

EIA SCOPING REPORT



December
2018

Rush Wall Solar Park

This document presents the scope of the environmental impact assessment (EIA) for the development of a proposed solar park north of the village of Redwick, near Newport, Wales. An EIA Scoping Opinion is requested of the determining authority, the Planning Inspectorate Wales.

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EIA Scoping Report

RUSH WALL SOLAR PARK

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INTRODUCTION

Rush Wall Solar Park Limited propose to submit a planning application for the development of a solar park on land near the village of Redwick, south east of Newport, Wales on the Caldicot Levels. The site is within the Parish of Redwick in the Newport City Council (NCC) local authority area. The development is classed as a Development of National Significance (DNS) and as such would be determined by the Planning Inspectorate Wales (PINS Wales). Rush Wall Solar Park Limited was set up by BSR Energy Ltd (<http://britishrenewables.com/>). BSR Energy Ltd is a leading renewable energy developer taking projects from inception, through delivery, to operation.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Environmental Impact Assessment (EIA) is a process that aims to provide decision makers with sufficient information regarding the likely significant effects of a proposal on the environment. It is accepted that the project will be required to undergo an EIA as set out in the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, referred to as the EIA Regulations. As such, the Applicant has decided not to carry out an EIA screening exercise. Therefore, this is the first EIA documents prepared for the proposed solar park and relates to the EIA only, representing the first formal step in the process of environmental assessment.

PURPOSE OF THIS DOCUMENT

The Applicant Rush Wall Solar Park Limited, wish to request a Scoping Direction from PINS Wales. This EIA Scoping Report sets out the intended methodology and scope of the EIA for consultation with PINS Wales. PINS Wales must adopt a scoping direction within 8 weeks and set out:

- Topics to be covered;
- Identified constraints;
- Comments on the methodology proposed (including bodies to consult); and
- Cumulative developments identified.

The process of scoping assists in defining the key topic areas and information to be included in the assessment and can identify where matters could be scoped out or reduced in scope, if there are no likely significant environmental effects.

Before adopting a scoping direction, PINS Wales must consult the consultees as defined in Schedule 2 of the EIA Regulations. For this project these are expected to be:

- Newport City Council;
- Natural Resources Wales (NRW); and
- Other bodies designated by statutory provision as having specific environmental responsibilities and which the relevant planning authority or the Welsh Ministers, as the case may be, consider are likely to have an interest in the application.

EIA SCOPING REQUIREMENTS AND GUIDANCE

The minimum information required with a scoping request as set out in Part 4 (14) of the EIA Regulations is:

- A plan sufficient to show the land;
- A brief description of the nature and purpose of the development including its location and technical capacity;
- Its likely significant effects on the environment; and
- Such other information or representations as the person making the request may wish to provide or make.

Procedural guidance¹ for developments of national significance states that applicants should provide their scoping request in the form of a scoping report containing all the information required by the EIA Regulations to make a scoping request, plus additional information reproduced at Appendix 1. This additional information has been provided, where possible.

PINS Wales acknowledges that the scope of the EIA will change as the design of the proposed development progresses. The scoping direction can only respond to the information available at that time. Therefore, it will be reasonable for applicants to refine topics. To support with this, PINS Wales can provide ongoing pre-application advice.

Sufficient expertise

The Environmental Statement (ES) is the document setting out the findings of the EIA. As required by Part 5 (17) of the EIA Regulations, the ES will contain a statement describing the expertise of the people who prepared the ES. According to the EIA Regulations, an ES must be prepared by people who in the opinion of the Welsh Ministers have sufficient expertise to ensure the completeness and quality of the statement. It is therefore important to provide this information at this early stage of the process. Appendix 2 provides this information.

THE SITE AND SURROUNDINGS

The site is located within a farm less than a kilometre north of the centre of Redwick village and over one kilometre from the banks of the Severn Estuary. The site is on farmland made up of irregular shaped fields of variable sizes over a total area of over 100 hectares. The farm, called Longlands Farm, comprises a dairy herd, which is housed indoors all year. Grass and maize are grown on a two to three-year field rotation and used as feed for the herd of 500 cows. Maize is cropped annually, and the grass is harvested six times per year on average. The young cattle also graze some of the fields.

¹ Guidance on Developments of National Significance - Appendix 3: Environmental Impact Assessment, PINS Wales, March 2016.



Eastern approach to Redwick (Left), housed cattle at Longlands Farm (Middle), Longlands Farm Farmyard (Right).

The fields are bordered by drainage channels (called reens) or hedgerows or both. The main reens on the site or adjacent to the site (Ynys Mead Reen and the Reen one field north of Green Street) are cleared annually by Natural Resources Wales (NRW). NRW require access to these reens at all times in order to carry out this maintenance. The farm maintains the other reens on the site, mainly to remove vegetation (such as hedge trimmings).



Black Wall Track, eastern site boundary (Left), maize crop stubble (Middle), grass crop / grazing field (Right).

Adjacent to the western site boundary there are three dwellings and the farmyard. Two of the three dwellings are owned and occupied by the farm owners. The dwelling adjacent and to the west of the farmyard, is not owned by the farm. The farmyard includes buildings to house livestock, machinery and feed, areas of hard-standing, silage storage and a slurry silo. Caravans are stored just to the north of the farm buildings on an area of compacted gravel. These areas are accessed by a short single-track tarmac road with two passing places (Longlands Lane), off North Row. Where Longlands Lane meets North Row there is a small recreation ground with children's play equipment.

The site is crossed east-west by three sets of overhead lines and their associated pylons. These overhead lines connect to a substation approximately 5 kilometres to the east. The farmland is flat and drained by the reen system, within which water flows slowly towards the Severn Estuary. There are no public rights of way across the site. There is a permissive path leading north from the northern end of Longlands Lane for 1.25 km before joining Rush Wall (Track). There are barriers to prevent vehicular access in two locations and the path is currently too overgrown to use along the middle section.

Under all the fields within the site a network of pipes has been installed to aid drainage, as is common for land in this area. 45cm under the surface of each field is a network of drainage pipes, over each there is a

layer of stone. The pipes are 5 to 15cm diameter and made of clay or plastic. The pipes drain toward the drainage ditches (reens) at field margins.

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



Site photographs of Longlands Lane Wind Turbine (Left), Permissive Path from Longlands Farm (Middle) to Rush Wall (Right).

The site is within Redwick Parish and the Newport City Council local authority area. The site's eastern boundary is adjacent to Cold Harbour Reen, which marks the border with Monmouthshire County Council. As can be seen from the OS map extract from 1887, the field boundaries have remained largely unaltered since that time.

The designations on and surrounding the site are described where relevant in the receptor/resources sections below, for example all the relevant ecological designations are described in the Ecology baseline section.

ALTERNATIVES

The landowner selected solar energy development as a means of farm diversification which allows the dairy farm to continue operating. The landowner has already taken up other forms of diversification for the farm, including a single wind turbine development proposed in the most northern field of the site, planning approval for which is awaiting determination (NCC Planning application reference 18/0408).

Solar energy is a preferred option for this site because it offers ease of connection to the national grid on site, ideal topography for ease of construction, proximity to the major road network, and good irradiance due to the southerly location near the coast.

CONSULTATION

This EIA Scoping Report represents the first formal consultation related to the EIA for this project. Nevertheless, informal discussions regarding the scheme and EIA scope have been made and future consultation is planned with EIA specific consultees. This is presented in the environmental receptor/resources sections within this report.

THE PROPOSED RUSH WALL SOLAR PARK

Construction

A Construction Environmental Management Plan would be implemented for the project to control construction related impacts.



Temporary access tracks similar to those to be used (Left), excavating trenches for cabled (Middle), HV, DC and communications cables in a trench.

The main groundworks is trenching for the installation of underground cables to connect groups of solar panels to the substation. Top soil is first stripped and set aside to create a 'working lane' approximately 10 m wide. The top soil is set outside of this 'working lane' and forms a small bund. The trench is then dug through the subsoil, and the excavated material set apart from the topsoil within the working strip. The deepest trenching would be approximately 1.2m deep for the high voltage cables, for which a medium sized mechanical excavator would be used. Approximately 4 km of this trench type would be required. Approximately 7 km of low voltage 0.6 m deep cable trenching is expected to be required and possibly a further 1 km of 0.6 m deep communications cable trenching. The cable is normally laid or winched into the open trench, and the trench then backfilled with the excavated subsoil. Generally, cable is installed in 500m lengths with a joint pit or bay at each end to allow a mechanical joint to be applied to each length of cable. A joint bay is excavated 3m long x 2m wide x 1.5m deep to allow an engineer to install the joints. The joint pit is back-filled as per the trench.

Where the cable alignment crosses through hedges, routine practice is to create a small opening approximately 3m wide providing sufficient space for the excavator and the dumper towing the cable trailer through allowing the cable to be installed as a continuous length. It is sometimes possible to excavate up to the hedge line and then 'burrow' beneath the roots without having to create an opening, and pull the cable in from one side to the other. This is only practicable where the free ends of cable are manageable by hand/machine without fear of damaging the cable. Where reens need to be crossed, cables would make use of existing bridges, culverts or crossings between fields. If this is not possible than cables would be placed under the invert level of the reen so as not to obstruct the drainage channels.

A railing sub structure would be piled into the ground, frames attached and then the solar panels would be mounted to the frames. The area for the base of the substation would be excavated prior to the hardstanding plinth concrete pour, after which the associated substation infrastructure would be installed.

The area of the site which would be disturbed through trenching for cables is expected to be 1% of the total site area. A further 1% of the area will be disturbed for piling the panel supports and excavating the base for the on site substation.



Panel supports (Left), Frames ready for solar panels to be fitted (Right).

All the construction vehicles use the 'working lane'. During construction temporary construction compounds and welfare facilities would also be required. To reinstate the land, topsoil is graded back over excavated areas.

Operation

Solar panels 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. PV 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. The solar park would have an export capacity of 49.9 MW of renewable electricity and comprise:

- Solar photovoltaic (PV) panels, mounted to a railing sub structure;
- Approximately 12 inverter stations distributed evenly across the solar park;
- Compacted gravel tracks (constructed on a sub layer geogrid membrane) to allow vehicular access between fields and a substation access track with a cement based top layer (a statutory requirement of the electricity distribution network operator, Western Power Distribution);
- Stock proof fencing and gates to enclose the panels within each field and allow sheep to graze securely;

- Security and monitoring CCTV mounted on fence posts within each field;
- Underground cabling to connect the panels to the substation;
- A substation compound (for both the customer (Applicant) and Western Power Distribution, the Distribution Network Operator (DNO), elements), including associated ancillary services, which will connect to the onsite 132kV overhead lines via a WPD tower; and
- The substation would be 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 10 metre high single pole communications antenna may be required at the substation.



Solar PV Panel (Left), inverter station (Right)

Decommissioning

The solar park would have a lifetime of 35 years. During decommissioning the above ground infrastructure (solar panels and supports, substation, inverters, switchgear, CCTV) would be removed from site. Underground cabling would be left in situ to avoid ground disturbance. Tracks and fencing would be removed, unless the landowner wished for them to be retained.

Farming

Operations will remain unchanged at the farmyard and on the farm's land outside of the land required for the solar park development.

IMPACTS AND EFFECTS

Impacts are the actions resulting in changes, for example, construction of a development removing hedgerows whereas the effect is the outcome to the resource/s or receptor/s from the impact, for example the effects on dormouse populations from loss of a hedgerow.

Types and characteristics of potential adverse impacts associated with solar parks are not unknown and would indicate that there can be impacts such as a change in views and construction phase disruption. The project has the potential for positive impacts through the change in land use which is likely to result in a beneficial effect on ree water quality and soil health. The EIA process seeks to identify these opportunities and assess the likely significant beneficial effects whilst adverse impacts likely to result in significant adverse effects are identified in order to seek avoidance, mitigation or compensation.

APPROACH TO MITIGATION

The EIA process seeks to identify potential impacts and incorporate avoidance, mitigation and management controls to minimise impacts which are likely to result in significant adverse effects on receptors such as the local community or the character of the landscape.

STRUCTURE OF THE PROPOSED ENVIRONMENTAL STATEMENT

The proposed structure of the ES is as follows:

- Non-Technical Summary;
- Introduction;
- Alternatives and Design evolution;
- Description of Construction appended by the Construction Environmental Management Plan (CEMP);
- Description of Operation appended by the Landscape and Ecological Management Plan (LEMP);
- Description of Decommissioning including a schedule of committed mitigation;
- Assessment Methodology and Consultation including an explanation regarding scoped out topics;
- Assessment of effects on environmental receptors and recourse chapters;
- Cumulative effects assessment; and
- Conclusions.

Background information and data

Schedule 4 of the EIA Regulations relates to what is required in the ES. Considering the subtle changes made to the EIA Regulations at (5), (6) and (10) of Schedule 4, it is proposed that data and supporting information appear separately to the ES, in a document titled 'Background Information and Data'.

ENVIRONMENTAL RECEPTORS AND RESOURCES

The EIA process first considers environmental receptors and resources within a potential impact zone of the proposed development and how likely it would be that these could be significantly affected by the scheme.

Climate: greenhouse gas emissions, resilience and adaptation to climate change

Solar parks convert sunlight to electrical energy without producing waste or emissions. The EIA does not propose to carry out a life cycle analysis of greenhouse gas emissions associated with the development of the solar park. Such an exercise is unlikely to be of any purpose as multiple scientific studies have shown that under normal conditions over its lifetime a solar photovoltaic system produces many times more energy (and hence greenhouse gases) than was required for its production and the pay-back time is expected to be several years.

The solar park would have an operational life of 35 years which is relatively short when compared to the majority of large-scale infrastructure projects such as roads and reservoirs for which EIA is required. However, the design of the solar park itself and any associated mitigation, enhancement or compensation would aim to be resilient to projected climate change within its operational life. A proportionate approach is proposed whereby the description of the development presented in the ES describes how resilience to climate change

over the lifetime of the project (based on the climate projections over land in the UK set out in UKCP18²) has been embedded.

Visual receptors

Study area defined by geographic extent of potential impacts

The study area will be 5km radius measured from the boundary of the proposed development as this will be where the most noticeable visual effects will occur. The study area will include the flat levels landscape, in which the proposed development is situated, as well as the estuarine fringes broadly to the south and the rising largely agricultural landscape broadly to the north.

Known sensitive receptors / resources within the study area

The views from the visual amenity receptors within the flat levels landscape, including scattered settlements and houses as well as public rights of way and minor roads are largely restricted by the numerous lines of mature hedgerows and trees that divide the regular field pattern. Views are however possible of the scattered wind turbines, pylons and large buildings associated with the steel works and Tesco distribution centre and from gaps in the enclosure.

More extensive views over the levels landscape, including over the proposed development site, are possible from selected elevated locations such as 'artificial' high points such as bridges and flood defences, above the immediate vegetative enclosure. More expansive views are also possible when the landscape rises up broadly to the north. Extensive, but distant, views over the expansive levels landscape, punctuated by development, are possible, limited occasionally by the mature vegetation in the immediate and wider landscape.

Scoped in or out of the Environmental Impact Assessment

The assessment of effects on visual receptors is scoped into the EIA due to the potential for significant effects on visual receptors. The assessment set out below will be carried out and presented in the Environmental Statement.

Proposed baseline work to inform assessment

Current baseline information will be collected through a combination of desk study and site survey within the study area to identify the location and extent of visual amenity receptors.

Ordnance survey (OS) mapping and aerial photography will be referenced, including internet data searches, supplemented by an extensive site survey.

A computer generated Zone of Theoretical Influence (ZVI), based on a 'bare-earth' will be used as a tool to inform judgements on where visibility is theoretically likely to occur. The ZVI represents potential visibility only. Given that the proposed development is located within the flat levels landscape, the ZVI is likely to be extensive. The ZVI does not take into account subtle variations in landform, local conditions such as built development or vegetation, which will significantly reduce the area and extent of actual visibility.

² <https://www.metoffice.gov.uk/research/collaboration/ukcp>

Therefore, the extent of potential visibility of the proposed development will be substantially less than on the predicted ZVI. Therefore, in this instance a ZVI does not convey impacts or effects. However, it will form an appropriate starting point for undertaking the visual assessment but will be used as a tool only and not re-produced for the ES, as it is not realistic and not a requirement of GLVIA 3.

A number of viewpoints to inform the assessment were also selected, based on the following criteria:

- A balance of viewpoints from the main directions of view;
- Provide a representative selection of views and receptors towards the proposed development; and
- For receptors most likely to experience the greatest change of view.

The potential viewpoints to inform the assessment are identified on the accompanying figure and are listed below:

No.	Viewpoint Description
1	From route with public access, to the south of Magor, in Gwent Levels Landscape of Historic Interest
2	From national cycle route and junction of North Row and South Row minor roads, in Gwent Levels Landscape of Historic Interest and Caldicot Levels Special Landscape Area
3	From play area on fringes of Redwick, in Gwent Levels Landscape of Historic Interest and Caldicot Levels Special Landscape Area
4	From national cycle route and minor road on fringes of Redwick Conservation Area, in Gwent Levels Landscape of Historic Interest and Caldicot Levels Special Landscape Area
5	From national cycle route and North Row minor road, in Gwent Levels Landscape of Historic Interest and Caldicot Levels Special Landscape Area
6	From layby on A4810
7	From Magor nature reserve, in Gwent Levels Landscape of Historic Interest
8	From pedestrian footbridge over railway line on fringes of Magor
9	From Wales Coast Path recreational route, in Gwent Levels Landscape of Historic Interest and Caldicot Levels Special Landscape Area
10	From Wales Coast Path recreational route, in Gwent Levels Landscape of Historic Interest and Caldicot Levels Special Landscape Area
11	From M4 motorway bridge, Wales Coast Path recreational route and national cycle route, near Rogiet
12	From public right of way, near Bishton
13	From Wales Coast Path recreational route, in Gwent Levels Landscape of Historic Interest and Caldicot Levels Special Landscape Area
14	From public right of way, near Llandevaud
15	From Green Street minor road, in Gwent Levels Landscape of Historic Interest and Caldicot Levels Special Landscape Area

The viewpoint photographs will be taken during the winter months, the worst-case scenario, when any enclosing vegetation will not be in leaf. The influence of vegetation, summer views, will be described. All viewpoint photographs will be annotated to show features in the view and the extent of the proposed development.

Approximately five of the viewpoints, which will experience the most exposed views of the proposed development, will be interpreted into photomontages.

A photomontage is where a computer rendered image of the proposed development is superimposed onto the existing photographic view. Photomontages are a valuable tool for presenting an overall realistic impression of the proposed development from selected agreed viewpoints.

The photomontages will be used to illustrate significant times during the life of the proposed development and would include:

- Existing view;
- Proposed view (Year 1) – to illustrate the ‘worst-case’ immediately following completion of the construction of the proposed development; and
- Proposed view (Year 10) – to illustrate the growth of mitigation planting over time.

Consultation

Alongside and further to this EIA scoping consultation, the following consultation is planned:

Consultee	Aim of consultation	Trigger for consultation
NRW, Newport City Council and Monmouthshire County Council - Landscape	To present the proposed methodology and scope in person in order to gain understanding and result in a more informed scoping response.	EIA scoping consultation
NRW, Newport City Council and Monmouthshire County Council - Landscape	To present the viewpoint photography and any proposed mitigation.	Once baseline photography complete and outline mitigation planting developed.

Guidance and best practice

The assessment will be carried out by experienced chartered landscape architects. They apply professional judgements in a structured and consistent way, following the guidelines produced by the relevant professional bodies concerned with landscape and visual impact assessment.

The Guidelines for Landscape and Visual Impact Assessment (GLVIA) will be the key reference document and guidance on best practice for the assessment.

Methodology and significance criteria

The visual amenity receptors and a description of their views, including their sensitivity to change, within the proposed study area will be identified and described. This will include:

Sensitivity	Receptor Description
High	Settlements and residential properties. The ‘main’ living areas, ground floor rooms and gardens will have a higher sensitivity than for example bedrooms and bathrooms
Medium-high	Users of public rights of way and open access land in regionally/locally designated areas (such as the Special Landscape Areas); users of outdoor

	recreational facilities with high interest in the surrounding environment and users of national cycle routes and recreational routes
Medium	Users of public rights of way and open access land; recreational users travelling at low speeds on public rights of way, cycleways and bridlepaths; and outdoor sporting facilities; and users of recreational facilities with low interest in the surrounding environment
Medium-low	Users of 'B' roads or unclassified roads; and static office workers
Low	Users of 'A' roads and railways travelling at speed and workers in industrial facilities/indoor non-static environments

An 'impact' is defined as a change likely to occur as a result of the construction, operation and de-commissioning of the proposed development. The scale or magnitude of impact is determined through the assessment of the duration and extent of the changes to the visual resource as a result of the proposed development.

The duration of impact is the time period over which the changes as a result of the proposed development occurs. Most impacts as a result of the proposed development would be long-term, however medium or short-term impacts may be identified where mitigation such as planting is proposed. For example, it is expected that the maturing of proposed planting will screen views over time. In addition, the construction impacts will also be short-term.

The extent of the impact indicates the geographic area over which the changes as a result of the proposed development occur. The extent of the impacts could be limited (for example, only a small part of the site or view); localised; intermediate or wide.

The definitions of the magnitude of impacts on visual amenity receptors are described below:

Magnitude of Impact	Visual Amenity Description
High	Receptors would experience an immediately apparent change to their views, arising from major alteration to the key characteristics of the existing view or the introduction of elements that will be totally uncharacteristic of the view. The proposed development will dominate the field of view and be impossible not to notice. The proposed development, when perceived with other solar schemes, would be immediately apparent and contribute to a view dominated by solar schemes.
Medium-high	Receptors would experience an apparent change to their views. The proposed development would be prominent in views or would be perceived as the determining factor within the field of view and be difficult not to notice. The proposed development, when perceived with other solar schemes, would be obvious and contribute to a view influenced by solar schemes.
Medium	Receptors would experience a readily apparent change to their view, arising from partial alteration to the key characteristics of the existing view or the introduction of elements that may be prominent but will not dominate the field of view. The proposed development, when perceived with other solar schemes, would be apparent and contribute to a view influenced by solar schemes.
Medium-low	Receptors would experience an apparent but minor change in their view, arising from an alteration to the view. The proposed development will be present in views but will form only a minor element.

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	The proposed development, when perceived with other solar schemes, would be noticeable and may contribute to a view influenced by solar schemes.
Low	Receptors would experience a low level of change to views. The proposed development will be present in the wider landscape but will be perceived as a background component of views and easily go unnoticed. The proposed development would lead to a minor change to the view. The proposed development, when perceived with other solar schemes, will not be immediately noticeable, although it may contribute to a view with solar schemes.
No change	Indiscernible level of change. Equivalent to no change.

The level of the effects on visual amenity receptors is determined by balancing the sensitivity of the receptor and the magnitude of change (i.e. the impact) as a result of the construction, operation and de-commissioning of the proposed development.

The correlation between the sensitivity of the visual amenity receptor, and the magnitude of impact to determine the level of effect is summarised below. The matrix is however not a prescriptive tool and the analysis of the level of effects requires the exercise of professional judgement.

		Sensitivity of receptor				
		High	Medium-high	Medium	Medium-low	Low
Magnitude of impact	High	Major	Major or Moderate	Moderate	Moderate or Minor	Minor
	Medium-high	Major or Moderate	Moderate	Moderate	Moderate or Minor	Minor
	Medium	Moderate	Moderate	Moderate	Minor	Minor or Negligible
	Medium-low	Moderate or Minor	Minor	Minor	Minor or Negligible	Negligible
	Low	Minor	Minor	Minor or Negligible	Negligible	Negligible
	No change	Neutral	Neutral	Neutral	Neutral	Neutral

Effects are defined below and it is also important to note that effects can be adverse (negative) or beneficial (positive).

Level of Effect	Visual Amenity Description
Major	Where the proposed development would be uncharacteristic or would substantially alter a valued/ very important view or view of high quality.
Moderate	Where the proposed development would be readily apparent and at variance with existing view.
Minor	Where the proposed development would be noticeable but only at slight variance with the existing view.
Negligible	Where the proposed development would provide a small change to the existing view.
Neutral	No change

Mitigation

Mitigation measures will be proposed which will aim to avoid, reduce or compensate for the identified impacts by, for example, retaining field boundary vegetation and using existing access points, and new planting, in combination with ecological advice.

Glint and Glare

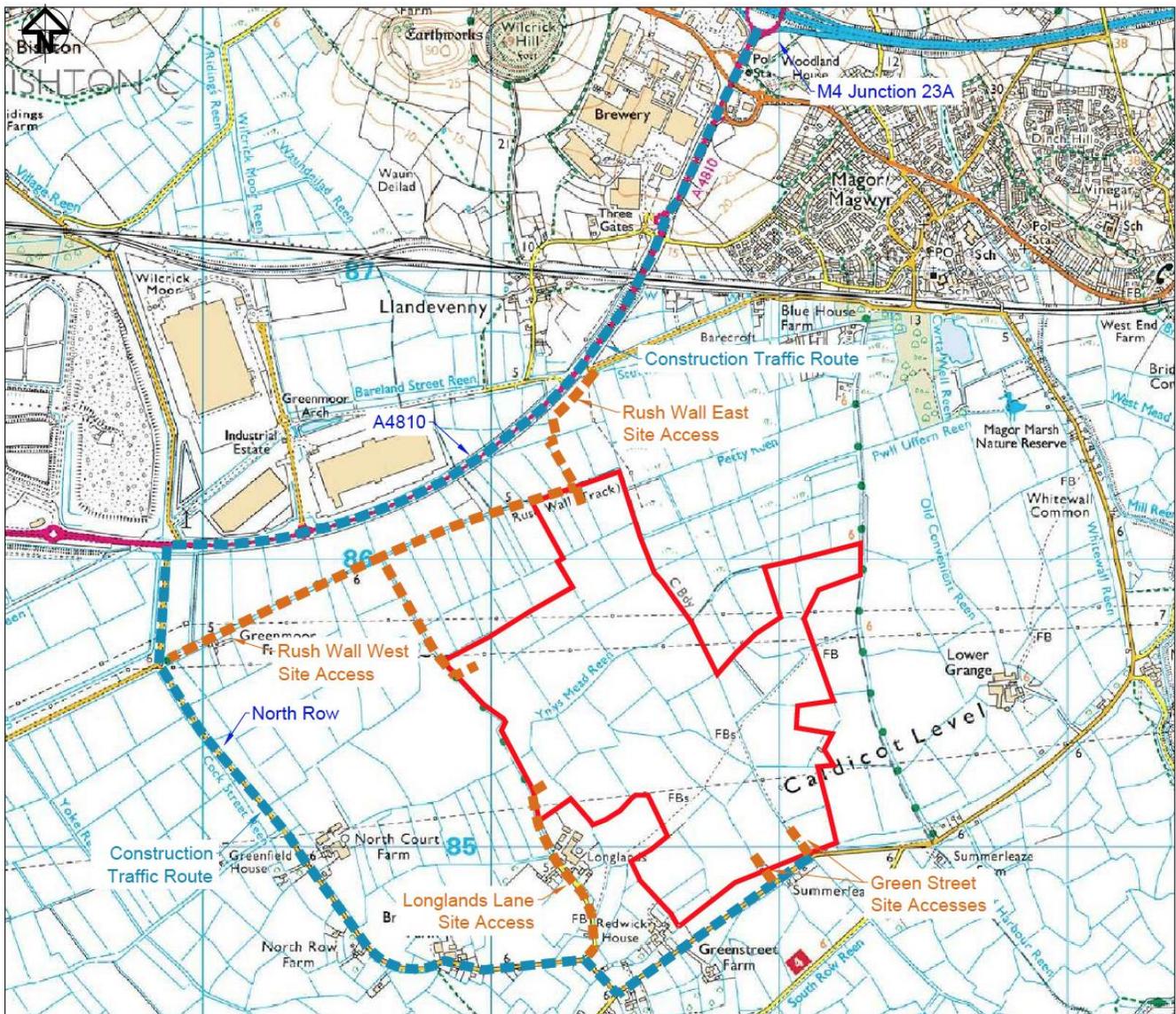
The effects of glint and glare would not be assessed in the EIA but avoided through design and evidence of this would be reported in the ES. Glint and glare can affect road users and dwellings to the east, west and south of solar developments. The nearest airport (Cardiff) is 38km away and would not be affected.

The majority of the potential receptors would not be affected based on existing screening from vegetation such as hedgerows. In terms of potential impacts on people in and around dwellings, there does appear to be visibility from several adjacent dwellings as several southern fields within the site have clear views of some dwellings. Adjusting the extent of panels and/or designing landscape planting appropriately can avoid glint and glare. Additionally, advances in solar panel technology include the inclusion of 'ridged' panel surface to trap more light which also results in less reflection.

Road Users

Construction, operational and decommissioning phase traffic would access the site via five possible access points; Rush Wall East, Rush Wall West, Longlands Lane and/or two possible access points off Green Street. The Rush Wall East option is that proposed for the undetermined for a single wind turbine of maximum tip height of 130m (NCC Planning application reference 18/0408).

Traffic would follow a designated route between Junction 23A of the M4 and the site access point(s) via the A4810 and North Row, as shown.



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Possible construction phase access points

It is not considered that any off-site highway improvements are necessary.

The following criteria are recommended within guidance (Guidelines for the Environmental Assessment of Road Traffic, Institute of Environmental Assessment) to identify roads where significant impacts (such as driver delay, severance of routes, pedestrian delay, fear and intimidation, accidents and road safety and hazardous, dangerous and abnormal loads) may occur: *Highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGV's are predicted to increase by more than 30%); and Any sensitive areas (hospitals, churches, schools, historical buildings) where traffic flows are predicted to increase by 10% or more.*

Study area defined by geographic extent of potential impacts

The study area for road users comprises the road users on roads where significant impacts may occur (as defined above).

Known sensitive receptors / resources within the study area

Sensitive areas are defined as hospitals, churches, schools, historical buildings. There are no known sensitive receptors along the construction route options shown above.

Scoped in or out of the Environmental Impact Assessment

The likely number of HGV movements throughout the construction phase is provided in the table below.

Construction Phase HGV Movements

	Week																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Per week																	
Earthworks	15	15	15	15	15											5	5	5
Mounting Systems		25	25	25	25													
Modules								50	50	50	50	50						
Inverter / Substation						10	8											
Fencing / Cables / Others	20	10	10	10	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Total Per Day	35	50	50	50	45	15	13	55	55	55	55	55	5	5	5	10	10	10

Existing traffic volume on the chosen construction route will be recorded and if the volume of construction traffic is below the above thresholds an assessment will be scoped out of the EIA.

Operational traffic would be limited to daily inspections and maintenance by one person using a 4x4 vehicle and occasional season related visits associated with the landscape and ecological management plan (e.g. monitoring).

A Transport Assessment (TA) is not required to accompany the planning application as TAs are required for developments that generate significant permanent increases in traffic as a result of their function, such as residential or leisure developments.

Construction traffic related effects would be managed in accordance with good practice implemented through a Construction Traffic Management Plan and would include measures to avoid HGV movements during e.g. school drop-off and pick-up. Construction traffic is not anticipated to generate significant adverse effects as these can be avoided and mitigated through good practice.

The Construction Environmental Management Plan (CEMP) would set out the controls in place to minimise effects such as dust and noise as a result of construction traffic.

Flood Risk

The area of the site is shown by the Natural Resources Wales Development Advice Map to be within Flood Zone C1. The Welsh Government Technical Advice Note for Planning 15 (TAN15) describes Zone C as being “based on Environment Agency extreme flood outline, equal to or greater than 0.1%” risk of flooding in any single year (i.e. 1 in 100) and Zone C1 as “areas of the floodplain which are developed and served by significant infrastructure, including flood defences”.

The area of the site therefore lies within the highest risk flood zone in Wales, but is afforded protection by flood defences. The key risk driver for flooding within the Gwent Levels is that of tidal or coastal flooding caused by either overtopping or breaching of the sea wall and associated defences. TAN 15 requires that any development within Zone C1 must be supported by a *justification test* and a test of *acceptability of consequences* as outlined in Sections 6 and 7 of the document. These tests form an integral part of a site-specific Flood Consequence Assessment, which is to be undertaken for the proposed development on this Site.

Scoped in or out of the Environmental Impact Assessment

A Flood Consequences Assessment (FCA) will be submitted with the application as a separate document (having been shared with NRW as part of the pre-application consultation exercise). The FCA will be used to establish appropriate mitigation measures which can be incorporated within the design of the solar park to ensure that it minimises risk to life, damage to property or disruption to people living and working on the site or elsewhere in the floodplain.

The assessment of effects from flood risk is scoped out of the EIA as the mitigation designed into the solar park as a result of the FCA will avoid the potential for significant effects related to flooding. Without such built-in mitigation, the project would not gain consent.

Consultation

Alongside and further to this phase of EIA scoping consultation, the following consultation (in person or telephone dialogue) is proposed:

Consultee	Aim of consultation	Trigger for consultation
NRW	Hydrology consultant to present the results of the FCA at a meeting with NRW and discuss the suggested mitigation designed into the solar park.	During design stage and prior to final design.
Newport City Council and Monmouthshire Council	Invite NCC and MC to NRW meeting and feedback outcome/common ground.	During design stage and prior to final design.

Noise and vibration

The solar panels within a solar park do not produce any sound directly; however, the inverters and grid connection equipment does have the potential to produce some sound, although any noise impacts can be avoided through acoustically sympathetic equipment selection or containment within enclosures.

The solar park would operate during daylight hours (0500 to 2200 hours in June) and would not operate when there is no solar energy to process.

Vibration impacts would be limited to the certain construction activities, in particular, piling, should this be required. Such effects would be transient and very localised.

Study area defined by geographic extent of potential impacts

The study area is limited to residential, ecological or designated amenity areas immediately adjacent to the site, in respect of potential operational, construction and decommissioning impacts, with receptors along key access routes to the site, considered in terms of road construction traffic noise impacts during peak periods of deliveries.

Known sensitive receptors / resources within the study area

The nearest acoustically sensitive receptors are:

- Redwick House, Green Street;
- Single detached dwelling on the northern side of Green Street (Summerlease Cottage), adjacent to the site’s southern boundary;
- Three dwellings on Longlands Lane;
- Dwelling at the Kennels on Rush Wall; and
- Dwelling on junction of Black Wall (Track) and Pill Street (in Monmouthshire).

Currently the soundscape of the area is characterised by road traffic noise, arising from the M4 motorway and A4180 to the north of the site, with localised contributions from local road traffic, agricultural activity and natural sources. The sound of the existing single wind turbine is audible at the permissive path near the western site boundary.

The type and intensity of solar park construction activity is not anticipated to give rise to significant or widespread noise startling effects on ecological receptors in this location. Nevertheless, such effects will be assessed in the ecological assessment.

Scoped in or out of the Environmental Impact Assessment

Due to the lack of evidence to suggest an operational solar park would have significant noise and vibration effects upon people who might be inside or outside a dwelling, or other premises used for residential purposes, an assessment proportionate to the sensitivity and location of receptors is proposed.

As with any built development, construction (and decommissioning) is capable of generating significant noise.

Consultation

The following consultation is planned:

Consultee	Aim of consultation	Trigger for consultation
Newport City Council and Monmouthshire EHO at Newport city council and Monmouthshire Council	Present the approach to be taken to seek understanding for a considered EIA Scoping response and to agree monitoring locations.	EIA Scoping report submission.
Newport City Council and Monmouthshire EHO at Newport city council (Michelle Tet and Clare Edwards) and Monmouthshire Council	Sharing of baseline data and discussion regarding appropriate mitigation (including conditions).	During EIA assessment work.

Guidance and best practice

Noise effects associated with the operation of the proposed development will be assessed in accordance with the guidance set out in BS4142:2014 Method for rating and assessing sound of an industrial or commercial nature.

Noise and vibration effects associated with the construction of the proposed development will be assessed in accordance with the guidance set out in BS5228:-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites.

The noise effects of any identified significant levels of road traffic increase at affected receptors will be considered in accordance with the relative change method specified in Volume 11 of the Design Manual for Roads and Bridges.

Methodology and significance criteria

The methodology for each potential noise effect considers the baseline noise environment, which will be determined by direct measurement at locations deemed representative of the closest identified noise-sensitive receptors to the site.

The significance criteria adopted will be as per those set out in the quoted guidance.

Mitigation

Historically, standard noise limiting planning conditions, referencing BS4142 guidance, have proved sufficient to avoid significant adverse noise effects arising from their operation.

Suitable noise limiting conditions imposed upon the scheme can control sound to result in no significant adverse effect on nearby noise sensitive dwellings, such as that suggested by Newport City Council in the Local Impact Report for Gwent Farmers' Solar Scheme, during construction phases, which reads

'The methods to be adopted to reduce the effects of noise occurring during the construction period to the lowest practicable levels and in accordance with BS 5228: Noise control on construction and open sites.'

In terms of operational noise, the following is expected:

'The scheme shall be installed and operated in such a manner so as to ensure that the rating level of the associated fixed plant items shall not exceed the measured background sound level at any off-site residential receptors, existing at the time of determination of this application, when assessed in accordance with the guidance set out in BS4142:2014.'

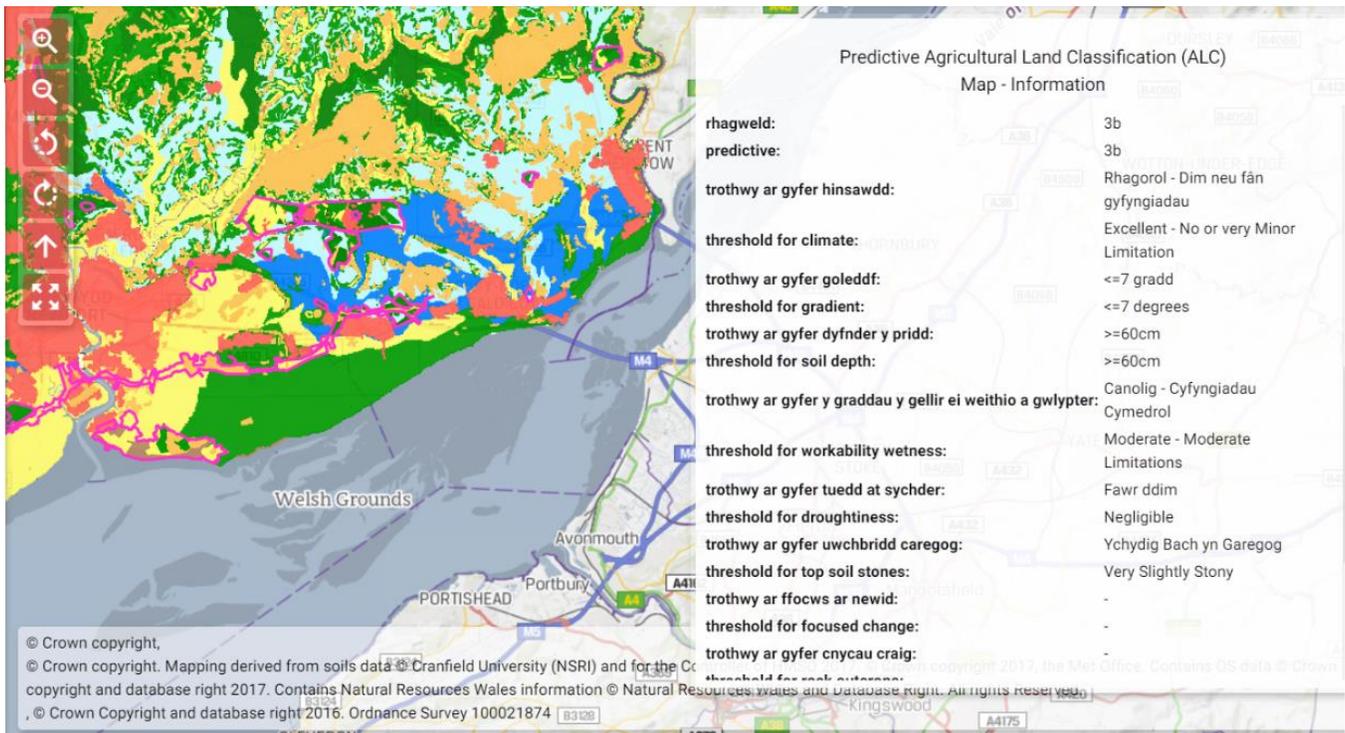
Agricultural land quality

Study area defined by geographic extent of potential impacts

The entire site is composed of fields in agricultural use. The study area for agricultural land quality is limited to the agricultural fields within the development site.

Known sensitive receptors / resources within the study area

The sensitive resource in relation to agricultural land quality is best and most versatile (BMV) agricultural land, which is land classified as Grades 1, 2 and 3a. This land is excellent to good quality land which is able to best deliver food and non-food crops. Predictive agricultural land classification (ALC) mapping (copied below) shows that the land within the site is predicted to be grade 3b which is described as moderate.



Scoped in or out of the Environmental Impact Assessment

An assessment of the effects on BMV land is scoped out of the EIA based on the likely absence of BMV within the site, as confirmed by the Department for Environmental and Rural Affairs, Welsh Government (see Appendix 3).

Consultation

The following consultation was carried out and no further consultation is proposed related to ALC.

Consultee	Date	Notes
Department for Environmental and Rural Affairs, Welsh Government	29/10/2018	Email correspondence and telephone conversation. Site area shared and email reply stating that 'It is the Department's belief that the search area is likely to be no better than ALC Grade 3b; possibly a mosaic of 3b and 4. The Department does not recommend commissioning an ALC survey. The Predictive ALC Map should be taken as best available evidence.'

Ecological receptors (habitats and species)

Study area defined by geographic extent of potential impacts

The study area for the biological records search provided by South East Wales Biodiversity Records Centre (SEWBRc) in Cardiff is 2 km radius centred on the site. The data will identify and locate records of species of animals and plants recorded in the search area over the last 50 years and will identify sensitive ecological receptors.

The study area for ecology will vary depending on the ecological receptor in question as set out in CIEEM Guidance 2.19 – 2.23. The extent of study area for ecological receptors relates to the zone of likely impact

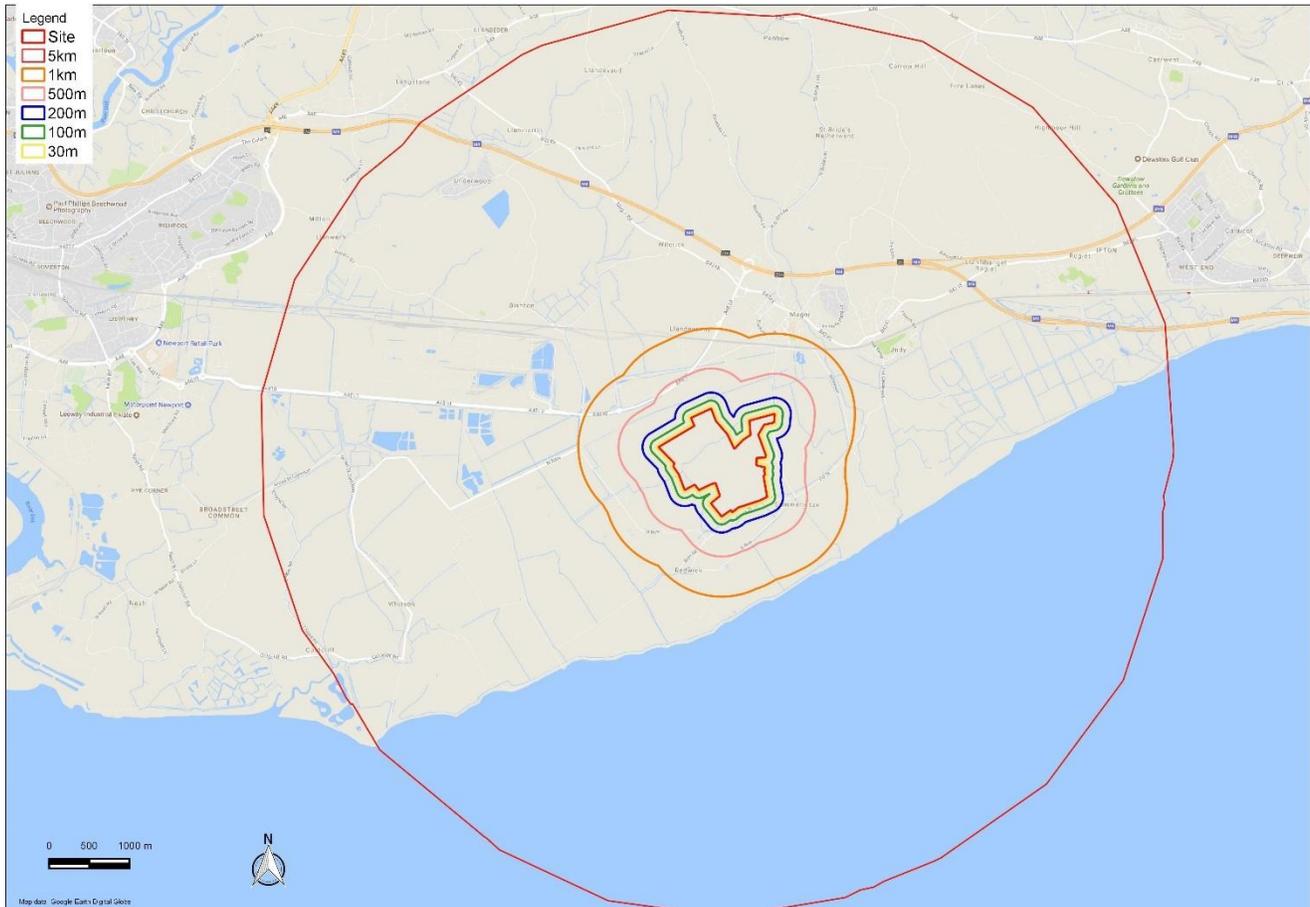
EIA Scoping Report for Rush Wall Solar Park

or 'zone of influence' as a result of the solar park, as set out below. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries and is shown below.

Solar park zone of influence on ecological receptors (construction, operation and decommissioning)

Ecological feature	Zone of influence – Construction phase	Zone of influence – Operational phase	Zone of influence – Decommissioning phase
Hedgerows, reedbeds, ponds, eutrophic standing waters, coastal and floodplain grazing march, arable field margins	Site area	Site area	As per construction phase
Shrill Carder Bee <i>Bombus sylvarum</i>	Site area		
Badgers	Site area plus 30 metres		
Breeding birds	Site area plus 100 metres		
Winter birds	Site area plus 200 metres		
Passage birds	Site area plus 200 metres		
Water vole	Site area plus 30 metres		
Otter	Site area plus 30 metres		
Bats	Site area plus 100 metres		
Reptiles	Site area plus 30 metres		
Amphibians	Site area plus 30 metres		
Great Crested Newts	Site area plus 500 metres		
Aquatic invertebrates associated with the reed network	Site area plus 30 metres		
Aquatic plants associated with the reed network	Site area		
Terrestrial invertebrates along reed banks and associated with hedgerows	Site area plus 30 metres		
Internationally designated sites (e.g. Severn Estuary Special Protection Area (SPA), Severn Estuary Ramsar)	5 km radius	5 km radius	5 km radius
Nationally designated sites (e.g. Gwent Levels SSSI - Redwick And Llandeenny unit, Gwent Levels SSSI – Magor and Undy Unit, Magor Marsh SSSI, Severn Estuary SSSI)	5 km radius	5 km radius	5 km radius
Local sites of importance for nature conservation (e.g. Magor Marsh Gwent Wildlife Trust Nature Reserve)	1 km radius	1 km radius	1 km radius

Ecological Zone of Influence Map

**Known sensitive receptors / resources within the study area**

The known sensitive ecological receptors are set out in the table above. In terms of statutory and non-statutory protection the below provides a summary.

STATUTORY SITES

1. The site is within the Gwent Levels SSSI - Redwick And Llandeenny unit (940 hectares). This site was selected for the following reasons:
 - Aquatic invertebrates and plants associated with the ree network.
 - Terrestrial invertebrates along ree banks and associated with hedgerows.

2. The site is immediately adjacent to Gwent Levels SSSI – Magor and Undy Unit. This site was selected for the following reasons:
 - Aquatic invertebrates and plants associated with the ree network.
 - Terrestrial invertebrates along ree banks and associated with hedgerows.
 - Brackish water fauna and flora towards its seaward edges.

3. Magor Marsh SSSI is located 430 meters to the north east of this site. This site was selected for the following:
 - Aquatic plants associated with the reed network.
 - Breeding water and marsh birds.

4. The following SSSIs are within the zone of influence:
 - Gwent Levels – Whitson
 - Gwent Levels – Nash and Goldcliff
 - Penhow Woodlands
 - Langstone-Llanmartin Meadows
 - Rectory Meadow - Rogiet

5. The Severn estuary 1.3km to the south has a number of nationally and internationally important designated sites:
 - Severn Estuary SPA - This site was 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 - The site is particularly important 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 - Estuarine fauna including water fowl, migratory fish, invertebrates. Important for wintering and passage birds.

NON-STATUTORY SITES

- Magor Marsh Gwent Wildlife Trust Reserve – Land adjacent to the east of the site is part of this reserve.

EUROPEAN PROTECTED SPECIES (CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017)

- Otter are likely to be active within the reens and may be using rough ground for resting.
- Water Vole are known to be in the area the re-introduction has been completed on the levels.
- Bats – although agriculturally managed grasslands have little value for bats, hedges and reens may be used by foraging and commuting bats, whilst mature trees may support roosting bats.
- Great Crested Newt – there is unknown potential for Great Crested Newt to be associated with ponds and reens.

NATIONALLY PROTECTED SPECIES (WILDLIFE AND COUNTRYSIDE ACT 1981)

- Breeding birds – there is unknown potential for breeding birds to be associated with reens, hedgerows and farmland.
- Reptiles – there is unknown potential for Grass Snake to be associated with reens, hedgerows and farmland.
- Amphibians - there is unknown potential for amphibians to be associated with reens, hedgerows and farmland.

PROTECTION OF BADGERS ACT 1992

It is likely that Badgers are active within this area.

HABITATS OF PRINCIPAL IMPORTANCE (SECTION 7 OF THE ENVIRONMENT (WALES) ACT 2016)

There is potential for the following habitats of principal importance to be associated with the site:

- Hedgerow (also protected under the Hedgerow Regulations, 1997)
- Reedbed
- Pond
- Eutrophic standing waters
- Coastal and floodplain grazing marsh
- Arable field margins

SPECIES OF PRINCIPAL IMPORTANCE (SECTION 7 OF THE ENVIRONMENT (WALES) ACT 2016)

There is potential for the following species of principal importance to be associated with the site:

- Shrill Carder Bee *Bombus sylvarum*
- To be determined from biological records search.

Scoped in or out of the Environmental Impact Assessment

A full assessment of the likely significant effects on ecological receptors will be carried out for the EIA and presented in the Environmental Statement.

Proposed baseline work to inform assessment

PRELIMINARY ECOLOGICAL APPRAISAL

This will be the key baseline survey and will identify all features of conservation importance that could constitute a constraint to the proposals for this site and will include a biological records search for all notable species and nature conservation sites within 2km from South East Wales Biodiversity Records Centre. Where appropriate, recommendations for phase 2 surveys will be made along with impact avoidance, mitigation and post-development enhancement to ensure compliance with wildlife legislation and relevant planning policy. This survey will be prepared in accordance with the 'Guidelines for Preliminary Ecological Appraisal' produced by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017). The survey will include a Phase 1 Habitat Survey and mapping.

PHASE 2 SURVEYS

Based on knowledge of the site gained from personal experience and free online resources, it is expected that the following Phase 2 ecology surveys will be required, although they may be modified following the outcome of the preliminary ecological appraisal.

Passage and winter birds surveys

Passage and winter birds survey began in October 2018 and will carry on until March 2018 as follows:

- 4 daytime passage bird survey visits in October 2018 and 4 in March 2018 comprising a walked transect across the site and will take account of the tidal state of the estuary.
- 2 daytime survey visits in each of the months of November 2018, December 2018, January 2019 and February 2019 with each visit comprising a walked transect across the site and will take account of the tidal state of the estuary.
- Each month from October 2018 to January 2019: 2hr watches on the estuary shore for birds moving inland during the rising tide to gather data on bird behaviour as the rising tide limits their foraging and roosting areas and pushes them inland towards the proposed development site. These will be completed during the same visit as the passage and winter bird surveys.
- Each month from October 2018 to January 2019: a survey aided by night vision equipment, will be completed to determine the use of the proposed development site by birds at night. These will be completed during the same visit as the passage and winter bird surveys.

These surveys will be completed by an experienced ornithologist, recording birds that are active within the development footprint and adjacent areas. Although all bird species will be recorded, the prime target are passage and overwintering birds that are interest features of statutory nature conservation sites associated with the Severn Estuary.

Bat activity transects and remote monitoring

The aim of the survey is to characterise the assemblage of bats using the site allowing an assessment of the potential impacts of the proposals for this site. Survey effort will be informed by the preliminary ecological appraisal and in-line with guideline published by the Bat Conservation Trust (Collins, 2016). These will be completed in the period April to October 2019.

Breeding bird survey

Fortnightly breeding bird surveys will be completed using a methodology based upon a combination of Common Bird Census methodology, devised by the British Trust for Ornithology (BTO), and the national Breeding Bird Survey (BBS) techniques, jointly devised by the BTO, Royal Society for the Protection of Birds and the Joint Nature Conservation Committee. This will include the site and a 250 metre buffer. These will be completed on four occasions in the period April to July 2019.

Water vole survey

All areas within 2 metres of watercourses associated with the site, plus a 30 metre buffer, will be carefully searched for field signs of Water Vole by an ecologist who meets the required competency level for Water Vole surveys (CIEEM, 2016). These will be completed in the period April to October 2019.

Otter survey

All areas within 50 metres of watercourses associated with the site will be carefully searched for field signs of Otter by an ecologist who meets the required competency level for Otter surveys (CIEEM, 2016). A single survey visit in 2019 will inform the EclA. Although there are no constraints to Otter survey periods, these are best completed in Spring when bankside vegetation is sparse.

Terrestrial and aquatic invertebrate surveys

Aquatic surveys will follow the methodology given in ‘A manual for the survey and evaluation of the plant and invertebrate assemblages of ditches’ published by Buglife. Terrestrial methodology to be agreed with consultees (NRW, Buglife and Bumble Bee Conservation Trust).

Botanical survey

Habitats will be mapped as per National Vegetation Classification (NVC) with aquatic plant surveys completed at a relevant time of the year. NVC surveys of terrestrial habitats will be completed in the period May to August 2019, with aquatic plant surveys between Mid-June to September 2019.

Badger survey

A walkover survey will be completed within the proposed development site, and in areas within 30 metres of the proposed development site. All features resulting from Badger activity, including sett entrances, latrines, foraging scrapes and well-worn pathways, will be accurately mapped. A single survey visit in 2019 will inform the EIA. Although there are no constraints to Badger survey periods, these are best completed in late winter, early spring when activity levels are increasing and concealing vegetation is sparse.

Amphibians surveys

All accessible watercourses and ponds within 500 metres will be assessed for their potential to support great crested newt through the calculation of Habitat Suitability Index (HSI). This can be completed at any time of year. If HSI indicate further surveys are required, eDNA assessments for presence absence would be completed in the period 15 April to 30 June, or population size assessment in the period Mid-march to Mid-June 2019.

Consultation

Alongside and continuing after this EIA scoping consultation which requests feedback on the scope and methodologies for assessment, the following consultation is planned.

Consultee	Aim of consultation	Trigger for consultation
Local Bat Group	To seek local knowledge of the local bat population.	Several months prior to bat surveys starting in April.
NRW, Buglife and Bumble Bee Conservation Trust	Agree terrestrial invertebrate survey methodology.	During EIA scoping consultation.
Representatives of Magor Marsh Wildlife Trust site	To present the outline plans of the proposed scheme in order to start an early and open dialogue with a view to incorporating sound ecological benefits.	Prior to / or during EIA scoping consultation.
Newport Ecologist	To gain feedback on results of phase 2 surveys.	Draft preliminary ecological appraisal complete for comment.
NRW	Present outline plans and gain feedback on mitigation proposals.	Outline design and mitigation measures agreed in principle with BSR Energy.
Gwent Wildlife Trust		
Newport Ecologist		
NRW		
RSPB	Seek formal feedback on the assessment of effects on ecological receptors and	
Gwent Wildlife Trust		
Buglife		

Bumble Bee Conservation Trust	resources in the Draft Environmental Statement.	Draft Environmental Statement consultation with draft DNS application prior to submission.
Local Bat Group		
British Ornithological Trust		

Guidance and best practice

In terms of guidance on methodology, the Chartered Institute for Ecology and Environmental Management (CIEEM) Guidelines for ecological impact assessment will be followed. The specific guidance and best practice set out in the References section at the end of this report will also be followed.

Methodology and significance criteria

Potential effects on valued receptors, adverse or positive, will be identified. The effects will then be assessed and characterised according to the following criteria:

- Direction (positive, adverse, or neutral)
- Magnitude of impact
- Spatial extent over which the impact would occur
- The temporal duration of the impact
- Permanence
- Frequency and timing
- Potential for cumulative effects.

The assessment identifies any information gaps and any uncertainties that may be material in the confidence of predicting effects. Confidence levels are assigned following the CIEEM (2016) scale. Confidence in predictions is given as:

- Certain/near-Certain: probability estimated at 95% chance or higher.
- Probable: probability estimated above 50% but below 95%.
- Unlikely: probability estimated above 5% but less than 50%.
- Extremely Unlikely: probability estimated at less than 5%.

The precautionary principle is applied whenever there is substantial doubt. The impact timescale is given as:

- Acute, immediate, and discrete;
- Short-term: 0-3 years;
- Medium term 3-10 years; and
- Long term: 10 years +.

Effects include, but are not restricted to:

- loss or change of habitat;
- disturbance during construction, operation, and decommissioning;
- chemical effects from airborne pollutants; and

- contravention of legal status or protection (including where the receptor would not meet or exceed the value threshold).

The assessment will identify those positive and negative impacts which could result in a ‘significant’ effect, based on the integrity and the conservation status of the ecological feature. Effects are unlikely to be significant where features of local value or sensitivity are subject to small scale or short-term impacts. However, where there are several small-scale effects that are not significant alone, it may be that, cumulatively, these may result in an overall significant effects.

For the purposes of this assessment, the significance of the effect is determined using the matrix below, where the scale of the effect is measured against the value of the receptor.

An ecologically significant effect is defined as an effects (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area. For the purposes of this assessment the effects that are identified in shaded cells (moderate and large effects) are significant.

Matrix for assessment of significance of effect

Scale of effect	Evaluation of nature conservation receptor				
	Very high/ International	High/ national	Medium/ regional	Low/ local	Negligible/site only
Major positive effect	Large positive	Large positive	Large positive	Large positive	Large positive
Intermediate positive effect	Moderate positive	Moderate positive	Moderate positive	Moderate positive	Moderate positive
Minor positive effect	Slight positive	Slight positive	Slight positive	Slight positive	Slight positive
Neutral	None	None	None	None	None
Minor negative effect	Slight adverse	Slight adverse	Slight adverse	Slight adverse	None
Intermediate negative effect	Large adverse	Large adverse	Moderate adverse	Slight adverse	None
Major negative effect	Very large adverse	Very large adverse	Large or moderate adverse	Slight adverse	None

EUROPEAN PROTECTED SPECIES AND SITES – DEFINITION OF SIGNIFICANCE OF EFFECT

For European Protected species such as otter, water vole, bats and great crested newts The Conservation of Habitats and Species Regulations 2017 require that disturbance should not:

‘significantly affect the ability of any significant group of animals of that species to survive, breed, or rear or nurture their young; or the local distribution or abundance of that species’.

Any disturbance above this threshold would be defined as significant for a European Protected Species and mitigation licensing may be required to allow lawful development.

For a European Protected Site, such as the Severn Estuary SPA, the integrity of a site is:

‘the coherence of the ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.’

Development should not have a significant effect on the integrity of a European Protected Site.

Mitigation

The key to effective mitigation will be to design sufficient avoidance during the design stage in order to limit adverse impact on the aquatic communities associated with the reens and passage/overwintering/breeding bird populations. This will involve ecological advice from the commencement of design, based on the results of surveys carried out and expertise, such as buffer areas adjacent to reens. This will also allow compensation and enhancement to be built in, where appropriate. Ongoing ecological management, enhancements and planting will be detailed in the LEMP.

In terms of the construction phase, control measures such as reen maintenance and sediment run-off control, will be detailed within the CEMP. Existing farm access tracks and gateways would be used wherever possible during construction, operation and decommissioning. Any hedgerow lost would be replaced resulting in no net loss of hedgerow habitat.

During construction, operation and decommissioning buffers would be maintained from reens at the field margins, with wider buffers from the main reens. No obstructions would be placed within watercourses in order to minimise impacts on Otter, Water Vole, Reptiles and amphibians. Ecological sensitive areas would not be artificially lit during construction, operation and decommissioning in order to minimise impacts on bats, invertebrates, Otter and nocturnal bird movements.

European designated nature conservation sites

There is potential for significant adverse effect on the Severn Estuary Special Protected Area (SPA) and Severn Estuary RAMSAR should avifauna (interest features for these designated sites) be relying on habitats within the site. Any impact on the overwintering and passage birds that are interest features of these sites would probably be limited to temporary disturbance during the construction and decommissioning phases, and habitat loss during the operational phase.

Avifauna interest features of internationally designated sites

Common name	Ramsar interest feature?	SPA interest feature?
Gadwall	Y	Y
Whimbrel	Y	Y
White-fronted goose	Y	Y
Dunlin	Y	Y (over winter)
Redshank	Y	Y (over winter)
Shelduck	Y	Y (over winter)
Ringed plover	Y	Y (passage)
Lesser black-backed gulls	Y	
Bewick's swan		Y
Grey plover		Y
Pochard		Y
Teal		Y

Tufted duck		Y
Wigeon		Y
Curlew		Y (over winter)
Pintail		Y (over winter)
Lapwing		Y
Mallard		Y
Shoveler		Y

Ground conditions/ contaminated land

A brief review of the history of the Site suggests that it has remained under agricultural use since the earliest Ordnance Survey mapping, dated 1882. As a result, there is unlikely to be a legacy of ground contamination from previous use of the site that may interact with the proposed development and as such the EIA proposes to scope out an assessment of ground conditions or contaminated land.

Reen water quality

With respect to water resources, the key features afforded protection by the notification of the Gwent Levels SSSI - Redwick And Llandeenny unit are found within the many reens that criss-cross the site and surrounding area. The key consideration with respect to interaction of the development with water is therefore associated with the potential for the development phases to impact on groundwater and runoff water quality, and hence any impact this may have on the water quality in the reens on and adjacent to the site.

Farming practices can impact water resources due to, for example, suspended sediment, fertilizer use or herbicide leaching. The proposed development also has the potential to impact on these water resources, both during the construction phase (for example due to suspended sediment release, fuel spills or leaks) and during the operational phase (for example due to an increase or decrease in run-off, change in land use).



Reens on the southern boundary of site near Green Street.

Study area defined by geographic extent of potential impacts

Whilst there is connectivity across the network of reens through the wider Caldicot Levels, water within the reens on the site is classed ecologically as eutrophic standing water. This is indicative of the near-static nature of water flow within the reens on site. As such, impacts to water quality within the reens is considered likely to be localised. A study area of the site plus a 30 m buffer is considered suitable. This aligns with the study area proposed assessment of effects on aquatic ecology.

Identification of sensitive receptors / resources and the study area

The receptors comprise both the semi-natural water resource within the reens on and within 30m of the site, and (indirectly) the aquatic species supported by the reen habitat.

Proposed baseline work to inform assessment

A baseline assessment will be undertaken in order to determine the current interaction between the farming methods on the site and the reens. This assessment will be informed by:

- a farm impact interview, collating information from the farmer on current farming practices, including; land-use; crop types; grazing patterns; fertilisers/ pesticides/ herbicides/ fungicides consumption, application and timings; reen maintenance and agri-environment/ environmental stewardship measures;
- review of literature sources to ascertain the expected run-off and leaching of sediment, fertilisers/ pesticides/ herbicides/ fungicides associated with the current farming practices;
- a reen condition assessment, comprising a combination of visual assessments of water quality (turbidity) at selected monitoring points throughout a full range of weather conditions, plus cross-reference to the ecological baseline assessment of aquatic flora and fauna;
- a review of current and historic NRW favourability assessment of the SSSI Unit that cover the site; and
- to consult NRW in order to obtain any water quality or other monitoring results that may be available for the reens on the site.

Consultation

Alongside and continuing after this written EIA scoping consultation which requests feedback on the scope and methodologies for assessment, the following face to face or telephone consultation is planned.

Consultee	Aim of consultation	Trigger for consultation
NRW	To present and seek agreement for the baseline assessment methodology. To seek views on the relationship between farming practice, water quality and SSSI condition. Data requests.	During EIA consultation

Guidance and best practice

The Scottish Environmental Protection Agency (SEPA), in conjunction with NRW, have released a series of Guidance for Pollution Prevention (GPP) documents. There is a programme of release for these document, replacing the previous Pollution Prevention Guidance documents (PPGs). Where no GPP exists, PPGs remain current. Amongst these documents, those pertaining to the interaction of the proposed development and water resources include “GPP 5: Works and maintenance in or near water” and “PPG 6: Working at construction and demolition sites”.

Other relevant guidance documents released by Welsh Government a “Code of practice for using plant protection products”. The reens on site fall within the catchment of the River Severn. The “Severn river basin district River basin management plan” and associated documents published by the Environment Agency and NRW provided context as to the current water quality status and water quality objectives. Against this wider backdrop, NRW have published a Briefing Note entitled “NRW Advice on Water Quality Standards to be used for Impact Assessment of the M4 Relief Road on the Gwent Levels Ditch System”. This document was produced

as part of NRW’s response to the planning application for the M4 Corridor around Newport (M4 CaN), but is deemed to have direct relevance to this project also.

Methodology and significance criteria

The critical receptor with respect to the aquatic environment is the quality of the water within the reens on the site. These reens are protected as SSSI and support a range of aquatic flora and fauna. Due to their statutory level of protection, the reens are assigned a high sensitivity for the purposes of environmental impact assessment, according to the following proposed matrix.

Classification of sensitivity

Classification	Definition
High	The receptor has little ability to absorb change without fundamentally altering its present character, is of high environmental value, or of international importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional or national importance.
Low	The receptor has high capacity to absorb change without significantly altering its present character, has low environmental value, or is of local importance.

The potential impacts of the final design will be identified and classified according to their magnitude of change. These impacts could be either positive or negative. The categories of the magnitude of change are defined below.

Classification of magnitude of impact

Classification	Definition
Large	There would be fundamental changes to the water quality, hydrology or dependent ecosystem (e.g. an ecosystem no longer functions or the function/s improve due to a change in water quality).
Medium	There would be material but non-fundamental changes to the water quality, hydrology or dependent ecosystem. (e.g. a water body suffers a detrimental change/ loss or benefits from a change, but remains largely intact and functioning).
Small	There would be detectable but non-material changes to the water quality, hydrology or dependent ecosystem. (e.g. minor changes/ very local water quality detriment, but the ecosystem remains largely as was).
Negligible	There would be no perceptible changes.

Combined with the sensitivity of the impacted receptor, the significance of the potential effect will then be categorised according to the matrix presented below.

Matrix for assessment of significance of effects

		Magnitude of Impact			
		Large	Medium	Small	Negligible
Sensitivity	High	Major	Moderate or Major	Minor or Moderate	Minor
	Medium	Moderate or Major	Moderate	Minor	Negligible or Minor
	Low	Minor or Moderate	Minor	Negligible or Minor	Negligible

Mitigation

Mitigation for water resources during construction would be set out in the CEMP and include controls to limit sediment run-off. During operation the measures set out in the LEMP would aim to maintain an improvement in water quality (such as turbidity). The land use change from maize cropping and the associated ploughing regime is expected to result in an improvement as a result of a reduction sediment run-off increasing turbidity and a reduction in farm inputs (fertilisers and pesticides/herbicides/fungicides) entering water courses.

Landscape character

Study area defined by geographic extent of potential impacts

The study area will be 5km radius measured from the boundary of the proposed development as this will be where the most noticeable effects on landscape character, including landscape relevant designations, will occur. The study area will include the flat levels landscape, recognised for its local and national importance, in which the proposed development is situated, as well as the estuarine fringes broadly to the south and the rising largely agricultural landscape broadly to the north.

Identification of sensitive receptors / resources and the study area

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, within Newport Unitary Authority only.

In addition, the proposed development site and the majority of the wider levels landscape are recognized as largely ‘outstanding’ and ‘high’ value in all five LANDMAP aspect areas. All five LANDMAP aspect areas will be considered within the assessment, focusing on the ‘outstanding’ and ‘high’ value areas.

Proposed baseline work to inform assessment

Current baseline information will be collected through a combination of desk study and site survey within the study area to identify the location and extent of landscape relevant designations and national and local landscape character, including all five LANDMAP aspect areas, focussing on the ‘outstanding’ and high’ value areas.

A number of viewpoints to inform the assessment have been selected, based on the following criteria:

- A balance of viewpoints from the main directions of view;
- Provide a representative selection of views from landscape relevant designations and landscape character areas towards the proposed development; and
- For areas most likely to experience the greatest change of view.

The potential viewpoints to inform the assessment are identified in the visual assessment methodology section above.

Consultation

Alongside and further to this EIA scoping consultation, the following face to face or telephone consultation is planned:

Consultee	Aim of consultation	Trigger for consultation
NRW, Newport City Council and Monmouthshire County Council - Landscape	To present the proposed methodology and scope in person in order to gain understanding and result in a more informed scoping response.	EIA scoping consultation
NRW, Newport City Council and Monmouthshire County Council - Landscape	To present the viewpoint photography and any proposed visual mitigation.	Once baseline photography complete and outline mitigation planting developed.

Guidance and best practice

The assessment will be carried out by experienced chartered landscape architects. They apply professional judgements in a structured and consistent way, following the guidelines produced by the relevant professional bodies concerned with landscape and visual impact assessment.

The Guidelines for Landscape and Visual Impact Assessment (GLVIA) will be the key reference document and guidance on best practice for the assessment.

In addition, the various LANDMAP guidance notes by NRW will be referenced.

Methodology and significance criteria

The landscape’s sensitivity to change, within the proposed study area will be identified and described. The following criteria will be used:

Sensitivity	Landscape Description
High	Distinctive landscape elements and/or character, susceptible to change. Includes areas with a very strong positive character with valued features that combine to give an experience of unity, richness and harmony. These are landscapes that may be considered to be of particular importance to conserve and which may be particularly sensitive to change. No detractors present. Designations are likely to be present. It is a landscape of importance, or rarity on a regional or national scale. Broadly comparable to the LANDMAP defined ‘outstanding’ category.
Medium-high	Medium to highly valued landscape elements and/or character with low tolerance to change. May be designated with few/no detractors present. Broadly comparable to the LANDMAP defined ‘high’ category.
Medium	Moderately valued landscape elements and/or landscape character, reasonably tolerant to change. Includes areas that exhibit positive character but which may have evidence of alteration, degradation and erosion of features resulting in areas of more mixed character. Some detractors likely to be present. Broadly comparable to the LANDMAP defined ‘moderate’ category.
Medium-low	Weak landscape structure, partly degraded with frequent detractors and potentially tolerant of significant changes. Non-designated landscape but with some locally valued elements and/or character. Broadly comparable to the LANDMAP defined ‘low’ category.
Low	Generally developed landscape, tolerant of substantial change. Includes elements and/or areas that are generally negative in character with few, if any, valued features. There is a weak landscape structure and the land use dominates. The landscape is tolerant of substantial change. The area could consist of industrial, derelict and randomly arranged developments with no aesthetic value or evidence of effective mitigation. No landscape designations apply.

An ‘impact’ is defined as a change likely to occur as a result of the construction, operation and de-commissioning of the proposed development. The scale or magnitude of impact is determined through the assessment of the duration and extent of the changes to the landscape resource as a result of the proposed development.

The duration of impact is the time period over which the changes as a result of the proposed development occurs. Most impacts as a result of the proposed development would be long-term, however medium or short-term impacts may be identified where mitigation such as planting is proposed. For example, it is expected that the maturing of proposed planting will screen views over time. In addition, the construction impacts would be short-term.

The extent of the impact indicates the geographic area over which the changes as a result of the proposed development occur. The extent of the impacts could be limited (for example, only a small part of the site or view); localised; intermediate or wide.

The definitions of the magnitude of impact on landscape character are described below:

Magnitude of Impact	Landscape Description
High	<p>High levels of change to landscape elements/ landscape character.</p> <p>The proposed development will be very prominent in the landscape and will be perceived as a determining factor of the landscape character.</p> <p>The proposed development will lead to a major alteration to the landscape character.</p> <p>The proposed development, when perceived with other solar schemes, will be immediately apparent and contribute to a 'landscape with solar schemes.'</p>
Medium-high	<p>Prominent level of change to landscape elements/landscape character.</p> <p>The proposed development will be obvious in the landscape and will generally be perceived as a determining factor in local landscape character.</p> <p>The proposed development, when perceived with other solar schemes, would be obvious and contribute to a 'landscape with solar schemes.'</p>
Medium	<p>Partial levels of change to landscape elements/landscape character.</p> <p>The proposed development will be noticeable but not necessarily a determining factor of the landscape character.</p> <p>The proposed development would lead to a change to the landscape character.</p> <p>The proposed development, when perceived with other solar schemes, would be apparent and contribute to a 'landscape with solar schemes.'</p>
Medium-low	<p>Minor levels of change to landscape elements/landscape character.</p> <p>The proposed development will be perceived but will not be a determining factor of the landscape character.</p> <p>The proposed development, when perceived with other solar schemes, would be noticeable and may contribute to a 'landscape with solar schemes.'</p>
Low	<p>Low levels of change to landscape elements/landscape character.</p> <p>The proposed development will be present and will be perceived as a background feature of the wider landscape character.</p> <p>The proposed development would lead to a minor change to the landscape character.</p> <p>The proposed development, when perceived with other solar schemes, will not be immediately noticeable, although it may contribute to a 'landscape with solar schemes.'</p>
No change	Indiscernible level of change. Equivalent to no change.

The level of the effects on landscape character areas (including landscape elements and landscape relevant designations) is determined by balancing the sensitivity of the receptor and the magnitude of impact as a result of the construction, operation and de-commissioning of the proposed development.

The correlation between the sensitivity of the landscape resource and the magnitude of impact to determine the level of effect is summarised below. The matrix is however not a prescriptive tool and the analysis of the level of effects requires the exercise of professional judgement.

		Sensitivity of receptor				
		High	Medium-high	Medium	Medium-low	Low
Magnitude of impact	High	Major	Major or Moderate	Moderate	Moderate or Minor	Minor
	Medium-high	Major or Moderate	Moderate	Moderate	Moderate or Minor	Minor
	Medium	Moderate	Moderate	Moderate	Minor	Minor or Negligible
	Medium-low	Moderate or Minor	Minor	Minor	Minor or Negligible	Negligible
	Low	Minor	Minor	Minor or Negligible	Negligible	Negligible
	No change	Neutral	Neutral	Neutral	Neutral	Neutral

Effects are defined below and it is also important to note that effects can be adverse (negative) or beneficial (positive).

Level of Effect	Landscape Description
Major	Where the proposed development would be noticeably out of scale with the character or noticeably alter a recognised landscape or landscape feature.
Moderate	Where the proposed development would be at variance with the character and/or landscape elements.
Minor	Where the proposed development would be at slight variance with the character and/or landscape elements.
Negligible	Where the proposed development would have a slightly discernible effect on the landscape character and/or landscape elements.
Neutral	No change

Mitigation

Mitigation measures to help minimise the potential impacts and effects will be incorporated into the distinct phases of the proposed development, including:

- During the site selection (by containing the proposed development within a series of regular fields and by avoiding sensitive designations, areas and receptors)
- Design process (designed in mitigation such as retention of boundary vegetation and using existing access points)
- Additional mitigation measures such as new planting, in combination with ecological advice
- Planning for construction, operation and de-commissioning.

Heritage

Study area defined by geographic extent of potential impacts

BURIED ARCHAEOLOGY

The study area for buried archaeology is the land within the site boundary. Known buried archaeology within the 1.5 km radius study area will be researched in order to identify likely potential for buried archaeology.

HISTORIC LANDSCAPE AND SETTING

The study area for effects on historic landscape as a result of the solar park is the Registered Historic Landscape of the Gwent Levels (see map provided). The study area for effects on the setting of high status/designated historic assets as a result of a solar park is a 5km search radius from the centre of the site.

Identification of sensitive receptors / resources and the study area

BURIED ARCHAEOLOGY

Despite the fact the site covers a large area, the only mechanical excavation required is for burying underground cables and for the concrete foundations for critical infrastructure such as the substation and inverters.

No designated site, listed buildings or scheduled ancient monuments (SAM) are recorded within the site, as shown on the Registered Historic Landscape and Scheduled Ancient Monuments within 5km map. A single non-designated site is located within the development area. This is an incomplete round-angled, subrectangular, ditched & banked enclosure of unknown date, c.55m ENE-WSW by 45m N-S, overlain & obscured by ridge & furrow cultivation & associated boundaries (nPRN 309437). No evidence of this was found during the site visit and LiDAR data suggests it may be the remains of historic field boundary.

HISTORIC LANDSCAPE AND SETTING

The site lies wholly within the Caldicot area of the Registered Historic Landscape of the Gwent Levels (HLW (Gt) 2) which is rated Outstanding and shown on the Registered Historic Landscape and Scheduled Ancient Monuments within 5km map.

There are two SAMs within the 1km of the site (the nearest two SAM lies some 1 km to the NNE in the village of Magor) with a SAM also located some 2.7km to the west of the development area. In total there are sixteen SAMs within the wider 5km study area. There is no inter-visibility between the site and local SAMs. Views from Wilcrick Hill Camp Scheduled Monument towards the site are screened by woodland on and surrounding the SAM.



View of Wilcrick Hill Camp (not taken from the site)

Proposed baseline work to inform assessment

A Desk Based Assessment (DBA) will be submitted to Glamorgan-Gwent Archaeological Trust (GGAT) during EIA Scoping consultation and forms the baseline data for the site for both buried archaeology and historic landscape and setting.

BURIED ARCHAEOLOGY

A geophysical survey might be appropriate if there were to be extensive mechanical excavation across the whole site. Due to the restricted nature of the excavations (mainly for cables) a geophysical survey in these limited linear excavation areas would not provide interpretable results. In addition, a geophysical survey employing traditional techniques would likely only map any shallowly buried archaeology. Roman and pre-historic archaeology on the Caldicot Levels are commonly in excess of one metre below current ground levels and in some instances in excess of two metres where magnetometry and resistivity surveys will struggle to map the buried archaeology.

HISTORIC LANDSCAPE AND SETTING

An assessment of the effect of the scheme on the setting of high status assets within the study area will be carried out. The baseline data will be provided by the HER search and the Cadw enquiry.

There is no inter-visibility between the site and local SAMs. Views from Wilcrick Hill Camp Scheduled Monument towards the site are screened by woodland on and surrounding this SAM.

Consultation

Alongside and following EIA scoping consultation, the following consultation has been carried out or is planned:

Consultee	Aim of consultation	Trigger for consultation
GGAT's Archaeological Planning Department	To obtain approval for a WSI for the DBA (to ensure quality and scope).	Pre - EIA Scoping– used for DBA.
GGAT on behalf of Newport City Council	To obtain baseline heritage data within the 1.5km study area from the regional HER.	Pre - EIA Scoping – used for DBA.
Cadw	To obtain scheduled ancient monument and Listed Building data within the wider 5km study area.	Pre – EIA Scoping – used for DBA.
GGAT	Consult on content of DBA and EIA scoping.	During EIA Scoping consultation.
Cadw	Identify the historic assets that might be affected by a proposed change or development and their significance.	During EIA Scoping consultation.

Guidance and best practice

BURIED ARCHAEOLOGY

- Standard and Guidance for Archaeological Desk-Based Assessment, as produced by the Chartered Institute for Archaeologists (Cifa 2014); and
- Design Manual for Roads and Bridges, Volume 11, Section 3 (Highways England 2007).

HISTORIC LANDSCAPE AND SETTING

- Setting of Heritage Assets in Wales (Cadw 2017);
- Guide to Good Practice on Using The Register Of Landscapes Of Historic Interest In Wales In The Planning And Development Process (Revised 2nd Edition); and
- Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process (Cadw 2007).

Methodology and significance criteria

BURIED ARCHAEOLOGY

In describing the value of archaeological assets the following value levels will be used:

- Very High (World Heritage Sites and other sites of international importance);
- High (Scheduled Monuments, undesignated assets of schedulable quality, assets of National importance that can contribute significantly to acknowledged national research objectives);
- Medium (Designated or undesignated assets of Regional importance that contribute to regional research objectives);
- Low (assets of local importance, assets compromised by poor preservation or poor survival of contextual associations);
- Negligible (assets with little or no surviving archaeological interest);

- Unknown (the importance of the resource has not been ascertained).

The magnitude of the potential impact on the archaeological assets (which can be either positive or negative), will be given as:

- Major (change to most or all key archaeological materials, such that the resource is totally altered; comprehensive changes to setting);
- Moderate (changes to many key archaeological materials, such that the resource is clearly modified; considerable changes to setting that affect the character of the asset);
- Minor (changes to key archaeological materials, such that the asset is slightly altered; slight changes to setting);
- Negligible (very minor changes to archaeological materials, or setting);
- No Change

HISTORIC LANDSCAPE AND SETTING

In assessing the impact of the proposed development, the assessment will be carried out based on these five stages:

- Stage 1 consists of gathering the contextual information.
- Stage 2 is an assessment of the direct physical impacts of the proposed development, in absolute terms, relative terms and landscape terms. Within this, tables will be provided to quantify these impacts and their magnitude.
- Stage 3 is an assessment of the indirect impacts of the development, in terms of both indirect, physical impacts and also indirect (non-physical) visual impacts. Again tables will be provided to quantify these impacts and their magnitude.
- Stage 4 is an evaluation of the relative importance of the Historic Character Area directly and/or indirectly affected by the proposed development. This will be done in relation to the whole of the Historic Character Area concerned and the whole of the historic landscape area on the Register, followed by an evaluation of the relative importance of the Historic Character Area concerned in the national context.
- Stage 5 is an assessment of the overall significance of the impact. This combines stages 2 and 4 to produce an assessment of the overall significance of the effect of the proposed development and the affect that altering the Historic Character Area has on the whole of the historic landscape area on the Register. This stage also includes an examination of mitigation or positive benefits and a concluding statement.

Avoidance and mitigation

As described in the Construction section of this report, the area of the site which would be disturbed through trenching for cables (between 0.6 m and 1.2 m depth) is expected to be 1% of the total site area. A further 1% of the area will be disturbed for piling the panel supports and excavating the base for the on site substation.

Evaluation would not be appropriate because the total area required to be archaeologically excavated to form a valid evaluation would far exceed the areas to be mechanically excavated for the purposes of the project. Such an approach would be out of line with the WAG strategy which states that archaeology should be preserved in situ.

If a watching brief is applied to this scheme it would be focussed on the areas where groundworks are to be undertaken i.e. the cable runs and concrete foundations for the substation and inverters. A Written Scheme of Investigations (method statement) would be written and approved before commencement of works.

Landscape mitigation for historic landscape or historic setting impact is not expected to be necessary, due to the likely negligible level of impact.

CUMULATIVE EFFECTS

Schedule 4 of the EIA Regulations states that the ES must include a description of the likely significant effects of the development on the environment resulting from 'existing and / or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources'. As the requirement is for the EIA to consider existing or approved projects, only those projects with consent need to be assessed in terms of cumulative effects with the proposed solar park, as set out below.

Project	Details and status	Scoped in or scoped out of Cumulative effects assessment
Gwent Farmers' Community Solar Scheme	Approved. Developer's website: http://www.llanverncommunityenergy.com/#documents DNS application portal: https://acp.planninginspectorate.gov.uk/ViewCase.aspx?caseid=3150137	Scoped in
Single wind turbine on land off Rush Wall Lane, Redwick, Caldicot, NP26 3DX	Undetermined NCC Planning application (ref: 18/0408) for a single wind turbine of maximum tip height of 130m. Link to planning application: http://planning.newport.gov.uk/swift/apas/run/WPHAPPDETAIL.DispIayURL?theApnlD=18/0408	Scoped out (as it is not approved). Will be included if approved prior to submission.
LDP allocations	LDP allocations are strategic approvals. Any development proposal would require planning permission in addition to this. Until such time as a planning permission has been granted, the land cannot be developed.	Scoped out (as it is not approved). Will be included if development/s approved prior to submission.
M4 CaN	https://beta.gov.wales/m4-corridor-around-newport At the public local inquiry (ended March 2018), independent inspectors examined the scope of the scheme, objectors' suggested alternatives and all social, cultural and economic issues. They have heard evidence from technical specialists, supporters and objectors. The inspectors are considering the Scheme and all suggested alternatives and will report on the findings.	Scoped out (as it is not approved). Will be included if approved prior to submission.

EIA Scoping Report for Rush Wall Solar Park

	Expected start of construction: end 2018 Completion: end 2023	
Newport and Cardiff Tidal lagoons	http://www.tidallagoonpower.com/projects/newport/ http://www.tidallagoonpower.com/projects/cardiff/	Scoped out (as it is not approved). Will be included if approved prior to submission.

The EIA will identify which sensitive resources and / or receptors are likely to be affected by the Rush Wall Solar Park and other cumulative schemes and to what extent. This information will be presented in tabular form and will make use of the assessments carried out by others for cumulative schemes.

In relation to visual amenity receptors, there are two types of cumulative impact. These include:

- Combined impacts which occur when the receptor is able to perceive two or more developments from one viewpoint, in combination or in succession;
- Sequential impacts which occur when the receptor has to move to another viewpoint to see different solar developments, travelling along regularly used routes such as major roads or popular or recognised public rights of way.

For cumulative landscape effects, the assessment will be concerned with the 'additional' effects of the proposed development when perceived with other approved schemes.

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APPENDIX 1: PROCEDURAL GUIDANCE FOR EIA SCOPING

Procedural guidance³ for developments of national significance states that applicants should provide their scoping request in the form of a scoping report containing all the information required by the EIA Regulations to make a scoping request, plus additional information

- an outline of the main alternatives considered and the reasons for selecting a preferred option;
- results of desktop and baseline studies where available;
- a record of consultation undertaken with relevant bodies (including any public engagement) to date; referenced plans presented at an appropriate scale to convey clearly the information and all known aspects associated with the proposal;
- guidance and best practice to be relied upon, and whether this has been agreed with the relevant bodies (for example the statutory nature conservation bodies or local authorities) together with copies of correspondence to support these agreements;
- methods used or proposed to be used to assess impacts and the significance criteria framework used;
- any mitigation proposed and the extent to which these are likely to reduce impacts;
- where impacts from consequential or cumulative development have been identified, how applicants intend to assess these impacts in the ES (for example, a high-level assessment of the grid connection where this does not form part of the proposed development for a power station);
- an indication of any European designated nature conservation sites that are likely to be significantly affected by the proposed development and the nature of the likely significant impacts on these sites;
- key topics covered as part of applicants' scoping exercise; and
- an outline of the structure of the proposed ES.

The guidance also states that elements of the proposed development likely to have a significant environmental effect should be identified. Where uncertainty remains, the applicant should provide as much detail as possible or assume the worst case (e.g. maximum dimensions of a building or feature).

Where the applicant wishes to scope out matters, justification should be provided, preferably supported by evidence of agreement with the relevant consultation bodies.

PINS Wales will determine whether matters may be scoped out, having taken into consideration the information provided in the applicant's scoping report and the comments provided by consultees.

³ Guidance on Developments of National Significance - Appendix 3: Environmental Impact Assessment, PINS Wales, March 2016.

APPENDIX 2: EXPERTISE

Expertise relevant to completeness and quality of an Environmental Statement (ES)

Person and role	Expertise relevant to completeness and quality of an Environmental Statement (ES)
Martin Rule, Ornithological surveyor	Martin has more than 30 years of ornithological survey experience that includes a number of renewable energy sites in Wales including the Gwent Levels.
Colin Hicks, Ecology assessment and LEMP author and manager of ecology surveys	Colin has 20 years of professional ecological experience and is a full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM), bound by their professional code of conduct.
Angela Watts, Landscape and Visual assessment, LEMP input	Angela is a Chartered Landscape Architect (CMLI) with over 20 years' experience. She has had extensive landscape design and planning experience with particular expertise in landscape and visual appraisals and landscape and visual impact assessments (LVIAs) for renewable energy schemes. Angela has recently completed LVIAs for renewable energy developments in Newport, Rhondda Cynon Taf and Merthyr Tydfil.
Gareth Owen, Flood Consequences Assessment and water quality	Chartered Geologist of over 18 years' professional experience, which includes experience in the environmental assessment of large-scale renewable energy infrastructure, with respect to both ground conditions and water resources.
Bob Sargent, Flood Consequences Assessment and water quality	Honorary President of the Chartered Institute of Water and Environmental Management (CIWEM) and a Past President of the British Hydrological Society. Bob has a wealth of experience in scoping and undertaking flood risk and consequence assessments and has extensive experience of the interaction of hydrology and ecology.
Rowena Hart, Assessment of effects on heritage	Rowena is a Member of the Chartered Institute for Archaeologists with over 10 years of professional experience in archaeology in Wales.
Alun Rees, Assessment of effects on road users, construction traffic management	Alun Rees has over 25 years of experience as a highways and transportation engineer, holds a Bachelor of Engineering (Honours) degree in Civil Engineering and is a Chartered Member of the Institute of Logistics and Transportation and a Member of the Chartered Institution of Highways and Transportation.
Danny Scrivener and Kai Frolic, Glint and glare effects assessment	Specialists in glint and glare studies, having undertaken over 150 individual assessments and provided evidence to PINS on the topic.
Neil Morgan, Sound and vibration assessment	Neil is a Member of the Institute of Acoustics with over 10 years of professional experience in acoustics.
Rebecca Chiazzese EIA Management and ES review	Rebecca has 15 years' experience of managing EIAs and preparing ESs. She is a Chartered Water and Environmental Manager, a Practitioner of the Institute of Environmental Management and Assessment (IEMA) and a Member of the Chartered Institute of Water and Environmental Management (CIWEM).

APPENDIX 3: CONSULTATION - AGRICULTURAL LAND CLASSIFICATION (ALC)

From: James.Cooke@gov.wales <James.Cooke@gov.wales>
Sent: 29 October 2018 14:58
To: Rebecca Chiazzese <RebeccaC@jctr.co.uk>; LQAS@gov.wales
Cc: Arwel.Williams@gov.wales
Subject: RE: ALC survey guidance

Dear Rebecca

Thank you for consulting the Department under the arrangements below.

Agricultural Land Classification:

It is the Departments belief that the search area is likely to be no better than ALC Grade 3b; possibly a mosaic of 3b and 4.

Advice:

The Department does not recommend commissioning an ALC survey. The Predictive ALC Map should be taken as best available evidence.

Kind regards

James

Department for Environment & Rural Affairs

Welsh Government

Agricultural Land Use

From: Rebecca Chiazzese <RebeccaC@jctr.co.uk>
Sent: 29 October 2018 13:23
To: LQAS <LQAS@gov.wales>
Cc: Cooke, James (ESNR - ERA - Land, Nature & Forestry) <James.Cooke@gov.wales>
Subject: RE: ALC survey guidance

Thank you so much Arwel,

Hi James, I see you were consulted on the Gwent Farmers' application in December 2016. I look forward to hearing from you. Should you have any questions, please do give me a call.

All the best,

Rebecca

From: Arwel.Williams@gov.wales <Arwel.Williams@gov.wales> **On Behalf Of** LQAS@gov.wales
Sent: 26 October 2018 16:09
To: Rebecca Chiazzese <RebeccaC@jctr.co.uk>

Cc: James.Cooke@gov.wales

Subject: RE: ALC survey guidance

Rebecca

(James – as discussed)

Thanks for the location map. My colleague James Cooke (c.c'd) will look into this and get back to you as soon as possible next week.

Regards

Arwel.

Arwel Wyn Williams

Cynghorydd Polisi Pridd a Defnydd Tir Amaethyddol / Agricultural Land Use & Soil Policy Advisor
Is-adran Tir, Natur a Choedwigaeth / Land, Nature and Forestry Division
Llywodraeth Cymru / Welsh Government
Doc Victoria / Victoria Dock, Caernarfon, Gwynedd. LL55 1TH
Ffôn / Tel: 0300 025 2052
Symudol / Mobile: 07791 269 594
E-bost: arwel.williams@llyw.cymru / E-mail: arwel.williams@gov.wales
Ar y We / Internet: www.llyw.cymru / www.gov.wales

From: Rebecca Chiazzese <RebeccaC@jctr.co.uk>

Sent: 26 October 2018 15:09

To: LQAS <LQAS@gov.wales>

Subject: ALC survey guidance

Hi Arwel,

Good to speak just now.

In confidence, here is the rough site location marked on the predictive ALC map - near Magor South Wales.

Rebecca



From: Arwel.Williams@gov.wales <Arwel.Williams@gov.wales> **On Behalf Of** LQAS@gov.wales

Sent: 26 October 2018 10:05

To: Rebecca Chiazese <RebeccaC@jctr.co.uk>

Subject: RE: ALC survey guidance

Hi Rebecca

Many thanks for your e-mail. Could you please send me a location/site plan of the proposed area? I can then check to see if there has been any previous detailed ALC surveys carried out and advise accordingly.

Regards

Arwel Williams

Arwel Wyn Williams

Cynghorydd Polisi Pridd a Defnydd Tir Amaethyddol / Agricultural Land Use & Soil Policy Advisor

Is-adran Tir, Natur a Choedwigaeth / Land, Nature and Forestry Division

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Ar y We / Internet: www.llyw.cymru / www.gov.wales

From: Rebecca Chiazese <RebeccaC@jctr.co.uk>

Sent: 25 October 2018 14:36

To: LQAS <LQAS@gov.wales>

Subject: ALC survey guidance

Dear LQAS,

I am scoping an Environmental Impact Assessment for a proposed Solar Park in South Wales. It will be a Development of National Significance (DNS) application. We have not carried out the pre-app yet so the project is not yet in the public domain. I am preparing the EIA scoping report which sets out the scope and methodology of the EIA, including what baseline data is collected to inform the assessment.

The 100 ha site is mapped as Grade 3b on predictive and there is also Grade 4 mapped to the north. From the flow chart I have seen here <https://beta.gov.wales/sites/default/files/publications/2018-02/agricultural-land-classification-predictive-map-guidance.pdf> (and the fact a large solar development in the same ALC grade area did not carry out an ALC survey and the application was accepted by PINS) I would take it that an ALC survey is not needed. However, I'd like to double check my assumptions that we can accept the Predictive Map Grade as the best available information.

I look forward to hearing from you.

Many thanks,

Rebecca Chiazese