



DESIGN & ACCESS STATEMENT

APRIL 2022

**Planning Application for Solar Farm and
Battery Storage Facility at Land at Cefn
Park, Cefn Road, Wrexham, LL13 0PA**

Design & Access Statement

Novus Renewable Services Limited

REPORT REF:321/DAS

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Working - Internal Disciplines\Planning\DAS



DOCUMENT ISSUE RECORD

Version	Prepared by	Reviewed by	Issue to	Date
1	HD	JE	NRS	-
2	HD	JE	Public Consultation	-

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1. INTRODUCTION

1.1 INTRODUCTION

This Design and Access Statement (DAS) has been prepared to accompany a planning application for a solar farm and battery storage facility along with associated works and landscaping at Land at Cefn Park, Cefn Road, Wrexham, LL13 0PA.

It is a statutory requirement that most applications for planning permission are accompanied by a DAS¹ to:

- a) explain the design principles and concepts that have been applied to the development.
- b) demonstrate the steps taken to appraise the context of the development and how the design of the development takes that context into account;
- c) explain the policy or approach adopted as to access, and how policies relating to access in the development plan have been taken into account; and
- d) explain how any specific issues which might affect access to the development have been addressed.

This DAS has been prepared in accordance with the Welsh Government guidance² and therefore covers the following matters:

- Description of the site and context
- Principles of a solar park and battery storage
- Character
- Environmental sustainability
- Community safety
- Access & movement



View from within the site (on the southern boundary, near to the SE corner of the site) looking from west to north.

1. Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016

2. Technical Advice Note 12 : Design (2016)



THE SITE

2. DESCRIPTION OF THE SITE & CONTEXT

2.1 SITE LOCATION

The site is located to the south-east of Wrexham and to the west of the Wrexham Industrial Estate (WIE). The location of the site is shown at **Figure 1**. The majority of the site is located to the north of Cefn Road, with a smaller parcel of land to the south, and adjacent to the Five Fords Wastewater Treatment Works, owned and operated by Dŵr Cymru Welsh Water (DCWW). For clarity, these two parcels of land will be referred to as follows within this DAS:

- **Southern Site:**
This comprises an area which will be occupied by a substation. The red-line also includes an area for the proposed cable route
- This part of the site lies within the Marchwiell Community.
- **Northern Site:**
This comprises two arable fields to the north of Cefn Road and will be where the solar panels and battery storage will be located.
- This part of the site lies within Abenbury Community

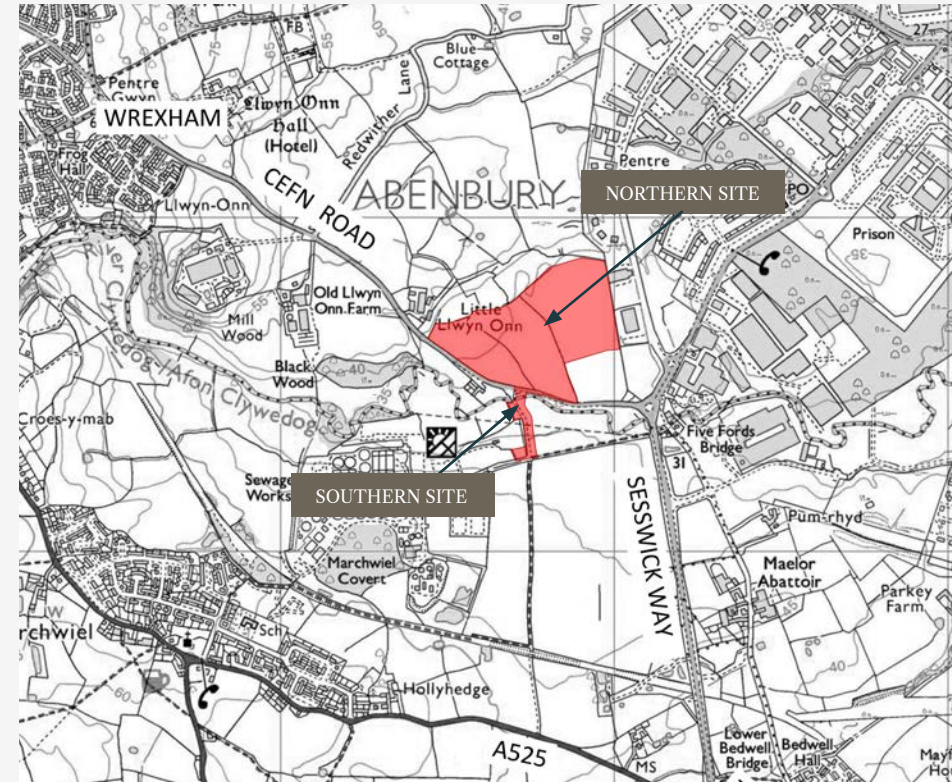


Figure 1: The application site is outlined in red



2. DESCRIPTION OF THE SITE & CONTEXT

2.2 SITE ANALYSIS

Access:

The site is accessed from Cefn Road, a single carriageway, two-way road with street lighting and a footway along the northern side of the carriageway. The road is well used, providing a connection route between the town and the WIE. There are no Public Rights of Way (PRoW) within the application site, although the PRoW numbered MAR/39 runs to the east and south of the Southern Site.

Flood zone:

The majority of the Northern Site lies within Flood Zone 1, the zone with the lowest risk of flooding as defined by Natural Resources Wales (NRW). A small area to the south and south-eastern boundaries of the Northern Sites lies within Flood Zones 2 and 3, which have a

higher risk of flooding. However, no electrical infrastructure is proposed within these areas. The location of the substation within the Southern Site, also lies within Flood Zone 1.

Heritage:

There are no designated heritage assets within or immediately adjacent to the site. The nearest listed buildings are: Pum-Rhyd, a dwelling approximately 575m to the south-east of the site; the former Llywyn Onn Hall Hotel (now a dwelling) approximately 970m to the north-west of the site and the Ice House which served Llywyn Onn Hall Hotel approximately 990m to the north-west of the site.

Landscape and land use:

The fields within the Northern site form part of a larger

agricultural holding and are farmed for arable crops. The Southern site forms part of the Five Fords Wastewater Treatment Works (FFWTW), and comprises scrub land, which was formerly occupied by a dwelling. A small building approximately 53m to the north-west of the application site, which was originally part of a now-demolished farmstead, has been converted to provide a bat roost.

The site does not lie within a nationally or locally designated landscape. The majority of the site lies within the Deeside and Wrexham National Landscape Character Area as defined by the National Landscape Character Areas for Wales.

The Clwydian Range and Dee Valley Area of Outstanding Natural Beauty is approximately 8km to the west of the site.

The Northern Site lies within the Wrexham East Green Barrier as defined by policy EC1 of the adopted Local Plan.

There are industrial buildings (Bonapre Products, the Apex Centre and Wilkinson Business Park) to the east of the boundary of the Northern Site, accessed from Clyweddog Road South.

2. DESCRIPTION OF THE SITE & CONTEXT

2.2 SITE ANALYSIS

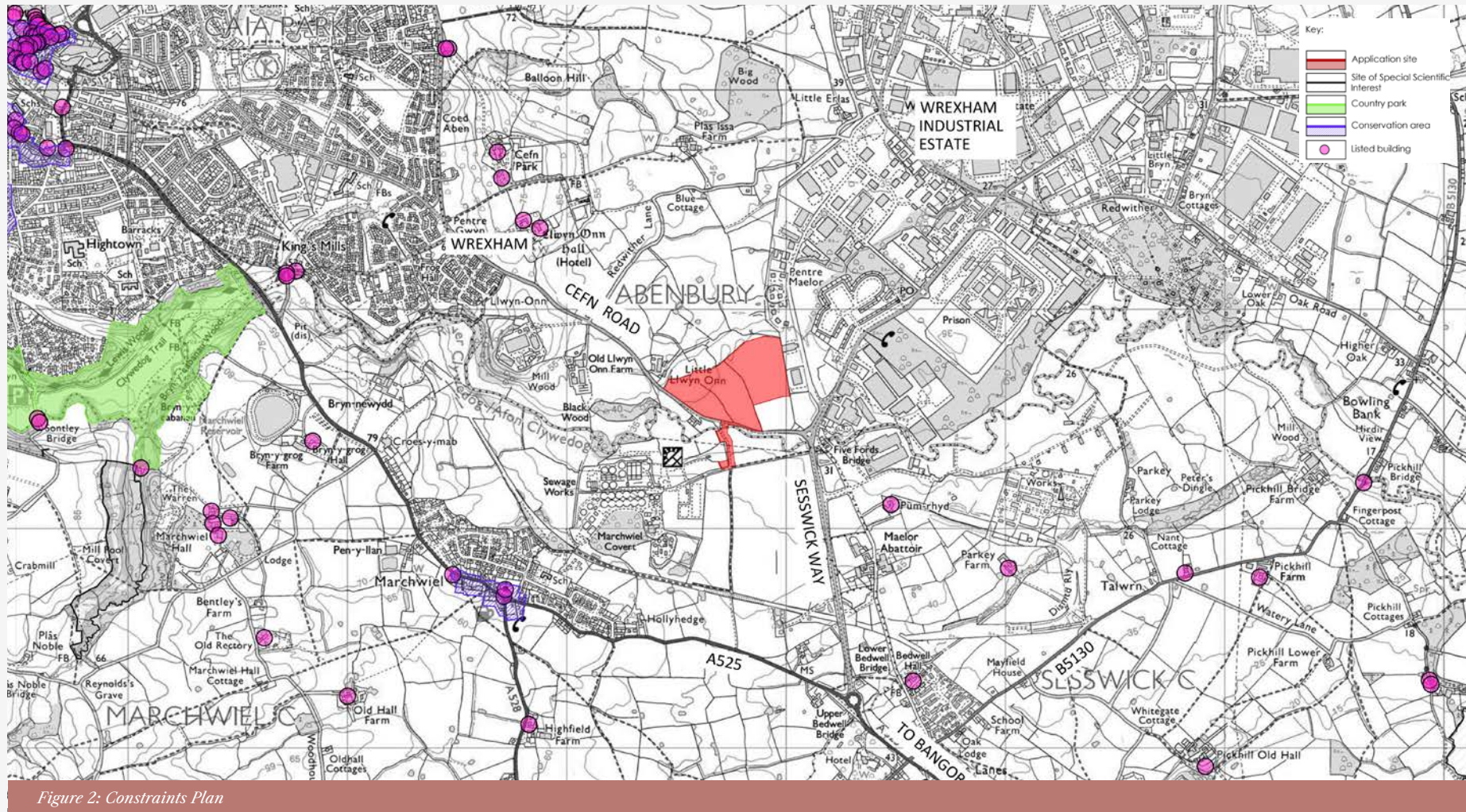


Figure 2: Constraints Plan

3. PRINCIPLES OF A SOLAR FARM & BATTERY STORAGE

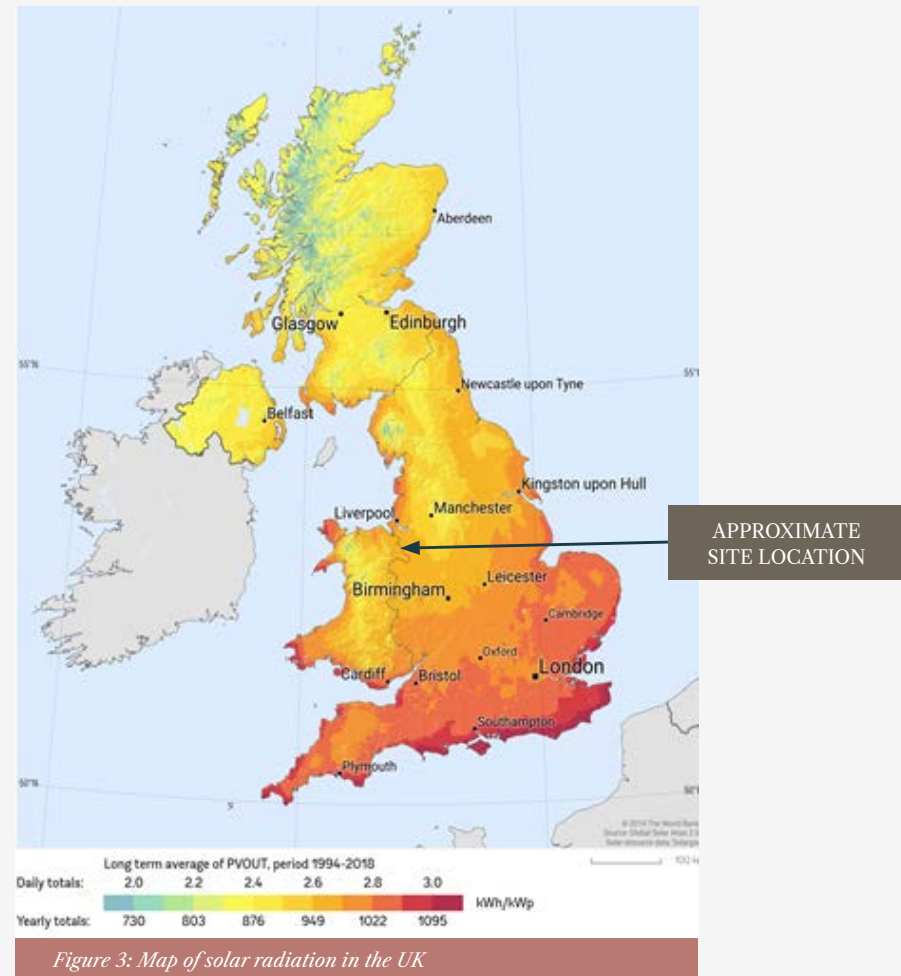
3.1 SOLAR FARM

Solar farms provide a source of renewable energy. Energy is captured using solar panels and, using inverters and transformers, converted to a form suitable for connection to the grid.

They can only be developed where a range of primary site development criteria are met, as follows:

- a) There is a suitable solar resource – taking into account orientation and absence of excessive shading. **Figure 3** confirms the suitability of the site.
- b) Land is available - the landowner supports the development and is prepared to enter into an arrangement to accommodate the proposal

- c) There is a suitable electrical connection: and it is technically and economically viable to connect the site to the local electrical distribution system and/ or there is an agreement for a “private wire” connection.
- d) Site sensitivities and potential impacts of development – there must be no clear barriers to potential development and preferably a relatively low impact on the local area. This DAS confirms the context of the area and design process.



3. PRINCIPLES OF A SOLAR FARM & BATTERY STORAGE



3.2 BATTERY STORAGE

Battery storage is a key component of supporting a reliable source of electricity to homes and businesses as the UK moves towards a Zero Carbon future with an increased reliance upon renewable electricity generation. Battery storage provides grid resilience by importing electricity from the grid at times of low demand and releasing it back into the grid at times of high demand.

Like solar farms, battery storage needs to be located in relatively close proximity to a connection point to the grid network. Co-location of battery storage and solar farms is becoming increasingly common due to the potential to share infrastructure.

With a private wire, batteries can store electricity generated by solar during the day and optimise flow of electricity to match the user demand at any time of day.



Figure 4: Example of a battery storage facility



4. CHARACTER

4.1 AMOUNT

The proposed solar park will be able to generate 9.9MW of electricity and the battery storage facility will have an import/export capacity of 16MWh.

The solar panels will be arranged on metal frames which are pushed into the ground. There is no requirement for foundations and therefore minimal disturbance to the ground. The solar farm is temporary in nature, consequently there is no permanent loss of agricultural land. At the end of the installation's life, the equipment can be removed, and the land restored.

Electricity from the panels will be converted from direct current (DC) to alternating current (AC) by inverters. These

inverters are mounted on the rear of panel strings or located in housings adjacent to rows of panels and steps up voltage via transformers to supply the grid network in the required form.

The electricity from the proposed solar farm can be stored in the batteries and exported to the FFWTW.

Battery storage works by importing electricity from the distribution network at times of low demand converting the Alternating Current (AC) from the grid to Direct Current (DC). The electricity is then stored within the battery modules (usually lithium-ion batteries as proposed within this application). The process is reversed when electricity is exported back to the distribution network at times of high demand.





4. CHARACTER

4.2 LAYOUT

The layout of the site has been designed to maximise the energy generation of the panels, whilst retaining existing trees and hedgerows.

The layout of the site has also been informed by pre-application advice provided by the Council. An area of panels within the high risk flood zone and an areas adjacent to the Cefn Road have been omitted, in part due to the location of service pipes but also to reduce the visual impact of the development from the Cefn Road and from the dwellings to the south of the road.

The panels and supporting electrical infrastructure are now sited outside of the zones with the highest risk of flooding.





4. CHARACTER

4.2 LAYOUT



Figure 6: Layout Plan



4. CHARACTER

4.3 SCALE & APPEARANCE

Solar arrays are proposed to be arranged in west-east rows.

Panels will be arranged in a two-panel portrait layout on the frames and angled to face due south to maximise the capture of solar energy.

Panels are finished in a nonreflective dark colour to maximise absorption, and the rows are spaced to facilitate the maximum solar energy capture whilst retaining field boundaries, hedgerows and trees.

The housings for transformers and storage container are proposed, to be of compact design and no higher than 3m. The locations are selected to combine efficient operation and minimal visibility, and the housings will be finished in a colour that will blend into the landscape, such as grey or dark green.

The battery storage facility will comprise eight container type structures sited either side of inverter and transformers along with a switch room structure. The containers will be grey or dark green in colour and sited on gravel.



Figure 7: Examples of infrastructure associated with a solar park.



Figure 8: Example of a solar farm



5. ENVIRONMENTAL SUSTAINABILITY

5.1 ENVIRONMENTAL AND ECONOMIC BENEFITS

There is widespread awareness of the need to reduce dependence on fossil fuels and an encouragement to increase the generation and use of renewable energy. The UK Government has a legal obligation in relation to generating renewable energy. In April 2019, the Environment Minister (and the Welsh Assembly Member for Wrexham) Lesley Griffiths declared a “Climate Emergency” and Wrexham County Borough Council also declared a Climate Emergency a few months later in September 2019. The planning statement accompanying this planning application discusses the targets set by the Welsh Government to achieve a low carbon future which includes a target for the country to generate 70% of its electricity consumption from renewable energy by 2030.

The proposed solar farm will provide a renewable source of energy to the FFWTW by a private wire.

This will have economic benefits for DCWW as a non-profit statutory undertaker, enabling savings to be reinvested. It will also make a significant contribution towards DCWW’s target of achieving net carbon neutrality by 2040.

Many renewable sources of energy generation are intermittent and battery storage enables National Grid to efficiently manage the differences between generation and demand.

It is anticipated that wherever possible, equipment, materials and workers required for construction would be sourced locally (subject to usual commercial tendering arrangements, suitability, and availability).

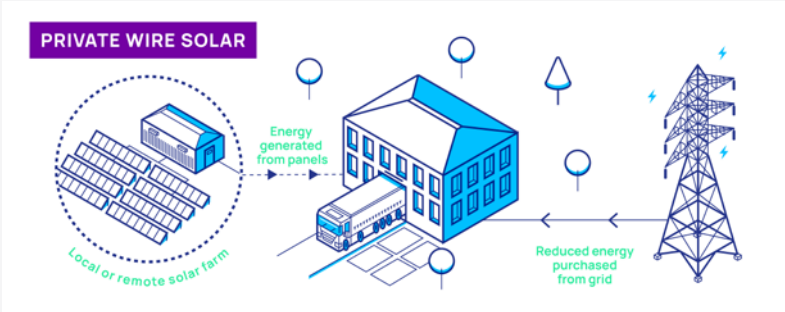


Figure 9: Private wire solar



Figure 10: Five Fords Wastewater Treatment Works



5. ENVIRONMENTAL SUSTAINABILITY

5.2 LANDSCAPE/HABITAT

A Landscape and Visual Impact Assessment (LVIA) and an Ecological Impact Assessment (EcIA) have been submitted in support of the application.

The LVIA has assessed the impact of the proposed development upon the character and appearance of the landscape from a number of viewpoints. It is proposed to enhance existing hedgerows and to plant new hedgerows and areas of woodland planting.

The EcIA has been informed by surveys of breeding birds and testing for Great Crested Newts (GCN) in ponds within 50 metres of the site. Within the Northern Site, two hibernaculum will be sited. These are holes in the ground which are filled with material such as stones, branches and logs and covered in soil. Access points will enable amphibians and reptiles to enter and hibernate in winter months.

The location of the sub-station within the Southern Site is currently scrub planting required as mitigation for the solar panels installed at FFWTW. To compensate for this loss, it is proposed to provide a new area of scrub planting to the north of the proposed sub-station.

The operator of the solar farm will manage and maintain the site to ensure that all of the mitigation and enhancement measures continue to function during the operational period of the development. An agricultural use can remain as the areas underneath and around the panels can be grazed by sheep. This is an efficient and sustainable method of managing the land and reduces the need for herbicides and mechanical cuts. This is a sustainable method of managing the land and reduces the need for herbicides and mechanical cuts.



Figure 11: Photograph of existing hedgerow and tree within the site



Great Crested Newt



Buzzard



Song Thrush



5. ENVIRONMENTAL SUSTAINABILITY

5.3 WATER & WASTE MANAGEMENT

The proposed development will not generate waste-water. It has been demonstrated that surface water can be attenuated within the site, therefore will not increase greenfield run off rates.

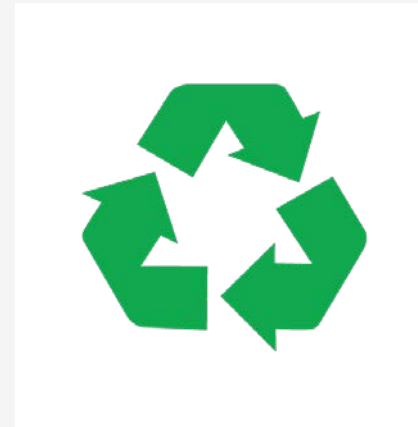
During the construction process, there is expected to be minimal waste and any that does arise, will be taken off site and recycled where possible.

Both the solar farm and the battery storage facility are largely modular in their construction, which means that should one element fail, such as an individual PV panel or battery cell, it can be replaced, maintaining the overall performance of the development.

On-going management and maintenance will ensure that the development continues to run as efficiently as possible for its operational period.

The decommissioning of the site will be undertaken in accordance with the environmental legislation and technology available at that time. The scheme of decommissioning can be agreed with the Local Planning Authority and secured by condition.

Many of the component parts of the solar farm and the battery storage facility can be dismantled, recycled, and re-used. This includes the battery cells and as the technology matures, it is expected that recycling or reconditioning processes will become more widespread and efficient.



6. ACCESS & MOVEMENT

The Northern Site will be accessed from Cefn Road utilising an existing site access which is already used by large farm machinery. Visibility splays will be provided to ensure that the access is safe for all road users.

The Southern Site will be accessed from the existing FFWTW access. This access has previously been widened in connection with the operation of FFWTW. This access will require no further modifications or visibility splays.

The majority of vehicular movements will occur during the construction and decommissioning phases, and these can be adequately accommodated for within the local highway network and managed through a Construction Management Plan (and decommissioning plan).

During the operational phase of the solar park, there will be limited vehicle movements to and from the site associated with on site management and maintenance.

The site will not be open to the public and the proposed development will not impinge upon the ability of the public to use the local PRow network.

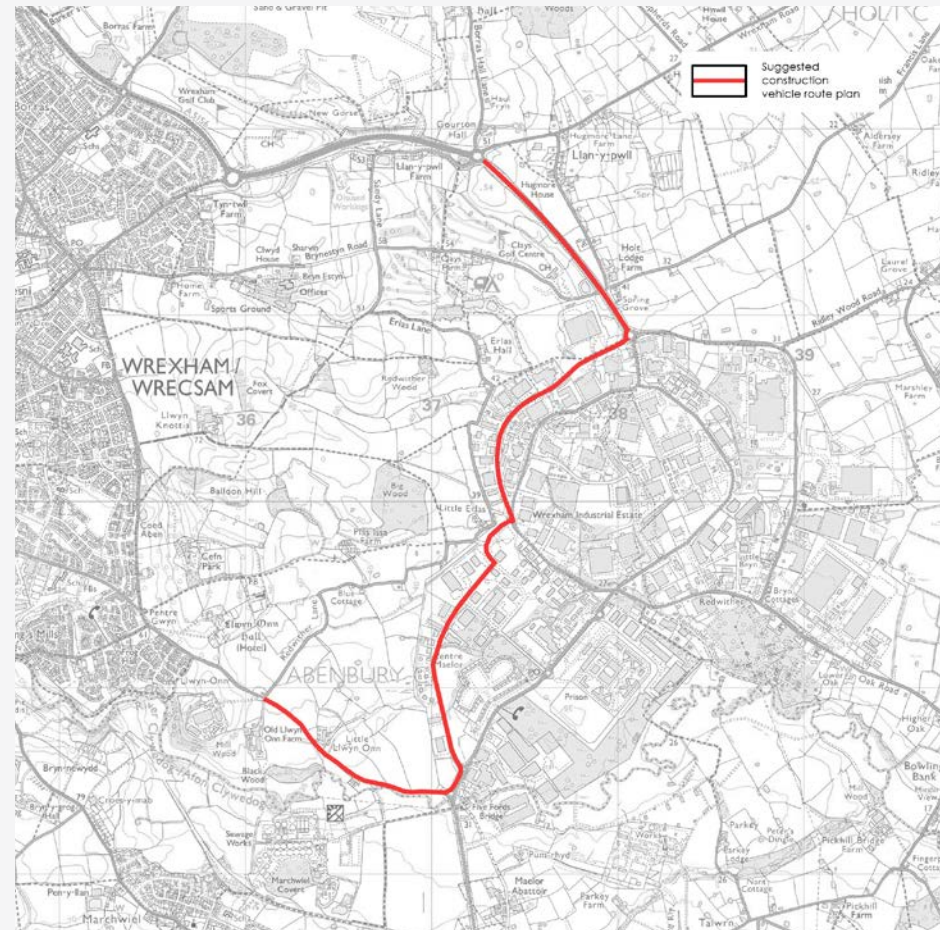


Figure 12: Suggested construction vehicle traffic route



7. COMMUNITY SAFETY

Community safety has been considered in the design and construction arrangements of the proposed development.

The solar farm site is, and will be retained as, private land and therefore has no public access. It will be surrounded by deer fencing, with palisade fencing around the battery storage facility and substation on the southern site. Examples of fencing are shown in **Figure 13**. The site will be monitored by CCTV cameras and as security lighting is not proposed, the cameras will be infra-red.

The construction of the development will be undertaken in accordance with the Construction Traffic Management Plan to ensure that there will be no conflict between users of the local highway network and construction vehicles.

It is therefore considered that appropriate safety considerations have been taken into account.



Figure 13: Examples of fencing; Deer fencing is shown top and palisade below



8. CONCLUSION

This DAS has been prepared to support a full planning application for a solar farm with battery storage facility and a substation.

It has been demonstrated that the site is not constrained by any statutory designations. It is available, has suitable irradiation and access. While electricity generated from the proposed development can be fed into the National Grid, in this instance a specific end user has been identified and an agreement made with them.

The proposed development has been designed in response to the site context and constraints, with consideration given to pre-application advice from the LPA and specialists in relation to flood risk, biodiversity, landscape and trees. Consideration has also been given to highway and community safety at both the construction and operational phases.

The proposed development would provide a valuable source of renewable energy, contributing towards a reduction in reliance on fossil fuels and towards Wales' net zero carbon ambitions. The incorporation of battery storage will support this transition by providing additional resilience to the grid.

It has been demonstrated through this DAS and through the specialist reports and planning statement accompanying this application that the proposed development would be environmentally sustainable and would accord with national and local planning policies and guidance. Therefore, it is considered that the application should receive the support of the LPA and planning permission be granted for the proposed development.





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