

Glöyn Byw | Butterfly Solar Farm, Land to the North of the B5426, Wrexham

Ref: DNS- CAS-03547-X3S2BS

Air Quality Technical Note

1. Introduction

1.1. Background

1.1.1. Axis, acting on behalf of RWE Renewables UK ('the Applicant'), has submitted an Environmental Impact Assessment (EIA) Scoping Report¹ to Planning and Environment Decisions Wales (PEDW) for the Glöyn Byw / Butterfly Solar Farm project ('the Proposed Development'). The Proposed Development comprises a new solar energy generating station and an associated on-site Battery Energy Storage System (BESS) on land to the north of the B5426, Wrexham ('the Site'). The Proposed Development also includes associated infrastructure and connection to the Legacy National Grid substation.

1.1.2. The document provided the information necessary to enable PEDW to adopt a Scoping Direction in respect of the information to be included within the EIA for the Proposed Development. This included information on the Proposed Development, the overarching impact assessment methodology and details of the environmental topics proposed to be scoped into, or out of, the EIA process. Air Quality was included in those topics proposed to be scoped out.

1.1.3. An EIA Scoping Direction has subsequently been received from PEDW². The Scoping Direction states that air quality cannot be scoped out at this stage and is therefore scoped in. PEDW recommends that *'the applicant liaises directly with NRW on this matter and if it is subsequently agreed that air quality can be scoped out, a robust rationale for this should be provided in the ES'*.

1.1.4. This following Technical Note has therefore been prepared by Smith Grant LLP (SGP) to inform discussions with Natural Resources Wales (NRW) on the matter with the aim of seeking agreement that air quality can be scoped out of the EIA process. This Technical Note has been prepared primarily with reference to:

- Natural England (NE) internal guidance in relation to road traffic emissions and Habitat Regulation Assessments (HRAs)³;

¹ Axis, Gloyn | Byw Butterfly Solar Farm, Land ot the North of the B5426, Wrexham: Environmental Impact Assessment Scoping Report, ref: 3456-01-SCP-01, February 2025

² Planning & Environment Decisions Wales, EIA Scoping Direction, DNS CAS-03547-X3S2B5-Butterfly Solar Farm, 03/04/2025

³ Natural England, Internal Guidance – Approach to Advising Competent Authorities on Road Traffic Emissions and HRAs, v1.4, dated: June 2018.

- Institute of Air Quality Management (IAQM) guidance in relation to air quality and planning⁴;
- IAQM guidance on air quality impacts on nature conservation sites⁵; and,
- IAQM guidance in relation to construction dust⁶.

1.1.5. SGP is an environmental consultancy specialising in air quality assessments. The report author, Katrina Hawkins, Partner, is a Member of the Institute of Air Quality Management (IAQM).

⁴ Institute of Air Quality Management (IAQM), Land-Use Planning & Development Control: Planning for Air Quality, v1.2, January 2017

⁵ Institute of Air Quality Management (IAQM), A guide to the assessment of air quality impacts on designated nature conservation sites, v1.1, dated: May 2020

⁶ Institute of Air Quality Management (IAQM), Guidance on the Assessment of Dust from Demolition and Construction, v2.2, January 2024

2. Scoping Report and Scoping Direction

2.1. Scoping Report

2.1.1. Section 4.3 of Scoping Report sets out those topics to be scoped out of the process along with supporting justification. The relevant extracts from Table 4.2 of the Scoping Report in relation to air quality is provided below:

Extract of Table 4.2: Environmental Topics to be Scoped Out of the EIA Process

Topic	Construction Effects	Operational Effects
Air Quality	<i>There is the potential for air quality impacts from increased vehicle movements and construction works giving rise to dust. However, as set-out above the construction traffic would be relatively limited and good practice measures can be adopted to reduce dust arising, this would be controlled via a Construction Environmental Management Plan</i>	<i>No likely significant effects due to minimal traffic generation and no emissions from onsite technology</i>

2.1.2. The supporting justification text provided in Section 4.3 in relation to Air Quality states:

Based on the vehicle movements described above, it is unlikely that the number of construction vehicle movements would give rise to potentially significant environmental effects. Notably the predicated HGV numbers during construction do not exceed the Institute of Air Quality Management (IAQM) thresholds for screening the requirement of a detailed air quality assessment.

Construction activities will be controlled by a CEMP, with appropriate measures to mitigate air quality and dust impacts on receptors during construction. These measures would follow best practice guidance set out by the IAQM. A draft CEMP will be submitted with the DNS application which will document the measures which the construction contractors would be required to implement.

There would be no onsite processes that would result in any pollutants being released. Operational vehicle movements will be minimal and unlikely to be of a scale that would give rise to significant effects. The operational vehicle movements will be reported in the ES as part of the description of the development.

On this basis it is considered there is unlikely to be significant impacts on air quality.

2.2. Scoping Direction

2.2.1. Table 1 of the Scoping Direction sets out PEDWs comments in response to the applicant's proposed aspects to be scoped out. In relation to Air Quality PEDW states:

ID.2: NRW highlight in their response that they are generally in agreement with the justification for scoping out air quality, however, the SR has not referenced the Institute of Air Quality Management Guidance, which includes published thresholds. NRW state that the ES should confirm potential impacts relating to the areas within the redline boundary, containing the existing roads, demonstrating the grid route options (which border / overlap with protected sites).

Given these considerations, impacts on air quality cannot be scoped out at this stage, and this is therefore scoped in. PEDW recommends the applicant liaises directly with NRW on this matter and if it is subsequently agreed that air quality can be scoped out, a robust rationale for this should be provided in the ES. Any departure from the advice provided by NRW should be supported by a robust rationale in the ES.

2.2.2. The NRW response itself is provided in Appendix 1. This specifically states in relation to air quality:

We are generally in agreement with the justification for scoping out air quality and traffic impacts. However, the Scoping Report has not explicitly referenced the Institute of Air Quality Management guidance, which includes the published thresholds. We note that the distances between the protected site boundaries and the development boundary for the solar arrays exceed the screening distances: >200m for traffic impacts and >50m for dust impacts. However, confirmation should be provided in the ES regarding potential impacts relating to the areas of the redline boundary containing the existing roads demonstrating the grid route options (which border / overlap with the above protected sites).

3. Proposed Development and Site Setting

3.1. Proposed Development and Site Location

3.1.1. Proposals are for the development of a solar photovoltaic electricity generating station (or 'solar farm') with battery storage and associated ancillary development, including a sub-substation.

3.1.2. The Solar Farm is to be sited across three separate solar array areas on land to the south of Wrexham. These are the Western Array Area (WAA), Central Array Area (CAA) and Eastern Array Area (EAA) as shown on the Site location plan (Figure 1.1) provided in Appendix A of this Note. The Battery Energy Storage Systems (BESS) and electrical sub-station compound would all be located within these solar array areas.

3.1.3. Underground electrical cabling would be provided between the solar array areas, and to the Legacy Sub-Station to provide connection to the National Grid. The connection between the WAA and the CAA would be along Bronwylfa Road (the B5426). The connection between the CAA and the EAA would be north along Marchwiel Hall Road, east along Bwgan Ddu Lane, Cockbank Lane and Kiln Lane.

3.1.4. The Legacy Sub-Station is located to the north of Bronwylfa Road (the B5426), approximately 2.7 km to the northwest of the main solar farm area. Two possible grid connection routes are being considered between the WAA and the sub-station as shown on Figure 1.1 in Appendix A. For the majority of this route, the underground cable would sit beneath the boundary of the existing highways.

3.1.5. The application Site ('the Site') therefore comprises the three solar array areas, the cable connection routes between the solar array areas and the two potential connection routes to the Legacy sub-station.

3.2. Protected Nature Conservation Sites

3.2.1. Information on statutory nature conservation sites within 2km (extended to 5km for international sites) is provided in the Scoping Report. Those within 2km are summarised below and shown on Figure 2.1: Environmental Constraints as provided in Appendix B of this Note.

Site Name	Distance and Direction from Site
International Statutory Sites	
Johnstown Newt Sites SAC	Immediately adjacent to Cable Route
River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC	635m south of EAA
National Statutory Sites	

Site Name	Distance and Direction from Site
Stryt Las a'r Hafod SSSI	Immediately adjacent to Cable Route
Afon Dyfrdwy (River Dee) SSSI	635m south of EAA
Sontley Marsh SSSI	1.35km north of the CAA.

3.2.2. The Johnstown Newt Sites SAC lies alongside the two proposed cable connection route between the WAA and Legacy Sub-station. This area of SAC also comprises the Stry Las a'r Hafod SSSI.

4. Air Quality Screening Assessment

4.1. Introduction

4.1.1. The following briefly reviews the potential for air quality impacts that may arise from the construction and operational phase to provide further supporting information to that presented in the Scoping Report. The following only relates to ecological receptors and assessment.

4.2. Construction Effects – Vehicle Movements

4.2.1. As set out in paragraph 4.3.2 of the Scoping Report the construction phase is expected to take in the order of 9 to 12 months. Working hours would be reduced on Saturdays with no working on Sundays or Bank Holidays.

4.2.2. It is expected that average Heavy Good Vehicle (HGV) movements during the construction phase would be in the order of 24 per day (12 in / 12 out). These would only be experienced on working days and the resulting annual average daily traffic (AADT) would be less than this. In the event the construction phase is less than 12 months then the AADT would be further reduced to this when averaged movements are averaged across a full 12-month period.

4.2.3. The construction phase would require a total of 80 staff members being on Site at any one time. Staff will be mini-bussed in, with a 4-person per vehicle target where required. It is therefore forecast that the total light vehicle movements during the construction period will be 40 a day (20 in / 20 out).

4.2.4. It is envisaged the Proposed Development will be served by a number of construction compounds and hence these movements would not be all be experienced on the same stretches of road but would be distributed across the local road network.

4.2.5. As noted in the Scoping Report guidance issued by the Institute of Air Quality Management (IAQM) on air quality and planning⁴ sets out criteria that can be referred to indicate when an air quality may be required for a proposed development. However, this IAQM guidance is specifically provided in relation to human receptors. Separate guidance is provided by Natural England (NE) in relation to ecological sites³ and is re-iterated in separate IAQM guidance⁵. These documents provide the following screening criteria to indicate the need for assessment of vehicle emissions in relation to nature conservation sites:

- Total vehicle flow change by 1,000 AADT or more; or,
- HDV flows change by 200 HGV AADT or more,
- these criteria only apply where an ecological receptor is located within 200m of the affected road.

4.2.6. As detailed above the expected 2-way daily movements during the construction phase are 24 HGV movements and 40 LDV movements. The expected vehicle movements to / from the Site over the construction phases are therefore **well below** the screening thresholds. It is therefore considered assessment of vehicle movements and potential impacts on nature conservation sites during the construction phase can be scoped out of the ES.

4.2.7. Furthermore, as detailed in the Scoping Report a detailed Construction Traffic Management Plan (CTMP) would be prepared which would detail the delivery routes, construction compounds and a suite of traffic management measures to minimise impacts. The CTMP would be submitted as part of the DNS application. The CTMP would be informed by the findings of the Transport Statement that is being prepared and would be submitted as part of the DNS application.

4.3. Construction Effects – Dust

4.3.1. Separate guidance is provided by the IAQM in relation to the assessment of demolition and construction dust⁶. The guidance describes a qualitative assessment methodology to assess the risks of dust impacts from demolition, earthworks, and construction activities and from trackout, and provides guidance for assessing the significance of the effects.

4.3.2. The guidance provides the following screening criteria to indicate whether further detailed assessment is required in relation to ecological receptors:

- An ecological receptor is present within;
 - 50m of the boundary of a site; or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from a site entrance(s).

4.3.3. Where the need for further assessment can be screened out it can be concluded that the level of risk is *negligible*, and any effects would not be significant.

4.3.4. None of the solar arrays, or proposed cable connection routes between the arrays, lie within 50m of any of the protected nature conservation sites. The proposed cable connection routes from the WAA to the Legacy sub-station does however extend to within 50m of the Johnstown Newt Sites SAC and Stryt Las a'r Hafod SSSI as shown on Figure 2.1 in Appendix B.

4.3.5. Works along this stretch of the cable route would primarily be within the existing highway boundaries and would involve the excavation of a trench to lay the cable with subsequent back filling. Where possible soils would be retained alongside the trench for backfilling as soon as possible. As such the potential for the generation of significant dust during these works would be low.

- 4.3.6. Furthermore, the potential for fugitive dust generation during construction activities can be readily controlled through the implementation of best practice in respect of dust control and site management. As detailed in the IAQM guidance⁶, for almost all construction activities the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect would normally be *negligible*.
- 4.3.7. Construction activities are to be controlled by a Construction Environmental Management Plan (CEMP). A draft CEMP would be submitted with the DNS application, and this would be developed into a full CEMP by the appointed contractors.
- 4.3.8. The CEMP would set out the measures which the construction contractors would be required to implement to minimise fugitive dust generation and potential impacts. These measures would be based on those recommended in the IAQM guidance, adapted as deemed applicable and appropriate for the specific Proposed Development.
- 4.3.9. Through the incorporation of the mitigation measures as would be set out in the CEMP, no unacceptable impacts or resulting effects on ecological receptors are likely to arise. It is therefore considered assessment of dust and potential impacts on nature conservation sites during the construction phase can be scoped out of the ES.

5. Summary and Conclusions

- 5.1. This Technical Note provides additional information to inform discussions with Natural Resources Wales (NRW) with regards the proposed Butterfly Solar Farm. The Note has been provided with the aim of seeking agreement that air quality can be scoped out of the EIA process.
- 5.2. This Note summaries the proposals and provides additional information on the relevant guidance deemed appropriate to the proposed development and assessment of potential air quality impacts in relation to nature conservation sites. It focuses on construction dust and vehicle emissions.
- 5.3. The expected vehicle movements to / from the Site over the construction phase are well below screening thresholds provided as indicating the need for assessment of potential vehicle emission impacts on nature conservation sites. Furthermore, a draft Construction Traffic Management Plan (CTMP) would be submitted as part of the DNS application.
- 5.4. The two cable route options between the WAA and Legacy Sub-Station lie alongside the Johnstown Newt Sites SAC and Stryt Las a'r Hafod SSSI.
- 5.5. However, the essence of guidance is that best practice working practices and mitigation measures are generally accepted as providing effective control against the impact of airborne dust. These would be included within the draft CEMP that is to be provided with the DNS application and would be further detailed in the subsequent detailed CEMP that is expected to be a requirement of any consent.
- 5.6. Through the incorporation of the in-design mitigation and standard dust mitigation measures no unacceptable impacts or resulting effects on ecological receptors are expected.
- 5.7. On the basis of the above, it is considered there is unlikely to be significant impacts arising from either vehicle emissions or construction dust during the construction phase on the nearby protected nature conservation sites.
- 5.8. It is considered the above provides sufficient information for air quality to be scoped out of the EIA process.

Prepared on behalf of Smith Grant LLP by:

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Signature:



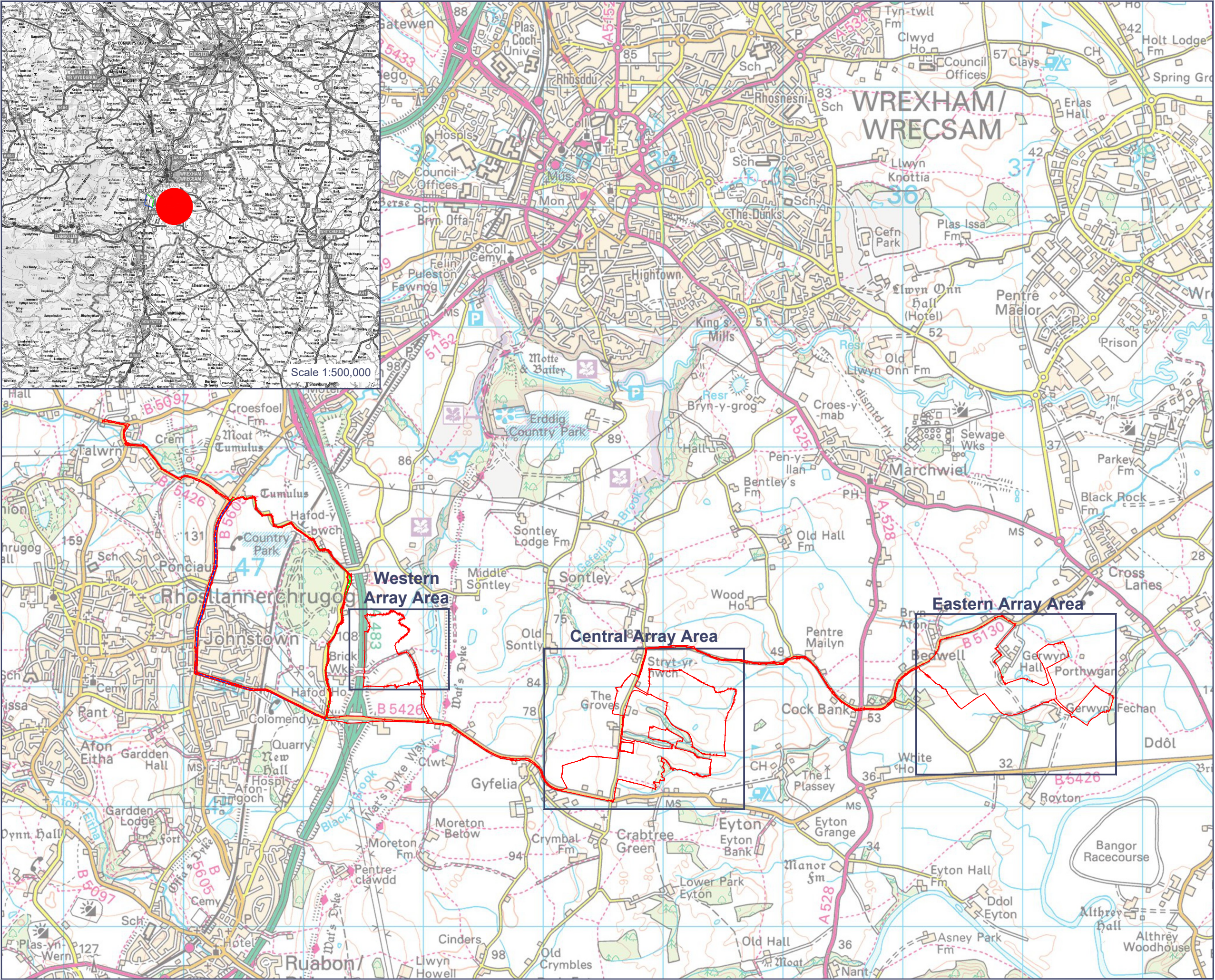
Date:

30.06.25

APPENDIX A:

Site Location Plan

(as provided in the Scoping Report)



- Application Boundary
- Site Location
- Solar Array Areas
- Grid Route - Northern option
- Grid Route - Western option

RWE

0344 8700 007
axis.co.uk



Project

Butterfly Solar Farm

Figure Number

Figure 1.1

Figure Title

Site Location

Scale

1:30,000 @A3

Date

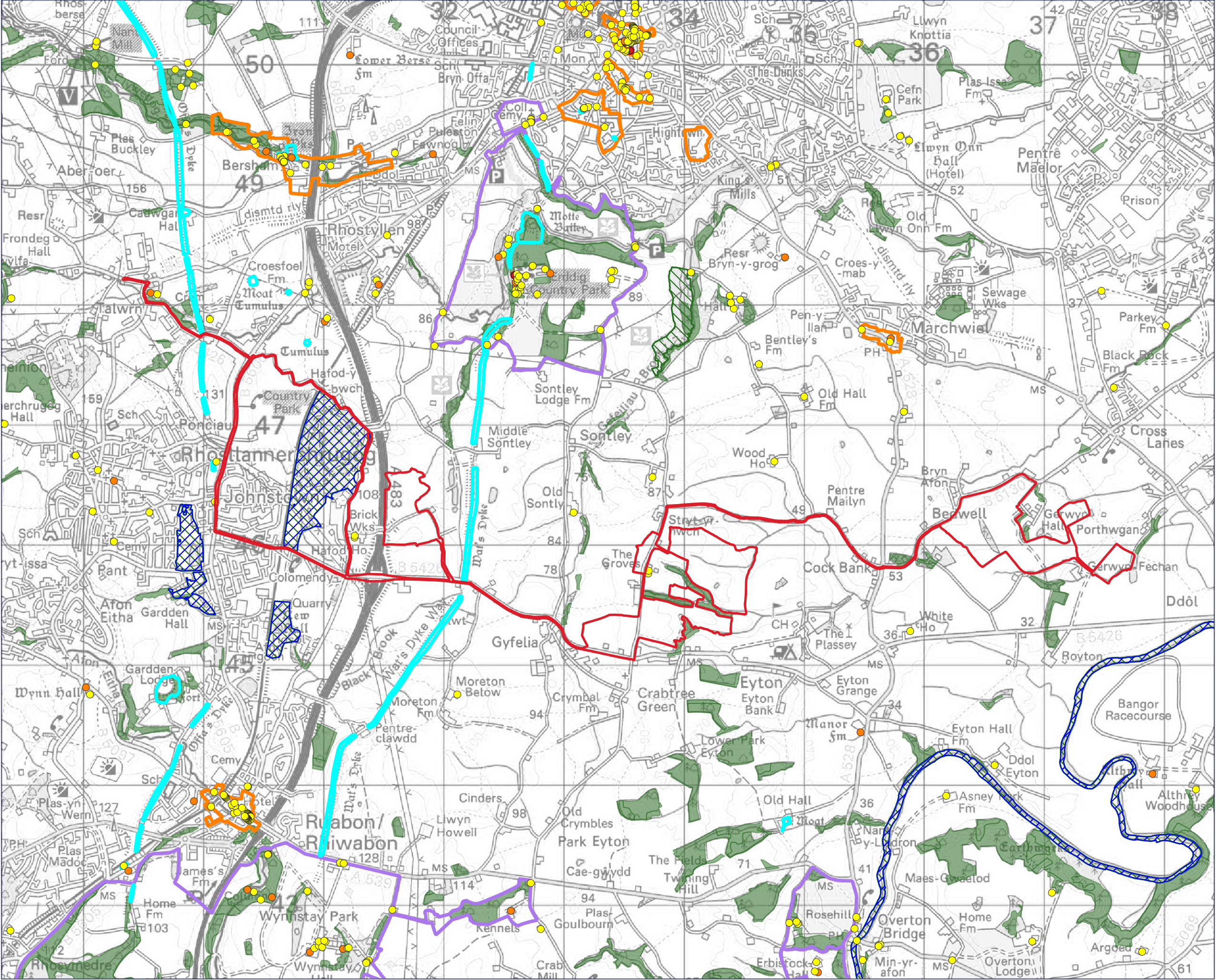
August 2024



APPENDIX B:

Site Constraints Plan

(as provided in the Scoping Report)



Application Boundary

Heritage Assets

Listed Buildings

Grade I

Grade II*

Grade II

Scheduled Monuments

Conservation Area

Registered Park and Gardens

Nature Conservation Designations

SAC

SSSI

Ancient Woodland

RWE

0344 8700 007

axis.co.uk



Project

Butterfly Solar Farm

Figure Number

Figure 2.1

Figure Title

Environmental Constraints

Scale

1:30000@A3

Date

August 2024



0 600 1,200 1,800 2,400 3,000 m