



0800 0787 243
www.tgcrenewables.com

PLANNING, DESIGN & ACCESS STATEMENT

PROPOSED SOLAR FARM ON LAND AT BRYN LANE, WREXHAM

Contents

KEY INFORMATION	4
EXECUTIVE SUMMARY	5
1.0 Introduction.....	8
2.0 The Proposals	9
2.1 Design Iterations	10
3.0 Site Selection	11
4.0 Access, Traffic and Transport	13
4.1 Construction	13
4.2 Operation	13
4.3 Decommissioning	14
4.4 Planning Assessment.....	14
5.0 Pre-application Discussions & Public Consultation	15
5.1 Wrexham County Borough Council.....	15
5.2 Community Consultation.....	15
6.0 Community Benefits.....	15
6.1 Tackling Climate Change and Supporting the Local Distribution Network	16
6.2 Community Benefit Payments.....	17
6.3 Community Funding Opportunities.....	17
6.4 Local Economic Opportunities	18
6.5 Educational Opportunities	18
7.0 Wider Economic Benefits of Renewables and Solar Power	19
8.0 Policy Context.....	21
9.0 National Planning Policy and Guidance Assessment.....	23
9.1 National Planning Policy.....	23
9.2 Presumption in favour of Sustainable Development	30
9.3 Solar PV Roadmap and Solar Strategy.....	31
9.4 Changes to Financial Support for Solar PV	34
9.5 BRE National Solar Centre Biodiversity Guidance for Solar Developments	34
9.6 Intergovernmental Panel on Climate Change Working Group III: Mitigation of Climate Change.....	35
10.0 Purpose and Principle of the Proposals.....	36
11.0 Land Use	38
11.1 Policy and Guidance	38
11.2 Assessment.....	39

11.3	Local Development Orders for Housing Development on Brownfield Land	42
11.4	Conclusion	43
12.0	Landscape and Visual Impacts	43
12.1	Planning Assessment	44
13.0	Residential Amenity	45
13.1	Planning Assessment	46
14.0	Flood Risk and Drainage	47
14.1	Planning Assessment	47
15.0	Ecology and Biodiversity	48
15.1	Planning Assessment	48
16.0	Archaeology	50
16.1	Planning Assessment	51
17.0	Cultural Heritage	51
17.1	Planning Assessment	52
18.0	Public Access, Recreation and Tourism	52
19.0	Conclusions	54

KEY INFORMATION

Project Title	Solar Farm on Land at Bryn Lane, Wrexham
Description of Development	Solar Farm and Associated Development
Applicant	TGC Renewables Ltd
Site Location	Land at Bryn Lane, Wrexham 338726 351130 (Eastings Northings)
Local Planning Authority	Wrexham County Borough Council
Community Council	Holt
Site Area	12.6 hectares
Development Area	11.1 hectares
Power	5.6 MWp
Homes Powered (approximate)	1,410
Community Benefit	Minimum £500, maximum of £1,000 per MW (subject to development costs) for ten years.
Community Ownership/Investment	Opportunity for community investment if local interest and viable.
TGC Contact details	James Jamieson MRTPI TGC Renewables Ltd, TGC House, 10 Duckmoor Road, Industrial Estate, Bristol, BS3 2BJ 07718 190 370 james.jamieson@tgcrenewables.com

EXECUTIVE SUMMARY

This Planning, Design and Access Statement (P,DAS) accompanies an application for detailed planning permission for a 5.6 MWp solar farm and associated development (the Proposals) on land at Bryn Lane, Wrexham (the Site).

The details covered in the subsequent sections are based upon the Extended Phase 1 Habitat Survey (EP1H), Flood Consequence Assessment (FCA) incorporating a Sustainable Drainage Scheme (SuDS), Archaeological Desk-based Assessment (DBA), Agricultural Land Classification (ALC) and Landscape and Visual Impact Appraisal (LVIA) carried out for the Proposals.

The Proposals would generate 4.7 GWh of renewable energy each year and supply approximately 1,410 local homes with power. They would support the local energy distribution network, protect agricultural land from development, diversify a rural business, deliver substantial biodiversity enhancements and include community benefit payments of a minimum of £500 to a maximum of £1,000 per MW (subject to development costs) installed on the Site (irrespective of the Community Council's support or otherwise). There would be supply opportunities for local companies during construction and operation. If there is local appetite and it is viable, there is the opportunity for community investment in the Proposals. Expression of interest forms will be made available following determination, allowing interested parties to engage with TGC.

A Screening Opinion was adopted by the Wrexham County Borough Council (the Council) on 10 June 2014 and this confirmed that an EIA would not be required as the Proposals would not result in significant impacts on the environment.

Detailed planning permission is now sought for the Proposals, which would make a substantial, positive contribution to the generation of renewable energy.

Legally binding climate change targets require the UK to increase the generation of renewable energy with Planning Policy Wales (PPW) detailing the targets set for the Welsh Government and noting that Planning Authorities must consider proposals on their merits.

TGC identified and assessed a number of potential sites for Solar PV development in this area, and it was decided to proceed with the Proposals due to;

- The Site's orientation and its location on relatively flat land;
- The Site's location outside sensitive designations;
- Ability to provide comprehensive screening;
- Suitability due to the separation between residential properties, built up residential areas and protected buildings and landscapes;
- Suitable Site access from Bryn Lane to the south;
- The Site's proximity to grid connection infrastructure;
- The Proposals would not inappropriately harm the amenities of the occupiers of nearby dwellings by way of overlooking, overshadowing or overpowering effects, noise, traffic or other adverse impacts; and
- The ability to fit into the surrounding landscape.

Therefore, the Site is considered to be appropriate for the Proposals, as impacts would be acceptable or outweighed by the benefits of the Proposals. Overall it is considered that the Proposals would

comprise a sustainable form of development and therefore, in line with Paragraph 4.2.2 of PPW, there is a presumption in favour of this development.

The P,DAS sets out the details of the application and assesses the appropriateness of it in terms of planning policy, guidance and other material considerations relevant to its determination.

In summary:

- The following support the Proposals in principle, location and in terms of likely impacts upon the environment:
 - Planning Policy Wales Edition 6 (2014);
 - A Low Carbon Revolution - The Welsh Assembly Government Energy Policy Statement (2010);
 - Energy Wales – A Low Carbon Transition (2012);
 - Practice Guidance – Planning Implications of Renewable and Low Carbon Energy (2011);
 - The Wrexham Unitary Development Plan (UDP, 2005); and
 - The Solar PV Roadmap.
- The Proposals comply with the Solar Trade Association’s Ten Commitments;
- In terms of landscape and visual impacts, the Proposals have been assessed against the requirements of the UDP and as such the Proposals are compliant with relevant policy of the UDP as they would not result in any inappropriate effects upon landscape designations and would be appropriate in terms of the overall character, field patterns and landscape attributes of the area;
- The Site is Grade 3b agricultural land with the ability for continued grass growing. Therefore the proposed dual-use of the land with sheep grazing capability is in line with the relevant policy of the UDP;
- The Proposals are considered to be appropriate in terms of residential amenity as only glimpsed views would be possible from the three most sensitive properties with the vast majority of the Site being screened by surrounding vegetation and intervening topography;
- TGC are proposing a community benefit of between £500 to £1000 per MW of installed solar capacity per annum for the first ten years of the Proposals lifetime, regardless of Holt Community Council’s support or otherwise for the scheme. Opportunities would be made available for community investment in the Proposals following determination. There would also be supply opportunities for local companies during construction and operation;
- The Proposals benefit from public support as detailed within the accompanying Community Consultation Report (CCR);
- Biodiversity and ecological networks within the Site and surrounding landscape would be protected and enhanced;
- The Proposals are appropriate in flooding and drainage terms and would incorporate a suitable SuDS scheme;
- There are no listed buildings or Scheduled Monuments (SMs) on the Site. One Grade II building, Borrass Hall, is located approximately 1.8km north-west of the Site. Intervisibility

between this designation and the Proposals is anticipated to be limited and as such the impact upon this designation resulting from the Proposals would be, at worst, minor;

- There are three Public Rights of Way (PRoW) situated within proximity of the Site. PRoW 26 is located approximately 110m east of the Site boundary at its closest point, PRoW 6 is located approximately 90m east of the Site boundary at its closest point and PRoW 25 is located approximately 50m north of the Site boundary at its closest point. No inappropriate effects on these routes are anticipated as a result of the Proposals;
- The Proposals would not result in direct impacts on specific tourism assets, and studies indicate that renewable energy projects do not have significant negative impacts on tourism in general;
- The Proposals would support the local electricity network and improve grid reliability and stability;
- The Proposals would make a positive contribution to meeting the energy targets of the Council and National Welsh and UK Government targets; and
- The Proposals would be temporary in nature, removed at the end of their lifetime and would not result in the land becoming brownfield.

Overall, it is considered that there is strong policy support for the Proposals and that they comply with the Development Plan and national planning policy. The Proposals would make a substantial contribution to meeting the Council's renewable energy targets as well as a positive contribution to national targets. There are substantial community benefit and rural business diversification benefits, which outweigh the not inappropriate impacts of the Proposals. Taking all of this into account, it is respectfully requested that the planning application which this P,DAS accompanies be approved by the Council.

1.0 Introduction

It is proposed to develop a 5.6 MWp solar farm and associated development (the Proposals) on land at Bryn Lane, Wrexham (the Site). The Site currently comprises 12.6 hectares of Grade 3b agricultural land and road and is situated approximately 2.6km east of the outskirts of Wrexham, and directly to the north of Wrexham Industrial Park. It is intended that the Site would be dual-use with sheep grazing throughout the operation of the Proposals. Detailed planning permission is now sought by TGC Renewables Ltd (TGC) from the Council for the Proposals.

The Proposals were subject to EIA screening as part of a larger site which now comprises two solar development sites; land at Bryn Lane (the Site) and land at Francis Lane. It was determined that an EIA would not be required for the original site and as such this applies to the two developments within the land originally identified. For the avoidance of doubt, an application for planning permission for the remainder of the original site, Francis Lane, will be submitted as an entirely separate planning application. The separate submission of both sites is due to the increased opportunities available for community investment with smaller solar PV developments. Consequently, there are opportunities for community investment in the Proposals, subject to local appetite and viability. Expression of Interest in Investment forms will be made available following determination and TGC welcome the opportunity for such community funded investment in the Proposals, as detailed within this P,DAS and in accordance with the Solar Trade Association's (STA's) 10 Commitments.

The purpose of the Proposals is to generate electricity from a clean, renewable and sustainable source. This would help to meet the UK Government's target of 20% of electricity to be generated from renewables by 2020. On 22 January 2014, the European Union committed to reducing its greenhouse gas emissions by 40% by 2030 (compared to 1990 levels) and a new binding target of 27% of energy generation to come from renewable sources from 2030 has been adopted. This is with a view to the EU cutting its greenhouse gas emission by 80-95% by 2050¹. It is anticipated that future UK energy policy and legislation will reflect these new commitments (refer to Section 8.0 for full details).

The Proposals are expected to generate and export 4.7 GWh to the local grid each year. Based on an average house hold consumption of 3,300kWh of electricity per year (based on DECC and OFGEM figures²), the Proposals would power approximately 1,410 local homes annually.

The Welsh Government's National Planning Policy, PPW, advocates the need for and the benefits associated with renewable energy. The most recent findings of ongoing research by the Department of Energy and Climate Change (DECC) show strong public support for renewable energy generation and strong support for solar, especially when compared to other forms of generation³.

The Building Research Establishment (BRE) recently published the National Solar Centre Biodiversity Guidance for Solar Developments and shows that solar presents an excellent opportunity to enhance local biodiversity. There are a number of options available for

¹ http://ec.europa.eu/energy/2030_en.htm

² <https://www.ofgem.gov.uk/ofgem-publications/64026/domestic-energy-consump-fig-fs.pdf>

³ <https://www.gov.uk/government/collections/public-attitudes-tracking-survey#surveys>

enhancing biodiversity on solar farms from hedgerows to wild flower meadows to bird boxes and ponds, all of which will help to enhance the biodiversity value of a site⁴.

In addition to helping the local community make a positive contribution to renewable energy targets, the Proposals would be connected and export power to the local distribution network. This would help to support the local electricity network and increase energy security in the local area, a key benefit of the Proposals for the local community. This is in addition to the socio-economic benefits of the Proposals which would be delivered by TGC through proposed community benefit payments, should permission be granted.

The Proposals would be designed to allow the landowner to graze sheep during the operational phase of 25 years. This ensures no loss of agricultural land and would support this local agricultural business's viability and contribution to the local rural economy, whilst generating clean electricity.

This P,DAS has been prepared in conjunction with the reports (as detailed above) which accompany the application and draws on these assessments to set out a planning assessment of the Proposals.

2.0 The Proposals

The Proposals involve the installation of a 5.6 MWp ground mounted solar farm. The Proposals would include the installation of:

- PV panels mounted on a ground-based racking system;
- Power inverter stations;
- Transformer stations;
- Security fencing and associated access gates with CCTV security cameras mounted on free standing support poles; and
- Gravelled (type 1) roads are proposed within the Site to allow access for construction and maintenance.

The proposed photovoltaic (PV) panels would be a maximum of 3m in height above ground level (AGL) and their lower edge would be a minimum of 80cm AGL to allow sheep to graze beneath them. Refer to Drawing TGC/PV005 for indicative details of the appearance of the panels and their racking.

Existing on-site screening would be retained, managed (in terms of height) and reinforced as appropriate for the local landscape. The panels would be of a blue/black colour and a specification of what is likely to be deployed is submitted with the planning application (refer to drawing TGC/PV005).

There are three different typical and acceptable options for the type of fencing in PV deployments in the UK; Palisade, Paladin and post and wire deer fencing. TGC consider that post and wire deer fencing is the most environmentally and landscape sensitive and help to reduce any potential landscape and visual effects. The proposed fence design is shown in drawing TGC/PV001 - DEER, submitted with the planning application. This type of fencing has been used as an example of good practice within the National Solar Centre's guidance on

⁴ <http://solar-trade.org.uk/media/140428%20STA%20BRENSC%Biodiversity%20Gudelines%20Final.pdf>

large PV solar farms: *“deer fencing can be much less intrusive than other forms of fencing and should be considered where possible”*, and has been deployed on solar farm developments in a wide range of locations.

In deploying the proposed system, vertical support poles for the solar panel arrays are usually inserted into the ground to a depth of up to approximately 1.5m, subject to pole-specific ground conditions. No archaeological impacts are anticipated. Please refer to Sections 16.0 and 17.0 for full details.

The inverter substations are installed on a concrete base and would be approximately 9.7m long, 3.1m wide and 3.2m high as shown in drawing TGC/PV003 submitted with the application. They would be painted green or grey which is considered the most suitable for a rural environment however TGC are willing to discuss the finish with the Council or agree this through the use of planning conditions.

Planning permission is sought for the 33kV substation (SP4099442 Rev 1.0), switchgear housing (TGC/PV0010), inverter cabins (TGC/PV003), communications building (drawing TGC/PV009) and customer switchgear (TGC/PV0010).

Planning permission is also sought for all cabling between the Proposals to the existing overhead lines of the local distribution network, which is located approximately 150m south-west of the southern Site boundary at the nearest point.

Planning permission is also sought for all cabling between the Proposals to the existing overhead lines of the local distribution network, which is located approximately 430 m south-west of the southern Site boundary at the nearest point. An auxiliary point of connection is located to the south east of the Site as shown on the Site Design.

The cable from the boundary of the Site to the Point of Connection (the PoC) would be entirely underground and following completion would not be visible, therefore ensuring no potential visual impacts. Soil would be temporarily excavated and once the cable has been laid all excavated soil would be backfilled restoring the land to its original appearance. The Council would be a statutory consultee during this process.

2.1 Design Iterations

The Site was initially identified as part of a larger site for which an EIA Screening opinion was sought. The decision to split this original site was taken due to the increased opportunities for community investment with smaller (approximately 5MW) solar developments. As a result the original site was divided and now forms two smaller sites including the Site itself and another, land at Francis Lane. For the avoidance of doubt, the solar farm on land at Francis Lane will be submitted as an entirely different planning application.

During the Site design process, the capacity of the Site in terms of solar array panels and associated infrastructure was identified. This initial Site design was then subject to iterations based on the results of the environmental assessments carried out with the Proposals in mind.

The Site layout has maintained the existing field boundaries and all field boundary vegetation would be retained and enhanced with additional planting.

3.0 Site Selection

This section of the P,DAS sets out details of TGC's site search and selection process, both in terms of its compliance with PPW and in terms of ensuring that projects are viable and technically feasible. For details of the need to utilise greenfield land, using poorer quality land, allowing continued agricultural use and enhancing biodiversity, refer to Section 11.0.

Wales is suitable for the development of viable solar farms due to the high solar irradiation levels. With due consideration of the responsibility of all communities to contribute to Government targets to tackle climate change and generating renewable energy, TGC reviewed planning policy and designations to identify potential opportunities for solar farms in the area.

In line with TGC's standard infrastructure adoption policy and commitments to Local Planning Authorities (LPAs) and communities, TGC aim not to actively increase the number/volume of new overhead pole routes across open countryside. This also ensures viability, as TGC considers it necessary to identify sites within proximity of existing overhead power lines and this is a key consideration which should be taken into account when reviewing the following sections and information. Following the identification of potentially suitable areas in terms of grid connection issues, TGC then undertook a detailed planning and environmental filtering site selection exercise. Sites within or directly adjacent to sensitive designations, or where adverse impacts were considered likely to be inappropriate were discounted.

Further considerations included proximity to built-up areas, access and transport issues, topography, existing land use and biodiversity issues and heritage impacts such as impacts on the setting of listed buildings and Scheduled Monuments (SMs). Sites which are Grade 1 or 2 land were also discounted with the aim of ensuring that the Proposals would be located on land which is poorer quality and not BMV agricultural land, in line with Paragraph 4.10.1 of PPW.

A number of sites were identified and detailed grid connection and land owner discussions entered into. However, grid connection cost responses or lack of landowner interest left the Site as one of two remaining viable sites.

It is also worthy of note that recent appeal decisions (APP/E3525/A/14/2218805 and APP/E2530/A/14/2218270) confirm that it is not necessary to undertake a sequential test in order to assess whether more appropriate locations might be available if a detailed site selection process is provided.

"There is no policy or guidance which refers specifically to the need for a formal sequential test – whereas national policy is quite explicit that such a test is needed for other types of proposal." (2218805, Paragraph 30)

"The Council argues that the Appellants have not demonstrated that other sequentially preferable land is not available and has mentioned the government's Solar PV Strategy Part 2 which emphasises the priority for utilising south facing commercial roofspace rather than greenfield agricultural land. Whilst the use of commercial roofspace and derelict land is clearly preferable the government's strategy does not rule out the use of agricultural land for the siting of solar PV schemes to generate renewable energy." (2218270, Paragraph 6)

Substantial efforts have also been made to identify opportunities on roof tops and previously developed land. The document '*TGC Renewables – Rooftop Previously Developed and or Non-agricultural Land Solar Programme - Opportunity Register*' (the Opportunity Register) which accompanies this application sets out details of these ongoing efforts. Brownfield sites in the local area were reviewed however these were either actively being used, or allocated for other purposes (so contrary to planning policy and not viable for a solar farm). Reference should also be made to Section 11.0 of this P,DAS for further details regarding land use and the use of agricultural land.

The Proposals are contained by the Site's surroundings with natural screening afforded by trees and hedgerows. They would allow for continued use for agriculture as they have been designed to be utilised for sheep grazing throughout the operational phase and there are substantial biodiversity enhancements to be gained around the arrays and site margins. The Site is appropriate for a solar development as it is located outside of any sensitive designations and is supported by national and local planning policy (refer to Section 9.0).

TGC reviewed planning policy and designations in order to identify potential opportunities for solar farms within Wrexham, in line with PPW. Consequently, a thorough feasibility process was undertaken by TGC before committing to develop a solar farm on the Site. Accordingly, TGC considered a number of locations for the Proposals, taking into account the following:

- Requirement of a site greater than eight hectares to ensure viability;
- A landowner willing to lease the land for solar development and grazing;
- A site that is flat/gently sloping in topography and south facing to maximise the amount of sunlight which can be converted to electricity;
- A site that is screened or enclosed in nature or allows for the successful screening from sensitive viewpoints (i.e. the impacts can be made acceptable as per PPW requirements, as set out in Paragraph 12.10.1);
- A site that is outside, not situated adjacent to, a suitable distance from or which will not result in inappropriate impacts on sensitive landscapes, heritage and ecological designations including National Parks/AONB's, Conservation Areas, Listed Buildings, Scheduled Monuments or Sites of Special Scientific Interest (SSSIs);
- Suitable access arrangements;
- Utilisation of Grade 3b land or below, (not BMV, on poorer quality land);
- A site outside the floodplain, unless appropriate design solutions are implemented in order to manage and mitigate any increased flood risk; and
- Within close range of a viable National Grid connection.

As well as the above, steep and/or north facing areas and sites near existing settlements or houses (other than the relevant landowner) were discounted.

It should be noted that the Proposals would not take the fields out of agricultural use as the landowner would graze sheep on the land underneath the panels. If planning permission is granted, it would make the Site dual-use and represent an efficient use of land in spatial and environmental terms. Furthermore, the Proposals are completely reversible, and the Site would be reinstated to its current nature following decommissioning. It was decided to

proceed with the Proposals at the Site as there is appropriate separation from residential properties and protected buildings/landscapes, there are good access links, there is a viable grid connection and the land owner is a willing development partner.

As such, and taking all of the above into account, the decision was made to pursue the development of the Proposals on the Site, and subsequently submit the planning application which this P,DAS accompanies, as it complies with the relevant policy and guidance and is the sequentially preferable option in terms of sites and opportunities which are both reasonably and realistically available to TGC and suitable in planning and practical terms.

An Environmental Impact Assessment (EIA) Screening Opinion was requested from the Council and it was confirmed that an EIA is not required. TGC appointed a range of independent, specialist consultants to assess the grade of the land, the ecological environment, landscape and visual impacts, flood risk and archaeology impacts of the Proposals on the Site. The findings of these supported TGC's consideration that the Site is suitable for the Proposals.

4.0 Access, Traffic and Transport

Access to the Site is assumed from the A534, utilising Industrial Estate Road. Direct site access to the Proposals would be taken via an access track to the south of the Site from Bryn Lane.

4.1 Construction

A permitted development temporary construction compound would be entirely outside the adopted highway. It is proposed that all site materials would be delivered and stored without the need to have standing traffic or material offloading on the public highway.

It is estimated the construction would take approximately 14 weeks to complete. During the construction stage all vehicles for the construction would be parked outside the public highway. TGC would discuss the traffic management process with the Highways Department during the planning process to ensure safe working procedures during the construction process.

The additional traffic associated with the construction phase of the Proposal would not materially increase impact upon residential amenity when considering the volume and nature of traffic movements already occurring within the immediate area of the Site associated with the industrial estate located to the south.

Care would be taken during the construction phase to ensure no trees or hedges are damaged in line with Policy EC4 of the UDP, Paragraph 5.2.9 of PPW and the recommendations of the EP1H.

TGC and the electrical component suppliers provide detailed instructions for the safe sequencing and carrying out of the installation and commissioning works. All works would comply with the relevant UK and EU regulations to ensure a safe working and post installation environment would be achieved.

4.2 Operation

It is proposed that the Proposals would operate for a period of 25 years initially and following this period, consent may be sought to extend the lifetime of the planning permission.

Vehicular access to the Site would be restricted to maintenance visits by transit van or equivalent. It is anticipated that one maintenance visit per month would be required and as such the existing access point is considered suitable for this purpose.

4.3 Decommissioning

The lifetime of modern solar panels is 40 years. The design of the solar farm is such that when it comes to the end of its permitted life (which is expected to be 25 years), it can be dismantled with ease and the restoration of the Site can be carried out without delay.

If so required, TGC have no objection to a planning condition being imposed requiring the removal of the Proposals after the end of its permitted operational timescale of 25 years or if the system becomes inactive for a period of more than 12 months, in line with Paragraph 12.10.6 of PPW. This is unless a subsequent planning approval is secured extending the use of the Proposals for a further period.

The Proposals are entirely reversible and the Site would be restored to its pre-development condition after the operation phase.

The panels and all associated infrastructure would be recycled and it is anticipated the scrap value of the support racking systems is sufficient to pay for the removal of the solar farm. The panels can contain glass, aluminium and semiconductor material which all have a value when recycled. All metal utilised on Site, including all steel racking and fencing, and all associated cabling would also be recycled.

4.4 Planning Assessment

The preparation of the PTMP is in line with the requirements of Paragraph 8.7.2 of PPW and Section 9 of TAN 18 (Transport) and sets out the scale of anticipated impacts of the Proposals upon the local transport network.

Paragraph 8.7.1 of PPW outlines the relevant considerations to be taken into account by LPA's when determining a planning application for development that has transport implications including *"the impacts of the proposed development on travel demand"*, *"the environmental impact of both transport infrastructure and the traffic generated (with a particular emphasis on minimising the causes of climate change associated with transport)"* and *"the effects on the safety and convenience of other users of the transport network"*.

In this regard, the transport associated with the Proposals throughout the construction phase and the operational phase is outlined within the accompanying PTMP. It is not expected that the associated traffic movements would result in any notable environmental effects due to the temporary nature of the construction phase (14 weeks) and the limited traffic generation throughout the operational phase. Furthermore it is not anticipated that the Proposals would have an inappropriate effect upon the safety and convenience of other users of the transport network.

Through detailed Site design and route consideration, the Proposals would ensure safe and convenient vehicular access to and from the Site on to Bryn Lane, in accordance with Policy GDP1 of the UDP.

The Proposals would not prejudice the safe and free flow of traffic on the primary and core highway network, in accordance with Policy T6 of the UDP and as detailed within the PTMP. This would be secured via condition with the preparation of a Detailed Traffic Management

Plan. In addition, the Proposals have taken account of the capacity of and effects on the transportation network relating to the construction and operation phases, in line with Paragraph 12.10.1 of PPW and as detailed within the accompanying PTMP.

In line with Policy T8 of the UDP, on-site parking would be made available for construction workers, although car-pooling would be encouraged throughout the construction phase and in accordance with Paragraph 8.4.1 of PPW, traffic calming measures would be incorporated along the transport route utilised by construction traffic on approach to the Site entrance and would include the use of speed reducing signs and radio-controlled banksmen.

In terms of potential for pollution, the Proposals would not result in detrimental effects through their impact upon the transport network and in particular upon traffic generation, in compliance with Paragraph 13.12.1 of PPW.

Overall, the Proposals are considered to be in compliance with all relevant policies and guidance in terms of traffic generation and subsequent effects.

5.0 Pre-application Discussions & Public Consultation

The Proposals and this P,DAS reflect the outcomes of the pre-application consultation process with various consultees and stakeholders, as detailed below.

5.1 Wrexham County Borough Council

An EIA Screening Opinion was issued by the Council on 10 June 2014 and they confirmed that an EIA would not be required as the potential impacts were not considered significant in terms of the EIA Regulations.

Emails have been exchanged regarding ecology issues, specifically great crested newts, between TGC, the Council and Natural Resources Wales.

5.2 Community Consultation

The two Sites originally formed one larger solar development site which was subject to the EIA screening process. Community consultation was carried out on the basis of this larger site. However, in line with STA's Commitment 8 to offer investment opportunities to local communities, TGC decided to split this site into two smaller sites (approximately 5MW) in order to facilitate community investment more easily.

TGC undertook a detailed programme of community consultation to inform interested parties about the Proposals and to gain an insight into local issues. The purpose of this CCR is to provide details of this programme and more importantly set out how the findings have been incorporated into the Proposals.

The community consultation began with TGC sending information to Isycoed Community Council and Holt Community Council locally elected members of Wrexham District Council and the local Member of Parliament, regarding the proposal to hold a consultation event at Isycoed Village Hall.

Invitation letters were also sent to 390 households, as well as 12 local businesses. These businesses were also sent posters advertising the event, and asked if they could display them in public areas. An advert was placed in the Wrexham Leader on the 31 May 2014.

A consultation event was held in Isycoed Village Hall on Tuesday 10 June 2014 from 3pm to 7pm and was attended by approximately 85 people with a number of supporters of the scheme.

Issues raised and discussed included:

- Landscape and visual impacts;
- Community benefits;
- Local support for the development of renewable energy generating developments;
- Proposed Site access; and
- The appropriateness of the site in planning and locational terms.

These were taken into consideration and:

- Screening will be incorporated around the Site's boundary;
- A Landscape and Visual Impact Appraisal has been prepared and accompanies the application; and
- Traffic Management will be considered in detail through the use of a detailed Traffic Management Plan (secured by condition).

Overall, TGC consider that the community consultation programme has been successful as it has enabled TGC to gain an insight into local issues and concerns relating to the Proposals. These have been reflected in the Proposals as detailed above, and as such the programme is considered to have added value to the design process and ensured that the Proposals reflect these local issues.

6.0 Community Benefits

6.1 Tackling Climate Change and Supporting the Local Distribution Network

PPW and the UDP recognise the importance of tackling climate change, which is considered to be the biggest threat to communities, primarily as a result of extreme weather and flooding events. 97% of scientists agree that global warming is man-made and there is robust evidence which addresses the arguments put forward by 'climate change sceptics' who remain in disagreement with the overwhelming majority of informed thought and analysis⁵.

The UK Government has also published 'Key Points and Questions' from the latest Intergovernmental Panel on Climate Change (IPCC) publications⁶. Amongst the points made, it is noted that impacts of climate change on the UK will include:

- Increased economic losses and more people affected by flooding in river basins and coasts, as urbanisation continues, sea levels rise and peak river flows increase;

⁵http://blogs.worldbank.org/futuredevelopment/climate-change-myth?cid=EXT_WBBlogSocialShare_D_EXT

⁶<https://www.gov.uk/government/publications/ipcc-fifth-assessment-report-working-group-2-report-on-impacts-adaptation-and-vulnerability/key-points-and-questions-ipcc-working-group-ii-report-on-impacts-adaptation-and-vulnerability>

- Increased water restrictions. Significant reduction in water availability from river abstraction and from groundwater resources combined with increased water demand (e.g. for irrigation, energy and industry and domestic use); and
- Increased economic losses and people affected by extreme heat events: impacts on health and well-being, labour productivity, crop production and air quality.

It is also noted that the IPCC's latest findings align with the UK Government's and the Welsh Government's Climate Change Risk Assessments⁷⁸.

With the Site being located in a rural area and part of the wider agricultural community, it should be noted that it is considered that climate change is likely to result in temperatures rising beyond those which have underpinned all of agricultural history⁹.

The Proposals have the capacity to power approximately 1,410 houses in the local area with clean, renewable energy. The Proposals would also contribute to supporting the local electricity grid as power would be fed into the local distribution network (as opposed to the National Grid).

6.2 Community Benefit Payments

TGC are committed to supporting the local communities which host their solar PV developments. As such, TGC wish to offer a community benefit as part of the Proposals. This is likely to be a minimum of £500 to a maximum of £1,000 (subject to development costs) per installed MW for ten years and would be paid to the Holt Community Council (irrespective of whether or not they support the Proposals).

Holt Community Council has been notified of the submission of this application and details of the community benefit payments, as well as the opportunity to enter into the agreement, have been provided. This is in line with Paragraph 12.10.5 of PPW which states that *"the Welsh Government supports the principle of securing sustainable community benefits for host communities through voluntary arrangements"*.

Such payments reflect the general desire for local communities to benefit more from the projects they host, and the publication of the UK's first Community Energy Strategy on 27 January 2014¹⁰ which draws out the key findings and policy implications for community energy.

6.3 Community Funding Opportunities

The UK Government has recently introduced a new Infrastructure Act which contains enabling legislation to allow the Government to pass regulation to enforce a community right to buy scheme. The Infrastructure Act was passed on 12 February 2015¹¹. TGC recognise the opportunity for members of local communities to benefit from renewable energy schemes.

⁷https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69487/pb13698-climate-risk-assessment.pdf

⁸ <http://gov.wales/docs/desh/publications/120126climateriskassessen.pdf>

⁹ <http://climie.blogspot.ie/2013/04/our-choice-rocket-to-warming.html>

¹⁰ <https://www.gov.uk/government/publications/community-energy-strategy>

¹¹ <http://www.legislation.gov.uk/ukpga/2015/7/contents/enacted>

TGC has engaged with the local community about the potential opportunity for individuals to invest in the Proposals as shown on the 'Investment Expression of Interest' form which accompanies the application. These forms will be made available following determination of the application. TGC will endeavour to encourage this form of investment in the Proposals.

TGC have previously worked with Bath and West Community Energy Co-op (BWCE) to successfully deliver a community funded solar farm in Bath and North East Somerset (refer to planning permission 14/00424/FUL). TGC are open to the idea of a similar funding and development partnership for the Proposals and discussions along these lines have been held.

Overall, TGC welcomes the opportunity for members of the public to express an interest in investing in renewable energy projects. In addition, such opportunities are in line with Commitment 8 of the STA's 10 Commitments, as detailed in Section 9.3 and with Paragraph 12.8.19 of PPW which states *"there is potential for communities and small businesses to invest in ownership of renewable energy projects [...] the Welsh Government's policy is to support community driven renewable energy projects where benefits from the projects are returned to the host community"*.

6.4 Local Economic Opportunities

There are opportunities for local businesses through the supply chain, including aggregates suppliers, security and monitoring during operation, farming and landscaping contractors and other aspects of the construction process such as fencing.

Recent solar farm appeal decision APP/K1128/A/13/2206258 states that solar farms:

*"[...] would provide some support for the construction industry and local contractors/suppliers could be engaged during the construction and eventual decommissioning stages. Some construction workers may also use some local services. Furthermore, the scheme would generate additional income for the landowners, enhancing farm incomes and possibly diversifying some farm businesses. This would accord with the Government's objective of promoting a strong rural economy. In addition, the development would assist in increasing the security and diversity of electricity supply. **These economic benefits are important considerations that can be given much weight**" (Paragraph 17, emphasis added).*

Therefore it is evident that the economic benefits resulting from the Proposals should not be underestimated and should be given due consideration during the determination of the application.

6.5 Educational Opportunities

TGC would be happy to discuss the incorporation of an information board into the Proposals, explaining the benefits of the Proposals including the biodiversity features of the solar farm, situated near to the Site entrance. This could provide an educational tool and could also be undertaken in conjunction with a local contractor/craftsperson, generating economic activity in the area. In addition, it may be possible for school and community groups to visit the Site to be educated on the effects of climate change and the ways in which renewable energy sources can tackle this.

7.0 Wider Economic Benefits of Renewables and Solar Power

Detailed analysis of the marginal rural seats which can often decide a general election, and which renewable energy projects are often located in due to the need for rural locations, has identified that “*getting the economy growing and creating jobs*” as well as “*protecting the environment*” are key issues¹². Well sited renewable energy projects clearly meet these two objectives.

In terms of creating jobs, additional investment of £40 billion is expected in renewable energy generation projects up to 2020. The operational capacity in the UK could double in that time and there is a healthy pipeline of projects in key technologies. It is estimated that “*increasing the amount of home-grown renewable energy will boost energy security, reduce reliance on imported fossil fuels, and support up to 200,000 jobs by 2020*”¹³.

In September 2014, the Centre for Economic and Business Research (CEBR) released a report investigating the macro economic benefits of investing in solar power¹⁴. The report finds that with bold support from the UK Government, by 2030 British solar could provide 60GW of power, enough to supply the equivalent of 18 million homes and support 49,400 jobs. The report carried out detailed analysis on solar farms and found that with bold government backing, by 2030 they could contribute £25.5 billion to the UK and put £425 million back into consumers’ pockets through reduced energy costs. It could also create 49,900 jobs on average each year, which by STA’s analysis, is nearly twice as many jobs as new nuclear and more than twice as many as onshore wind, per unit of energy generated.

The CEBR Report finds that the solar industry’s reliance on subsidy has plummeted 65% in the last four years. Furthermore, the recent CfD auction results demonstrate how the price of solar has drastically reduced; “*price for solar came in at up to 58% lower than the price would have been without competition*”¹⁵. Prior to the CfD auctions, solar cost £112/MWh, (levelised cost of electricity (LCOE) over the course of a project’s lifetime), with the cost currently estimated at £79/MWh and expected to fall further by the end of the decade. Offshore wind (round 3) costs £173. Gas costs £78, and as gas prices rise, this will only increase. (LCOE values from Electricity Generation Costs (DECC, 2013 converted to 2014 price equivalent)). Therefore solar can be fairly considered as an economically comparable energy source to gas generation without the market fluctuations.

Solar projects generate electricity at a far cheaper rate than that of offshore wind projects and cheaper electricity rates make British businesses more competitive on an international scale. A mixed energy supply portfolio which includes solar at fixed prices insulates the wider economy from variable gas prices. Homeowners benefit from competitive energy prices by having more disposable income, which will assist the one in four households who live in fuel poverty.

¹² <http://lordashcroftpolls.com/wp-content/uploads/2013/04/MARGINAL-TERRITORY.pdf>

¹³ <https://www.gov.uk/government/news/record-investments-of-40-billion-in-renewable-electricity-to-bring-green-jobs-and-growth-to-the-uk>

¹⁴ <http://www.cebr.com/reports/solar-powered-growth-in-the-uk/>

¹⁵ <https://www.gov.uk/government/news/world-leading-auctions-to-provide-major-green-electricity-boost>

The UK Solar PV Strategy Part 2 (the Solar Strategy) published April 2014, focuses on the DECC ambition for the key market segments, the ways in which they will be realised through innovation and partnership and the benefits that this will bring for jobs and investment in the UK, in addition to vitally important emissions reduction¹⁶. The Solar Strategy notes *“the importance of solar PV not just for the contribution it can make to decarbonisation”* (Paragraph 135).

Recent National Solar Centre (NSC) research¹⁷, commissioned by the UK Government, concluded that there were up to 14,000 direct and indirect jobs supported by the UK’s solar industry at the end of 2013. The research estimates that 3,500 jobs are associated with ground mounted solar farms. This indicates the important economic contribution of the solar industry to the UK economy, especially as it recovers following the recession.

Renewable energy generation plays an important role in the transition from carbon based electricity generation to more environmentally friendly sources of power. However, the impacts on consumers’ bills are often misinterpreted.

Ofgem data of 21 August 2014¹⁸ and 29 January 2015¹⁹ shows that 7% of a dual fuel (electricity and gas) bill goes to social and environmental costs including renewable energy incentives such as the Feed in Tariff and Renewables Obligations Certificates.

An older but more detailed breakdown from February 2013²⁰ shows that 5% of electricity bills (gas bills are not affected) go to The Renewables Obligation and Feed-in-Tariffs, the two main methods of stimulating investment in and development of renewable energy projects.

For a typical electricity bill of £592 (December 2014), this equals around £29.60 per year. This means that for only £2.46 a month, consumers are supporting the transition to more environmental friendly means of generating electricity. The long term benefits of this clearly outweigh the costs of alternative methods of dealing with climate change (such as extensive flood defences and addressing health implications such as air quality related illnesses). This is reflected by Professor Ottmar Edenhofer, the Chair of the IPCC working Group 3 (which published the most recent reports) who states *“mitigation does not mean the world has to sacrifice economic growth”*²¹ reflecting the overall, long-term economic benefits of tackling climate change.

Furthermore and specifically in terms of solar power, recent reporting comparing solar power to nuclear power generation at Hinkley Point indicates that solar power prices will undercut nuclear power generated at Hinkley several years before Hinkley becomes operational²². Essentially, this means that solar power would be cheaper than nuclear power

¹⁶https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/302049/uk_solar_pv_strategy_part_2.pdf

¹⁷ UK Solar PV Employment Initial Assessment, National Solar Centre, Feb 2014

¹⁸<https://www.ofgem.gov.uk/information-consumers/domestic-consumers/understanding-energy-bills>

¹⁹<https://www.ofgem.gov.uk/publications-and-updates/charts-outlook-costs-make-energy-bills>

²⁰<https://www.ofgem.gov.uk/ofgem-publications/64006/householdenergybillsexplainedudjuly2013web.pdf>

²¹<http://www.bbc.co.uk/news/science-environment-27008352>

²²http://www.solarpowerportal.co.uk/guest_blog/solar_set_to_beat_nuclear_on_headline_strike_price_by_2018_never_mind_2023

by 2018, “some five years before Hinkley Point C is due to be completed”. Furthermore, solar power does not include the long term clean-up costs and associated environmental impacts.

For example, the Nuclear Decommissioning Authority’s 2013-2014 annual budget is £3.2 billion, £3 billion of which is for site programme works. The total cost of decommissioning the UK’s nuclear generation facilities is estimated at £60 billion²³. Solar farm sites have no significant reinstatement costs as the value of the recovered materials is greater than the costs.

8.0 Policy Context

Renewable energy is one of the key global topics, and there is a consensus at a world, European, and national level that efforts to reduce our reliance upon fossil fuels are of critical importance.

This can be seen from international legislation and policy from the UN and IPCC, numerous aspects of national legislation, Ofgem reports, and National Planning Policies. Wales now has a requirement to reduce greenhouse gas emissions by at least 40% by 2020, relative to 1990 levels. The UK Government’s current target is to reduce emissions by 30% and generate 20% of electricity demand from renewable sources by 2020.

In the run up to the General Election, the now Secretary of State for Energy and Climate Change stated “solar energy is not just good for helping to deliver affordable, clean and secure energy supplies, it is also a powerful engine for growth – driving small and medium sized businesses and creating thousands of jobs up and down the country”²⁴. More recently, Amber Rudd has called for a “solar revolution”²⁵. These comments reflect the key role that solar plays in the energy supply industry in the UK.

On 22 January 2014, the European Union committed to reducing its greenhouse gas emission by 40% by 2030 (compared to 1990 levels) and a new binding target of 27% of energy generation to come from renewable sources from 2030 has been adopted. This is with a view to the EU cutting its greenhouse gas emission by 80-95% by 2050²⁶. It is anticipated that future UK energy policy and legislation will reflect these new commitments.

Most recently, the IPCC warns that “increasing magnitudes of warming increase the likelihood of severe, pervasive and irreversible impacts”²⁷. Reports based on 12,000 peer-reviewed scientific studies provide solid evidence that climate change will affect all communities on the planet.

UK Energy Policy have included a range of Energy White Papers which have all recognised the important contribution that the development of renewable energy can make towards addressing climate change and achieving the targets that have been set at an international level.

²³ <http://www.nda.gov.uk/sites/financials/index.cfm>

²⁴ http://www.solarpowerportal.co.uk/news/amber_rudds_speech_at_solar_energy_uk

²⁵ <http://www.telegraph.co.uk/news/earth/energy/solarpower/11606820/Energy-secretary-Amber-Rudd-plans-to-unleash-solar-revolution.html>

²⁶ http://ec.europa.eu/energy/2030_en.htm

²⁷ <http://www.bbc.co.uk/news/science-environment-26810559>

The most recent Energy White Paper, published in July 2011, *‘Planning Our Electric Future: A White Paper for Secure, Affordable and Low-Carbon Electricity’* set out the UK Governments energy strategy. The executive summary states that, *“We must decarbonise electricity generation. It is vital that we take action now to transform the UK permanently into a low-carbon economy. [...] Without reform, the electricity sector would have emissions intensity in 2030 of over three times the level advised by the Climate Change Committee. [...] To meet our decarbonisation targets the majority of this new investment must be in a diverse range of low-carbon generation such as renewable.”* The paper outlines the key role renewable energy has in reducing carbon emissions and achieving security of supply. It sets out how the UK Government will encourage investment in renewable energies in the most cost-effective way, explaining that *“by reforming the market, we can ensure future security of supply and build a cleaner, more diverse, more sustainable electricity mix”*. It recognises the contribution that renewable energy has already made to reducing emissions but identifies that there are barriers to development which are currently slowing the rate of renewables development in the UK in both the short and long term and that these need to be overcome if the UK is going to achieve its renewable energy targets.

In an effort to decarbonise electricity generation, the UK Government introduced a tax on fossil fuels used to generate electricity; Carbon Price Floor (CPF), which came into effect on 1 April 2013. This aims to encourage investment in proven low-carbon generation technologies and an electricity market reform, aiming for secure, sustainable and affordable electricity within the UK. The White Paper outlines low-carbon electricity generation will have the effect of making our electricity supply more secure by encouraging a diverse range of new generation capacity and reducing our reliance on energy imports. Furthermore, it details *“renewable electricity is key to our low-carbon energy future and is a vital component of the UK’s diverse energy mix. We recognise the importance of maintaining industry confidence and creating stable conditions for investment, in order to deploy renewable electricity to the levels needed to meet our 2020 targets and beyond”*.

The Climate Change Act 2008 put in place legally binding targets for reducing greenhouse gas emissions by 2050. This includes the requirement of the Secretary of State to *“ensure that the net UK carbon account for the year 2050 is a least 80% lower than the 1990 baseline”*.

The UK Renewable Energy Strategy was published in 2009 by DECC and aims to facilitate a radical increase in the generation of electricity from renewable sources such as solar farms, to meet the ambitious targets relating to climate change and ensure energy security set out in the above national and international legislation. In terms of specific targets, the strategy notes that renewables could meet in excess of 30% of the UK’s energy demand by 2020, with renewables share of electricity generation a record 19.2% in 2014, an increase of 4.3% on 2013²⁸.

28

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415998/renewables.pdf

As a result, it is important that Planning Authorities acknowledge the national and international position in determining planning applications as encouraged in Paragraph 12.8.1 of PPW:

“Our approach is to reduce energy consumption and improve energy efficiency first and maximise renewable and low carbon energy generation at every scale across Wales. This is part of a concerted effort to tackle climate change in Wales”.

This is a key material consideration and reflects the positive impacts of renewable energy projects in terms of reducing carbon emissions and the reliance upon fossil fuels. A development’s potential to produce renewable energy should be considered as a significant material consideration in determining any application and substantial supporting weight should be attached to this contribution.

The Proposals would generate 4.7 GWh of renewable energy each year. This should be deemed a significant contribution to renewable energy targets, as reflected by recent appeal decision APP/F1610/A/13/2196612 – Proposed Solar Panels at Land at Norton Hall in Cotswold District Council. That development has the potential to power a smaller number of homes (700), and the decision attached *“significant weight to the current proposal’s contribution to help achieve these national policy aims”*. The Proposals (to which this P,DAS relates to) will power approximately 1,410 homes, so it follows that this should be afforded significant weight. Additionally, and as noted above, there is no need to demonstrate the need to pursue the development of renewable energy generation schemes.

With acknowledgement of the general context set out above, the Proposals are assessed against relevant guidance including PPW and the UDP. Consideration of individual issues is set out as appropriate later in this P,DAS.

9.0 National Planning Policy and Guidance Assessment

9.1 National Planning Policy

Whilst overall energy policy is a reserved function of the UK Government in Westminster, the Welsh Government sets out land use planning policies for Wales as well as the nation’s intentions for future energy generation. All renewable energy proposals must therefore take into account the policies as set out by the Welsh Government.

Planning Policy Wales (PPW) Edition 6 – 2014

PPW sets out the land use planning policies for Wales, with the promotion of sustainable development forming a strong theme throughout, signalling the Welsh Government’s commitment to tackling climate change and the encouragement of renewable energy provision.

These aims are illustrated in Paragraph 4.4.3, as one of the main sustainability objectives for the planning system is to:

“Support the need to tackle the causes of climate change by moving towards a low carbon economy. This includes facilitating development that reduces emissions of greenhouse gases in a sustainable manner, provides for renewable and low carbon energy sources at all scales and facilitates low and zero carbon developments.”

The Proposals would help the Welsh Government in achieving this objective as it comprises a development that produces renewable, low carbon energy and as such would contribute to tackling climate change and cutting greenhouse gas emissions. This is reinforced within Paragraph 12.8.6 of PPW:

“The Welsh Government’s aim is to secure an appropriate mix of energy provision for Wales which maximises benefits to our economy and communities, whilst minimising potential environmental and social impacts”.

With regard to the conservation of high quality agricultural land, the Proposals are in accordance with national policy, with Paragraph 4.10.1 of PPW noting;

“In the case of agricultural land, land of grades 1, 2 and 3a of the Department for Environment, Food and Rural Affairs (DEFRA) Agricultural Land Classification system (ALC) is the best and most versatile, and should be conserved as a finite resource for the future.”

As the Site is on Grade 3b agricultural land (as confirmed by the accompanying ALC report) the existing use of sheep grazing would continue creating a dual-use of the land. This also complies with the aims of Paragraph 7.5.1 which states that development plans should “[...] include policies encouraging farm diversification and new rural development opportunities.”

Section 12 of PPW contains a considerable amount of guidance regarding renewable and low carbon energy.

Paragraph 12.10.1 outlines the aspects of a development proposal that should be taken into account by the LPA:

“In determining applications for renewable and low carbon energy development and associated infrastructure LPA’s should take into account:

- The contribution a proposals will play in meeting identified national, UK and European targets and potential for renewable energy, including the contribution to cutting greenhouse gas emissions;*
- The wider environmental, social and economic benefits and opportunities from renewable and low carbon energy development;*
- The impact on the natural heritage, the coast and the historic environment;*
- The need to minimise impacts on local communities to safeguard quality of life for existing and future generations;*
- Ways to avoid, mitigate or compensate identified adverse impacts;*
- The impacts of climate change on location, design, build and operation of renewable and low carbon energy development. In doing so consider whether measures to adapt to climate change impacts give rise to additional impacts;*
- Grid connection issues where renewable (electricity) energy developments are proposed; and*
- The capacity of and effects on the transportation network relating to the construction and operation of the proposal.”*

The Proposals have been considered in relation to the above guidelines and their compliance is outlined below:

- The contribution that the Proposals would make to local, regional, national and UK targets and potential for renewable energy is detailed within this P,DAS. The Proposals would work towards cutting greenhouse gas emissions and would form a sustainable low-carbon development within Wrexham;
- The wider environmental, social and economic benefits of the Proposals have been outlined and discussed throughout this P,DAS and most notably with reference to PPW guidance in Section 9.2;
- Relevant assessments have been carried out with the Proposals in mind. Assessments on the impact of the Proposals on the natural heritage and the historic environment accompany the application and are discussed within Sections 15.0, 16.0 and 17.0 of this P,DAS;
- Consideration of residential amenity is integral to the Site design of the Proposals and one of the main aims is to ensure the minimisation of impacts upon local communities in order to safeguard the quality of life for existing and future generations. This is discussed fully within the accompanying LVIA and within Section 13.0 of this P,DAS;
- Through the assessments undertaken for the Proposals, potential impacts have been identified and mitigation through design has been implemented in order to avoid, minimise and mitigate potential for adverse impacts, as discussed within this P,DAS. The Proposals would not result in any inappropriate impacts;
- Appropriate consideration has been paid to the impacts of climate change on location, design, build and operation of the Proposals. In particular, the FCA has assessed the flood risks with climate change considered. No inappropriate impacts would result when climate change is accounted for;
- The viability of the grid connection is the first step in TGC's feasibility assessment. If there is no grid connection capacity available to accommodate the Proposals, the project is not taken forward to detailed design stage. There is sufficient grid capacity to accommodate the Proposals on the Site; and
- The design of the Proposals has taken account of the capacity of and potential effects on the transportation network relating to the construction and operation phases. This has been considered within the accompanying PTMP and within Section 4.0 of this P,DAS.

In addition, an extract from Paragraph 12.8.9 states that a positive stance by LPA's should be taken by;

- “– considering the contribution that their area can make towards developing and facilitating renewable and low carbon energy, and ensuring that development plan policies enable this contribution to be delivered;*
- ensuring that development management decisions are consistent with national and international climate change obligations, including contributions to renewable energy targets and aspirations;*
- recognising the environmental, economic and social opportunities that the use of renewable energy resources can make to planning for sustainability [...]*”

The Proposals would contribute to the renewable energy generated within Wrexham and the Council's renewable energy and climate change targets. The relevant planning policies, as outlined within the UDP, have been considered with regards to the Proposals and the assessment is detailed within this P,DAS. Furthermore, the ways in which the Proposals are consistent with PPW guidance and the UDP in terms of renewable and low carbon energy production is also detailed.

The Proposals would result in a number of environmental, economic and social benefits and as such is considered sustainable development. Please refer to Section 9.2 of this P,DAS for further details.

Paragraph 12.8.10 also dictates that LPAs should *"ensure that mitigation measures are required for potential detrimental effects on local communities whilst ensuring that the potential impact on economic viability is given full consideration."*

Appropriate mitigation has been incorporated into the design of the Proposals to ensure that no inappropriate effects would occur.

Overall, PPW is supportive of renewable energy developments and this should be acknowledged as a key material consideration when assessing the planning application. Further details relating to specific issues are set out or noted below as appropriate.

Technical Advice Notes (TAN)

An additional material consideration in the decision making process are Technical Advice Notes (TAN) which supplement the PPW. The following are considered relevant to the Proposals.

TAN 6 – Planning for Sustainable Rural Communities (2010)

TAN 6 seeks to promote rural diversification and states that LPA's should support the diversification of the rural economy as a way to provide local employment opportunities and increase local economic prosperity. In accordance with this guidance, the UDP facilitates the diversification of the rural economic by accommodating the needs of both traditional rural industries and new enterprises, whilst minimising impacts on the local community and the environment. In Paragraph 3.7.2, TAN 6 notes that *"the production of non-food crops and renewable energy, are likely to be appropriate uses"*.

In relation to the development of agricultural land, TAN 6 states that when considering planning applications *"planning authorities should consider the quality of agricultural land and other agricultural factors and seek to minimise any adverse affects on the environment"* (Paragraph 6.2.1).

The Proposals would retain agricultural activity on the land via sheep grazing while generating an additional and diversified income stream. The substantial increases in the cost of farming against the more moderate increase in returns means that diversification of rural businesses is more important than ever. From recent experience of working with a similar farm business, it is understood that the price of a tonne of grain has not increased substantially since the mid-1980s, whereas the costs for producing this now render the process unviable in many cases, especially for farms on poorer quality land. The Proposals would assist the diversification of a rural business, and support the rural area within which the Site is located.

The Proposals are for a fully reversible dual-use of the Site. Recent research by Nottingham Trent University, Forum for the Future and Farming Weekly, as well as feedback from the agricultural community, indicates strong support for this dual-use of agricultural land, with one farmer stating that:

"A lot of people say that PV panels are taking up land, wasting land but far from it if it is done properly [...] My sheep prefer being under or around the panels than being in the open fields. The grass grows better, they also have lovely shelter and they lamb underneath them"²⁹.

TAN 6 provides adequate support for farm diversification and for the appropriate development of renewable energy projects as part of this diversification.

TAN 8

Although published in 2005, before solar farm developments had become established within the UK, TAN 8 outlines the aspirations for Wales in terms of renewable electricity production stating;

"...we have set 4TWh per annum renewable electricity production target by 2010 and a 7TWh target by 2020 as stepping-stones to our ambition of 60% carbon savings by 2050."

TAN 8 sets out the Welsh Government's commitment to promote energy efficiency and energy conservation, as well as the development of new sources of renewable energy which are essential to meeting the targets set by energy policy. Due to the date TAN 8 was published, this guidance does not contain solar specific guidance relevant to commercial scale solar energy farms. Nevertheless TAN 8 reinforces the Welsh Government's support for sources of renewable energy.

In addition, TAN 8 provides support for community consultation and community benefits associated with renewable energy developments, stating:

"Developers, in consultation with local planning authorities, should take an active role in engaging with the local community on renewable energy proposals. This should include pre-application discussion and provision of background information on the renewable energy technology that is proposed".

TGC have undertaken comprehensive consultation with the local community in relation to the Proposals, whereby details of the Proposals and the Site were provided during a community consultation event, as detailed in Section 6.0.

TAN 12

In July 2014 the Welsh Government published an update to Technical Advice Note 12: Design which includes guidance on Design and Access Statements which accompany major applications. TAN 12 makes it clear that a Design and Access Statement must explain the design concepts and principles applied to the development, in relation to the following:

- Access;

²⁹ <http://www.bbc.co.uk/news/science-environment-25305454>

- Character (including amount, layout, scale, appearance and landscaping);
- Community Safety;
- Environmental Sustainability; and
- Movement to, from and within the development.

Furthermore, this guidance outlines that a Design and Access Statement should demonstrate the steps taken to appraise the physical, social, economic and policy context of the development and explain how the design of the development takes that context into account in relation to its proposed use and each of the aspects specified above.

This P,DAS has been prepared in accordance with this guidance and details the ways in which the Proposals are appropriate in relation to each aspect outlined. In addition, the P,DAS assesses the ways in which the Proposals are compliant with the relevant policy and guidance.

TAN 15

TAN 15 provides technical guidance which supplements the policy set out in PPW in relation to development and flooding. The whole of the Site is situated within Flood Zone A (low risk). The Flood Consequence Assessment (FCA) accompanying this planning application considered the direct risk of flooding to the Site and the impacts of the Proposals in terms of surface water run-off. The assessment concludes that due to the fact that the Site is within Flood Zone A, the Site is not at any direct risk of flooding. With regards to surface run off, the impermeable area created by the Proposals is very small, relative to the Site area and as such would have a small impact on the run off rates from the Site.

A SuDS scheme is proposed to promote infiltration and create storage across the Site, this would include a system of swales which would serve to reduce runoff rates to less than the pre-developed rates; thus reducing the potential flood risk created by the Site.

On the basis of the above it is considered that the Proposals are compliant with the aims of TAN 15. Further details relating to the FCA carried out is detailed within the accompanying FRA and in Section 14.0 of this P,DAS.

Energy Wales: A Low Carbon Transition – 2012

This document outlines the future energy aspirations for Wales and centres heavily on the maximisation of the renewable energy potential of the nation. In the section entitled '*Delivering renewable energy*' this document notes that in 2009/10, the renewable sector supported 13,000 jobs in Wales which has continued to increase as renewable generation grew rapidly with a 58% rise between 2004 and 2010. One of the key pledges made by the Welsh Government during this term is to "*improve the planning and consenting regime*", with the overall aspiration of;

"Making the best use of commercially proven renewable energy sources – such as onshore and offshore wind, solar, bio-energy and hydro – we want to facilitate appropriate deployment to deliver against our low carbon objectives, contribute to wider UK and EU aims and realise the significant wealth-generating opportunities Wales has." (P19).

It is therefore considered that the benefits of the Proposals should be afforded significant weight in the decision making process as they would make a positive contribution to the

Welsh Government's aspirations to generate more renewable energy and would aid the Country's transition towards a low carbon future.

Practice Guidance – Planning Implications of Renewable and Low Carbon Energy 2011

Section 8 of this guidance details the relevant factors to be considered by LPA's in relation to planning implications of renewable and low carbon energy and outlines six particular aspects, as follows:

- *Landscape and Visual*

The accompanying LVIA concludes that the Proposals would have very few landscape or visual effects and no inappropriate cumulative effects. Where the predicted landscape or visual effects would be prominent, they are limited and localised and would be reduced, in due course, with the establishment of additional planting within and on the boundaries of the Site.

- *Glint and Glare*

Solar panels are designed to absorb sunlight rather than to reflect it, with typically 2% of incident light being reflected. Reflections from solar panels are consequently smaller than direct sunlight, solar reflections from water and reflections from wet runways. Pilots would and do have to cope with glare effects more intense than those from solar panels. Detailed research³⁰ has concluded that; *"the potential for hazardous glare from flat-plate PV systems is similar to that of smooth water and not expected to be a hazard to air navigation"*. The nearest operational aerodrome is Hawarden Airport, located approximately 8km to the north, where at this distance, it is not considered that there would be any concerns over aircraft safety.

It is also considered that there would not be any significant glint and glare impacts on motorists travelling on the road network surrounding the Site nor users of the nearby PRow network. Increased planting is proposed around the Site perimeter in order to mitigate potential views and the post and wire deer fencing securing the Site would also further diffuse views of the solar PV panels themselves. The limited potential visibility afforded from nearby local properties, as verified in the accompanying LVIA, also ensures that there would be no significant glint and glare issues impacting on residential amenity.

- *Historic Environment*

The Proposals are located in a low lying and flat post-medieval agricultural landscape on the edge of Wrexham Industrial Estate. The low-lying and level aspect of the terrain east, west and south of the Site generally prevents any direct views of the fields further afield, however there are limited views from elevated terrain to the north-west. A Site visit identified land corrugation indicative of ridge and furrow in two fields, and two ponds that may be former post-medieval marl pits, although these features are not uncommon in this area. Crop growth prevented any identification of further features within the fields.

³⁰ Evan Riley and Scott Olson, "A Study of the Hazardous Glare Potential to Aviators from Utility-Scale Flat-Plate Photovoltaic Systems," *ISRN Renewable Energy*, vol. 2011, Article ID 651857 (available at <http://www.hindawi.com/isrn/renewable.energy/2011/651857/>)

No HER sites would be directly physically impacted by the Proposals. There may be limited views of sections of the fields from nearby listed buildings, nevertheless it is considered that the setting of these listed buildings is not impacted to any great extent.

- *Agriculture*

The Proposals are sited on Grade 3b agricultural land in line with national PPW and TAN 6 guidance. The Proposals would also be built in order to facilitate the continuation of the agricultural use of the land, in the form of sheep grazing.

- *Hydrology and Flood Risk*

As discussed above, an FCA, incorporating a SuDS scheme, has been undertaken and accompanies this application. There is no direct risk of flooding, as the Site is within Flood Zone A and the introduction of a SuDS would ensure that surface water runoff is managed appropriately and would in fact lead a runoff rate of less than the undeveloped (current) runoff rate.

- *Cumulative Impacts*

As noted in LVIA, there were no solar farms identified in the vicinity which would lead to cumulative impact issues.

9.2 Presumption in favour of Sustainable Development

As detailed, PPW reinforces that planning plays a key role in securing reductions in greenhouse gas emissions and supporting the delivery of renewable energy. This is central to the economic, social and environmental dimensions of sustainable development.

There would be a positive impact in environmental terms due to the role of the Proposals in tackling climate change and generating low carbon renewable energy and supporting the transition to a low carbon future. Further, environmental benefits include the additional planting for screening and enhanced biodiversity purposes at Site level.

Taking into account the three roles of sustainable development as set out in Paragraph 4.2.2 of PPW, TGC is of the view that the Proposals would result in a number of economic and social benefits by providing support for the construction industry, with local contractors/suppliers being engaged during the construction and eventual decommissioning phases. A number of the construction workers would likely utilise local services, thus positively impacting upon the local rural economy. The Proposals would generate additional income for the landowners, enhancing farm incomes whilst diversifying a rural business, in accordance with the Governments objective of promoting a strong rural economy. The Proposals would reduce reliance upon overseas energy sources and the energy produced would help to meet national energy targets. Additionally, the Proposals would assist in increasing the security and diversity of electricity supply. These economic and social benefits are considered to be important considerations, as reinforced by Appeal APP/K1128/A/13/2206258 as detailed in Section 6.4.

Overall it is considered that the Proposals would comprise a sustainable form of development and therefore, in line with Paragraph 4.2.2 of the PPW and Policy GDP1 of the UDP as well as the policies outlined above, there is a presumption in favour of this development.

9.3 Solar PV Roadmap and Solar Strategy

The DECC have published the Solar PV Roadmap³¹ and the Solar Strategy³² which provides guidance on solar PV developments and builds upon planning practice guidance issued by the Department for Communities and Local Government (DCLG).

Solar PV Roadmap and Solar Strategy

The third (of four) guiding principles of the roadmap relates to planning issues:

“Support for solar PV should ensure proposals are appropriately sited, give proper weight to environmental considerations such as landscape and visual impact, heritage and local amenity, and provide opportunities for local communities to influence decisions that affect them”.

The Proposals comply with these principles as proper weight has been given to environmental considerations during the Site search and design process. The Proposals are appropriate in landscape and visual terms (full details are set out in Section 13.0), there are no direct or significant indirect impacts on heritage and any archaeology impacts can be made appropriate as need be. Local amenity impacts are not inappropriate and substantial effort has been made, and would continue to be made, to provide opportunities for the local community to influence the decision making process.

There is a specific section on ground mounted solar farms in the Solar Strategy. In terms of planning issues, the Solar Strategy notes the STA’s 10 Commitments and states that compliance with these commitments seeks to “ensure that the impact of large-scale solar farms on communities, visual impact and long-term land use are minimised” (Paragraph 64). The STA’s biodiversity guidance is also noted, and the benefits of the Proposals in this regard are noted in Section 15.0 below.

In terms of the 10 Commitments and the biodiversity guidance, Paragraph 67 of the Solar Strategy states that:

“These best practice initiatives are important as they help address the perception that solar farms are diverting significant amounts of land from agricultural use and domestic food production. This, alongside the effects on the landscape and communities of the rapid growth in the deployment of large-scale solar PV installations, might erode public support for the sector overall”.

As a founding member of the STA’s Steering Committee on Large Scale Solar Farm Development, TGC is a responsible developer and has ensured that the Proposals comply with the 10 Commitments by considering them early on in the site selection and subsequent design process:

- 1) We will focus on non-agricultural land or land which is of lower agricultural quality.**

³¹https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/249277/UK_Solar_PV_Strategy_Part_1_Roadmap_to_a_Brighter_Future_08.10.pdf

³²https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/302049/uk_solar_pv_strategy_part_2.pdf

The Site is Grade 3b agricultural land, avoiding BMV agricultural land in line with PPW, and focussing on poorer quality land. It should be noted that agriculture would continue during operation of the Proposals.

2) We will be sensitive to nationally and locally protected landscapes and nature conservation areas, and we welcome opportunities to enhance the ecological value of the land.

The Proposals would not result in inappropriate impacts on any designations and would improve the biodiversity of the Site and its surroundings.

The Site is not located in an AONB, a Special Landscape Area, nor is it within any sensitive natural or historical designations. The accompanying LVIA details the comprehensive planting which is proposed, together with other mitigation measures. The LVIA concludes that the Proposals would result in limited adverse landscape or visual effects and no adverse cumulative effects. Where the predicted effects are prominent, they are limited and localised and would be reduced, in due course, with the establishment of additional planting within and on the boundaries of the Site.

3) We will minimise visual impact where possible and maintain appropriate screening throughout the lifetime of the project managed through a Land Management and/or Ecology plan.

Based on the findings of the LVIA, the Proposals are appropriately sited with the nearest independent property, Honeysuckle Cottage, located around 100m away. This property is primarily orientated to the north-south with mature planting within the garden areas. There would however be some scope for views of the northern extent of the Proposals and views from first floor windows.

Screening has been incorporated into the Proposals and a landscape management plan can be agreed through condition.

4) We will engage with the community in advance of submitting a planning application.

TGC have undertaken a detailed community engagement programme. Results and responses are set out in the CCR which accompanies the application as well as Section 5.0 above.

5) We will encourage land diversification by proposing continued agricultural use or incorporating biodiversity measures within our projects.

The Site would continue to be used for grazing and there would be substantial biodiversity enhancements. The ability to graze sheep throughout the Site ensures that there is provision for continued agricultural use. The comprehensive planting and appropriate ecological management would also enhance the biodiversity of the area.

6) We will do as much buying and employing locally as possible.

There would be opportunities for local companies and workers during the construction (materials and labour) and operation (maintenance, landscaping,

security and monitoring) phases. Opportunities for security and fencing contractors were identified during the consultation process.

7) We will act considerably during construction, and demonstrate 'solar stewardship' of the land for the lifetime of the project.

All relevant best practice would be complied with during construction. TGC have prepared a Provisional Traffic Management Plan. Appropriate management of the land would be enacted to implement the recommendations of the Landscape Masterplan throughout the lifetime of the Proposals.

8) We will offer investment opportunities to communities in their local solar farms where there is local appetite and where it is commercially viable.

TGC actively encourage local ownership and it is due to this that the decision was taken to split the original site and form two solar farm projects which include the Proposals. This is because, due to previous experience, TGC believe that more flexibility in terms of community investment and ownership can be offered with smaller schemes of up to 5MW. As such Investment Expression of Interest forms would be made available following determination.

9) We commit to using the solar farm as an educational opportunity, where appropriate.

TGC would welcome the opportunity to discuss such opportunities in addition to the educational aspects of the community engagement programme to date. TGC are happy to explore the possibility of arranging visits from local schools and installing an information board at the entrance of the Site to provide information about renewable energy, solar energy in particular and further information on the role of the Proposals in the wider sense.

10) The end of the project life we will return the land to its former use.

The Site can be returned to its former use and character once the Proposals are no longer operational. TGC are happy to accept a condition enforcing the decommissioning of the Proposals and reinstatement of the Site at the end of 25 years.

Taking the above compliance with the STA's 10 Commitments into account, TGC consider that the Proposals comply with the guidance set out in the Solar Strategy.

Furthermore, the most recent letter to Planning Authorities from Greg Barker (then MP)³³ reconfirms that DECC "strongly support solar PV" and that "there is still a place for larger-scale field-based solar in the UK's energy mix". Ministerial statements reflect the desire to provide further support for roof mounted and brownfield solar PV, however it is important to note that they do not preclude the development of ground mounted solar in appropriate locations. The letter re-confirms the requirements of the Solar Strategy and the Planning Practice Guidance. The Proposals comply with these requirements as detailed above and TGC

³³https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/305460/140422_Solar_PV_Strategy_LA_letter.pdf

have reviewed the five points on the second page of the letter before submitting this application, and consider that the Proposals comply with these requirements. This has ensured that the Proposals are in line with the latest comments and guidance from DECC.

9.4 Changes to Financial Support for Solar PV

The changes to financial support bring forward the new funding regime (Contracts for Difference; CfD) to support the development of large scale ground mounted solar PV (greater than 5MW) which was already planned for 2017.

The changes to the financial support for large scale solar PV improve value for money for energy consumers as PV is now the second most competitive of all the low carbon technologies. The recent CfD auction results demonstrate how the price of solar has drastically reduced; *“price for solar came in at up to 58% lower than the price would have been without competition”*³⁴.

The document re-confirms the UK’s commitment to solar PV as a core part of the country’s energy mix, with the very first sentence of the publication reading *“Solar PV is an important part of the UK’s energy portfolio”* (Paragraph 1 and Paragraph 12). The publication goes on to specifically state that *“appropriately sited large-scale solar PV also has the potential to play a significant role”* (Paragraph 3).

Sensationalist style headlines were noted in the press following the publication of the consultation on changes to financial support. TGC note that the development of large scale ground mounted solar PV in appropriate locations is still strongly supported by current planning policy and guidance. The PPW, Welsh national energy policy and local planning policy all support renewable energy in principle and appropriately sited large scale ground mounted solar PV specifically.

Appropriately sited ground mounted solar PV presents a range of environmental and socio-economic benefits. This includes generating renewable energy, the key tool to tackling climate change, support for rural businesses through farm diversification, economic opportunities and support in the supply chain and substantial biodiversity enhancement opportunities.

This is reflected by the National Farmers’ Union who back the development of appropriately sited solar PV projects which support economic and environmental objectives in the countryside. The Solar Strategy also singles out the agricultural sector for its *“excellent progress”* in the development of solar PV.

Overall, TGC reiterate that ground mounted solar PV is a core part of the energy mix, with appropriately sited schemes still supported by planning policy and guidance. TGC welcome the opportunity to continue to contribute to cost reductions and innovation, whilst tackling climate change and improving the country’s energy security.

9.5 BRE National Solar Centre Biodiversity Guidance for Solar Developments

The September 2014 publication provides guidance to Planners on how they can help support biodiversity on solar farms. The *‘State of Nature Report’* illustrates the severity of the

³⁴ <https://www.gov.uk/government/news/world-leading-auctions-to-provide-major-green-electricity-boost>

threat facing British Wildlife and shows that biodiversity is declining in the UK. In the past 50 years over 60% of the 3,146 species monitored were recorded as declining. Agricultural intensification has been identified as one of the primary causes of the decline. There is no 'one size fits all' solution, as each site is considered unique. The best approach to implementing biodiversity successfully requires engagement with the local community, the landowner and local and national conservation organisations.

As previously stated the Proposals would have no moving parts and the infrastructure typically disturbs less than 5% of the ground. The posts upon which the panels are mounted take up less than 1% of the land area. Normally only 25-40% of the surface is over-sailed by panels. Due to the fact that panels are raised above the ground on posts, greater than 95% of a field utilised for solar farm development is still accessible for plant growth and potentially for wildlife enhancements and complementary agricultural activities such as conservation grazing.

There are a number of options that will help to enhance biodiversity on solar farms. These could include:

- New and enhanced hedgerows;
- Bird Boxes;
- Wild Flower meadows;
- Pollen and nectar strips; and
- Habitat for invertebrates.

Additionally, in the last 100 years bumblebee populations have crashed, with two species becoming extinct in the UK. It is recognised that solar farms provide an ideal environment for bee habitats because they can support a range of attractive micro habitats. The variety of dry, wet, shaded and sunny areas, if managed efficiently, can encourage a much wider variety of fauna than improved grassland alone.

9.6 Intergovernmental Panel on Climate Change Working Group III: Mitigation of Climate Change

In April 2014 the Intergovernmental Panel on Climate Change Working Group III (IPCC WG III) released the fifth assessment report '*Mitigation of Climate Change*'. The IPCC WG III assesses all relevant options for mitigating climate change through limiting or preventing greenhouse gas emissions and enhancing activities that remove them from the atmosphere.

It found that serious emission cuts are yet to start and that Greenhouse Gases (GHG) emitted are still rising. If additional efforts are not implemented to reduce GHG then it will result in 3.7 - 4.8 degrees of warming by the end of the century. Emissions growth is expected to persist, driven by growth in global population and economic activities.

Fossil fuels have contributed 78% to the total GHG emissions increased from 1970 and 2010. Between 2000 and 2010 the main contributors to emission growth were a growing energy demand and an increase of the share of coal in the global fuel mix. The energy supply sector is the largest contributor to global GHG emissions. GHG emissions from the energy sector grew more rapidly between 2011 and 2010 than in the previous decade.

It has been identified that there is a need towards phasing out consumption of fossil fuels and zero net emissions:

“The stabilization of greenhouse gas concentrations at low levels requires a fundamental transformation of the energy supply system, including the long-term phase-out of unabated fossil fuel conversion technologies and their substitution by low-GHG alternatives”.

To help stop the worst of climate change from happening, low carbon technologies share needs to grow to 80% by 2050. The rapid decarbonisation of electricity generation in recent years is realised by a rapid reduction of conventional coal power and limited expansion of natural gas.

Renewable energy has become a fast growing category in the energy supply with many of the renewable energies now achieving technical and economic maturity. For example, the cost of photovoltaic systems fell substantially between 2009 and 2012, with renewable energy accounting for over half of the new electricity generating capacity added globally in 2012.

Nuclear energy could make an increasing contribution to low-carbon energy supply, but a variety of barriers and risks exist (robust evidence, high agreement). Those include: operational risks, and the associated concerns, uranium mining risks, financial and regulatory risks, unresolved waste management issues, nuclear weapon proliferation concerns, and adverse public opinion (robust evidence, high agreement).

Delaying mitigation efforts beyond those in place today through to 2030 is estimated to substantially increase the difficulty of the transition to low longer-term emissions levels, and narrow the range of options consistent with maintaining temperature change below 2°C relative to preindustrial levels.

10.0 Purpose and Principle of the Proposals

The purpose of the Proposals is to generate energy from a renewable source, in this case sunlight. This is to contribute to the overarching aims of international, national and local level planning policy on tackling climate change by, in part, generating energy from renewables (as detailed in the preceding Sections).

Overall, solar power is a key technology in tackling climate change, as *“solar power represents a vast resource which could, in principle, meet the world’s needs for low-carbon power generation many times over”*³⁵. In terms of costs compared to other technologies *“cost reductions in solar PV over the last ten years now make it competitive with conventional, fossil fuel based grid power in some locations, and it will soon be competitive in others, including the UK”*. Further details of cost comparisons have been included in Section 7.0 above.

The purpose of the Proposals complies with PPW and the UDP as it would generate 5.6 MWp of renewable energy which is a positive contribution to meeting local, regional and national energy targets. This clearly has wider social and economic benefits as a result of the wider contribution to tackling climate change and forms sustainable development, as discussed in Section 9.2 and stated in PPW (Paragraph 4.5.1) *“tackling climate change is a fundamental part of delivering sustainable development”*.

³⁵<https://workspace.imperial.ac.uk/climatechange/Public/pdfs/Briefing%20Papers/Solar%20power%20for%20CO2%20mitigation%20-%20Grantham%20BP%2011.pdf>

Policy PS12 relates to renewable energy development in Wrexham and provides strong support for renewable energy development, in accordance with the PPW, provided that the wider environmental benefits are not outweighed by any detrimental impacts of the Proposals on the landscape, public safety and the local environment. It is not anticipated that the Proposals would cause any unacceptable impacts as any impacts which would have occurred have been mitigated accordingly.

The development of renewable energy gains further support from PPW which states that *“planning to minimise the causes of climate change means taking decisive action to move towards a low carbon economy by proactively reducing the demand for energy, facilitating the delivery of new and more sustainable forms of energy provision at all scales and minimising the emissions of greenhouse gases to the atmosphere”* (PPW, Paragraph 4.5.7).

It is evident that The Proposals would make a substantial and positive contribution to renewable energy targets, a key aspect of tackling climate change.

The Proposals have sought to avoid or where possible minimise adverse impacts through careful consideration of location, scale, design and other measures in line with Paragraph 12.10.3 of PPW. In addition they have taken account of community safety and security through the careful and considered design of the Site layout and the inclusion of CCTV cameras and post and wire security fencing along Site boundaries, in accordance with Policy GDP1 of the UDP. Further, the siting, design and orientation of the solar PV panels works to *‘conserve energy and water resources’*. The Proposals have been orientated in order to absorb the optimum irradiation from the sun and have been designed such that they would not have a detrimental impact upon the water resources throughout or adjacent to the Site. The panel height is such that they would not impact upon the flooding potential of the Site.

Other benefits of the Proposals include the community benefits detailed in Section 6.0, the biodiversity enhancements detailed in Section 15.0 and the potential for local businesses to benefit from construction and maintenance contracts.

In addition to the contribution to meeting energy targets, and as noted elsewhere, the Proposals would:

- Result in the local community benefitting substantially through the community benefit payments proposed;
- Support the local electricity network, improving grid reliability and stability;
- Offer additional community benefits (refer to Section 6.0);
- Employ and utilise local contractors and materials where possible during the construction, operation and decommissioning phases of the Proposals; and
- Present biodiversity enhancement and agricultural ecology stewardship opportunities.

In addition, the Proposals would enable the landowner/farmer to diversify their business whilst continuing to farm the Site which is in compliance with PPW and TAN 6. Paragraph 4.6.3 of PPW outlines the priorities for rural areas and highlights that they must secure *“a thriving and diverse local economy where agriculture-related activities are complemented by sustainable tourism and other forms of employment in a working countryside”*. The landscape and ecological management of the Proposals and the Site would also contribute to farming practices which have a positive impact on the environment, whilst tackling climate change.

Therefore, the Proposals would bring about substantial benefits which should be taken into account in the decision making process. They would assist the Council in achieving its targets for renewable energy generation whilst also providing community benefits. The purpose of the Proposals complies with PPW and the UDP as it is to generate 5.6 MWp of renewable energy and would power approximately xxx local homes, which is a positive contribution to meeting energy targets. This clearly has wider social and economic benefits as a result of the wider contribution to tackling climate change.

It is considered that the Proposals comply with the relevant policies of the UDP or do not significantly conflict with them. Potential impacts have been minimised and the Proposals would be removed and the land returned to its former use at the end of their use.

Overall, it is considered that benefits of the Proposals should be afforded significant weight in the decision making process as they would make a positive contribution to the Council's aspirations to increase their renewable energy generation and would result in a number of benefits as detailed above. In terms of the principle and purpose of the Proposals, there is direct and strong policy support from Policy PS12 of the UDP, as well as PPW.

11.0 Land Use

The Proposals are located on land which is Grade 3b (refer to 'Agricultural Land Classification Report'). As such, the Proposals would not impact on BMV agricultural land as defined in PPW and in line with Policies PS3 and EC2 of the UDP. It should also be noted that the Site would be grazed during the operation of the Proposals, retaining agricultural use of the land.

There are also substantial biodiversity benefits associated with the Proposals, as noted in Section 15.0 below.

11.1 Policy and Guidance

There are a number of planning tests which must be applied to the Proposals in terms of land use, and specifically, the use of agricultural land for the dual use of the Proposals and agriculture (sheep grazing). These are set out in PPW and the Welsh Government's Energy Policy Statement. These provide guidance to help the assessment process and are material considerations.

Section 4.10 of PPW sets out guidance that seeks to conserve best and most versatile land:

"In the case of agricultural land, land of grades 1, 3 and 3a of the Department for Environment, Food and Rural Affairs (DEFRA) Agricultural Land Classification system (ALC) is the best and most versatile, and should be conserved as a finite resource for the future" (PPW, Paragraph 4.10.1).

The speech made by Greg Barker (then MP) on 25 April 2013³⁶ stated:

"Where solar farms are not on brownfield land, you must be looking at low grade agricultural land which works with farmers to allow grazing in parallel with generation [...] incorporating well thought out visual screening [...] involving communities in developing projects and bringing them with you [...]"

³⁶<https://www.gov.uk/government/speeches/gregory-barker-speech-to-the-large-scale-solar-conference>

all of these will be vital in creating a sustainable future for large-scale solar PV”.

Further, Greg Barker stated that *“the main message from the Strategy is that we are keen to focus growth of solar PV in the UK on domestic and commercial roof space and on previously used land”* in his letter to Local Authorities of 22 April 2014.

Policy and guidance does not preclude the use of agricultural land in the development of solar farms, as was suggested by the UK’s Environment Secretary, Liz Truss. A freedom of information request was filed by Solar Power Portal which revealed that despite claims by Ms Truss that solar farms were having a damaging effect on agriculture and food production, DEFRA had been informed by CAP Direct Payments Team in September 2014 that *“given the small areas of land covered [by solar farms] currently, it is not possible to argue that, at the national level, there is yet a serious impact on agricultural output”*.³⁷

In the House of Commons oral statement of 29 January 2014 the Planning Minister, Nick Boles MP, said that *“where significant development is necessary on agricultural land, the national planning policy framework is equally clear that local planning authorities should seek to use areas of poorer quality in preference to that of a higher quality. Where land is designated at a relatively high grade it should not be preferred for the siting of such developments”*.

The Solar Strategy includes the Solar Trade Association’s ten commitments, which state that ground mounted solar farms *“will focus on non-agricultural land or land which is of lower agricultural quality”*. These ten Commitments are outlined in Section 9.3.

11.2 Assessment

Section 3.0 of this P,DAS should be reviewed with regards to site selection and use of agricultural land.

In terms of the need to demonstrate the use of agricultural land, ground mounted solar is a key part of the UK’s energy supply and it is not necessary to demonstrate the need for the development of renewable energy.

Similarly, the use of brownfield land and rooftops is encouraged, not required by any part of planning policy, and ground mounted solar farms on greenfield land in appropriate locations are supported by planning policy at all levels, as confirmed by recent appeal decision (APP/E2530/A/14/2218270):

“The Council argues that the Appellants have not demonstrated that other sequentially preferable land is not available and has mentioned the government’s Solar PV Strategy Part 2 which emphasises the priority for utilising south facing commercial roofspace rather than greenfield agricultural land. Whilst the use of commercial roofspace and derelict land is clearly preferable the government’s strategy does not rule out the use of agricultural land for the siting of solar PV schemes to generate renewable energy.” (Paragraph 6)

³⁷

http://www.solarpowerportal.co.uk/news/exclusive_defras_solar_clampdown_based_on_politics_not_evidence

Other renewable energy projects and land uses utilise a greater proportion of land in the UK, with less scrutiny of this use, than solar farms. This is despite solar farms remaining in agricultural use and the other uses noted below preventing continued agricultural use.

Table 1: Land Use within the UK

Land Use	% of UK Land	Source/Method
Existing Solar Farms	0.024	c. 3GW, 2 hectares/MW, c.6,000 hectares
Solar Pipeline	0.03	c. 4GW, 2 hectares/MW, c.7,500 hectares
Fracking	0.39	DECC assessment ³⁸
Biomass	0.45	DEFRA ³⁹
Golf Courses	1.11 (England only)	Estimate based on Golf England figures ⁴⁰

TGC have considered and pursued the development of commercial rooftop and brownfield/previously developed land solar projects since the inception of the company in 2006. In 2011, TGC developed a 1MW rooftop scheme in conjunction with the Body Shop, on their headquarters in Littlehampton, Sussex.

As previously outlined in Section 3.0, details of TGC's ongoing efforts to develop projects on previously developed land, non-agricultural land and rooftops are set out in the Opportunity Register which accompanies the application. As can be seen from the Opportunity Register, at the time of submitting this, there are no such projects ready to be submitted for planning permission or likely to be ready for submission for planning permission in the near future.

The most recent discussions in the Opportunity Register have been held in the last few months (of TGC's two year development and business cycle) and all above discussions have been unsuccessful in detailed commercial terms for reasons including:

- Prohibitively expensive development and/or alteration costs associated with structural reinforcements of roofs (taking into account wind load, snow and ice load plus the weight of PV panels) and development of brownfield land (geotechnical and geoenvironmental considerations);
- Insurance conflicts (content insurance challenges including risk to damage to stored stock from roof damage);
- Fundamental flaws, in the Solar Trade Association's opinion, in the banding and capacity triggers of financial support for rooftop solar on commercial buildings, with proposed and emerging changes preventing every day investors developing roof top schemes and helping to tackle climate change. Certain scales of development have been completely precluded as a result of

³⁸ 'The Environmental Effects of Onshore Oil and Gas Licensing – Two Page Synopsis,' AMEC Environment & Infrastructure UK, London, 2014

³⁹ 'Area of Crops Grown for Bioenergy in England and the UK: 2008-2011,' Department for Environment Food & Rural Affairs, London, 2013.

⁴⁰ <http://www.bbc.co.uk/news/magazine-24378868>

imbalanced support, with all bands being reduced at the same rate despite the complete failure of certain bands (i.e. 250kW band);

- A shift, as a result of the economic downturn, to shorter leases for occupiers who are able to command more flexibility on lease terms. This means that owners need to retain flexibility in their warehouses and rooftops i.e. by being able to alter the roof to accommodate refrigeration and ventilation if need be;
- The 'fragmented' nature of owners and occupiers in industrial estates and commercial buildings, resulting in being unable to achieve consensus between myriad development partners and the complexities of the metering system in such a scenario;
- The focus of redevelopment and regeneration of brownfield land for residential, commercial and industrial (among other) uses means that solar farms on brownfield land are not financially viable in terms of land values. Generally, it makes more sense for such (often inner city or edge of settlement) locations to have trip generating uses, where they can be incorporated into an integrated transport system more easily, rather than increasing the pressure on Green Belt or greenfield sites for housing development etc.; and
- The lack of interest from the owners of buildings, whose tenants pay electricity bills, but who may not lease the building for long enough to benefit from the installation of a PV system.

The active exploration of possible brownfield sites by TGC through the Opportunity Register is in line with Policy PS3 of the UDP and as discussed within this P,DAS, the Site does not comprise greenfield land that is of particular ecological, landscape or amenity value and is not BMV agricultural land.

It should also be noted that just as owners of residential property put panels on their own roof, it is often the case that companies which TGC approach are considering doing so themselves and do not wish to lease roof space to a third party to do so.

Similarly, the key role that the commercial/utility scale part of the overall solar sector plays in the UK economy is noted by the Solar Strategy. There are a many small scale rooftop installers (focussing on residential or small commercial properties) which operate on the FiT. However, TGC operates predominantly within the ROC and CfD areas, contributing to the supply of commercial/utility scale projects.

Significant expansion, likely putting a number of smaller businesses out of work in the process, would be required for TGC to develop FiT projects. As ground mounted solar farms are supported by planning policy and as they offer opportunities for making substantial contributions to renewable energy targets, TGC focus on this sector of the wider, overall solar PV market.

In addition to the above, the need for use of agricultural land for solar farms specifically is due to the requirement of large areas of flat or gently sloping land, avoidance of inappropriate or wide ranging residential amenity impacts, the need to avoid shading (for example by tall buildings in built up areas), the need for ease of access by larger vehicles and available and willing land owners who view solar farms as a viable use of land in conjunction with agriculture and an opportunity to diversify their rural business. Vacant land in urban

areas tends to be unviable due to higher land values and the opportunities presented by commercial or residential development. Such urban brownfield locations are also better suited to more intense use in terms of sustainability principles.

TGC have also considered the redevelopment of airfield sites. However, those which were suitable (in terms of grid availability and potential planning and environmental impacts) were either unavailable (other proposed uses) or had already returned to agricultural use.

Landowners are often not willing to release such sites for solar farms as they are suitable for higher value development such as residential. Additionally, TGC have encountered sites with severe environmental issues such as foot and mouth disposal sites or buried waste tanks which render sites unviable.

With all of the above in mind and put simply, it is clear that to prohibit the significant development of agricultural land would prohibit the vast majority of renewable energy projects and significantly hinder tackling climate change.

It has been clearly and robustly demonstrated that the ALC of the Site is Grade 3b and, therefore, it is not BMV agricultural land and is poorer quality land. The Proposals allow for continued agricultural use as the Site would be grazed during the operation of the Proposals, retaining agricultural use of the land.

The Proposals would also incorporate substantial biodiversity improvements around arrays as illustrated on the Site Design, detailed in the accompanying EP1H and outlined in Section 15.0. The Proposals represent an opportunity for the landowner to further diversify the agricultural business and continue to contribute to the local rural economy, at the same time as generating clean energy which would be used by the local communities connected to the distribution network.

The Site would continue to be used for agriculture due to the minimal physical disruption of the land and the spacing between rows, which allows sheep grazing. The Site would not be irreversibly developed and there would be no change of use away from agricultural. The soil and land would not be adversely impacted by the Proposals, and it is likely that resting the Site for 25 years would improve its quality. The land can be quickly returned to its current condition following the completion of the operation of the Proposals.

11.3 Local Development Orders for Housing Development on Brownfield Land

In August 2014 the Department for Communities and Local Government introduced plans that encourage Councils to bring forward brownfield land for housing development and in the process established a local development order incentive fund of £5 million which has been allocated to help provide support for the scheme.

This further expands onto measures announced in June 2014 from Chancellor of the Exchequer George Osborne, who outlined plans to make it easier to build on brownfield land that is suitable for housing. It was stated that the fund highlights the vital role that brownfield land plays in meeting the country's housing needs. The £5 million fund has been established to unlock local development orders as part of a drive to unlock viable housing schemes on brownfield sites through the delivery of planning simplification.

It has been outlined that there is enough previously developed brownfield land to deliver up to 200,000 new homes and with housing a key part of the government's long term economic

plan, ministers are looking for permissions for homes to be in place on more than 90% of this land by 2020.

The Government has therefore set out clear criteria for prioritising housing development on all brownfield land and has outlined that it aims to deliver the maximum number of homes on brownfield sites by 2020. As a result this has significantly reduced the number of sites that could be potentially used for solar development.

11.4 Conclusion

In terms of land use issues and the quality of agricultural land in question, the Proposals are compliant with planning policy EC2 of the UDP. Furthermore this dual use approach demonstrates how the overall yield of the land can be maximised.

Overall, the planning tests set out above are met as, based on the above reasons and issues, it is considered that the need to develop agricultural land has been demonstrated. The Proposals would not result in any loss of agricultural land, the Site would continue to be utilised for agriculture, the Site is not BMV land and is poorer quality agricultural land and there would be significant biodiversity enhancements as a result of the Proposals and associated landscaping.

12.0 Landscape and Visual Impacts

The LVIA which accompanies the application has been prepared by Wardell Armstrong and should be referred to for full details of the assessment of landscape and visual impacts. A combined assessment provides a worst case, combined impacts assessment, based on the Site and the site at Francis Lane (separate application) both being developed.

Overall the landscape around the Proposals consists of predominantly, pastoral agricultural land, interspersed with mixed native enclosure field boundary hedgerows with hedgerow oaks forming a geometric field pattern of medium scale. Fields are interspersed with occasional blocks of small scale deciduous farm woodland. A larger scale arable field pattern persists in parts of the character area (to the east). Visual amenity receptors consist of scattered residential properties, farms and settlements all connected by a network of transport corridors including major and minor roads, PRow and cycle routes.

The visual screening afforded by the extensive vegetation cover in the study area ensure that the Proposals would result in no inappropriate impacts upon visual receptors. The proposed landscaping of the Site would further restrict the extent to which the Site would be seen in views from nearby properties, once planting is established.

The nearest settlement consisting of more than communities of individual properties around farms is Lan-y-pwll, located 880m to the north-west of the Site. Abenbury is located on the southern edge of the Wrexham Industrial Estate at 1.5km to the south-west of the Site. The village of Holt is located approximately 2.8km to the north-east of the Site. The eastern edge of the town of Wrexham is located at approximately 2.5km to the west of the Site. To the south-east of the Site is the small settlement of Isycoed, which is centred on the local road network east of the B5130 and includes a church and a mix of one and two storey properties.

There would be limited visual effects upon settlements within the study area, with a number of properties within Llan-y-pwll experiencing views of the Site from first floor windows. None of the identified effects would be inappropriate.

The Site is not recognised for its value through any landscape designations, however there are three Special Landscape Areas (SLAs) situated within 2km of the Site. The closest of these is at Borrass Woods, to the north of the A534, some 1.4km to the north-north-west of the Site. Two other SLAs are either just within or on the edge of the 2km buffer: to the west, East of Wrexham Town SLA, which extends from Cefn Park to Big Wood; and to the south, south of Wrexham Industrial Estate SLA, which covers land to either side of the River Clywedog.

The Site is considered to be of Low to Medium in value as it is undesignated and within close proximity to the adjacent Wrexham Industrial Estate which currently impacts upon the tranquillity of the setting and landscape views. Impacts upon the character of the Site are assessed as low, as the introduction of a solar farm development would be barely perceptible outside of the Site and therefore would only be prominent within the immediate locality of the Site itself.

Consideration has been given to the potential impact of the Proposals upon the key characteristics of the LANDMAP Aspect Area within which the Site is located and is outlined within the LVIA. In summary the LVIA reports that there would be some highly localised landscape effects and as such the Proposals would not predominantly affect the whole of the landscape character of the various LANDMAP Aspect Areas it is within.

With only localised effects resulting from the impacts upon the Site, and with none of the defining characteristics of the Aspect Areas of the surrounding study area relating to views towards the Site, the overall level of effect upon the landscape character of the study area is concluded to be imperceptible.

In terms of visual effects, during the operational period there would be limited visual effects upon settlements within the 5km study area. The level of effects would not exceed slight adverse, where the Site would be glimpsed through intervening hedgerow trees.

The Proposals are anticipated to result in some adverse effects upon the road network immediately around the Site boundaries, although these effects would not be greater than moderate.

The Proposals would not currently result in any cumulative impacts when viewed from key vantage points as they would be viewed alongside the adjacent Francis Lane solar farm as one development.

12.1 Planning Assessment

The Proposals are compliant with Policy GDP1 of the UDP as their scale, design and layout have taken due consideration of the character of the surrounding area. They include the retention, creation and enhancement of key landscape features on the Site including the mature hedgerows and trees on the Site, the field boundary and pattern and biodiversity enhancements in the fields, as well as their margins.

The Proposals would not result in an adverse impact upon the SLA's within the county and design mitigation has been employed in order to minimise the visual impact both from nearby and distant viewpoints associated with the SLA's. As a result, the Proposals are compliant with Policy EC5 of the UDP.

With the above in mind and based on the findings and conclusions of the LVIA, it is considered that the Proposals comply with Policy PS2 of the UDP, as the impacts on the immediate and wider landscape are not inappropriate and the Proposals would not adversely affect the particular character of the surrounding landscape or any settlement as they are well contained in the immediate landscape and views of the Proposals would be restricted.

The design of the Proposals is such that it retains the existing field pattern and through the implementation of additional boundary hedgerow planting, would not inappropriately impact upon the existing landscape character. As such the Proposals would be compliant with Policy PS4 of the UDP.

Any minor negative impacts are outweighed by the substantial benefits of the Proposals in terms of renewable energy generation and the support the Proposals would benefit from Policy PS12, as well as the substantial weight of support for renewable energy in PPW and background policy/legislation as noted in this P,DAS.

Additionally, the Proposals support the diversification of farm-based operations with consideration of:

- Best and most versatile agricultural land;
- Impact upon landscape character;
- Existing properties and road network;
- Cumulative impact; and
- The impact upon the natural and historical environment.

The Proposals would not lead to the loss of important areas of open space or the development of open land around settlements. The Proposals would not obscure typical views of settlements from public vantage points, obstruct significant views of settlements, result in the loss of 'green fingers' which play an important role in the structure or amenity of settlements or have any other serious adverse effect on the character or setting of settlements.

Overall, it is considered that the Proposals are well sited in landscape and visual terms and comply with the UDP, PPW and relevant guidance.

13.0 Residential Amenity

The potential for long term (i.e. during the operation of the Proposals) impacts on residential amenity stems primarily from landscape and visual impacts.

The visual screening afforded by the extensive vegetation cover surrounding the Site would ensure that the Proposals would result in very few visual effects on visual receptors and in terms of noise, the only anticipated noise source during operation of the Proposals would be from the extractor fans at the inverter cabins and would be minimal.

There are several individual properties in close proximity to the Site who would experience adverse effects with the closest comprising of Honeysuckle Cottage approximately 140m to the north-west. First floor views from this property across the northern extent of the Site would be possible. Nevertheless, this dwelling is not directly orientated towards the Site and is surrounded by mature trees and hedging, thus reducing any potential for effects. The screening surrounding the Site would be enhanced as part of the Proposals.

There are three further properties, located approximately 500m to the west of the Site. These properties are expected to experience open views across the Site. Other properties within the study area would not experience significant effects.

It is stated that the magnitude of impact from these properties would at worst be 'medium-low' with the significance of the effect 'moderate'. Following growth of the surrounding vegetation it is expected that the magnitude of impact would then become 'low' and the significance of effect becoming 'minor'.

Other than potential landscape impacts, solar farms are benign in as much as they do not release emissions or cause disruption. It is acknowledged that there is the potential for low level noise from inverters, however the distances from dwellings to the inverter locations ensure that there would be no significant impacts. With this in mind, it is considered that there are unlikely to be any inappropriate impacts on residential amenity in terms of noise as a result of the operation of the Proposals. There would also be no external lighting during the operation of the Proposals other than small light(s) above the door of the substation which is required for health and safety purposes.

As such, particularly when considering the wider benefits of the Proposals, it is considered that they are compliant with Policy GD1 of the UDP as they would not result in unacceptable effects on the privacy and amenity of existing dwellings nor would they create any noise or light pollution.

13.1 Planning Assessment

PPW notes that *"noise can affect people's health and well-being and have a direct impact on wildlife and local amenity. Noise levels provide an indicator of local environmental quality. The objective of a policy for noise is to minimise emissions and reduce ambient noise levels to an acceptable standard"* (PPW, 13.13.1).

After a brief period of construction there would be minimal activity, noise or movement from the Site and as such the Proposals comply with Policy GDP1 of the UDP in terms of minimizing air, light, vibration, odour and noise pollution and PPW in terms of minimal noise emissions. Whilst there would be some temporary noise and dust emissions during construction, this would be temporary in nature and would only last approximately 14 weeks.

The PPW sets out further guidance in terms of the potential impact of lighting associated with development;

"There is a need to balance the provision of lighting to enhance safety and security to help in the prevention of crime [...] with the need to:

- Protect the natural and historic environment including wildlife*
- Retain dark skies where appropriate*
- Prevent glare and respect the amenity of neighbouring land uses; and*
- Reduce the carbon emissions associated with lighting.*

Lighting to provide security can be particularly important in rural areas" (P13.13.2).

The Proposals would not result in extensive light pollution within the area with limited external lighting proposed in the form of small downward directional light(s) on the

substation building for health and safety purposes. As such they would not result in any glare or inappropriate light related effects upon the amenity of neighbouring land uses.

A Construction Environmental Management Plan could be put in place to minimise these impacts associated with construction impacts and construction would be based on best practice and be in line with latest guidance and legislation.

Whilst there may be some temporary impacts on the amenity of residential properties close to the Site during construction, these would be temporary, only during normal working hours and Saturday morning and are outweighed by the need to avoid potentially dangerous manoeuvres to and from the trunk road.

It is noted that there may be some temporary disturbance as a result of traffic impacts during the construction phase of approximately 14 weeks. However, this is considered to be minimal as it would be temporary and would reflect existing agricultural movements in terms of the size and nature of many of the vehicles which would be used. It is anticipated that the traffic generated would be absorbed by the traffic movements associated with the nearby Wrexham Industrial Estate.

The land in which the Proposals would be sited has very limited visibility, as noted in the LVIA. Though the Zone of Theoretical Visibility (ZTV) diagram (refer to the accompanying LVIA) includes much of the land within 5km of the Site the reality is that the dense network of hedgerows and trees provides an effective visual screen from the vast majority of potential public and residential viewpoints.

Overall, it is considered that the impacts on amenity have been minimised by the choice of the Site for the Proposals and the proposed landscaping, and there would not be inappropriate impacts on these dwellings. As such, the Proposals comply with Policies GDP1 and PS12 of the UDP. The Proposals are justified by their local and wider benefits and there would be no loss of residential amenity as a result.

14.0 Flood Risk and Drainage

TGC commissioned Nijhuis H₂OK to carry out a FCA which accompanies the application.

The Proposals are shown to be located within Fluvial Flood Zone A (low risk) according to the Environment Agency (EA) flood mapping. Despite the low flood risk, due to the size of the Site, i.e. over 1 hectare (ha), an FRA was prepared to accompany the planning application with the primary aim to assess the surface water runoff produced by the Proposals on the Site and, if necessary, to outline the measures required to ensure flood risk would not be increased downstream of the Site. The accompanying FRA outlines recommendations in line with SuDS best practice principles, in order to mitigate any potential issues in relation to runoff rates and flow routes.

14.1 Planning Assessment

The overriding emphasis for new developments of this type suggests that sustainability is an important aspect in granting approval. However, the risk due to flooding should not be overlooked but should be mitigated to a safe level if possible. Within planning policy the vulnerability classification and flood zone extents are key to assessing whether a development is appropriate.

In terms of the relationship between sustainable development and flood risk, the PPW states *“meeting the Welsh Government’s objectives for sustainable development requires action through the planning system to move away from flood defence and the mitigation of the consequences of new development in areas of flood hazard towards a more positive avoidance of development in areas defined as being of flood hazard.”* (PPW Paragraph 13.2.3)

The Proposals would not result in and are not subject to inappropriate flooding and as such comply with Policies EC12 and GDP1 of the UDP. Further, the Proposals would not result in an unacceptable adverse impact on the water environment due to additional water run-off, in line with Policy EC13 of the UDP.

This is due to the fact that the Proposals are located within Fluvial Flood Zone 1, would incorporate a suitable SuDS scheme in order to avoid adverse effects on the Site itself and elsewhere and would not have an adverse effect upon the water quality of groundwater resources.

The Proposals would not be located in an area known to be at risk of flooding. Consequently, with regard to flood risk, the Proposals are entirely appropriate in this area as they would enable agriculture to continue and would reduce the pressure on other sites outside and within the flood zone. Furthermore, there are clear links between climate change and flood events, so the Proposals would essentially contribute to reducing the likelihood and extent of flood events.

The Proposals would seek to ensure the safety and amenity of the public and safeguard the environment from the adverse effects of pollution of water, in line with Policy GDP1 of the UDP.

“Local planning authorities should take a strategic approach to flood risk and consider the catchment as a whole. They should ensure that new development is not exposed unnecessarily to flooding. Therefore, by considering flood risk in terms of the cumulative impact of the proposed development in the locality on a catchment wide basis [...] recognising that this may require working across administrative boundaries. Development proposals should seek to reduce, and certainly not increase, flood risk arising either from river and/or coastal flooding or from additional run-off from development in any location”. (PPW Paragraph 13.2.4)

In relation to this guidance, the FCA have assessed this potential and concluded that the Proposals would not result in an increase in flood risk elsewhere.

It is considered that the Proposals comply with the relevant Policies of the UDP and PPW guidance. The Proposals should therefore be deemed acceptable with regard to flood risk, compliant with the national policy outlined in TAN 15.

15.0 Ecology and Biodiversity

TGC commissioned Ecosulis to undertake an EP1H at the Site with the Proposals in mind and this report accompanies the application.

The Site comprises an area of arable land and improved grassland. The hedgerows on Site have been assessed as species poor, nevertheless would still provide opportunities for wildlife, including nesting birds. Trees on Site include mature oak trees that have been noted as having features that provide roosting opportunities for bats.

Three ponds within proximity of the Site (including one situated within the Site boundary) were assessed for their suitability to support great crested newts. Two were rated as good habitat and the other as average. Additional ponds adjacent the Site were identified but not assessed.

The Site is also recognised to provide potential opportunities for reptile species, small mammals and invertebrates particularly in ruderal habitat on Site and hedgerows.

The recommendations of the EP1H, in terms of further survey effort required are as follows:

- A great crested newt survey;
- A bat habitat suitability assessment of trees on the site;
- A reptile survey;
- A nesting bird check; and
- An invertebrate survey.

Detailed discussions have been held with the Council and NRW with regards to great crested newts. It is considered that, in terms of planning policy, work will be undertaken based on the basis that newts are present, and employing a Reasonable Avoidance Measures approach. It may be necessary to obtain a license for the works, and this is a separate process.

As there will be no removal of bat habitat, further bat survey work is not necessary. Similarly, as suitable buffers around ponds and hedges have been included in the site design, reptile and invertebrate surveys are not required. Nesting bird checks can be undertaken subject to the time of year construction is undertaken in.

15.1 Planning Assessment

The Proposals include the retention of the most ecologically valuable habitats on the Site, in the form of hedgerows and trees. PPW details that priorities for rural areas include the securing of “an attractive, ecologically rich and accessible countryside in which the environment and biodiversity are conserved and enhanced” (Paragraph 4.6.3). It is considered that there is significant opportunity to provide biodiversity gain as part of the Proposals.

Paragraph 5.5.1 of PPW expands on this and states:

“Biodiversity and landscape considerations must be taken into account in determining individual applications and contributing to the implementation of specific projects. The effect of a development proposal on the wildlife or landscape of any area can be a material consideration. In such instances and in the interests of achieving sustainable development it is important to balance conservation objectives with the wider economic needs of local businesses and communities. Where development does occur it is important to ensure that all reasonable steps are taken to safeguard or enhance the environmental quality of land”.

There would be a net gain in terms of biodiversity, even before the benefits of the contribution of the Proposals in tackling climate change are taken into account. In accordance with the requirements of PPW, recommendations to increase the Site’s biodiversity have been outlined and provided that the recommendations are adhered to, the Proposals would remain compliant with current wildlife legislation and planning policies

which seek to protect such species and habitats. Additional features including boundary planting for screening would be consistent with the characteristics of the surrounding area. This is supported by Policy PS11 which states *“encouragement will be given to proposals which improve the biodiversity value of sites and to the establishment of local nature reserves where the nature conservation and landscape interest of the land will be protected and enhanced”*.

In line with Policy EC6 of the UDP, the Proposals would safeguard the nature conservation value within the Site and its subsequent biodiversity interest. They would not result in any damage to features of ecological interest and measures, including additional planting, would be employed in order to improve the biodiversity and natural conservation value of the Site.

The Proposals would provide for the conservation and management of hedgerows, trees, woodland, wildlife and other natural landscape and water features present in the landscape area, in line with Policy EC4 of the UDP. The emphasis on the protection of trees, woodland and hedgerows is reinforced by PPW which states that *“trees, woodlands and hedgerows are of great importance, both as wildlife habitats and in terms of their contribution to landscape character and beauty. They also play a role in tackling climate change by trapping carbon and can provide a sustainable energy source”* (PPW, Paragraph 5.2.9). In addition the Proposals would include new planting along the Site boundaries in order to enhance the character of the landscape in line with this guidance.

The Proposals would safeguard sites and areas of nature conservation and wildlife interest through careful construction and site management, in line with Policy GDP1 of the UDP and international and national statutory obligations to protect designated areas, species and habitats have been observed, as detailed within the EP1H and in accordance with Paragraph 12.8.10 of PPW.

The Proposals would not result in material detrimental effects upon the quality of the natural environment in line with Policy PS2 of the UDP and would comply with the main policy test for renewable energy development in the UDP, Policy PS12, as they would not result in an adverse impact on features of ecological interest. Additionally, Policy EC4 of the UDP is complied with as sustainable management of trees, woodland and hedgerows would be undertaken. If any minimal removal is required for access tracks or similar development, additional planting would be provided to offset any minor loss. It is considered that there is significant opportunity to provide biodiversity gain as part of the Proposals.

16.0 Archaeology

TGC commissioned Archaeology Wales to undertake an archaeological desk based assessment (DBA) of the development of the Proposals on the Site in order to fully assess the impact of the Proposals in terms of archaeology. The DBA concludes that there would be no significant effects on known archaeological assets. Land corrugation, indicative of ridge and furrow in two fields, and two ponds that may be former post-medieval marl pits was identified during a site visit, however these features are not uncommon in the area.

The DBA details that relict ridge and furrow and possible marl pits (which now form ponds) are present within the area. However, these do not form unique features within the area and it is worth noting that a number of preserved ridge and furrow features are located within a 2km radius of the Site. The development of the Proposals would not have an inappropriate

effect upon either of these features and appropriate mitigation through design and the construction and operation phases would be implemented.

No HER sites would be directly (physically) impacted by the Proposals.

16.1 Planning Assessment

The Proposals are compliant with Policy EC11 of the UDP as they would not result in direct effects upon any non-scheduled sites of archaeological importance as indicated by the DBA and it is considered that they comply with Paragraph 6.5.1 of PPW as they include provision for the conservation of archaeological resources and would not adversely affect archaeological assets.

17.0 Cultural Heritage

Archaeology Wales has carefully considered the potential impact on heritage assets as part of the DBA which accompanies the application.

There are no SM's or Listed Buildings within the Site and therefore there would be no direct physical impact. There are no SM's or Grade I Listed Buildings within 2km of the Site. One Grade II* is located within 2km of the Site, comprising of Borrass Hall, located approximately 1.8km north-west of the Site. Whilst the ZTV indicates that visibility from this asset is possible, it should be noted that ZTVs assume bare earth and do not take account of local aspects such as screening by boundaries, developments, vegetation or buildings. With this in mind it is anticipated that visibility would in fact be limited and that the impact on the setting would be no more than Minor or Neutral.

There are a further 7 Grade II Listed Buildings within 2km of the Site. Of these, three assets were considered in detail, the remaining four were considered not to be impacted by the Proposals as a result of the distance, low-lying ground and intervening buildings and vegetation. It has been concluded that the Proposals would have a Moderate impact upon the setting of New Holt Lodge Farm, approximately 400m to the west of the Site and Moderate on Cornish Hall, approximately 900m to the north and north-east of the Site. Plas Bostock is located approximately 1.5km to the north-west of the Site and due to its low lying location, distance from the Site and tree cover, this property has no clear views of the Site. As such, the impact on Plas Bostock has been assessed as Neutral. All identified impacts would be further reduced by the boundary screening implemented along the Site boundaries and none of these impacts would be inappropriate.

Overall, there are no impacts on cultural heritage assets assessed as greater than moderate and the impacts on these assets would be further reduced by the proposed boundary screening. No HER sites are directly impacted by the Proposals and any anticipated impacts upon the potential marl pits would be avoided, if deemed necessary. Whilst acknowledging the potential for impact upon the ridge and furrow, these are not unique features within the area with a number of other similar features located within 2km of the Site.

Given the nature of the Proposals and the environment within which it is set, it is considered that no further mitigation measures need to be adopted with regard to any identified limited visual impact of the Proposals on designated sites within the wider landscape, where intervisibility is shared and a potential negative effect has been identified.

17.1 Planning Assessment

The public benefits of the Proposals, in terms of contributing to tackling climate change through the generation of renewable energy, as well as economic and biodiversity benefits, outweigh any less than substantial impacts.

Section 6.5 of PPW seeks to protect heritage assets. With reference to the Proposals and their potential effects upon cultural heritage, relevant guidance regarding impact on the setting of Listed buildings has been noted with particular reference to Paragraphs 6.5.8-6.5.9 of PPW:

“there should be a general presumption in favour of the preservation of listed buildings. [...] Where a development proposal affects a listed building or its setting, the primary material consideration is the statutory requirement to have special regard to the desirability of preserving the building, or its setting, or any features of special architectural or historic interest which it possesses”.

The Proposals would not have an inappropriate impact upon the setting and character of nearby Listed buildings as identified within the LVIA, DBA and above, and as such would be compliant with Policy EC9 of the UDP.

The Proposals would not adversely affect features of historic interest and are justified in terms of local and wider benefits. Having regard to the above it is considered, on balance, that the Proposals would not result in any unacceptable impact upon any cultural heritage assets and accordingly it is considered that the Proposals comply with the provisions of UDP Policies PS12 and EC11.

Paragraph 12.8.10 of PPW states that LPA's should *“ensure that international and national statutory obligations to protect [...] the historic environment are observed”*. The Proposals would not result in any inappropriate effects on historical assets and as such are compliant with this guidance.

Therefore, based on the above and the information in the accompanying DBA, it is considered that the Proposals are in line with PPW as any imperceptible impacts on cultural heritage assets would be clearly outweighed by the public benefits of the Proposals.

18.0 Public Access, Recreation and Tourism

There are a number of PRoW located within the vicinity of the Site, although no such assets cross the Site itself, as detailed within the accompanying LVIA.

There are three PRoW routes within proximity of the Site. PRoW 26 is situated approximately 120m east of the eastern Site boundary at the nearest point and runs the length of the northern area of the Site, extending from Francis Lane at the north to the first field boundary heading southwards. PRoW 6 joins PRoW 26 at this junction and extends to the south to meet Bryn Lane. PRoW 6 is, due to the alignment of the red line boundary, outwith the Site, although it does run parallel to it approximately 90m east. PRoW 25 is situated to the north of the Site, running in a north to south direction.

The LVIA acknowledges that there would be adverse effects on PRoW 26 and PRoW 6. PRoW 25, to the north of the Site would also experience adverse effects at the southern end of the route at its junction with Francis Lane.

The adverse effects upon the PRoW within and adjacent to the Site are acknowledged. Adverse effects in such close proximity are unavoidable and severe in the short to medium term. The proposed landscaping of the Site including internal planting of hedgerows, would reduce effects on visual amenity in the longer term. Users of the wider PRoW network would not be inappropriately affected by the Proposals.

Notwithstanding the acknowledged impact on PROWs within the immediate vicinity of the Site, it is considered that the Proposals would not result in any negative impacts on recreation opportunity or activity in the area.

The anticipated effects should be considered in conjunction with the situation of the Wrexham Industrial Estate to the south. Additional screening of the Proposals on the Site would be incorporated, thus reducing the openness of views from the routes identified. Despite the fact that adverse effects on these routes are anticipated, these effects would be entirely visual and the Proposals would not pose any barrier of entry to these routes.

It should be noted that all onshore renewable energy developments are likely to lead to landscape and visual effects, and that significant or adverse effects are not necessarily unacceptable. The changes arising from the Proposals may engender positive or negative responses depending on individual perceptions regarding the merits of solar energy development. The same scheme may be seen by some as attractive, acceptable and contributing to the well-being of the natural environment. Whilst others may take a negative stance, regarding the Proposals as unattractive and unacceptable.

The Proposals would protect, maintain and improve the existing PRoW network in line with Policy CLF6 of the UDP and Paragraph 11.1.13 of PPW which states that *“local authorities should seek to protect and enhance the rights of way network as a recreational and environmental resource”*.

As stated the Proposals would not impact upon these routes in any way other than visually and would not pose any barrier to access. The adverse effects identified would diminish over time, as the proposed screening develops and bearing in mind the small scale nature of the height of the solar panels, effects would be minimised further.

In terms of tourism, there has been one study conducted to determine the potential impact on tourism of wind and solar farms in Cornwall. The comprehensive survey of holiday makers in Cornwall was conducted in 2013. Participants were asked whether the presence of wind and solar farms would affect their decision to visit Cornwall again, with 94% claiming it would have no impact upon their decision to come back, 4% stating that it would actually encourage them to visit again and only 2% said that they would be less likely to visit again as a result. Generally, it was found that the majority of participants expressed support for renewable energy development, with 75% expressing support for solar farm development specifically⁴¹.

Whilst there are limited studies investigating the potential impact on tourism of solar farms, generally due to their low level appearance and benign nature, there have been a number of studies of and enquiries into the impacts of large scale wind farms on tourism in Scotland and Wales. Please refer to the reports at the links below, which are key parts of the evidence

⁴¹ www.goodenergy.co.uk/visitor-impact-research-nov2013

base that suggests that renewable energy projects do not have general impacts on tourism in the areas which they are located in:

- Scottish Government – Economy, Energy and Tourism Committee (2012) - Report on the Achievability of the Scottish Government’s Renewable Energy Targets
http://www.scottish.parliament.uk/S4_EconomyEnergyandTourismCommittee/Reports/eeR-12-07w-r.pdf
- Visit Scotland – Wind Farm Consumer Research Topic Paper
<http://www.visitscotland.org/pdf/Revised%20Oct%2012%20%20Insights%20Wind%20Farm%20Topic%20Paper.pdf>
- Scottish Government – The Economic Impacts of Wind Farms on Scottish Tourism
<http://www.scotland.gov.uk/Resource/Doc/214910/0057316.pdf>
- Welsh Government - Study into the Potential Economic Impact of Wind Farms and Associated Grid Infrastructure on the Welsh Tourism Sector-
<http://wales.gov.uk/docs/desh/publications/140404economic-impacts-of-wind-farms-on-tourism-en.pdf>

It is noted that there are no tourism assets on the Site and as such there would be no direct impacts. Furthermore, it is considered that any impacts on nearby heritage assets, which may play a role in tourism in the area, would be less than substantial.

TGC would be happy to discuss the incorporation of an information board into the Proposals, explaining the benefits of the Proposals including the biodiversity features of the solar farm, near to the entrance of the Site. This could provide an educational tool and could be undertaken in conjunction with a local contractor/craftsperson. In addition, it may be possible for school and community groups to visit the Site.

There would be no inappropriate impacts on the setting of nearby settlements and attractions of these areas would not be adversely affected. As such and overall, no impacts on tourism are anticipated.

19.0 Conclusions

To conclude, there is strong policy support for renewable energy projects from PPW, the UDP and relevant guidance as outlined within this P,DAS. This is subject to ensuring that projects do not have inappropriate impacts and balancing any potential impacts against the benefits of a project.

The UK has ambitious and legally binding targets to meet in terms of renewable energy obligations and the Welsh Government has expressed a commitment to contribute substantially to these targets. The Proposals make a valuable and positive contribution, generating 4.7 GWh of renewable energy each year, providing a clean form of electricity for approximately 1,410 local homes.

Section 38 of the Planning and Compulsory Purchase Act 2004 requires that planning applications be determined in accordance with the provisions of the Development Plan unless material considerations suggest otherwise. In determining an application for planning permission, decision makers should give consideration to the compliance of a proposal against the Development Plan taken as a whole. Plans often have policies tailored specifically to control certain kinds of development and such policies should carry weight and be more

dominant in the minds of decision makers. The conflicting nature of Development Plan policies is highlighted by appeal decision (APP/K1128/A/13/2206258):

"I have found that the proposal would accord with some development plan policies and conflict with another. It is not unusual for development plan policies to pull in different directions and most, if not all, development results in some degree of harm. However, when read as a whole, the proposal would accord with the development plan and would comprise sustainable development."

The Proposals would provide a clean, renewable and sustainable form of energy. They would generate a considerable amount of electricity and would assist in meeting national targets for increasing energy consumption from renewable resources. Additionally, the Proposals would make a valuable contribution to reducing greenhouse gas emissions and, in combination with other renewable and low carbon energy schemes, would assist in tackling climate change. These comprise important wider environmental benefits of the Proposal.

The Proposals would make a substantial contribution to the Council's aim of improving the contribution of the area to renewable energy targets, and TGC has chosen to pursue the Site for development due to the benign impacts or the ability for mitigation to make impacts appropriate.

It has been demonstrated that whilst there are some adverse impacts associated with the Proposals, these can either be made appropriate through suitable mitigation measures, or the impacts are outweighed by the substantial benefits which the Proposals would result in. This is in terms of contributing to tackling climate change through the generation of sufficient renewable electricity to power 1,410 local homes, with the generation of 4.7 GWh of renewable energy per year, biodiversity enhancements, economic benefits and diversification of a rural business and contributions to a community fund.

Overall, it is considered that the Proposals comply with the UDP and National Planning Policy. The Proposals would make a substantial contribution to meeting the Council's renewable energy targets as well as a positive contribution to regional and national targets. There are substantial community and rural business diversification benefits, which outweigh the impacts of the Proposals. Taking all of this into account, it is respectfully requested that the planning application which this P,DAS accompanies be approved by the Council.