



ETIVE ECOLOGY Ltd

Proposed Solar Park

Marchwiel, Wrexham

**Great Crested Newt Mitigation
Strategy**

Produced for:



June 2022

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Quality Assessment Record

Report Version	Written by	Date	Reviewed by	Date
1.0	Wendy O’Neil	28 th January 2022	Russell Grey	20 th February 2022
2.0	Russell Grey	13 th May 2022	Maddy Warriner	13 th May 2022
3.0	Russell Grey	24 th May 2022	Russell Grey	24 th May 2022

1 INTRODUCTION

1.1 The Scheme

- 1.1.1 Etive Ecology Ltd. was commissioned by Corylus Planning and Environmental Ltd to prepare a Great Crested Newt (GCN) Mitigation Strategy for a proposed solar park immediately adjacent to the existing solar park on land to the north of Maelor Gas Works, Marchwiell, Wrexham. This GCN MS has been produced in response to pre-application consultation feedback from NRW (reference CAS-165639-T7L2). The proposed development site is centre on National Grid Reference SJ 38099 48504.
- 1.1.2 The proposed scheme is to develop the site to provide additional solar capacity to the adjacent solar farm. The proposed solar park footprint is approximately 9ha in size and wraps around the north and east of the existing solar farm. Full details of the proposed scheme are given in the submitted planning application (P/2021/0676).

1.2 Previous Study

- 1.2.1 The following GCN/amphibian records were provided as part of the desk study undertaken to inform the Preliminary Ecological Appraisal (PEA). A large number of great crested newt records were returned within 2km of the site and the existing solar farm was implemented under a NRW development licence (S087171/2). It was assumed that a medium meta-population was present to inform the license and part of the compensation works comprised the creation of three new ponds within the solar farm boundary.

Table 1.1 GCN/amphibian records within 2km of the proposed site

Species	Scientific name	Records	Distance from site
Smooth newt	<i>Lissotriton vulgaris</i>	91	0-1.9 km
Common toad	<i>Bufo bufo</i>	25	3 m-1.8 km
Great crested newt	<i>Triturus cristatus</i>	256	0-1.9 km
Palmate newt	<i>Lissotriton helveticus</i>	7	45 m-1.8 km
Common frog	<i>Rana temporaria</i>	38	45 m-1.9 km

1.3 Scope of this Report

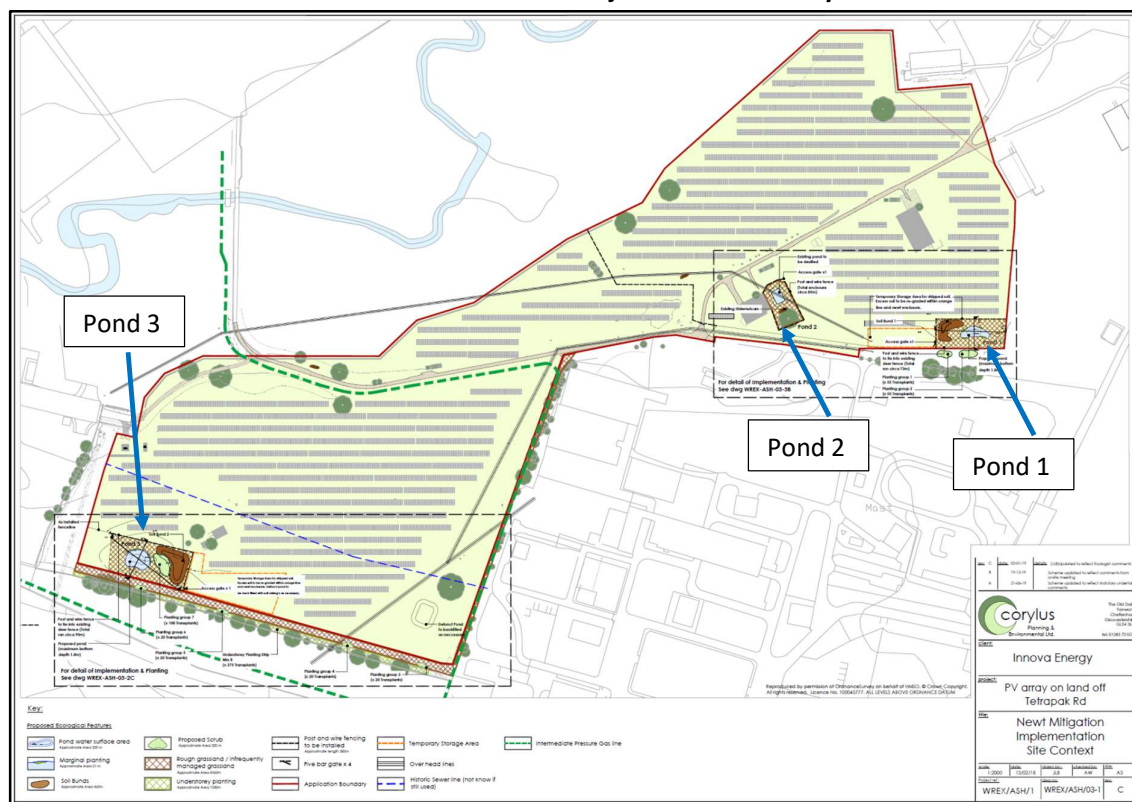
- 1.3.1 The report provides a summary of the status of GCN on and adjacent to the Site, based on the guidance found in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001).
- 1.3.2 An impact assessment is provided in **Section 3**, identifying the likely impacts posed to GCN by the scheme and the magnitude of these impacts. Details of the proposed scheme are presented, and key risk areas and activities are identified.
- 1.3.3 **Section 4** presents the GCN mitigation strategy. The mitigation measures proposed follow the GCN Mitigation Guidelines and aim to avoid any harm to GCN, to minimise disturbance to GCN and to ensure there is no long-term impact on the Favourable Conservation Status (FCS) of the species as a result of the proposed scheme.
- 1.3.4 A short section on the 'three tests' is provided in **Section 5**. This provides a summary of the key issues which is given to assist the LPA in determining whether the scheme satisfactorily passes these tests.

2 RESULTS

2.1 GCN Survey

- 2.1.1 GCN presence/absence surveys were undertaken to comply with the monitoring requirements of the license in 2021. The survey effort comprised two torch surveys of each of the three newly created ponds, using a high-powered torch (Clulite 1 million candle power) to search for GCN. The surveys were undertaken on 19th April and 14th June 2021.
- 2.1.2 The surveyor slowly walked around the perimeter of Ponds 1, 2 and 3 and shone the torch across the water surface to look for newts. Any newts seen were identified to species level and sexed (where possible). It is not usually possible to differentiate between female smooth and palmate newts during torching surveys.

Plate 2.1.1 Ponds Subject to Torch Survey



- 2.1.3 Weather conditions and survey times are noted in Table 2.1.2.

Table 2.1.2 Weather Conditions During Surveys

Survey Date	Ponds	Weather conditions at dusk
19 th April 2021	1 - 3	10% cloud cover, no precipitation, light air (Beaufort Scale 1), air temperature 12°C
14 th June 2021	1 - 3	20% cloud cover, no precipitation, light breeze (Beaufort Scale 2), air temperature 13°C

- 2.1.4 GCN were found to be present in Pond 2 during the first survey on 19th April but were not recorded in any ponds during the second survey on 14th June. Table 2.1.3 presents the full survey results.

Table 2.1.3 Survey Results

Pond	Central Grid Reference	National	Great Crested newt	Smooth newt	Palmate newt	Smooth or Palmate newt	Common frog	Common toad
Survey 1; 19 th April 2021								
1	SJ 38315 48288		0	-	-	Yes	-	-
2	SJ 38174 48314		2	Yes	Yes	Yes	Yes	-
3	SJ 37704 48124		0	-	-	Yes	-	-
Survey 2; 14 th June 2021								
1	SJ 38315 48288		0	-	-	Yes	-	-
2	SJ 38174 48314		0	Yes	Yes	Yes	-	-
3	SJ 37704 48124		0	-	-	Yes	-	-

2.1.5 Based on this survey effort, it is concluded that there is a small GCN population present within the immediate vicinity of the proposed solar site. It is acknowledged that this small population may well form part of a wider medium-sized meta-population. NRW have indicated that the site should be considered as part of the surrounding Wrexham Industrial Estate meta-population, which is a medium-large sized population. Therefore, given the scale at which the impacts are anticipated, **a medium-sized population has been assumed.**

2.2 Extended Phase 1 Habitat Survey

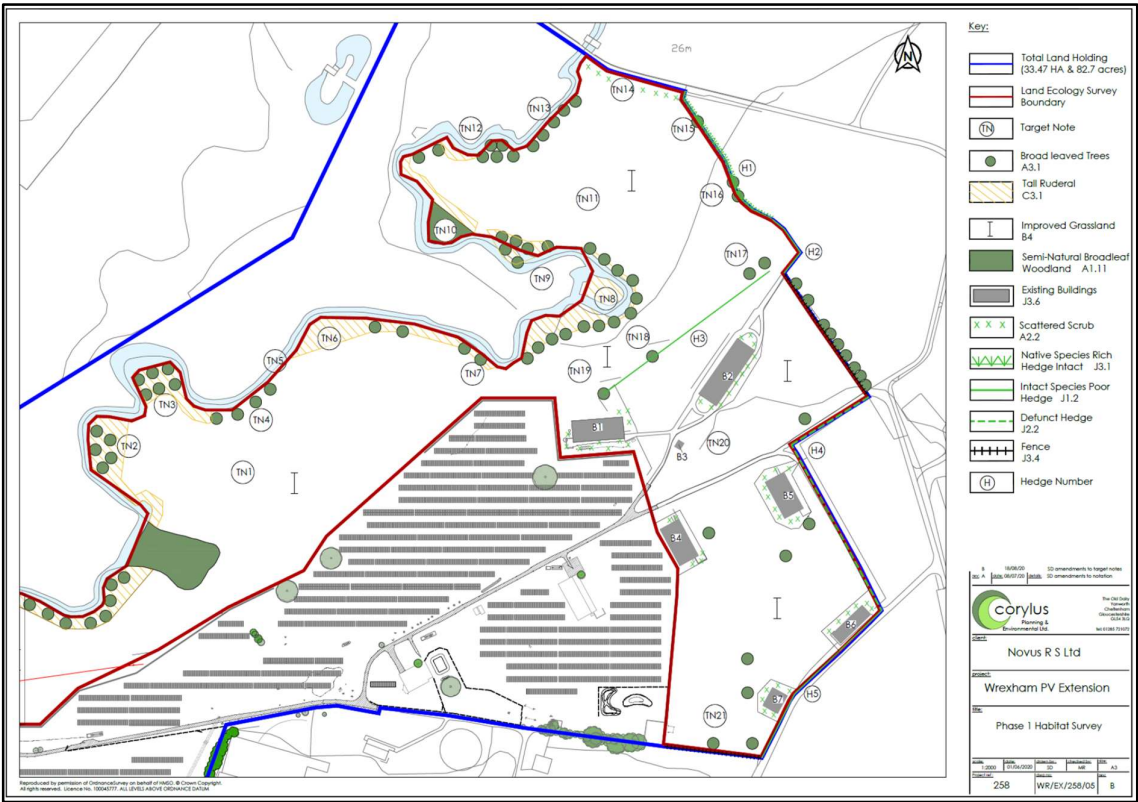
2.2.1 An Extended Phase 1 Habitat Survey of the site was undertaken by Corylus Planning and Environmental Ltd in May 2020 (Corylus, 2021). The survey established that no ponds were present within the red-line boundary, although there was suitable terrestrial habitat for GCN throughout much of the site. There were 17 ponds identified within 500m of the site, however, the River Clywedog acts as a barrier between the site and six ponds to the north, thereby reducing ponds with connectivity to the site to 11 ponds. The three ponds created on the existing solar site in October 2020 are located to the southwest of the proposed site. This brings the total to 14 ponds with connectivity to the site. Local records also confirmed a high number of GCN records within the Wrexham Industrial Estate (WIE) area and within 2km from the site. The Phase 1 Habitat Map is presented as Plate 2.2.1 below and the Ecology Report is provided as part of the planning submission.

2.2.2 It is concluded that GCN are present within the development footprint. Data have been gathered and suggest a medium population size class, which requires a precautionary approach to be taken with regards to mitigation measures, given the importance of the WIE GCN population.

2.3 Limitations

2.3.1 There were no limitations to the surveys.

Plate 2.2.1 Extended Phase 1 Habitat Map



3 GCN IMPACT ASSESSMENT

3.1 The Proposed Scheme

3.1.1 The scheme will include the following components and activities:

- Develop Fields 1A, 1B, 1C, and Field 2 as separate solar panel compartments with four access gates.
- Create maintenance access roads to Fields 1A, 1B, 1C and Field 2.
- Create one native woodland block and a hibernacula in Field 1A.
- Create a shallow ditch, an attenuation swale area, a hibernacula, translocate a hedgerow and a main access gate within Field 1B.
- Create a soil bund, two hibernacula, a pond, a battery storage area and ancillary infrastructure within Field 1C.
- Create a series of shallow scrapes, soil bunds and grass heaps in land adjacent to the north of Fields 1A and 2.
- Manage the retained and enhanced habitats for their biodiversity for the duration of the operational period (anticipated to be 40 years) with monitoring and site wardening. This includes both the grassland beneath the panels and the adjacent off-site grassland area (as shown on Figure 3).

3.1.2 **Figure 1** shows the existing site layout pre-development and highlights the anticipated impacts without mitigation, as described below. **Figure 2** shows the proposed mitigation measures required to ensure there is no direct harm posed to GCN during the construction phase of the scheme. **Figure 3** shows the footprint of the development and illustrates the compensation and management measures to be delivered as part of the scheme (detailed in Section 4).

3.2 Short-term Impacts - Disturbance

3.2.1 Without mitigation, the construction of the scheme will result in immediate disturbance to the existing semi-natural habitats on site, comprising improved grassland, tall ruderal and hedgerows. Any GCN present within these habitats will also be subject to disturbance and likely harm. These impacts would be significant at the local level given the assumed presence of GCN within the site.

3.2.2 During the construction phase (c 16 weeks) of the proposed development, there is a risk that GCN could be present on site and therefore could be disturbed, injured or killed.

3.3 Long-term Impacts – Site Modification

3.3.1 The proposed scheme will retain grassland beneath the solar panels, but the grassland will be significantly modified with beneficial impacts to GCN. The site will no longer be subject to an intensive grazing regime with sheep. Instead, it is intended that grazing will be significantly reduced to a short spell during the core growing season, with conservation livestock densities. Therefore, the long-term impact of site modification will be beneficial to GCN through the development of a more suitable grassland habitat covering ~7ha of the site.

3.3.2 Additionally, land lying to the north of Field 1A and Field 2 will be subject to habitat enhancement for GCN and other biodiversity interests (~1.3ha). These measures will include the creation of three shallow scrapes (~10m x 5m elliptical footprints), three soil bunds and

three grass cutting heaps. The area will then be subject to long-term conservation management, resulting in the long-term modification of the site, with a positive impact to GCN and other biodiversity interests.

3.4 Long-term Impacts – Site Loss

- 3.4.1 The proposed development will result in a small area of semi-natural habitat loss, where site access roads and new buildings (inverter, battery storage unit) will be installed. These areas account for ~0.05ha of habitat loss.

3.5 Long Term impacts - Fragmentation and Isolation

- 3.5.1 The site would become temporarily fragmented during construction, with grassland habitat subject to impacts from site vehicles and panel installation. However, long-term there would be no significant fragmentation impacts due to the retention of the majority of the grassland and reinforcement of existing boundary vegetation through planting. Additionally, all site boundaries (security fences) will be permeable to GCN.

3.6 Post Development Interference Impacts

- 3.6.1 Post-development, routine maintenance could disturb GCN, specifically by pond management and hedgerow cutting. However, both tasks would normally be carried out over the winter period to avoid nesting bird impacts. The grassland beneath the panels and in adjacent land to the north is to be subject to a very light grazing regime, thus interference impacts associated with this management prescription are likely to be very minor. The impact of any post-development interference is therefore considered to be negligible.

4 GCN MITIGATION STRATEGY

4.1 Capture and Exclusion

- 4.1.1 The GCN mitigation strategy is based upon the goal of excluding all GCN from the entire construction zone required to install the proposed scheme. To achieve that goal, a line of perimeter fencing will be installed, according to best practise standards, around the working area as shown on **Figure 2**. One internal drift fence will be installed within each field to assist trapping operations. Alternate pitfall traps and refugia will be installed every 10m along the inside of this fence line and will be used to capture GCN, and any other amphibian species, for a period of up to 60 consecutive days. Artificial refugia (carpet tiles or similar) will be laid in between pitfall traps and checked daily to improve trapping efficiency. Once the trapping period has been completed and no GCN are caught for a minimum of 5 consecutive days, the area will be deemed clear of GCN. Newt grids will be installed where site access roads cross perimeter fencing areas. Retained boundary corridors will be protected during the construction phase to ensure continued use by GCN and other amphibians.
- 4.1.2 All amphibians caught during the trapping effort will be translocated into the areas surrounding Ponds 1, 2 and 3 within the existing Wrexham Solar Park.
- 4.1.3 Once the construction zone has been cleared of GCN, the internal drift fencing will be removed under ecological supervision (outside of the hibernation period) and the perimeter fence will remain in situ for the duration of construction works.
- 4.1.5 All industry standard GCN trapping protocols as described in the GCN Mitigation Guidelines will be fully adhered to. These include the checking of traps by GCN licenced ecologists or accredited agents, trapping only during suitable weather conditions and ensuring that the traps are set-up to provide shelter for amphibians and a means of egress for small mammals.

4.2 Receptor Site

- 4.2.1 GCN and other amphibian captures will be moved to the terrestrial habitat immediately surrounding Ponds 1, 2 or 3, which have been specifically designed to provide suitable GCN habitat. These areas will sit outside of the GCN exclusion fencing and will therefore prevent returns to the site until all construction works have been completed.
- 4.2.2 Ponds 1, 2 and 3 sit within the existing solar park, which lies outside of the red line application site boundary and in separate ownership to the applicant. However, permission has been granted by the landowner for the applicant to use these ponds as receptor sites for the translocation of GCN from the working area. A copy of the grant of permission is provided in **Appendix B**.

4.3 Enhancements, Monitoring, Management and Maintenance

- 4.3.1 **Figure 3** illustrates the proposed enhancement, management and monitoring measures associated with the scheme. These include:
- Field 1A; a small area of native scrub planting in the eastern boundary and a hibernacula.
 - Field 1B; creation of a new pond and adjacent soil bund within a fenced area, a swale for water attenuation along the southern boundary, a shallow ditch running northwards across the field

- to connect the swale to an existing drainage network and a small length of translocated hedgerow. One hibernacula will also be provided.
 - Field 1C; a pond will be created at the southern end of the field in a fenced-off area together with two hibernacula and a vegetated soil bund. The eastern hedgerow will be subject to hedgerow planting to form a ~300m long and 1m wide corridor for improved habitat connectivity.
 - Field 2; no specific GCN enhancement measures are proposed.
 - Land North of Field 1A and Field 2; creation of three shallow scrapes, three soil bunds (using inverted turves taken from the scrapes), three grass cutting heaps and long-term conservation management of the area (two cuts per year or low-intensity grazing, to be confirmed).
- 4.3.2 The retained grassland habitat beneath the new solar panels will be managed specifically for GCN by reducing the grazing levels and thereby improving the structure and density of the sward. Sheep will be grazed at a density of 0.5 LSU/ha, (~3 sheep per ha) during June/July for a four-week period. The aim is to reduce the grassland to a sward height of ~150mm during this period, before allowing it to re-grow again towards the late summer and early autumn, so that it offers excellent over-wintering habitat and connectivity. It would also be possible to carry out grassland management mechanically if required, with a single cut (and collection) to 150mm during the June/July period. Additionally, the western edge of Fields 1B and 1C will be allowed to establish a thick and dense vegetation sward, to facilitate direct connectivity between the two newly created ponds.
- 4.3.3 The retained and newly created habitats within the red-line boundary will be subject to a Habitat Management Plan (HMP) for the operational period of the site (anticipation to be 40 years). A HMP has been drafted and included within the planning submission (Etive Ecology, 2022). The HMP includes annual maintenance and management of the new ponds, the hibernaculum, scrapes and the areas of enhancement planting. Management of these habitats and features is targeted at creating high quality breeding, foraging, dispersal and sheltering opportunities for GCN and other amphibians.
- 4.3.4 As part of the licencing requirements, there will be a schedule of monitoring to assess the GCN population across the site and the efficacy of habitat enhancement and management works. In accordance with NRW's requirements, monitoring will extend for the operational life of the solar park, anticipated to be 40 years. Annual GCN presence/absence surveys will be undertaken for the first three years post-development, and then every two years thereafter. The survey effort will comprise two torch surveys carried out during the period mid-March to mid-June by a suitably licensed ecologist. Habitat Suitability Index (HSI) assessments will also be undertaken of the pond. A review of the habitat enhancements will also be undertaken during these visits and any necessary alterations to the management regime will be made.

4.4 Timing of Works

- 4.4.1 Table 4.4.1 below gives an indication of the likely programme of works for the GCN mitigation, construction and post-development monitoring.

Table 4.4.1 Outline Programme of Works

Year	Activity	Responsibility
2022	Installation of GCN fencing and pitfall traps on site, including creation of newt friendly vehicle access point with newt grids.	Suitably experienced GCN fencing contractor.

Year	Activity	Responsibility
	60 days pitfall trapping. GCN License Report submitted to NRW.	GCN-licenced ecologist.
	Removal of internal drift fencing under ecological supervision.	Suitably experienced GCN fencing contractor.
	Construction Phase. Habitat creation and landscaping within GCN fencing.	Principal Contractor. Suitable landscape contractor.
2023	Removal of GCN fencing under ecological supervision. GCN License Report submitted to NRW.	Suitably experienced GCN fencing contractor. GCN-licensed Ecologist.
	2 x GCN monitoring surveys & habitat assessment.	GCN-licenced ecologist.
	GCN Licence Report submitted to NRW.	GCN-licenced ecologist.

5 THE “THREE TESTS”

5.1 The NEED

- 5.1.1 In 2016, the UK signed the Paris Agreement, which is a global agreement between nations to reduce global warming, specifically to keep the increase in global temperature to below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5°C. The UK is committed to a target of net-zero carbon emissions by 2050. In Wales, the Environment Act has set a target of 70% of the country’s electricity consumption to be from renewable energy by 2030. Wrexham Borough Council declared a Climate Emergency in September 2019.
- 5.1.2 This development can therefore contribute to meeting the National Grid’s renewable energy needs of producing green electricity and reducing reliance on fossil fuels which produce harmful greenhouse gases. Solar Technology is a proven source of safe, locally produced and sustainable power.

5.2 No SUITABLE ALTERNATIVE

- 5.2.1 There is capacity within the National Grid network in the vicinity of the site and the applicant has secured the use of an existing Point of Connection into the National Grid which has been the driving force behind the selection of this site for a solar farm.
- 5.2.2 The “Do Nothing” scenario would pose no adverse impacts to GCN but would make no contribution to meeting the NEED for the creation of additional renewable energy production within an existing industrial setting.

5.3 No Impact on FAVOURABLE CONSERVATION STATUS

- 5.3.1 The proposed development has been identified as posing a potential risk of disturbing, injuring and killing GCN during construction and operational activities. However, as a result of the mitigation and compensation measures proposed herein, all GCN will be removed from the working area, thereby avoiding harm during the construction phase. New habitat will be created, including two ponds, three new scrapes, four hibernacula, 300m of new hedgerow, a water attenuation swale and a ditch. The existing grassland will be managed in such a way that it will provide suitable habitat for GCN. Terrestrial habitats will also be created, enhanced and managed in perpetuity for GCN.
- 5.3.2 These measures will ensure that there will be no loss of functionality GCN post-development and will ensure no significant long-term impacts on the GCN population at the site, local or county level. The proposed monitoring should demonstrate this strategy to be successful in ensuring no short to medium-term impacts on the species. As a result of these measures there should be an improvement in the Favourable Conservation Status (FCS) of the local GCN population, known to currently be in an unfavourable condition.

APPENDIX A

FIGURES

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FIGURE 1

IMPACTS

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Short Term Impacts

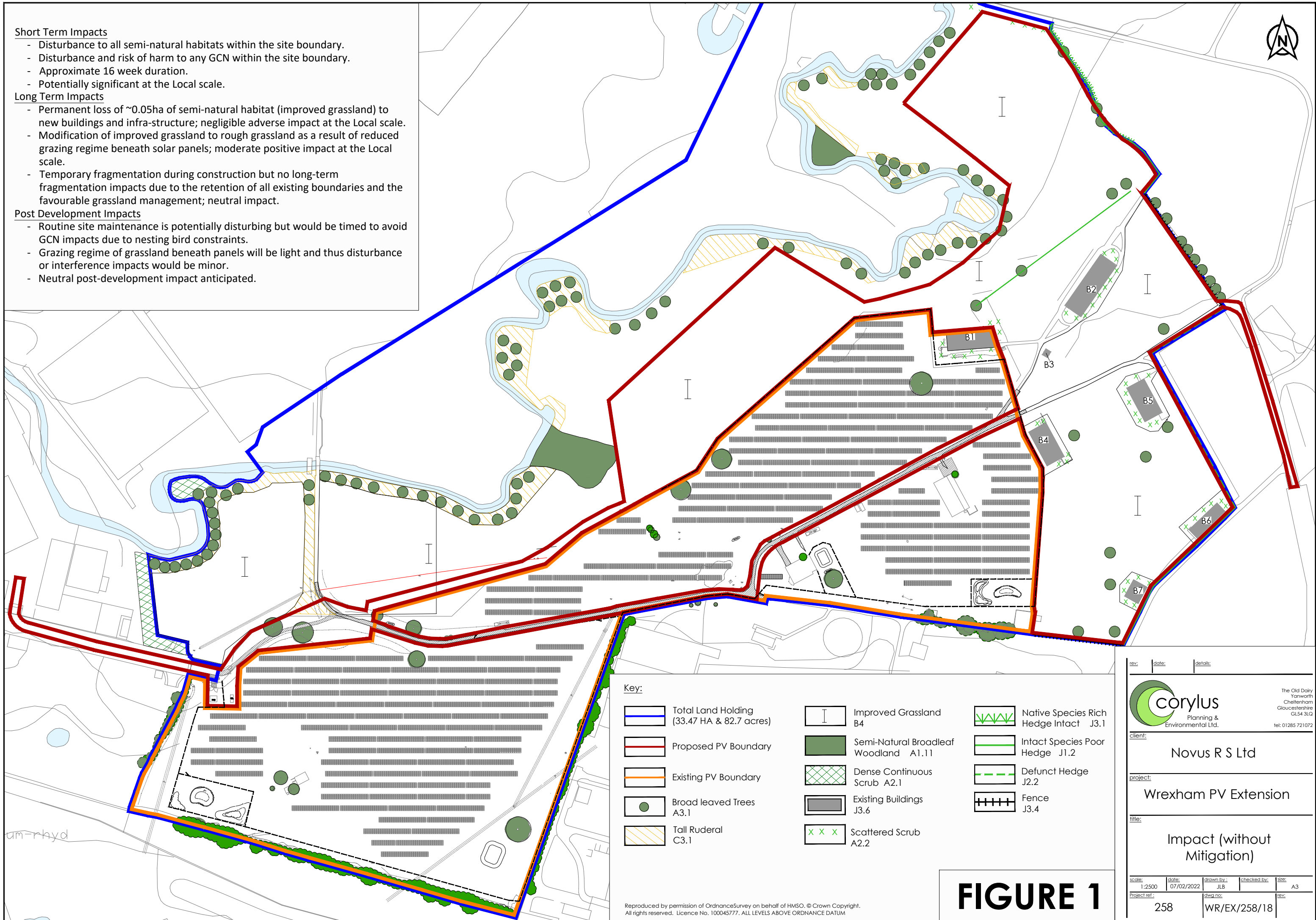
- Disturbance to all semi-natural habitats within the site boundary.
- Disturbance and risk of harm to any GCN within the site boundary.
- Approximate 16 week duration.
- Potentially significant at the Local scale.

Long Term Impacts

- Permanent loss of ~0.05ha of semi-natural habitat (improved grassland) to new buildings and infra-structure; negligible adverse impact at the Local scale.
- Modification of improved grassland to rough grassland as a result of reduced grazing regime beneath solar panels; moderate positive impact at the Local scale.
- Temporary fragmentation during construction but no long-term fragmentation impacts due to the retention of all existing boundaries and the favourable grassland management; neutral impact.

Post Development Impacts

- Routine site maintenance is potentially disturbing but would be timed to avoid GCN impacts due to nesting bird constraints.
- Grazing regime of grassland beneath panels will be light and thus disturbance or interference impacts would be minor.
- Neutral post-development impact anticipated.



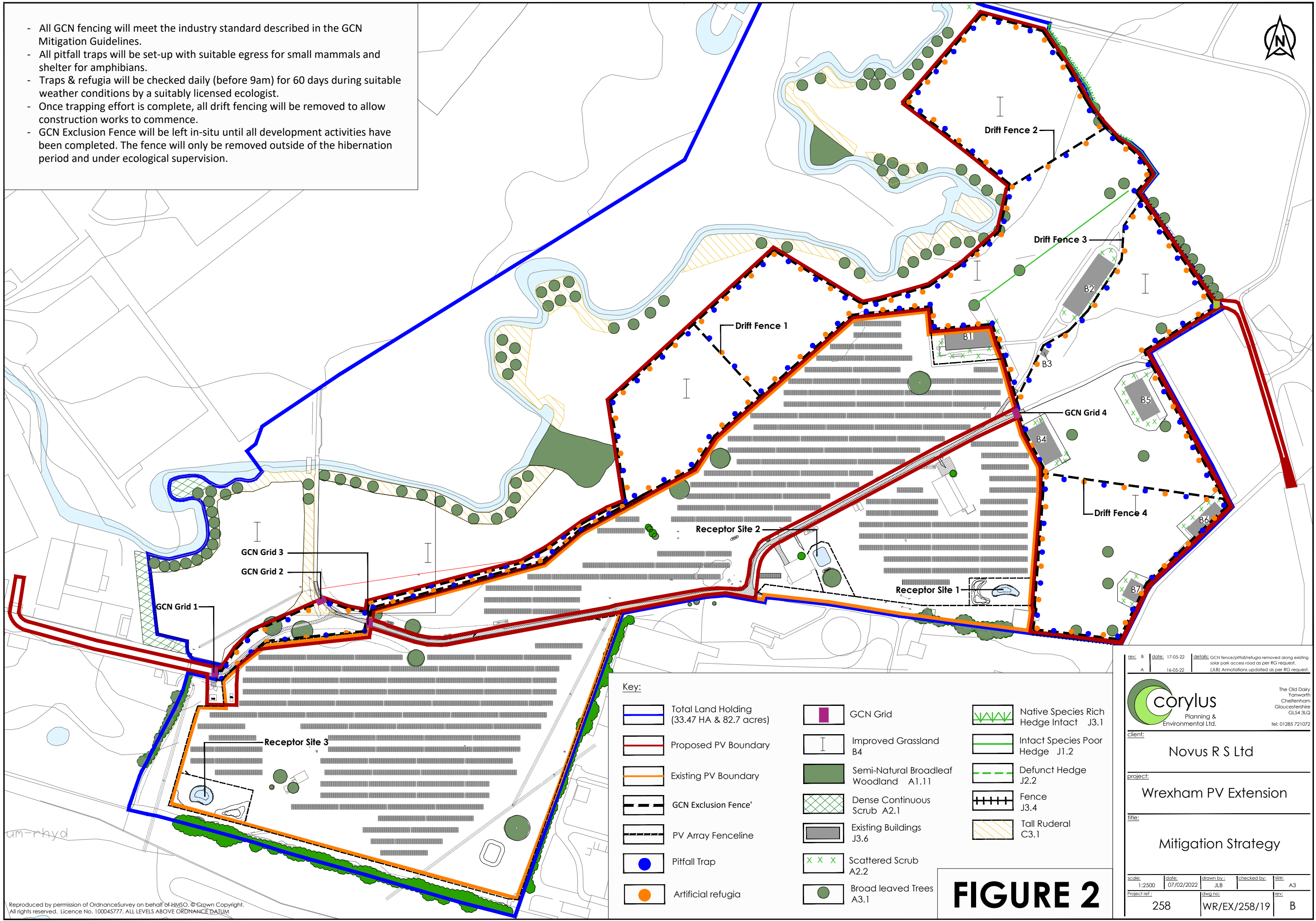
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rev:	date:	details:
 The Old Dairy Yarworth Cheltenham Gloucestershire GL54 3LQ tel: 01285 721072		
client:	Novus R S Ltd	
project:	Wrexham PV Extension	
title:	Impact (without Mitigation)	
scale:	date:	drawn by:
1:2500	07/02/2022	JLB
checked by:	size:	
	A3	
Project ref:	draw no:	rev:
258	WR/EX/258/18	

FIGURE 2
MITIGATION STRATEGY

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- All GCN fencing will meet the industry standard described in the GCN Mitigation Guidelines.
- All pitfall traps will be set-up with suitable egress for small mammals and shelter for amphibians.
- Traps & refugia will be checked daily (before 9am) for 60 days during suitable weather conditions by a suitably licensed ecologist.
- Once trapping effort is complete, all drift fencing will be removed to allow construction works to commence.
- GCN Exclusion Fence will be left in-situ until all development activities have been completed. The fence will only be removed outside of the hibernation period and under ecological supervision.



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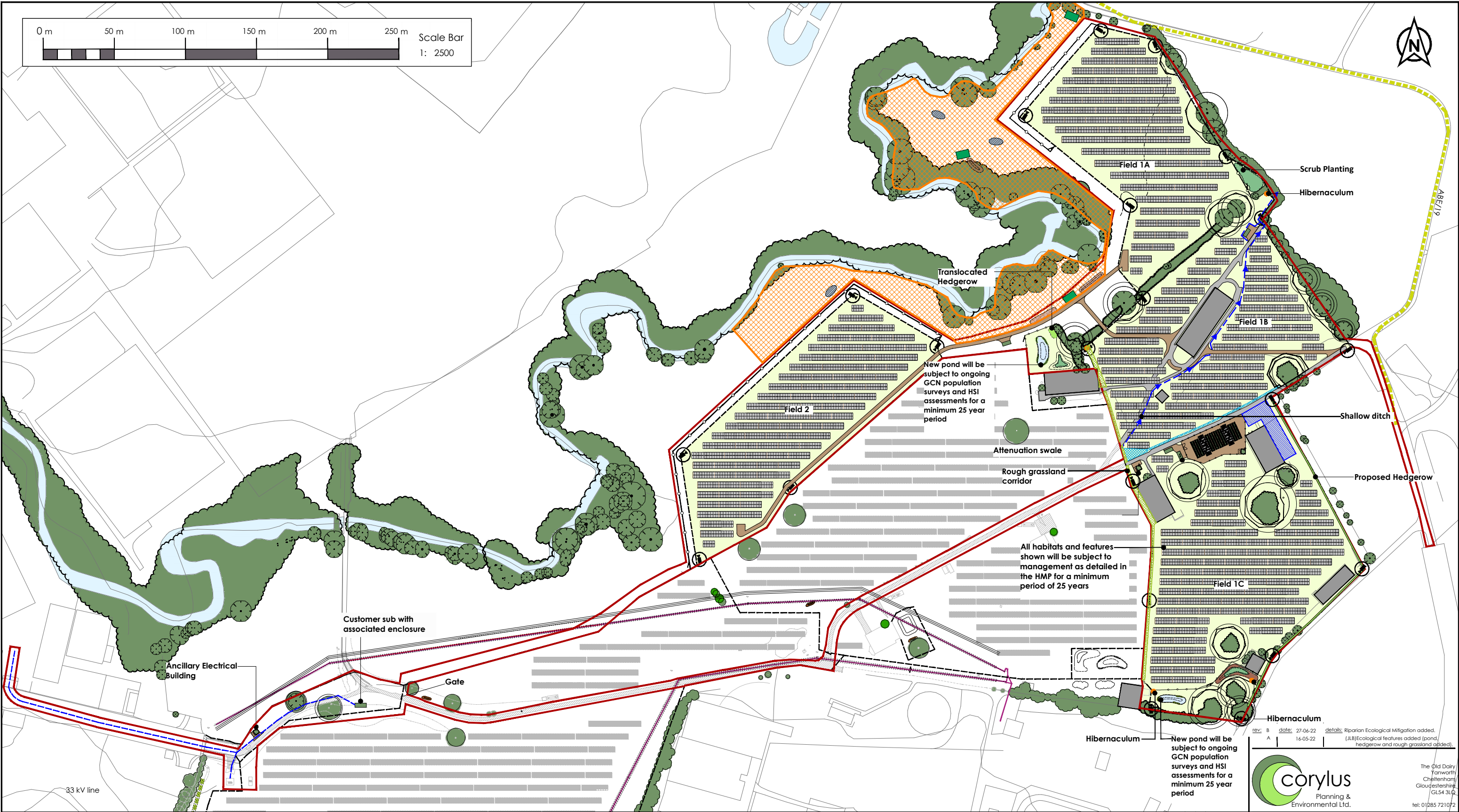
FIGURE 2

rev: 8	date: 17-05-22	details: GCN fence/pitfall/refugia removed along existing solar park access road as per RG request.	
A	16-05-22	(JLB) Annotations updated as per RG request.	
 The Old Dairy Yanworth Cheltenham Gloucestershire GL54 3LQ tel: 01285 721072			
client: Novus R S Ltd			
project: Wrexham PV Extension			
title: Mitigation Strategy			
scale: 1:2500	date: 07/02/2022	drawn by: JLB	checked by: JLB
project ref: 258	drawn no: WR/EX/258/19	rev: B	

FIGURE 3

ENHANCEMENTS, MANAGEMENT & MONITORING

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Key:

	Planning Application Boundary		Existing Hedgerow		Battery store		Proposed indigenous hedgerow
	Hibernaculum		Proposed Planting		Proposed Access Road		Proposed rough grassland strip
	Grassland to be managed: Low Density Grazing Regime, 4 weeks of sheep grazing at 0.5 LSU/ha		Public Right of Way		Existing site roads		Habitat Enhancement
	Cable route		Deer fencing		Soil Storage area		Inverted soils from scrape construction
	Shallow ditch		CCTV		Existing Building		Proposed shallow scrape
	Soil Bund		Attenuation Swale		Proposed Pond		Grass receptor Area

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FIGURE 3

client:	Novus R S Ltd			
project:	Solar Park to the north of Maelor Gasworks			
title:	Enhancements, Management & Monitoring			
scale:	1:2500	date:	07/02/22	drawn by:
Project ref:	258	dwg no:	WR-EX-258-20	rev:
				B

APPENDIX B

LANDOWNER CONSENT (RECEPTOR SITE)

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