, will remain intact and unaffected. The development would however be a distinct visual change. That being said, significant viewpoints are limited, long distance views across the landscape are soon obscured by boundary vegetation. Steps have been taken to reduce visual impacts, through positioning development back from the main publicly accessible thoroughfares, creating buffer zones around ditches and reens, and retaining existing boundary vegetation.

Transport (Road Users)

Construction and Decommissioning

1.89 During construction and decommissioning traffic would follow a specified route between the M4 and the site access point on Green Street. From the M4's junction 23A, construction traffic would follow the A4810, turn left onto North Row and left again onto Green Street before accessing the site. Departing traffic would follow the same route back to the M4, as depicted in Figure NTS-11. As is often the case with construction projects, users of the local road networks may be temporarily affected by an increase in the number and change in type of vehicles on the road. The increase in this case is likely to be modest and is therefore unlikely to have a significant effect on local road users in terms of driver and pedestrian delay, route severance, and accident and road safety. That said, as North Row and Green Street have no segregated footways and currently carry little HGV traffic, it is accepted that the introduction of HGV traffic during the construction phase may be

intimidating due to HGVs passing in close proximity to other road users, particularly those who are vulnerable, resulting in a temporary adverse effect on these road users of moderate significance.

1.90 In order to reduce effects relating to traffic during construction, a Construction Traffic Management Plan (CTMP) has been prepared. This details the specified route and access arrangements, signage, speed restrictions and other relevant information to ensure that the effects of construction traffic on road users is satisfactorily managed. A planning condition is expected requesting the submission and approval of the final and detailed CTMP

Operation

1.91 Following the completion of construction activities, operational traffic would be limited as its likely to include no more than daily inspections and maintenance by one person using a 4x4 vehicle and occasional seasonal related visits associated with the ongoing landscape management and maintenance of the solar park. As such, upon completion of the construction there would be no significant effects on road users.

Noise

Construction and Decommissioning

1.92 As with any construction site, noise generated has the potential to affect people in nearby dwellings. Assessments have been carried out to estimate noise during construction of this development. These assessments concluded that, given the distance to nearby properties and best practice measures that would be employed during the construction phase (for example the use of temporary screening and enclosures to reduce noise emissions and working only during set hours) the development is unlikely to have a significant noise effect. However, should noise levels be deemed excessive by residents at the time of construction, mechanisms would be in place to inform the construction team so that action can be taken, if necessary.

Operation

1.93 Solar panels generate energy silently and are unlikely to present noise issues during their operation. Whilst the sub-station and inverters produce a low frequency sound, given the distance to the nearest dwellings, this sound would be imperceptible over the existing natural background noise environment. A planning condition is expected in order to limit the selection of equipment installed to that which meets the relevant British Standard with regards to noise.

Glint and Glare

1.94 A Glint and Glare study was carried out to determine the effects associated with solar reflections from the proposed solar park. The study concluded that reflections are not predicted for road users on any major roads due to a lack of visibility of the reflecting panel locations and that reflections visible from nearby properties are unlikely to be experienced due to the restricted visibility of the site. Therefore, no significant effects are predicted and no mitigation measures beyond those already proposed are required.

Cumulative Impact Assessment

1.95 It is a requirement of EIA to consider the cumulative effects of the proposed solar park, in conjunction with other developments within the area. Following consultation with Newport County Council and

Monmouthshire County Council, a list of developments to be considered within the cumulative assessment was compiled. Such developments include those which are:

- Under construction; and
- Permitted, but not yet implemented.

1.96 The cumulative effects of the project in conjunction with these other proposed developments have been assessed within each chapter of the ES. The assessments did not identify any increases to the likely significant effects on the environment.

CONCLUSIONS

1.97 The environmental impact assessment did not identify any adverse effects of substantial or major significance. However, several likely adverse effects of moderate significance were identified, meaning these are important but unlikely to be a key decision-making factor.

1.98 One was the effect, from both a heritage and landscape character perspective, on ones perception of the Historical Characterisation areas within which the site is located as a result of the change in setting and land use associated with the presence of a solar park in this location. Another was associated with the change in views from public rights of way adjacent to the proposed development.

1.99 A temporary moderate adverse effect to road users was identified relating to fear and intimidation resultant from a short-term increase in HGV traffic along a section of the access route with no segregated footway.

1.100 All other likely effects on the environment were assessed to be beneficial or minor to negligible level adverse effects. Beneficial effects include significant moderate beneficial effects as a result of the sensitive management of the reens, improved hedgerow boundaries and rough grassland buffers.