

Alleston Solar Farm, Pembrokeshire

Collaborative Benefits Report

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Alleston Solar Farm

Collaborative Benefits Report

On behalf of **Alleston Clean Energy Limited**

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Contents

- 1 Introduction..... 1**
 - 1.1 Overview..... 1
- 2 The Site and Development Description..... 2**
 - 2.1 Site Context 2
 - 2.2 Site Description 3
 - 2.3 The Development 3
- 3 Project Benefits 6**
 - 3.1 Environmental Benefits 6
 - 3.2 Economic Benefits..... 8
 - 3.3 Social Benefits..... 10
- 4 Community and Stakeholder Engagement..... 11**
- 5 Summary and Conclusions 12**

Figures

- Figure 2.1: Site Location Plan 2
- Figure 2.2: Site Layout Plan 5
- Figure 3.1: Construction Workforce..... 9

Appendices

- Appendix A Carbon Calculations

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1 Introduction

1.1 Overview

- 1.1.1 The Collaborative Benefits Report has been prepared by Stantec UK on behalf of Alleston Clean Energy Limited (the Applicant) to present the benefits of the Development of National Significance (DNS) planning application for a ground mounted photovoltaic (PV) solar farm together with associated equipment, infrastructure and ancillary works (the Development) on Land at Alleston Farm, Lower Lamphey Road, Lamphey, Pembrokeshire (the Site). The Site extends to approximately 96 hectares (ha) and is located within the administrative boundary of Pembrokeshire County Council (PCC).
- 1.1.2 The purpose of the Collaborative Benefits Report is to specify the social, economic and environmental benefits that the Development can deliver, which should be weighed in the planning balance. It also provides details of the community and stakeholder engagement which has guided the Applicant in implementing additional measures to benefit the local area.
- 1.1.3 The primary benefit delivered by the Development is the generation of renewable energy, which contributes to the Welsh Government's national renewable energy target of delivering 100% of electricity from renewable sources by 2035 and its legal obligation to achieve net zero emissions of harmful gases by 2050. It will also contribute to Pembrokeshire County Council's aim of achieving district wide net zero by 2050.
- 1.1.4 Planning Policy Wales (2024)ⁱ and Future Wales: The National Plan 2040 (2021)ⁱⁱ require benefits of developments to be specified. Policy 17 of Future Wales specifically states that developments should deliver "*positive social, environmental, cultural and economic benefits*". This Collaborative Benefits Report has been prepared accordingly.

2 The Site and Development Description

2.1 Site Context

- 2.1.1 The Site is located on land at Alleston Farm, Lower Lamphey Road, Lamphey, Pembrokeshire. Its northern boundary broadly follows the alignment of the Lower Lamphey Road. Watery Lane forms the western and south-western boundaries of the Site. The southern boundary follows an existing area of woodland in a south-easterly direction. There are a small number of residential properties located adjacent to the north and west of the Site boundary.
- 2.1.2 The residential dwellings of Pembroke are 190m north-west of the Site whilst the village of Lamphey is located 370m to the north-eastern corner of the Site.
- 2.1.3 Land use in the surrounding area of the Site is predominantly agricultural, with scattered farmhouses as well as residential developments associated with Pembroke and Lamphey. The West Wales railway line, which connects Pembroke and Lamphey, runs approximately 40m north of the Site. Pembroke train station is located 680m north-east of the Site and Lamphey train station is located 415m east of the Site.

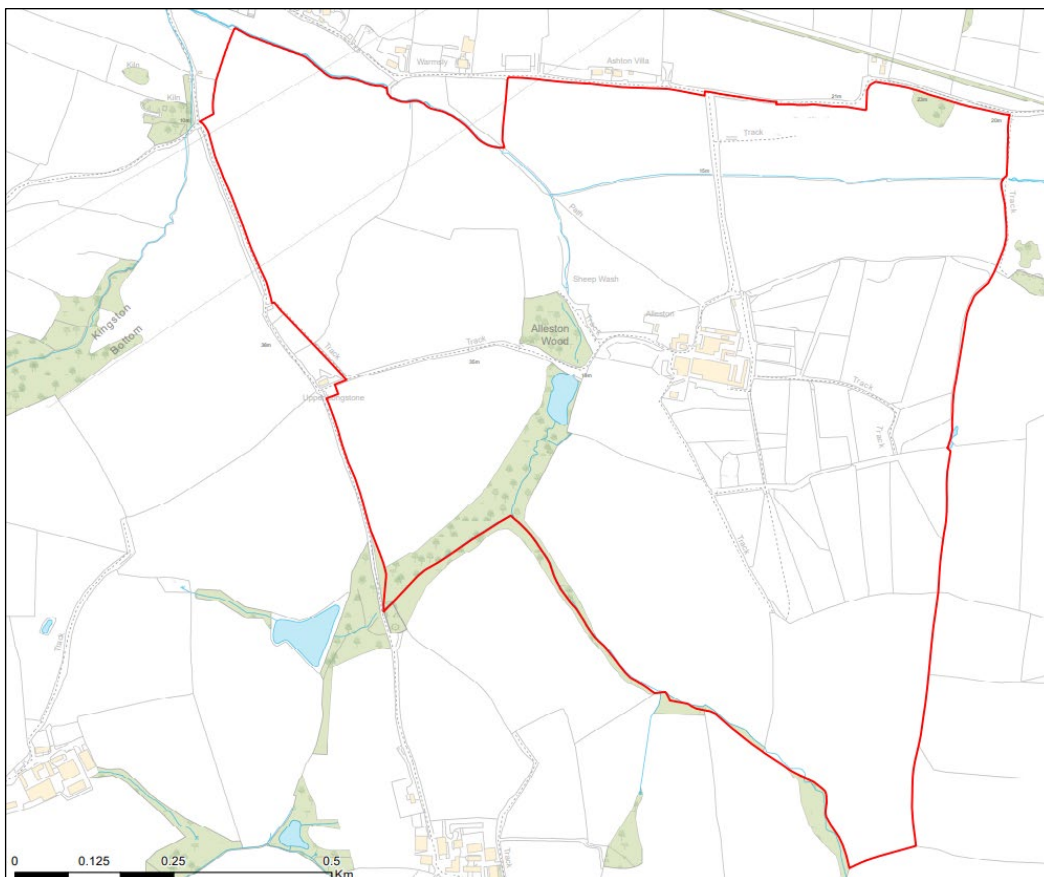


Figure 2.1: Site Location Plan

2.2 Site Description

- 2.2.1 The Site encompasses approximately 96 hectares (ha) and comprises several agricultural fields separated by rows of mature hedgerows.
- 2.2.2 Alleston Farmhouse, a Grade II Listed building, together with its associated buildings is located within the centre of the Site and is accessed from the north along Lower Lamphey Road and the west along Watery Lane, both unnamed tracks. It is proposed to use the existing northern access from Lower Lamphey Road as the access to the Site.
- 2.2.3 Some of the eastern fields within the Site are currently used for equestrian activities, which will continue. An area of mature trees and vegetation are located within the south-western region of the Site and run into the central region of the Site, this collection of trees is known as Alleston Wood, there are no plans to remove any of these trees.
- 2.2.4 In terms of topography, the Site slopes from highpoints in south and west towards the north and east. There are two unnamed watercourses located in the north of the Site, as well as a watercourse running alongside the southwestern boundary.
- 2.2.5 There are two Public Right of Ways (PRoW) which cross and meet in the centre of the Site. The first PRoW (SP32/52) runs to the western boundary of the Site and is accessible via Watery Lane. This PRoW connects to a bridleway (SP32/68) which borders the west of the site and runs in a north-south direction, on Watery Lane. The second PRoW (SP32/51) runs in a north-south direction across the northern and southern area of the Site. This PRoW will be diverted to the southwestern edge of the farm's boundary via a Secondary Consent submitted alongside the main application.

2.3 The Development

- 2.3.1 A Development of National Significance (DNS) application is proposed for the construction, temporary operation, and decommissioning of a ground mounted solar farm and associated equipment such as inverters, transformer stations, substation, fencing, CCTV, weather monitoring stations and cabling (see Figure 2.3). The solar farm will connect to the grid via a 132kV overhead wooden pole, located within the site. The solar farm Development will have an operational lifespan of 40 years from the date of first export of electricity, after which it will be decommissioned.
- 2.3.2 The solar PV panels will have an anti-reflective coating. They will be ground mounted to a piled frame made of galvanized steel or aluminium. The PV panels will be crystalline silicon. Either monofacial or bifacial modules will be used.
- 2.3.3 The PV modules will be installed on a fixed tilt structure, facing south. Key features of the installation which should be noted, and which arise from the topography of the site, are illustrated on the Figures below. Attention is drawn to the following key points:
- The fixed tilt range is 10-25 degrees from the horizontal.
 - The spacing between the rows will range from 2.5-5 metres.
 - The lowest part of the structure will be about 0.8 metres above ground level.
 - The highest point of the structure will range from about 3 metres to a maximum of 3.4 metres above ground level. However, at topographical high points within the site the highest point of the structure will not be more than 3 metres above ground level.

The variations just described will not be noticeable to viewers looking into the site.

- 2.3.4 The mounting posts for the support structure are pile driven into the ground at a depth of 0.5–4.5 metres below ground level, depending on the ground condition. The optimum pile depth will be determined by a survey to be carried out prior to construction.
- 2.3.5 CCTV cameras will be mounted on posts up to 5m high, and positioned at appropriate intervals to ensure that the entire perimeter fence is monitored. Up to 3 weather stations will be installed to measure performance and these will be up to 5m in height.
- 2.3.6 The perimeter fencing for the development will consist of deer type fencing and gates of up to 2m in height. The fence will be offset by 100mm from the ground to allow passage of small animals and will include mammal gates at appropriate intervals.
- 2.3.7 Internal tracks to allow vehicular access between fields will be constructed of compacted crushed stone, utilising existing internal gateways/gaps where possible. For single tracks, the width typically ranges between 3.5-4 metres whereas a 2-way track would be up to 6 metres wide.

Substation/HV Compound

- 2.3.8 A HV substation compound will be located in the centre (~51.665721, -4.8916358) of the Site and will provide the infrastructure to connect the solar farm to the electrical grid via a 132kV overhead line within the Site area. The substation/HV compound, will be surrounded by a palisade fence with an electric fence and additional stock fence. Furthermore, a communication mast is potentially required to service the substation. The mast would not be a prominent feature and details can be provided prior to development commencing, if necessary.

MV Switchgear Room/Edge of Park Switchgear Station

- 2.3.9 The MV switchgear room accommodates the switchgear panels to protect the equipment and allow safe isolation of the MV electrical circuits.

Monitoring / Control Building

- 2.3.10 A monitoring cabin/building will be located next to the HV Compound. The cabin will house the telecommunications/control/SCADA and security system equipment (CCTV), to enable 24-hour remote monitoring of the Site to identify any faults and to relay CCTV footage to an external security company.

Temporary construction compound

- 2.3.11 There are two construction compounds proposed within the Site, providing an area for temporary storage, unloading of trucks and the necessary parking and welfare facilities for the workers onsite, which will be installed and subsequently removed once the construction has been completed. One of the construction compounds will predominantly be used for the substation infrastructure and the other for the whole site, more centrally located.
- 2.3.12 The road layout would allow sufficient room for delivery vehicles to manoeuvre, unload their cargoes and exit in a forward gear. The compound would provide parking for light vehicles and HGVs undertaking deliveries to unload. A temporary permeable stone surface will be used for the compound.

Storage containers

- 2.3.13 Two 40ft shipping containers will be installed to provide storage space for the solar farm.

Grid connection

- 2.3.14 Onsite grid connection into 132kV overhead line (OHL). Alleston Farm will connect to the Pembroke GSP via a tee-in arrangement at or near pole 82 of the Pembroke to Golden Hill 132kV circuit located

within the site. A new 132kV circuit, underground cable (UGC), will be constructed between this point of connection and Alleston Farm.

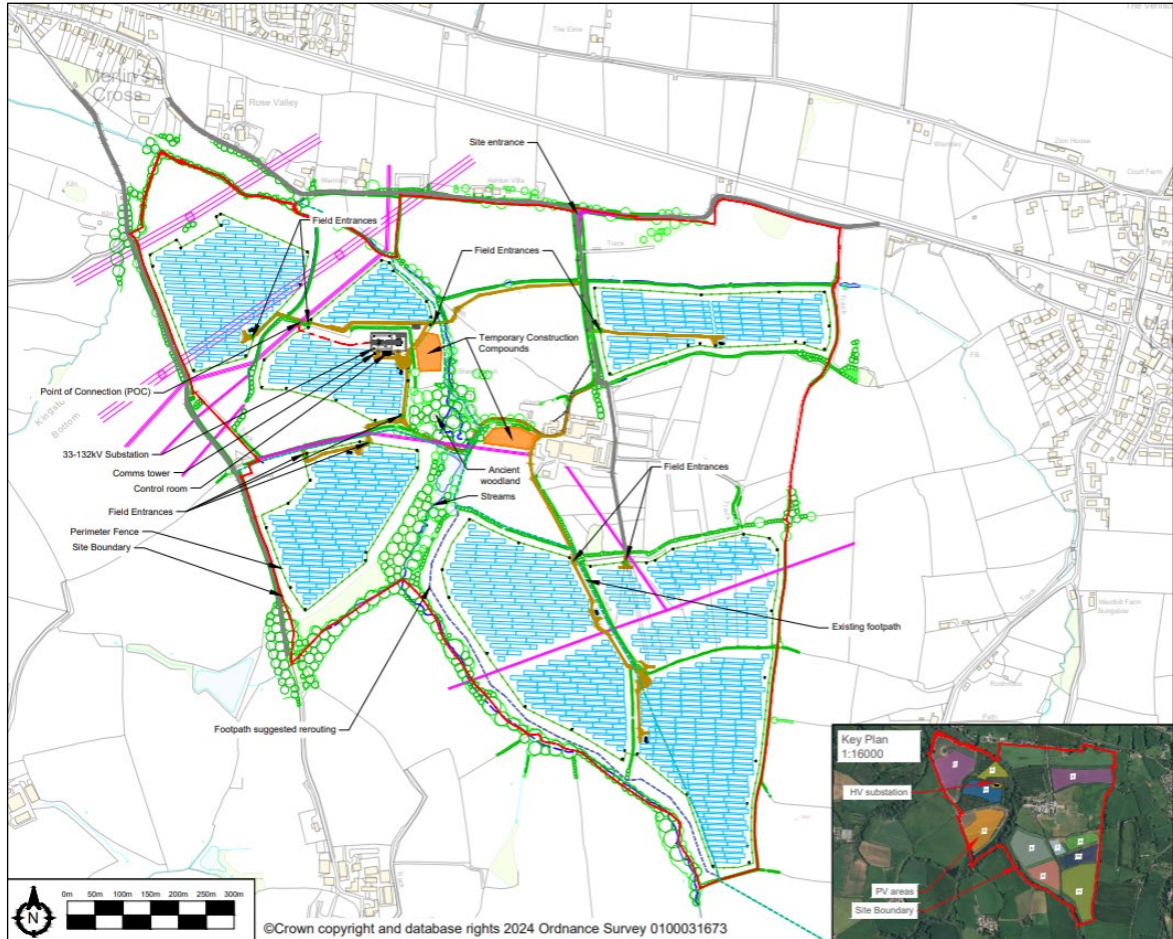


Figure 2.2: Site Layout Plan

3 Project Benefits

3.1 Environmental Benefits

Renewable Energy

- 3.1.1 Climate change is a recognised phenomenon of international and global significance. The scientific evidence is overwhelming and identifies that climate change, as a result of rising greenhouse gas emissions, threatens the stability of the global climate with potentially severe and irreversible consequences unless immediate action is taken to address it. The continuing production of greenhouse gases and carbon dioxide in particular is considered to be a significant contributor to the rapidly increasing rate of climate change.
- 3.1.2 Welsh Government declared climate change emergency in April 2019. Pembrokeshire County Council declared a Climate Emergency in May 2019 and has committed to becoming a net zero carbon local authority by 2030 and district wide net zero by 2050. In Wales, the main strategies for tackling climate change are outlined in relevant policy. Prosperity for all: A Low Carbon Walesⁱⁱⁱ is the statutory decarbonisation plan set out by Wales to cut greenhouse gas (GHG) emissions and increase energy efficiency. The Plan sets a target to reduce power sector emissions by 27% from baseline 1990 levels by 2030.
- 3.1.3 The GHG emissions associated with traditional power sources such as oil and gas are a main contributor to climate change. By deploying renewable energy sources, the reduction of GHG emissions will contribute towards limiting the severity of the impacts of climate change. Net Zero Wales^{iv} set policies and proposals in support of reaching net zero GHG emissions no later than 2050. According to the Future Energy Grids for Wales Insights Report^v, Wales will need 18.2 GW of renewables by 2050 to achieve this goal. Similar to national goals, PCC has set the target of net zero by 2050, which in PCC's Local Area Energy Plan^{vi} it is identified that 720 MW of renewable energy will need to be developed to hit this target.
- 3.1.1 Table 6.1 demonstrates the progress of renewable energy developments according to the Renewable Energy Planning Database of July 2024^{vii} in Wales and Pembrokeshire towards the net zero goals established above.

Table 6.1: Renewable Energy Developments and Net Zero Targets

| Status | Wales | | | Pembrokeshire | | |
|--|----------|-------------|-----------|---------------|-------------|-----------|
| | Capacity | Target 2050 | Shortfall | Capacity | Target 2050 | Shortfall |
| With extant planning permission (construction not started) | 284.25 | | | | | |
| Under construction | 316.9 | | | | | |
| Operational | 2,978.69 | | | | | |

| | | | | | | |
|--------------|-----------------|---------------|------------------|-------------|------------|--------------|
| TOTAL | 3,579.93 | 18,200 | 14,620.07 | 28.8 | 720 | 691.2 |
|--------------|-----------------|---------------|------------------|-------------|------------|--------------|

- 3.1.2 As demonstrated, both nationally and locally the number of renewable energy developments are immensely inadequate. The contribution of 30 MW from the Development would contribute 0.001% to the Welsh goal and 4.3% to the Pembrokeshire goal. This demonstrates how crucial it is for renewable energy developments such as the Development to be constructed to hit renewable energy targets.
- 3.1.3 The contribution of 30 MW from the Development is therefore critical in order to achieve the goals set out nationally and locally, as within PCC targets are currently 521.7 MW and Wales 8.2 GW behind target.
- 3.1.4 On a local level, Decarbonisation and Net Zero has been identified as a Project Plan as part of the Well-being plan for Pembrokeshire^{viii}, which includes the delivery of carbon reduction actions and the reduction of carbon use to net zero by 2030.
- 3.1.5 Given the intended installed generation capacity of the Development (approximately 30MW) the proposed solar farm would make a substantial contribution towards achieving these targets and other associated policy objectives at the national and local levels.
- 3.1.6 The Development will reduce GHG emissions associated with energy usage and production as well as contribute to achieving net zero by 2050. The generating output capacity of 30 MW which will save approximately 5,553 tCO_{2e} (tonnes of carbon dioxide equivalent) annually. During the 40-year lifespan of the Development, 222,156 tCO_{2e} will be saved. Details regarding the calculation of the total carbon savings of the Development are outlined in Appendix A and Appendix 2.5 of Chapter 2 in the Environmental Statement.
- 3.1.7 In addition to reducing GHG emissions, renewable energy projects have extensive benefits. For example, renewable energy reduces reliance on energy markets associated with oil and gas which are extremely volatile. This reduces the chances of an energy crisis lead by high energy prices. The Development therefore contributes to energy reliability and security.

Enhancement of the Natural Environment

- 3.1.8 Since 2019, 60% of British wildlife has experienced a decline. Solar farms are in a unique position to support wildlife and contribute to national biodiversity targets addressing this decline. The Development will achieve a significant Net Biodiversity Benefit (NBB) through the following mechanisms:
 - Newly planted hedgerow with native trees;
 - Planting of native shelter belt and woodland;
 - Native orchard planting;
 - New grassland outside fencing to develop into a taller sward with some tussocks;
 - Existing grassland at field margins retained to develop into a tussocky sward;
 - Flower-rich pollinator seeding at field margins and easements;
 - Planting of low maintenance grassland within the development footprint.
- 3.1.9 An important species which have experienced a significant decline are bumble bees, who play a crucial role in food production and resource management. However, solar farms can make a notable contribution to supporting pollinators by providing adequate pollinator habitat and resources as

evidenced in research recently undertaken by Lancaster University^{ix} and Solar Energy UK^x. To address the decline in bumble bees, the Applicant works closely with experts at the Bumblebee Conservation Trust to develop solar farms that enhance, restore and create bumblebee habitats. The Bumblebee Conservation Trust provides feedback on habitat, plant species and ground preparation techniques that enable bumblebees to thrive. This feedback has been incorporated within the design of the Development.

- 3.1.10 The Development will be supported by a Landscape Strategy which will implement measures to improve the landscape of the Site and surrounding area. This will include:
- Retention of existing structure of hedgerows surrounding the Site to enhance habitat connectivity and reinstate field boundaries;
 - Approximately 2.66ha of native woodland planting to enhance existing landscape character and provide visual screening of the Development;
 - Orchard planting to provide biodiversity benefits and protect the historic character of Grade II Listed Building Alleston Farmhouse;
 - Incorporating adequate buffers between the Development and the property on Upper Longstone, Alleston Farmhouse and the northern Site boundary; and
 - Planting a range of grassland types enabling the Site to benefit from less intense grazing and encourage species diversity.
- 3.1.11 The Applicant's partnership with the Bumblebee Conservation Trust will allow bespoke habitat management measures to be implanted into the Landscape Strategy. This will aid the sustainable populations of invertebrates on Site and support the Development in delivering biodiversity enhancement across the Site.

3.2 Economic Benefits

Community Benefit Fund

- 3.2.1 The Applicant is committed to creating a Community Benefit Fund (CBF) which will provide funding for local organisations and initiatives, working to make a difference for local residents on issues, such as education, energy efficiency, environmental improvements and improved community facilities. The Applicant will place £12,000 every year across the Development's 40-year lifespan into the CBF. This amounts to £480,000, over the project's 40-year lifetime. The Community Benefit Fund will be accessible to both Pembroke Town Council and Lamphey Community Council for relevant projects in the area, following clear feedback provided by the local community.
- 3.2.2 Additionally, the Applicant seeks to explore shared and community ownership opportunities should there be any community groups that demonstrate interest. This is in line with the Welsh Government's target for new energy projects to have at least an element of local ownership from 2020, as set out in the Policy Statement 'Local ownership of energy generation in Wales – benefitting Wales today and for future generations'^{xi}. The Applicant has shared this opportunity in community consultation, there have been no formal expressions of interest.

Job Creation and Local Economy Growth

- 3.2.3 The Development will generate a maximum of 100 temporary jobs during the construction phase as shown below in Figure 3.1. During the operation phase, there will be an average of approximately 2 people per month on Site for maintenance activities.

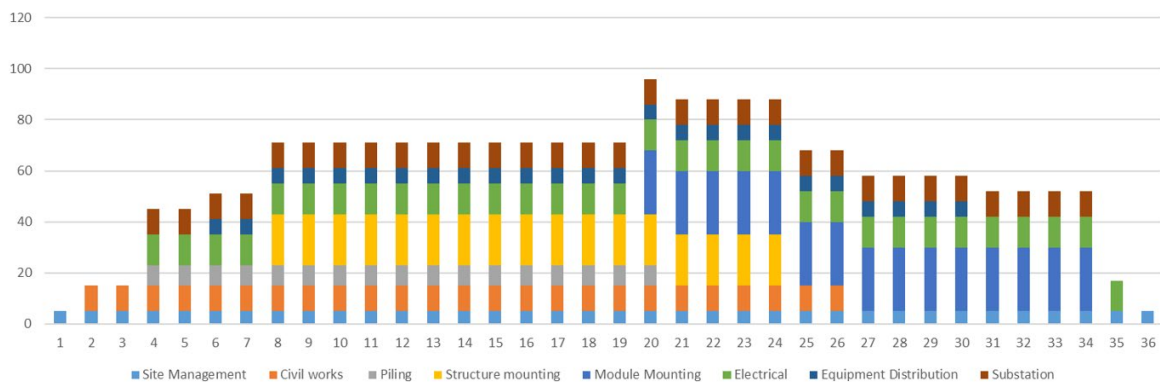


Figure 3.1: Construction Workforce

3.2.4 As shown within Figure 3.1, there are a range of positions in which the Development can support throughout the construction phase. The Applicant will seek local supplies to provide valuable economic benefits through inward investment. It is likely that local companies will be best placed to source construction materials, including stone and sand from local quarries, fencing, fuel and waste treatment labour, equipment, and services, where possible. The Applicant encourages local businesses to register their details via a registration form on the Applicant’s website (<https://projects.statkraft.co.uk/alleston-solar-farm/local-suppliers-register/>).

3.2.5 Business rates generated by the solar project are projected to be around £50,440 per annum, over the 40-year lifetime of the project business rates are estimated to be in the region of £2 million.

Construction Spend in the Local Area

3.2.6 It is likely that the construction workers will come from outside the local area, based on past experience of solar farm developments. An estimation can be produced to calculate how much the construction workers will spend in the local area, thereby supporting local business through accommodation, food and drink.

3.2.7 The construction phase is expected to have a duration of approximately 9 months, with a maximum of 100 temporary jobs generated for this period on site. The methodology used assumes each worker will spend £50 per day and includes all 274 days of the 9-month construction period. All days of the 9-month construction period have been included in the calculation as it is considered unlikely that workers will return home for their regular 1.5 days off, given the assumption above that workers will come from outside the local area and that the Site is not located in close proximity to any major cities.

3.2.8 The number of employees, based off Figure 3.1, has been averaged each month. It is estimated that during the 9-month construction phase, the construction employees could spend around £808,563 at local business, supporting accommodation, food and drink businesses within Pembrokeshire.

3.2.9 The Development can also contribute to the local economy through Farm Diversification. Due to the relatively low income from farming, many farmers have had to diversify to secure an economically sustainable profit. Farm diversification is broadly defined as “the entrepreneurial use of farm resources for a non-agricultural purpose for commercial gain”^{xii}. Hence, diversification reflects the reduced dependence of farmers on agriculture as a source of income. Diversification also implies entrepreneurial activity on behalf of the farmer.

3.2.10 The Development represents a farm diversification strategy as it provides the opportunity for the agricultural land of Alleston Farm to support a range of economic activities in relation to the continued agricultural use. The Development has been designed to allow some areas of the farm (the northern fields) to remain in full agricultural use. The land between the panels within the fenced area can continue

to be made available for sheep grazing, allowing for on-going farm operation to take place alongside the operation of the solar farm. As the Site is currently producing arable crops, this activity can be continued in certain areas, and the Development will not impact the range of arable crops which can grow. Some of the eastern fields within the Site are currently used for equestrian activities, which will continue throughout the construction and operational lifespan of the Development. Although the Site is likely to remain in co-located agricultural grazing use it will also provide a guaranteed income to the farm at a challenging time for UK agriculture. The Site can be returned to full agricultural use at the end of the operational period.

3.3 Social Benefits

Health and Wellbeing

- 3.3.1 The Landscape Strategy previously mentioned will provide social benefits as well as economic benefits by creating a pleasant space. The use of fencing around the Site perimeter and CCTV, will ensure the creation of a space in which crime and anti-social behaviour is discouraged. This will increase community safety and wellbeing within the locality of the Development.
- 3.3.2 In addition to the provision of a solar farm, the Applicant has submitted a secondary consent to reroute Public Right of Way (PRoW) SP32/51 which goes through the centre of the Site. As set out in the Pre-Application Consultation Report, local residents expressed concern regarding deterioration of the condition and level of access to PRoWs. Rerouting of this PRoW will enable a more logical route of the pathway, facilitating enjoyable and accessible walking for the local community. This will therefore promote the usage of the PRoW which can generate benefits to the health and wellbeing of the surrounding area due to the increased physical activity. In addition to the benefits generated from accessible active travel and safety within the community, renewable energy can address the cost-of-living crisis. The current economic climate and cost of living crisis across the country is undermining the social and economic wellbeing of people. Domestic renewable energy would provide greater security of supply in the medium and long term, providing an important opportunity to improve socio-economic prosperity.

4 Community and Stakeholder Engagement

- 4.1.1 The Applicant is committed to meaningful engagement with local residents and stakeholders. The Applicant recognises that proactive pre-application discussions can lead to better design and more well-informed planning applications, with improved outcomes for all involved. This section summarises the community engagement undertaken.
- 4.1.2 To facilitate public participation, the Applicant mandates a hybrid consultation which included a digital consultation on a project website (<https://projects.statkraft.co.uk/alleston-solar-farm/>) and an in-person public exhibition for people to meet the team and view plans. This helps to ensure that the consultation is widely accessible.
- 4.1.3 A total of 1,550 properties, both residential and businesses, were mailed bi-lingual newsletters encouraging them to attend the public exhibition events.
- 4.1.4 The Applicant hosted two community events on Wednesday 29th November at Lamphey Jubilee Hall and Thursday 30th November at Pennar Community Hall in Pembroke Dock. Following feedback from a local councillor, a third event was added, being held in Pembroke Town Hall on Wednesday 29th November. While it was not possible to communicate this with all residents by mail, posters were distributed to local organisations and the Ward and Town Councillors were requested to share the updated information on their social networks.
- 4.1.5 The Community Events were held to provide the community with a project summary, information regarding environmental considerations and community benefits of the project. To acquire feedback, freepost reply cards, project email (UKProjects@statkraft.com), a freephone phone number and project website were shared with attendees.
- 4.1.6 Following the public exhibition, the project website featured information from the in-person consultation including a copy of the newsletter, exhibition boards and constraints maps, as well as opportunities for local people to ask questions and to answer the provided online survey. The website has remained open for further feedback and comments.
- 4.1.7 Full details of the community consultation events, and feedback will be provided in the Pre-Application Consultation (PAC) Report prepared by Grasshopper to support the formal submission.
- 4.1.8 Community feedback on this project contributed to a decision by the applicant to increase the value of the Community Benefit Fund, which was under review at the time of the non-statutory consultation. Representatives of the local community provided clear feedback in support of the community benefit fund being accessible to both Pembroke Town Council and Lamphey Community Council for relevant projects in the area.

5 Summary and Conclusions

5.1.1 The environmental, economic and social benefits delivered by the Development and the Applicant have been outlined within this document.

5.1.2 In regard to environmental benefits, Energy generation of approximately 30MW solar farm, which if consented, is expected to generate renewable electricity equivalent to the needs of over 14,000 Welsh homes and businesses. These benefits can equally address the net zero goals of Wales include a carbon saving of 222,156 tCO₂e over the 40-year operational period. Additionally, the implemented Landscape Strategy and NBB strategy will provide extensive environmental benefits through the following mechanisms:

- Planting of native hedgerows, tress, shelter belt and woodland;
- Orchard planting to provide biodiversity benefits and protect the historic character of Grade II Listed Building Alleston Farmhouse;
- Close work with the Bumblebee Conservation Trust to restore, enhance and create bumblebee habitats
- Incorporating adequate buffers between the Development and the property on Upper Longstone, Alleston Farmhouse and the northern Site boundary; and
- Planting a range of grassland types enabling the Site to benefit from less intense grazing and encourage species diversity.

5.1.3 Economic benefits will be delivered to the local community through a Community Benefit Fund of £12,000 per year, equating to a £480,000 Community Benefit Fund throughout the 40-year operational lifespan of the solar farm. Additional economic benefits include the following :

- A maximum of 100 jobs during the construction phase
- Contribution to local services and infrastructure through the payment of around £50,440 in business rates per annum
- Sourcing local materials and services where possible, including stone and sand from local quarries, fencing, fuel and waste treatment. The Applicant encourages local businesses to register their details via a registration form on the Applicant's website ([Local Suppliers | Alleston Solar Farm - Statkraft UK](#)).
- It is estimated that during the 9-month construction phase, the construction employees could spend up to £808,563 at local business, supporting accommodation, food and drink businesses within Pembrokeshire.
- Farm Diversification strategy comprising co-located energy generation and agricultural uses (production of arable crops, grazing and equestrian activities).

5.1.4 In addition to the number of economic and environmental benefits, social benefits will occur as the health and wellbeing of the local community improve. Health and wellbeing will be impacted through the PRoW SP32/51 improvements, energy security and discouragement of anti-social behaviour through security features of the Development.

5.1.5 The highlighted advantages of the Development are in compliance with PPW and Future Wales. These benefits can drastically improve the wellbeing of the local community while simultaneously making an impact nationally by combating climate change.

Appendix A Carbon Calculations

A.1.1 During the operation of the Development, there will be a carbon saving resulting from the export of renewable electricity to the grid, in lieu of the current energy mix, which include fossil fuels. This is anticipated to be a carbon saving of approximately 5,553 tCO₂e per year.

A.1.2 This is a total saving of 222,156 tCO₂e over the Development's lifespan.

A.1.3 The details of the calculation are shown in Table A.1

Table A.1: Supporting Calculations

| Site | Figure | Calculation | Source |
|--|---|--|--|
| Solar Farm Capacity (MW) | 30 | N/A | |
| Site Specific (UK) Load Factor | 10.2% | N/A | Assumes a capacity factor of 10.2% for average UK solar photovoltaic projects as per the 'Digest of UK Energy Statistics (DUKES) 2023: Chapter 6', published by the Department for Business, Energy & Industrial Strategy. See Table 6.3 "Load Factor". Updated 30 July 2024 https://www.gov.uk/government/statistics/renewable-sources-of-energy-chapter-6-digest-of-united-kingdom-energy-statistics-dukes |
| Carbon Factor | 0.20705 kg of CO ₂ e per kWh | N/A | The values are taken from the Department for Energy Security & Net Zero 'Greenhouse gas reporting: conversion factors 2023' spreadsheet. Updated 8 July 2024 https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024 |
| Annual "units" /kWh generated | 26,823,960 kWh | 30,000 kW (30MW x 1,000) x 8766 (Number of hours in a year – 365.25 days (to account for leap years x 24 hours) x 0.102 (load factor of 10.2% / 100) =26,823,960 kWh | Assumes a capacity factor of 10.6% for average UK solar photovoltaic projects as per the 'Digest of UK Energy Statistics (DUKES) 2022: Chapter 5', published by the Department for Business, Energy & Industrial Strategy. See Table 6.3 "Load Factor". Updated 27 July 2023. https://www.gov.uk/government/statistics/renewable-sources-of-energy-chapter-6-digest-of-united-kingdom-energy-statistics-dukes |
| Annual estimated CO ₂ reduction | 5,553.90 tCO₂e | 26,823.960 (MWh/Yr / Load Factor) x 0.20705 (Carbon Factor in tCO ₂ e) =5,553.90 | Based on a saving of 0.20705 kg of CO ₂ e per kWh. The values are taken from the Department for Energy Security & Net Zero 'Greenhouse gas reporting: conversion factors 2024' spreadsheet. Updated 8 July 2024 |
| 40-year estimated | 222,156 tCO₂e | 5,553.90 x 40 = 222,156 | https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024 |

| | | | |
|------------------------------|--|--|--|
| CO ₂ reduction | | | |
|------------------------------|--|--|--|

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