Chapter 11: Climate Change

Glyn Taff Solar Farm – Environmental Statement

04/03/2025

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Chapter 11: Climate Change

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INTRODUCTION

Background

11.1. Neo Environmental Ltd has been appointed by Renantis UK Limited (the "Applicant") to undertake an Environmental Impact Assessment for a proposed solar farm (the "Proposed Development") on lands at Bryantail Farm, Bryntail Lane, Pontypridd (the "Application Site"). Please see **Figure 1** for the layout of the Proposed Development.

Development Description

11.2. Installation, operation and subsequent decommissioning of a renewable energy scheme comprising ground mounted photovoltaic solar arrays together with substation compound, transformer stations, internal access track, landscaping, biodiversity measures, boundary fencing, security measures, CCTV posts, monitoring house, storage containers access improvement and ancillary infrastructure. The solar arrays will have a combined capacity of up to 39.9MWp.

Site Description

11.3. The area of the Proposed Development (the "Application Site") lies at an elevation of approximately 140m – 330m AOD and covers a total area of c. 70.9 hectares. It is centred around Bryntail Farm at approximate National Grid Reference (NGR) E 309333, N 189800. It is south of Eglwysilan Road. The site extends wet of Glyn Taff Farm and east of the Bryn Tail Road. The site is within the administrative area of Rhondda Cynon Taf Council.

11.4. The site comprises 38 agricultural fields that are currently in use for livestock farming. It is on the east side of the Taff Valley c. 1.6 km east of Ynysangharad War Memorial Park. Access will be gained from the Bryn Tail Road.

11.5. The site is adjacent to the Twyn Hywel Energy Park a consented wind farm including 14 turbines (DNS/3272053).

CLIMATE CHANGE POLICY & LEGISLATION

International Policy

11.6. International energy policy is based on the demand to battle climate change and reduce carbon dioxide CO2 emissions and, therefore, is relevant to renewable energy development. The United Nations Framework Convention on Climate Change (UNFCCC) implemented by the United Nations in May 1992, determined a long-term objective to lessen GHG in the

atmosphere, with the purpose of preventing anthropogenic interference with the climatic system. Subsequently, the Kyoto Protocol was implemented in 1997. National governments who signed up to the Kyoto Protocol are committed to reducing their GHG emissions.

11.7. The Kyoto Protocol came into effect in 2005, as a result of which, emission reduction targets agreed by developed countries, including Ireland, became binding for the first time.

11.8. Under the Kyoto Protocol, the EU agreed to achieve a significant reduction in total GHG emissions in the period 2008 to 2012. These EU emission targets are legally binding in Ireland. Ireland's contribution to the EU commitment for the period 2008 – 2012 (the first commitment period) was to limit its GHG emissions to no more than 13% above 1990 levels. Ireland achieved its Kyoto Protocol targets under the EU burden-sharing agreement.

11.9. The Paris Agreement marks the latest step in the development of the UN regime on climate change. Its central objective is to boost global response to climate change, keep global temperature rise low and strengthen efforts to support this. Actions under the Paris Agreement are known as Nationally Determined Contributions (NDC's). These include commitments to reduce GHG emissions, enhance adaptation actions, finance and capacity building. Ireland's contribution comes under the European Union NDCs targets and is based on the European Union's 2030 emissions reductions targets and commits to at least 30% efforts to meet the target as government by the Emissions Trading System regulations, the Effort Sharing Regulation; and the Land Use, Land Use Change and Forestry Regulation.

11.10. In December 2019 the European Commission published a communication called The European Green Deal. It is described as resetting "the Commission's commitment to tackling climate and environmental-related challenges that is this generation's defining task." It presented an initial roadmap of the key policies and measures needed to achieve a number of goals. The European Commission presented a proposal for a European Climate Law on 4 March 2020, which included a net zero by 2050 target.

Welsh Policy Context

Environment (Wales) Act 2016

11.11. Among other matters, the Act[1] places an obligation on Welsh Ministers to reduce greenhouse gas emissions from Wales such that in the year 2050 they are at least 80% lower than baseline figures for 1990 or 1995, with interim emission targets for 2020 (elapsed), 2030 (now 63%) and 2040 (now 89%). These interim targets assist in evaluating the progress made towards meeting the long-term 2050 target. The Act places a duty on the Welsh Ministers to set five yearly carbon budgets, which set limits on the total amount of emissions that can be emitted in Wales. Carbon budgets are set for specified periods, known as budgetary periods.

[1] Welsh Government (2016) *Environment (Wales) Act 2016*. Available online: https://www.legislation.gov.uk/anaw/2016/3/contents

Future Wales: The National Plan 2040

11.12. In February 2021 the Welsh Government launched *Future Wales: The National Plan 2040*[2], the highest-level framework guiding national planning policy. Approved by Senedd Cymru in Autumn 2020, Future Wales now sets the overall direction for development in Wales—superseding any previous national or local policies that are inconsistent with its vision—and provides the context within which renewable energy projects must be assessed.

11.13. Key to this framework are Policies 17 and 18, which set out criteria for renewable and low-carbon energy projects. **Policy 17 – Renewable and Low Carbon Energy and Associated Infrastructure** articulates a strong commitment to developing renewable energy from all technologies and at every scale. In this spirit, solar energy projects must be evaluated on their ability to help meet national and international targets such as generating 70% of consumed electricity from renewable sources by 2030 while delivering demonstrable social, economic, environmental, and cultural benefits. New grid infrastructure linked to such developments should also be designed to minimize visual impacts on local communities.

11.14. **Policy 18 – Renewable and Low Carbon Energy Developments of National Significance** outlines the specific criteria that all large-scale renewable projects, including solar developments, must satisfy. These criteria require that:

- The project avoids unacceptable adverse impacts on the surrounding landscape, including areas of outstanding natural beauty;
- There are no detrimental visual effects on nearby communities or dwellings;
- The integrity of internationally designated conservation sites and nationally protected habitats is maintained;
- Biodiversity is enhanced through proactive measures;
- Potential issues such as shadow flicker, noise, and other disturbances are minimised; and
- A clear decommissioning plan is in place, with cumulative impacts of renewable energy schemes carefully considered.

The Path to Net Zero Wales

11.15. In December 2020, the CCC published a further report, titled 'The Path to Net Zero'[3], which called for Wales to legislate the target to reach net zero by 2050. In March 2021, new legislation came into force in Wales, setting a legally-binding net zero emissions target by

[2] Welsh Government (2019, updated 20 Feb 2025) *Future Wales: the national plan 2040.* Available at: https://www.gov.wales/future-wales-national-plan-2040

[3] Climate Change Committee (2020) *The Path to Nero Zero Wales*. Available online: https://www.theccc.org.uk/publication/the-path-to-net-zero-and-progress-reducing-emissions-in-wales/

2050 as well as interim emissions targets. As well as amending the 2050 emissions target to net zero, the 2030 target was increased from 45% to 63% below the 1990 baseline, and the 2040 target was increased from 67% to 89% below the 1990 baseline. The report was published alongside 'the Progress Report: Reducing Emissions in Wales', which has subsequently been updated as set out below.

Progress Report: Reducing Emissions in Wales

11.16. The most recent edition of the climate change progress report was published in 2023[4]. The report observes the following with regards to renewable energy:

"By 2030, Wales aims to generate renewable electricity equal to 70% of its electricity consumption. Welsh renewables capacity has increased over time but at a slower rate since 2016. Wales must now work with the UK Government to deliver strong policy consistent with decarbonising electricity supply by 2035 (e.g. on standards for new-build power plants), and to continue to take Welsh-specific programmes forward where these are devolved (e.g. on planning and consenting for new low carbon developments)."

Net Zero Strategic Plan 2022

11.17. The Net Zero Strategic Plan[5] sets out the actions the Welsh Government will take to achieve net zero. This includes outlining the targets initiatives and policy support that the Welsh Government will provide in achieving net zero.

Net Zero Wales Carbon Budget 2

11.18. In October 2021, the Welsh Government published their second Low Carbon Delivery Plan, which outlines the delivery of the Second Welsh Carbon Budget (2021-2025), and look beyond to start building the foundations for Carbon Budget 3 and the 2030 target, as well as net zero by 2050.

[4] Climate Change Committee (2023) *Progress Report: Reducing Emissions in Wales*. Available online: https://www.theccc.org.uk/wp-content/uploads/2023/06/Progress-Report-Reducing-emissions-in-Wales.pdf
[5] Welsh Government (2022) *Net Zero Strategic Plan*. Available at: https://www.gov.wales/sites/default/files/publications/2022-12/welsh-government-net-zero-strategic-plan.pdf

Local context

Rhondda Cynon Taf Local Development Plan up to 2021

11.19. The Rhondda Cynon Taf Local Development Plan up to 2021[6] was adopted in March 2011 and remains the development plan for the area. Policy AW 12 'Renewable & Non-Renewable Energy is the most relevant policy therein, stating:

"*Development proposals which promote the provision of renewable and non-renewable energy such as schemes for energy from biomass, hydro-electricity, anaerobic digestion, on-shore oil and gas and small / medium sized wind turbines, will be permitted where it can be demonstrated that there is no unacceptable effect upon the interests of soil conservation, agriculture, nature conservation, wildlife, natural and cultural heritage, landscape importance, public health and residential amenity.*

Development proposals should be designed to minimise resource use during construction, operation and maintenance."

11.20. There are no policies that directly reference solar PV developments within the Local Development Plan. The Plan itself is currently undergoing a review, with the revised plan currently due for adoption by May 2026. In the interim, the '*Rhondda Cynon Taf Local Development Plan Review*'[7] was undertaken in 2019 which identified the following with respect to the LDP's renewable energy policies:

"[The] policies are considered to be performing effectively in accommodating and aiding the delivery of renewable energy. Since the adoption of the LDP in March 2011, roughly 331 MW of renewable energy capacity has been granted permission to develop (excluding renewable energy with permitted development rights). The vast majority of the capacity is delivered through wind farms, and 94 wind turbines are currently operating within Rhondda Cynon Taf. The next highest generator of renewable energy in Rhondda Cynon Taf is solar energy, contributing approximately 54 MW. Energy from waste facilities also account for a small proportion of the total renewable energy capacity that has been granted in the Borough.

However, several contextual changes have occurred effecting renewable energy since the adoption of the LDP, which will require consideration through the LDP revision process. For example, a consultation draft of the National Development Framework (NDF) identifies priority areas for solar and/or wind energy at a regional scale, and includes vast amounts of Rhondda Cynon Taf. Furthermore, the Welsh Government published an updated Renewable Energy

[6] Rhondda Cynon Taf (2011) *Rhondda Cynon Taf Local Development Plan 2006-2021.* Available at: https://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/LocalDevelopmentPlans/LocalDevelopmentPlan20062021.aspx

[7] Rhondda Cynon Taf (2019) *Rhondda Cynon Taf Local Development Plan 2006-2021 Review Report.* Available at: https://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/RelatedDocuments/Pdfs/LDPReviewReport2019.pdf

Toolkit for Planners in 2015, which will also require consideration during the LDP revision process and the LDP's renewable energy evidence base will accordingly require updating."

METHODOLOGY

11.21. A desk-based assessment was undertaken to identify the potential impacts the Proposed development would have on the climate throughout construction, operation and decommissioning. See Table 11-1 below outlining relevant impacts;

Table 11-1 – Potential Impacts from Proposed Development on the Climate during its Lifecycle

Lifecycle Stage	Potential Impacts on Climate
Construction Stage	On-site construction activity including emissions from construction compounds.
	Transportation of construction materials. Due to the nature of the equipment required, this could require shipment of certain aspects over large distances.
	Transportation of construction workers.
	Waste disposal generated during the construction process
	Land use change
	Water usage
Operational Stage	Operation of the Proposed Development
	Maintenance of the Proposed Development
Decommissioning Stage	Onsite decommissioning activity
	Transportation and disposal of waste

	Transportation of workers

Significance of Effects

11.22. The significance of effects has been defined in accordance with the criteria outlined within **Table 11-2** below. The sensitivity of the attribute and the magnitude of the potential impact have been combined to identify the significance of the effect.

Table 11-2: Rating of Significant Environmental Impacts Matrix

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible to Minor	Negligible to Minor	Minor
Low	Negligible to Minor	Negligible to Minor	Minor	Minor to Moderate
Medium	Negligible to Minor	Minor	Moderate	Moderate to Major
High	Minor	Minor to Moderate	Moderate to Major	Major
Very High	Minor	Moderate to Major	Major	Major

IMPACT ASSESSMENT

11.23. Following the methodology outlined earlier in this chapter, analysis of the potential effects from the Proposed Development on the climate was conducted. See **Table 11-3** below for further details. Please refer to **Table 11-1** for an outline of the potential effects at each stage of a solar farm project.

11.24. It should be noted that when emissions are discussed below it includes carbon dioxide, hydrocarbons, methane and other relevant greenhouse gases that are produced from machinery, equipment and waste during the construction, operation and decommissioning of the Proposed Development.

Table 11-3: Summary of Effects

Receptor type	Description of Potential Impact	Embedded design, mitigation and enhancement measures within Proposed Development	Sensitivity of receptor	Duration and reversibility	Magnitude of Impact	Significance of Effect
Construction Stage						
Climate Change	Construction stage emissions from machinery, equipment and waste, including carbon dioxide, hydrocarbons, methane, etc.	• Increasing recyclability by segregating construction waste to be re-used and recycled where reasonably practicable; • Designing, constructing and implementing the Proposed Development in such a way as to minimise the creation of waste and	Medium	Construction phase of Proposed Development	Low	Minor Adverse

		maximise the use of alternative materials that are locally sourced where feasible; • Liaising with construction personnel for the potential to implement staff minibuses and car sharing options • Implementing a Travel Plan to reduce the volume of construction staff and employee trips to the Proposed Development • Switching vehicles and plant off when not in use; and • Conduct regular planned maintenance to optimise efficiency.				
Decommissioning Stage						
Climate Change	Decommissioning phase emissions from machinery, equipment and waste, including carbon dioxide,	• Liaising with decommissioning personnel for the potential to implement staff minibuses and car sharing options	Medium	End of Proposed Developments lifespan	Low	Minor Adverse

	hydrocarbons, methane, etc.	• Implementing a Travel Plan to reduce the volume of decommissioning staff and employee trips to the Proposed Development • Switching vehicles and plant off when not in use; • Conduct regular planned maintenance to optimise efficiency, • Increasing recyclability by segregating decommissioning waste to be re-used and recycled where reasonably practicable; and • Designing, and implementing the Proposed Development in such a way as to minimise the creation of waste and maximise the use of alternative materials that are locally sourced where feasible.				
Operational Stage						

Climate Change	Production of renewable/low-carbon energy via PV panels	Increasing efficiency of power generation for the Coleraine town area and contributing to Wales' energy and climate targets.	Medium	Operational lifespan of Proposed Development	High	Major Beneficial
Climate Change	Operational Phase emissions from machinery, equipment and waste, including carbon dioxide, hydrocarbons, methane, etc.	Including but not limited to; • Switching vehicles and plant off when not in use; • Conduct regular planned maintenance to optimise efficiency; and • Designing, the Proposed Development in such a way as to minimise the creation of waste and maximise the use of alternative materials that are locally sourced where feasible.	Medium	Operational lifespan of Proposed Development	Low	Minor Adverse

Cumulative Effects

11.25. Developments that are subject to a valid planning application are included within such an assessment.

11.1. A search of the PEDW planning register[8], Rhonda Cynon Taf planning register[9] and the Caerphilly County Borough Council planning register[10] was undertaken to identify existing, approved or proposed (in planning) renewable energy developments within a 5km study area, as of the 14th February 2024, which could have potential notable cumulative climate change effects in conjunction with the Proposed Development. Note that DNS projects are listed on both the PEDW planning register and the planning registers of those affected local authorities. In **Table 11-4** they're listed as DNS schemes, with the application references from local authorities also cited.

Table 11-4 Cumulative Project search

Planning Reference	Project Type	Distance	Planning Status
Caerphilly County Borough Council			
DNS/3272053 23/0427/DNS	Twyn Hwel Wind Farm. Construct and operate up to 14 wind turbines and associated infrastructure	Adjacent	Granted
23/0116/DNS	Construct and operate a 20MW Solar Photovoltaic (PV) Farm	2.8km east	Granted
16/0385/FULL	Erect a single wind turbine of up to 77m tip height and associated infrastructure	1.7km northeast	Granted
Rhondda Cynon Taf County Borough Council			
24/1017/SSO	8 turbine wind farm	5.5km north	EIA Scoping
DNS 3280378 22/1129/DNS	A wind farm consisting of up to 7 wind turbines and associated infrastructure	4.6km west	Granted

[8] PEDW DNS Planning Register: https://planningcasework.service.gov.wales/
[9] Rhonda Cynon Taf planning register: https://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/PlanningApplications/SearchthePlanningRegister.aspx
[10] Caerphilly County Borough Council planning register: https://publicaccess.caerphilly.gov.uk/PublicAccess/

15/1635/FUL	Erection of two wind turbines with a tip maximum height of 125m,	4.5km northwest	Granted
22/1128/DNS	Solar park, access and associated development	2.7km south	Granted
15/0777/FUL	Solar photovoltaic park, ancillary development and ecological enhancements	2.8km southwest	Granted
14/1014/FUL	Installation of a solar farm and associated infrastructure	4.4km southeast	Granted

11.26. Cumulatively the adverse effects from the construction and decommissioning phases of these projects will be **Minor**. However, the cumulative beneficial effects during their operational phase will be **Major Beneficial** as the projects (solar and wind) will generate renewable and low-carbon energy which helps reduce greenhouse gas emissions and enables the ROI to achieve their climate change and renewable energy targets.

Summary of Effects

Effects from Proposed Development

11.27. The Proposed Development will only have **Minor adverse effects** on the climate during the construction and decommissioning phases. Overall, the proposed Glyn Taff Solar Farm will have **Major Beneficial effects** on the climate by generating renewable energy.

Cumulative Effects

11.28. Cumulatively, with the projects outlined in **Table 11-4**, the Proposed development will have an overall long-term **Major Beneficial effect** at the operational stage on the climate. This will far outweigh any of the minor adverse effects identified for the construction and decommissioning phases.

Further Benefits of the Proposed Development

11.29. Solar energy can positively impact our environment and help fight climate change. As a renewable source of power. Solar energy also has an important role in reducing greenhouse gas emissions and mitigating climate change, which is critical to protecting humans, wildlife, and ecosystems. Solar energy can also improve air quality and reduce water use from energy production.

11.30. The most notable benefit of the Application Site is the support it will provide towards the Welsh Government's commitments to reduce emissions of greenhouse gas emissions to combat the effects of climate change.

11.31. The Proposed Development will have an export capacity of up to 39.9MWp. This would be sufficient to generate approximately 43,000MWh. Based on the most recent figures from the Department for Energy and Net Zero (DENZ)[11], average household energy consumption per year is 3,301kWh/yr, meaning that the Proposed Development would be sufficient to power approximately 12,000 homes. Consequently, during its operational lifespan (35 years), the Application Site has the potential to displace electricity generated from fossil fuels and consequently represents carbon savings and helps to tackle the climate emergency.

11.32. Using DENZ's most recent "*all fossil fuels*" emissions statistic of 437 tonnes of carbon dioxide per gigawatt hour (GWh) of electricity supplied in Table 5E of the *Digest of UK Energy Statistics*[12], the estimated prevention of emissions in CO_2 from the Proposed Development has been calculated both annually and for the estimated lifetime of the solar farm.

Table 14-5: Estimated prevention of emissions in tonnes of CO_2.

Estimated Prevention of Emissions in CO_2 (tonnes)	
Approximate Annual	Solar Farm Lifetime (35 years)
18,000	630,000

11.33. The development of the Proposed Development will mean a substantial reduction of approximately 18,000 tonnes of CO_2 emissions annually. Scaling this up to the CO_2 displaced over the 35 year lifetime of the Proposed Development this would be approximately 630,000 tonnes of CO_2 displaced. This represents a significant contribution to the legally binding national and international requirement and associated targets to increase renewable energy generation and reduce CO2 emissions. Therefore, overall, the project will result in a **Major Positive** long-term effect.

11.34. As one of the cheapest forms of electricity generation (alongside solar), solar farms are considered to be a key component of the future energy mix. The deployment of renewable energy sources will need to increase significantly by 2030 to be on track to achieve net zero by 2050.

[11] Department for Energy and Net Zero (Dec 2024) *Subnational Electricity and Gas Consumption Statistics*. Available at: https://assets.publishing.service.gov.uk/media/6763dd7ebe7b2c675de30820/Subnational-electricity-and-gas-consumption-summary-report-2023.pdf

[12] Department for Energy and Net Zero (July 2024) *Digest of UK Energy Statistics: Table 5.14 "Estimated carbon dioxide emissions from electricity supplied"*. Available at: https://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes

MITIGATION AND RESIDUAL EFFECTS

As the effect identified are beneficial no further mitigation is required. In turn, the residual effect is considered to be a major positive effect.

CONCLUSION

11.35. The Environment (Wales) Act 2016 places an obligation on Welsh Ministers to reduce greenhouse gas emissions from Wales such that in the year 2050 they are at least 80% lower than baseline figures for 1990 or 1995, with interim emission targets for 2020 / 2030 / 2040 with a long-term 2050 target of net zero.

11.36. The Proposed Development will have an export capacity of 39.9MWp. The Proposed Development would produce enough electricity to power approximately 12,000 homes displacing approximately 630,000 tonnes of CO_2 over its 35 year operational lifespan. This represents a significant contribution to the legally binding national and international requirement and associated targets to increase renewable energy generation and reduce CO_2 emissions.

11.37. To conclude, it is clear that more renewable energy resources need to be implemented throughout Wales and the Proposed Development will help Wales and the UK achieve their legally binding climate targets in compliance with national and local policy.