



ETIVE ECOLOGY Ltd

Solar PV Scheme

Land at Borrass Hall, Wrexham

**Great Crested Newt Mitigation
Strategy**

Produced for:



December 2017

This page is intentionally blank

CONTENTS

1	INTRODUCTION	1
1.1	The Scheme	1
1.2	Previous Study	1
1.3	Scope of this Report	1
2	METHODOLOGY	2
2.1	Habitat Suitability Index	2
2.3	Limitations	3
3	RESULTS	4
3.1	Habitat Suitability Index	4
3.2	GCN Survey	5
4	GCN IMPACT ASSESSMENT	7
4.1	The Proposed Scheme	7
4.2	Value of the Site to GCN	7
4.3	Short-term Impacts - Disturbance	8
4.4	Long-term Impacts – Site Modification	8
4.5	Long-term Impacts – Site Loss	8
4.6	Long-term Impacts – Fragmentation / Isolation	8
4.7	Post-development Interference Impacts	8
4.8	Predicted Scale of Impacts	9
4.9	GCN Derogation Licence	9
5	GCN MITIGATION STRATEGY	10
5.1	Reasonable Avoidance Measures	10
5.2	Habitat Creation	10
5.3	Habitat Management & Monitoring	11
6	CONCLUSION	12

Quality Assessment Record

Report Version	Written by	Date	Reviewed by	Date
1.0	Russell Grey	18 December 2017	Maddy Warriner	18 December 2017

1 INTRODUCTION

1.1 The Scheme

- 1.1.1 Etive Ecology Ltd was commissioned by Caulmert Ltd on behalf of the applicant to develop a mitigation strategy in relation to great crested newts (GCN) and the installation of the consented solar PV scheme on land at Borras Hall, Wrexham. The location of the scheme is centred on National Grid Reference SJ 3679 5292.
- 1.1.2 The scheme was granted planning permission in March 2016 (planning reference; HOL P/2015/0777). Planning Condition 6 relates to the requirement for a GCN Licence to be obtained prior to the commencement of any works on site. Planning Condition 7 relates to the provision of an amended Ecological Assessment demonstrating protection, mitigation and compensation measures to be provided in relation to GCN. This document has been produced to accompany a Section 73 application, to remove Condition no.6 and to amend Condition no.7. If successful, this document will then be used as the method statement for installation of the scheme with regards to GCN mitigation, in line with the requirements of Condition no.7.

1.2 Previous Study

- 1.2.1 An extended Phase 1 Habitat Survey of the site was undertaken in July 2015 which found no ponds or any other aquatic features within the site boundary and five ponds within 250m. The wider location within which the site is found (land to the east of Wrexham) is renowned as a key site within Wales for GCN. Records were also identified of GCN within 1km of the site within the last decade. The terrestrial habitats present on site were found to be of low value to GCN and the scheme was considered likely to pose no significant adverse impact on the Favourable Conservation Status of the local GCN population.
- 1.2.2 During the planning process, Natural Resources Wales (NRW) were consulted on the proposals and raised concerns regarding the potential impacts on GCN during the installation of the scheme. NRW recommended that, given the presence of important GCN populations nearby to the site, a licence be obtained for the scheme before any works commenced. This was subsequently inserted as Planning Condition 6, prior to the undertaking of any survey work to confirm the presence/absence of GCN in proximity to the site.
- 1.2.3 GCN surveys were subsequently undertaken in 2016 on seven of the ten ponds identified within 500m of the site boundary, as requested by NRW. GCN were found to be present in two of these ponds, both of which were on the edge of the 500m survey radius and on the opposite side of likely barriers to GCN movement towards the solar site.

1.3 Scope of this Report

- 1.3.1 The report provides a summary of the 2016 survey findings, based on the recommended survey methods found in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001).
- 1.3.2 An impact assessment is provided in **Section 4**, 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 5** 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 The conclusion to this document is provided in **Section 6**.

2 METHODOLOGY

2.1 Habitat Suitability Index

2.1.1 The Habitat Suitability Index (HSI) is a ten score system used to rapidly assess the suitability of ponds for GCN based on ten environmental parameters that can be scored objectively. The criteria include pond size, water quality, pond shading and the area of suitable adjacent terrestrial habitat (Oldham et al, 2000).

2.1.2 The HSI was used to score all ponds within 500m of the solar site in 2016 to determine their relative suitability for the species and whether to include in the survey effort. Other factors that were considered include habitat connectivity, barriers to GCN movements and sources of disturbance. The HSI results are presented herein.

2.2 GCN Surveys

2.2.1 GCN surveys were undertaken in full accordance with the guidance set out in the *GCN Mitigation Guidelines*. The recommended survey protocol is to undertake survey work to determine presence/absence (4 survey visits) and/or population estimate surveys (6 survey visits) during the period mid-March to mid-June. Half of all survey visits should be undertaken within the 'peak' breeding period of mid-April to mid-May. On each survey visits three techniques should be employed to show reasonable survey effort – the relevant techniques used are described below.

2.2.2 GCN surveys may only be undertaken by suitably licensed ecologists. Licenses are issued by Natural Resources Wales and recognise the surveyor's skills and experience in amphibian ecology and survey.

Bottle Trapping

2.2.3 Bottle-trapping involves the setting of funnel-traps made from plastic bottles around the pond margins. The traps are set approximately one every two metres of suitable habitat and are left overnight. The surveyor returns to site the following morning, retrieves the bottles, records all amphibians captured and releases them.

Egg Search

2.2.4 Egg searches are carried out by checking aquatic vegetation, both alive and dead, for GCN eggs. Newts wrap their eggs inside such vegetation and the relative whiteness of the egg is used to determine whether it is from a GCN or a smooth or palmate newt. When GCN breeding has been confirmed, the egg search should cease for that pond to avoid unnecessary disturbance and impacts to breeding success.

Torch Survey

- 2.2.5 The torch survey involves the use of a high-powered torch (500,000 to 1,000,000 candle-power) to detect amphibians activity during darkness. The torch is used to systematically search the pond margins – and deeper areas where it is appropriate and feasible to do so – for amphibians. Counts of species and gender of all amphibians observed should be recorded.

2.3 Limitations

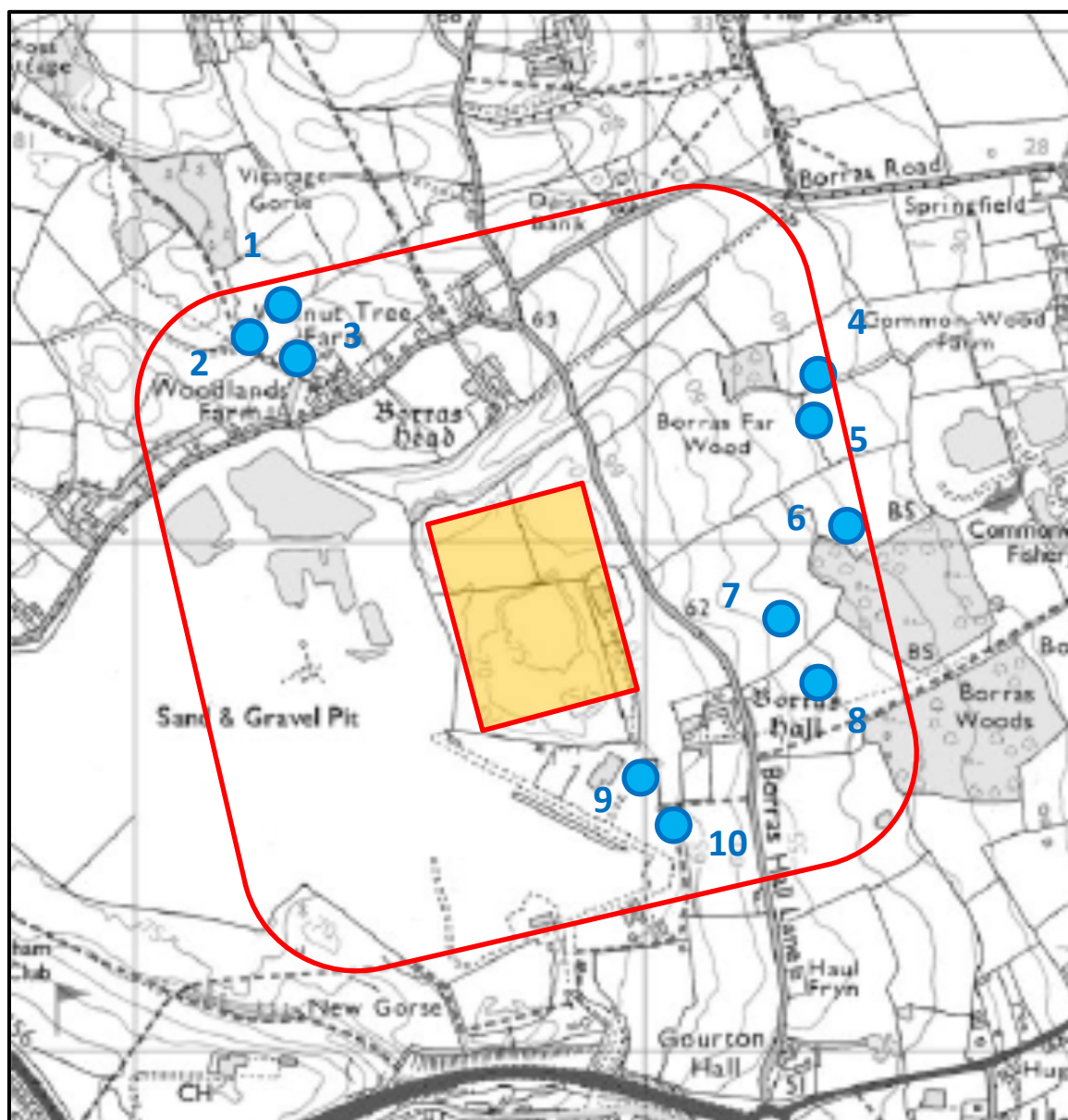
- 2.3.1 Access could not be agreed for Pond 3 until mid-way through the survey effort, meaning that only 4 survey visits were made to this pond. Pond 3 could only be accessed via its northern end, and due to sections of overgrown vegetation only ~50% of the pond could be accessed for the GCN surveys. However, the survey effort still managed to confirm the presence of GCN, but may be considered an under-estimate of the true population present at the time.
- 2.3.2 Pond 7 could only be accessed at its northern end, and due to dense bramble on the banks, only ~20% of the pond could be accessed for survey. However, the remaining 75% of the pond margins were dominated by bramble and hawthorn scrub, with no marginal vegetation and therefore largely unsuitable to support GCN. The HSI score for this pond was also poor.
- 2.3.3 Despite these constraints, overall it is considered that the GCN surveys carried out on ponds within 500m of the Borras Hall solar site were fit for purpose. The survey findings provide a clear and reliable picture of the current status of Great Crested Newt in the study area.

3 RESULTS

3.1 Habitat Suitability Index

- 3.1.1 A total of 10 No. water-bodies are shown on Plate 3.1.1 below. Ponds 2 – 8 were included in the 2016 GCN surveys. Pond 1 is no longer present whilst Ponds 9 and 10 were ruled out on the basis of low HSI scores, as seen below. The various large water-bodies present within the adjacent sand and gravel extraction works are operational lagoons, used to wash out extracted material on a frequent basis and therefore certainly not suitable as either breeding or even foraging habitat for any species of amphibian.

Plate 3.1.1 Ponds <500m of Solar PV Site at Borras Hall



3.1.2 The findings of the HSI assessments are presented in Table 3.1.2 below.

Table 3.1.2 HSI Assessment Summary

Pond	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	HSI
1	No longer present										
2	1	0.4	0.9	0.67	1	0.67	0.67	1	0.67	0.5	0.71
3	1	0.6	0.9	1	0.8	1	0.67	1	0.67	0.7	0.82
4	1	0.2	0.9	0.33	1	1	0.01	1	0.33	0.3	0.38
5	1	0.2	1	0.67	0.2	1	1	1	0.67	0.4	0.61
6	1	0.4	0.9	0.67	0.8	0.67	0.01	1	0.67	0.3	0.44
7	1	0.4	0.9	0.33	1	0.67	0.67	1	0.33	0.3	0.59
8	1	0.6	0.9	0.33	1	0.01	0.67	1	0.33	0.3	0.40
9	1	0.05	0.5	0.33	1	1	1	0.9	0.01	0.3	0.34
10	1	0.05	0.5	0.33	1	1	1	0.9	0.01	0.3	0.34

3.1.3 Pond 3 was found to offer *excellent* quality habitat for GCN. Pond 2 offers *good* quality habitat and Pond 5 offers *average* quality habitat. Pond 7 offers *below average* quality habitat and the remaining ponds were all considered to offer *poor* quality habitat. The key reasons behind poor HSI scores were the small size of ponds, impacts from waterfowl, presence of coarse fish and poor terrestrial habitat.

3.1.4 On the basis of the HSI scores for Ponds 9 and 10, it was decided that the habitat is so poor that GCN absence could be presumed. Although Ponds 4, 6 and 8 were also assessed to be of poor quality habitat, they were adjacent to higher quality ponds so were easily included within the survey effort.

3.2 GCN Survey

3.2.1 The GCN survey effort was undertaken by Russell Grey, an NRW licensed GCN surveyor with many years' experience in undertaking GCN surveys. Russell has also worked on numerous mitigation and translocation schemes and has a good understanding of the species' ecology, habitat preference and usage.

3.2.2 All surveys were undertaken under suitable weather conditions for GCN activity. Details of survey conditions are detailed in Table 3.2.1 below.

Table 3.2.1 Weather Conditions during surveys

Survey No.	Date	Conditions
1	05/04/16 – 06/04/16	Occasional light rain. Air temp 6°C.
2	13/04/16 – 14/04/16	Dry. Air temp 8°C.
3	20/04/16 – 21/04/16	Dry. Air temp 5°C.
4	27/04/16 – 28/04/16	Clear and still. Air temp 5°C.
5	11/05/16 – 12/05/16	Dry and mild. Air temp 12°C.
6	19/05/16 – 20/05/16	Dry. Air temp 6°C.

3.2.3 The results of the six GCN surveys are summarised in Table 3.2.3 below.

Table 3.2.3 GCN Survey Results

Pond No.	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Peak Count
2	No Access	No Access	-	-	-	-	-
3	No Access	No Access	16 x ♂, 8 x ♀ (Bottles) 4 x ♂, 2 x ♀ (Torch)	12 x ♂, 6 x ♀ (Bottles) 4 x ♂, 3 x ♀ (Torch)	13 x ♂, 7 x ♀ (Bottles) 1 x ♂, 2 x ♀ (Torch)	5 x ♂, 2 x ♀ (Bottles) 2 x ♂ (Torch)	24
4	-	-	-	-	-	-	-
5	-	-	-	-	1 x ♂ (Bottles)	-	1
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-
Peak Count	-	-	24	-	21	-	

3.2.4 GCN eggs were found in Pond 3 only.

3.2.5 It is very difficult to establish the true size of a GCN population, without extensive survey and capture effort. Survey techniques such as bottle-trapping and torching have been shown to identify between 2% and 30% of an actual population. However, an approximation of a populations' size is useful in determining the necessary mitigation effort and other licensing requirements. The following three size classes are broadly recognised:

- Small (maximum count of up to 10)
- Medium (maximum counts between 11 and 100)
- Large (maximum counts for over 100)

3.2.6 Therefore, using the peak counts shown in Table 3.2.2, the size class population for Pond 3 is Medium and for Pond 5 is Small. These two ponds are not considered to be connected due to the distance between them (950m) and the poor connecting habitat (large arable fields, with narrow boundary hedgerows), as well as two country lanes. Therefore these are considered to be two separate populations, with no inter-change of GCN at the current time.

3.2.7 It should also be noted that other amphibians were recorded during the survey effort. These are shown in Table 3.2.3 below.

Table 3.2.3 Other Amphibians (Peak counts per pond)

Pond	Smooth Newt	Common Frog	Common Toad
2	8	1	-
3	18	2	-
4	-	-	-
5	6	1	-
6	-	-	5
7	-	-	-
8	2	-	1

3.2.8 Overall, the survey data indicates two separate GCN populations within 500 of the Borras Hall solar site; a Medium population in Pond 3 and a Small population in Pond 5. GCN are also confirmed to be breeding in Pond 3.

4 GCN IMPACT ASSESSMENT

4.1 The Proposed Scheme

4.1.1 The approved scheme will include the following components and activities:

- Use of the existing site access in the site's eastern boundary, comprising a double width gate and an existing farm vehicle track. Use of existing field gates and openings to move between the three fields.
- A permanent crushed-stone track will be installed along the eastern and northern edges of the site for future site maintenance. A temporary compound area will also be located at the site entrance.
- The installation of seven inverter/transformer kiosks around the periphery of the site, each approximately 6m x 2.5m in footprint. Installation of one control room and two DNO switch rooms.
- The installation of solar panels in rows across the site, using numerous vehicles and occasional heavy plant to lift, carry and insert the panels into the ground. Solar panels will stand on 2m tall metal rods, driven into the ground at each corner of the panel. The installation of the panels is therefore relatively quick and simple, requiring only a tracked machine towing a pile rig to install the panels.
- The laying of electrical cables in shallow trenches (~500mm deep) across the site, to connect panels, kiosks and other infrastructure.
- There will be a 7m wide hedgerow buffer where no development works will take place and which will be left un-grazed during the operational phase and used only for occasional vehicle access. There will then be a security fence and a further 5m wide gap before the start of the solar panels

4.1.2 The layout of the approved scheme is shown in **Figure 1**.

4.1.3 A number of additional measures are identified herein which are designed to add conservation value to the scheme; primarily for the benefit of GCN. These measures include the creation of a new pond located in the northwest corner of the site. This pond will be ~200m² in footprint and will be surrounded by an area of land seeded to generate a rough grassland sward of high foraging value to GCN. All hedgerows will be subject to protection, enhancement and management measures to deliver further biodiversity gains.

4.1.4 **Figure 2** shows the footprint of the development and illustrates the enhancement and management measures to be delivered as part of the scheme (detailed in Section 5).

4.2 Value of the Site to GCN

4.2.1 The site offers no breeding habitat for GCN and is located 430m from the nearest known breeding site. The majority of any given GCN population will be found within 250m of a breeding site. Juvenile animals are those most likely to disperse further than this distance. It is therefore reasonable to consider that the most likely GCN to be found on site are dispersing juveniles.

4.2.2 The terrestrial habitat on site comprises 7.8ha of arable land used to grow cereal crops, 8.8ha of improved grassland pasture used to support cattle and 515m of hedgerow which divides the three fields on site. The arable and the improved grassland are both subject to

high levels of disturbance (ploughing, harvesting, grazing) and offer low densities of insect prey and poor ground cover for shelter. It is therefore highly unlikely that GCN would actively or purposefully utilise these habitats. The hedgerow corridors are protected by stock-fencing and, although only 1m wide, do offer ground cover and some protection for foraging and sheltering GCN. It is concluded that any GCN using the site would be found within these hedgerow bottoms.

4.3 Short-term Impacts - Disturbance

- 4.3.1 As discussed above, the risk of GCN being present within the working area (i.e. excluding the existing hedgerow corridors) is negligible. Therefore there is also considered to be a **negligible risk of GCN being subject to disturbance or caused any harm** during the installation of the scheme.

4.4 Long-term Impacts – Site Modification

- 4.4.1 All habitats falling within the footprint of the proposed scheme will be retained post-installation. **There will be no loss of any semi-natural habitats to the scheme.** The southern field will be modified in a positive change for biodiversity value. This field will change from a heavily improved grassland pasture to a rough semi-improved grassland pasture, as a result of reduced grazing pressure. The two northern field will also be modified in a positive change; from arable land to rough semi-improved grassland pasture. These represent **positive impacts at the local scale.**
- 4.4.2 None of the hedgerows will be subject to any direct impacts, therefore there will be no loss of change to any of the existing potential foraging and dispersal corridors.
- 4.4.3 The inclusion of a **new pond will pose a positive modification to the value and potential usage of the site by GCN.** This pond will add the potential for the GCN to breed on site, which would improve the range of the species at the local level.

4.5 Long-term Impacts – Site Loss

- 4.5.1 There will be no permanent loss of any semi-natural habitats on site.

4.6 Long-term Impacts – Fragmentation / Isolation

- 4.6.1 The scheme will pose no adverse impacts on any of the existing hedgerows or habitat corridors that currently surround the site. Furthermore, there is anticipated to be a positive impact on the dispersal of GCN and their local connectivity as a result of the scheme. The solar development will ensure the long term protection of existing hedgerows and will widen their undisturbed width by another 7m. The whole site will also be subjected to a lesser degree of disturbance than currently and it is likely that the grassland body of the site will also be suitable for GCN dispersal. There will also be a new pond created, which in time may support GCN (if indeed they do disperse towards the site) and therefore will assist in the spread of the species locally. Thus **the likely impacts on ‘fragmentation / isolation’ are positive at a local scale.**

4.7 Post-development Interference Impacts

- 4.7.1 Post-development, the site will experience lower level of disturbance than the existing level of disturbance caused by frequent agricultural and pastoral activities. Once installed, there

will be minimal maintenance requirements, all of which would be focused on the various kiosks scattered around the site. The main body of the site will be grazed, but no cattle will be able to graze beneath the panels and a low density of grazing animals will be stipulated, in order to ensure there is a conservation benefit. Overall, **the post-development impacts will be positive at the local scale.**

4.8 Predicted Scale of Impacts

- 4.8.1 At the local level, the magnitude of the anticipated impacts on GCN, without any mitigation works, are anticipated to be negligible. This is because there is such a low risk of a) GCN being present on site and b) any such GCN being found outwith the hedgerow corridors – which will not be impacted.
- 4.8.2 At all levels greater than local, the impact on the GCN population would also be negligible. It is not anticipated that any GCN would be directly impacted by the installation of the permitted scheme. Therefore there would be no impact on the wider meta-population associated with this area outside of Wrexham. Even considering the loss of <5 individual GCN as a result of the scheme, this could not be considered to pose a significant impact on the Favourable Conservation Status of the species locally.
- 4.8.3 It is acknowledged that the GCN meta-population located to the east of Wrexham is considered by NRW to be of national importance. It is also acknowledged that the population is in an unfavourable condition. However, this scheme does not pose a risk of further reducing the status of this population. Instead, it provides an opportunity to safeguard 16ha of terrestrial habitat and to create and secure a new breeding site for the species. It is considered that rather than posing an adverse impact, the scheme poses a minor positive impact in the medium to long-term for the local meta-population of GCN.

4.9 GCN Derogation Licence

- 4.9.1 GCN are legally protected under the *Conservation of Habitats and Species Regulations 2010* (the Habitat Regulations). These Regulations protect GCN from being captured, killed, injured or disturbed and protect their habitat (any breeding site or resting place) from being damaged or destroyed. Provision is made within the Habitats Directive for the derogation of this protection, providing certain conditions are met. This is delivered through a licensing process managed by NRW. To attain a license for an otherwise unlawful activity the applicant must satisfy three tests, relating to the need for the activity, the lack of any suitable alternative and the favourable conservation status (FCS) of the species.
- 4.9.2 The approved development of the site for a solar PV scheme has been identified by NRW as posing a significant risk of harm and disturbance to individual GCN during the installation phase. It has been the opinion of NRW that a derogation license will be required in order for the scheme to progress. However, in light of the impact assessment provided herein, it is the considered professional opinion of Etive Ecology Ltd that the scheme does not pose such significant impacts as to require a licence to be obtained. Furthermore, a scheme of Reasonable Avoidance Measures (RAMs) and a number of enhancements for GCN are proposed herein which would further strengthen the case for the scheme to proceed without the need for a European Protected Species licence.

5 GCN MITIGATION STRATEGY

5.1 Reasonable Avoidance Measures

5.1.1 The following Reasonable Avoidance Measures (RAMs) will be followed on site:

- Any excavations left overnight should either be back-filled and compacted or else covered by plastic sheeting and secured by plywood batons to prevent amphibians from becoming trapped within them.
- Pre-start checks of working areas should be undertaken each morning.
- All site workers should be made aware of the potential presence of GCN and an identification sheet should be kept on site in case any amphibians are encountered.
- Implementation of a 'Tidy Site' policy, ensuring all material are stored away every evening and that all brickwork, spoil, sand and other loose materials are stored off-ground overnight, e.g. on wooden pallets. This will ensure there are no suitable features for GCN to take refuge in or beneath.
- An ecologist should be retained in an 'On-call' capacity, so that if any GCN are encountered during the works, or if any of the above measures cannot be implemented then an ecologist is on hand to discuss and advise the best solution.

5.1.2 Prior to the start of any works on site, a phase of habitat manipulation will take place to ensure that all ground vegetation within the working area comprises a very short sward (<50mm) if not bare ground. This habitat manipulation may include the use of livestock to graze the site over a period of two weeks, or a series of cuts using an agricultural mower to reduce the sward height to the required level. This will help to deter any GCN from dispersing onto site by making it wholly unsuitable for them.

5.1.3 No seasonal or timing restrictions are considered to be necessary. This is because the risk of GCN being present is considered to be so low, that the time of year is unlikely to have any bearing on the level of such activity. There is no hibernation potential within the working area, so winter time would be ideal. However, as there are no breeding sites within 430m of the working area, the risk of GCN being present on site during the breeding season (March to June) is also very low. Therefore no preferred season for working is imposed.

5.2 Habitat Creation

5.2.1 A new pond will be created as part of the scheme, to provide genuine ecological enhancement to the site, in acknowledgement of the presence of GCN locally. The pond will be located in the northwest corner of the site, where no solar panels are permitted due to landscape impacts. The pond will cover a footprint of approximately 200m² and will be of an irregular 'figure of eight' shape. The pond will have shelved margins, with a maximum depth of 1.5m in two areas. The pond will also be lined to ensure it holds water throughout the spring/summer months and will be left to colonise naturally.

5.2.2 The area surrounding the pond will not be accessible to any livestock, therefore there will be no grazing or grazing impacts. This terrestrial habitat will be allowed to develop naturally, with grassland being created through seeding of the land within a minimum of 10m from the pond edge, and scrub being allowed to encroach from the surrounding boundaries.

- 5.2.3 A single GCN hibernacula will also be constructed adjacent to the pond, to provide a high quality place of shelter.

5.3 Habitat Management & Monitoring

- 5.3.1 The new pond will be subject to the following annual maintenance and management measures:

- Checks on the integrity of the pond lining and repair as necessary.
- Checks for any non-native invasive species and removal as necessary.
- Checks for the introduction of any fish and removal as necessary.
- Repair of any accidental damaged caused by livestock or machinery.
- Control and removal of any excessive aquatic vegetation. Aquatic vegetation cover should be not more than 50% of the ponds surface area.
- Remediation of any water quality issues.

- 5.3.2 The surrounding grassland will be subject to the following annual maintenance and management measures;

- A single annual cut, undertaken in July with sward height reduced to 150mm. All cuttings will be collected but may then be stockpiled on the edge of the grassland to form a single mound of grass cuttings.
- Checks for any non-native invasive species and removal as necessary.
- Control of scrub encroachment such that a minimum 10m wide area of grassland is maintained around the full perimeter of the pond.

- 5.3.3 The pond will be subject to GCN monitoring surveys 2 years after the end of installation of the solar PV scheme. This will allow a sufficient number of GCN sufficient time to find this pond and to potentially commence breeding. The pond will be subject to four survey visits, carried out during the period mid-March to mid-June.

- 5.3.4 All existing hedgerows will be subject to the following annual maintenance and management measures;

- A single annual cut to control the height of the hedgerows only.
- Hedgerow sides are to be allowed to grow to up to 2m wide, at which point they will also be managed by a single annual cut. The aim is to increase the ground cover provided by the hedgerow for GCN to move beneath.
- Hedgerow cuttings may be collected and used to recharge the hedge-bottom and to provide additional ground cover and shelter.

- 5.3.5 All of the above measures will be repeated annual for the duration of the operational life of the scheme.

- 5.3.6 During the operational phase of the scheme, the land beneath the solar panels may be used to graze sheep. To ensure that the grazing regime is suitable in order to deliver a high value sward for GCN and other biodiversity interests, the grazing density will be not more than 0.2 livestock units per hectare¹.

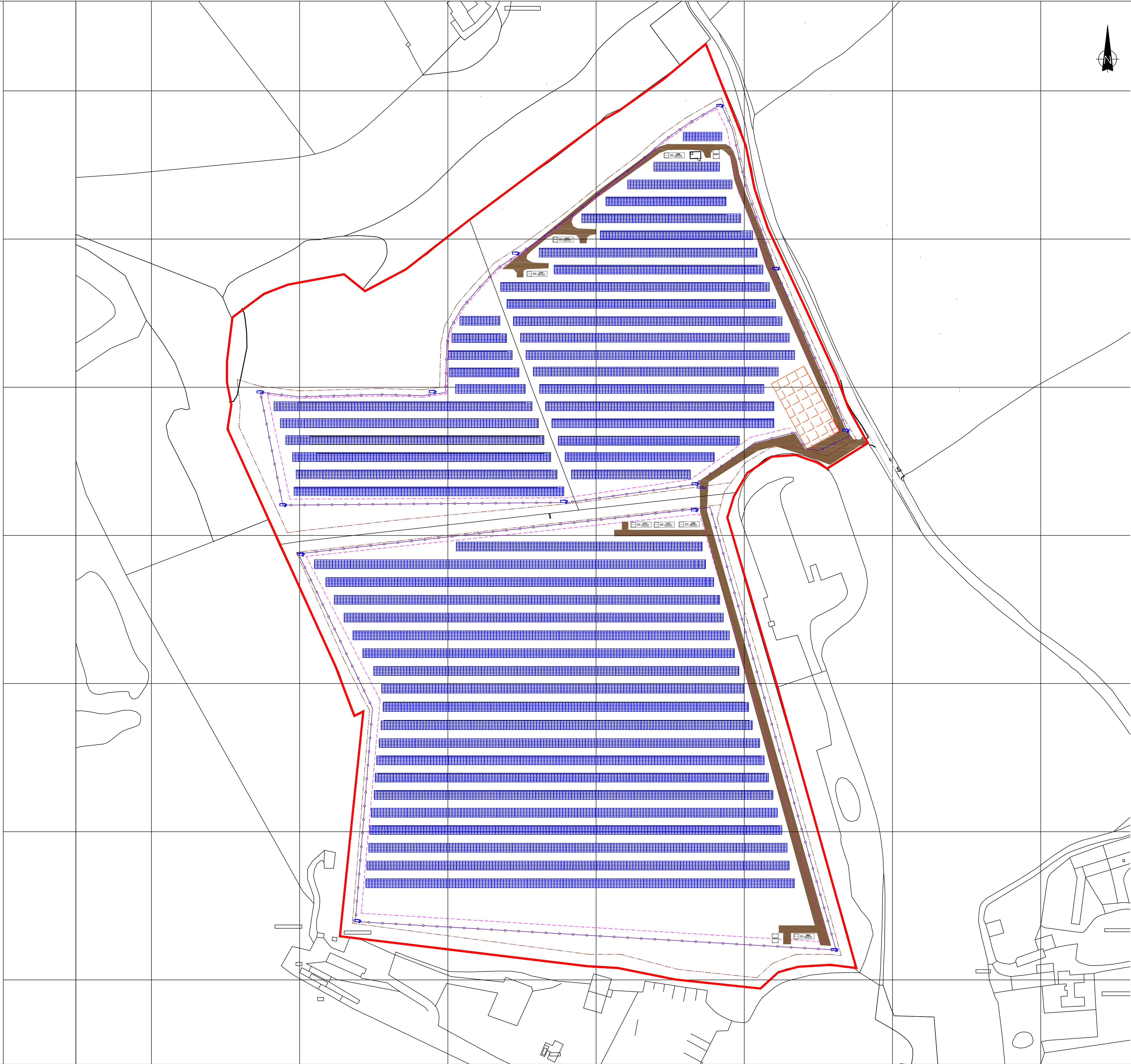
¹ 1 x sheep = 0.1 livestock unit

6 CONCLUSION

- 6.1 Planning permission was granted for the installation of a Solar PV Scheme on land at Borras Hall, Wrexham in March 2016 (HOL P/2015/0777). Condition no.6 of the permission stated that a GCN Licence must be obtained from NRW before construction of the scheme could commence. Condition no.7 stated that an updated Ecological Appraisal be submitted with details of GCN protection, mitigation and compensation measures.
- 6.2 GCN surveys were undertaken in April and May of 2016 to establish the presence, population size and distribution of GCN in relation to the site. Seven ponds within 500m of the site were included in the survey effort. GCN were found to be present in two of these ponds; Pond 3 located 430m to the north supported a small medium-sized population and Pond 5 located 450m to the east supported a small-sized population.
- 6.3 The development site comprises primarily of habitats of low value to GCN (arable and grazing pasture). The site is also a minimum of 430m from the closest GCN pond, meaning that the dispersal of any GCN onto the site is unlikely and it is highly unlikely that any significant number of GCN would be present on site. The only potential habitat on site for GCN is the 515m of hedgerow.
- 6.4 The installation of the scheme will comprise the use of a small number of heavy machinery to drive metal supports into the ground (upon which solar panels are bolted), to move panels and other materials around the site, to install cables in shallow trenches and construct a number of kiosks. All of these activities would take place within the low value habitats on site and are all considered to pose a negligible risk of harming or disturbing GCN – as GCN are highly unlikely to be found on site.
- 6.5 The scheme will pose no adverse impacts in terms of site modification, site loss, fragmentation/isolation or post-development interference. Instead, the solar scheme will provide positive impacts through the creation of semi-improved grassland beneath the panels and the removal of disturbance from agricultural practises, resulting in a higher quality habitat for GCN to utilise. The scheme will also provide a new pond and a new area of terrestrial habitat, solely for the benefit of GCN. The scheme also serves to protect the site, its hedgerows and its other habitats from any further development or disturbance for its operation lifetime.
- 6.6 To further ensure that no GCN are harmed during installation of the scheme, a series of Reasonable Avoidance Measures (RAMs) will be implemented. These include the covering or back-filling of all trenches left overnight, daily pre-start site checks, the operation of a 'tidy site' policy and the retention of an ecologist 'on-call'. Furthermore, a new pond will be created and a surrounding area of terrestrial habitat managed for the benefit of GCN.
- 6.7 In light of the impact assessment undertaken herein, it is judged that the solar scheme does not pose any significant impacts on the local population of GCN. Additional RAMs and enhancement measures have been included to ensure a net benefit to GCN. It is concluded that the scheme does not require a European Protected Species Licence to be obtained in order for it to be constructed.

FIGURE 1
APPROVED SITE LAYOUT

© COPYRIGHT CAULMERT LIMITED – NOT TO BE COPIED OR REPRODUCED IN ANY WAY OR FORM WITHOUT PRIOR WRITTEN CONSENT FROM CAULMERT LIMITED



- NOTES
- PLANNING APPLICATION BOUNDARY
 - SOLAR PV ARRAY
 - FENCE
 - 5m BUFFER ZONE FROM SECURITY FENCE
 - 7m BUFFER ZONE FROM HEDGEROW
 - INVERTER CABIN (REFER TO 2320.PLG.07)
 - DNO SWITCHROOM (REFER TO 2320.PLG.11)
 - CONTROL ROOM (REFER TO 2320.PLG.10)
 - MAINTENANCE TRACK
 - CCTV (REFER TO 2320.PLG.08)
 - TEMPORARY CONSTRUCTION COMPOUND (30x50)

A	SITE BOUNDARY AMENDED	RWG	JC	HJ	01.03.16
REV	MODIFICATIONS	BY	RE	AP	DATE

EARTHWORM ENERGY
PLC Ltd

BORRAS HALL PROPOSED
SOLAR PV ARRAY

PROPOSED SITE LAYOUT

DRAWN BY	RWG	DATE	01.03.2016
REVIEWED BY	JC	SCALE	1:1250
AUTHORISED BY	HJ	ISSUE	-
		REVISION	A

DRAWING NUMBER
2320.PLG.03

Caulmert
engineering environmental planning

Registered Office: Intec, Parc Menai, Bangor, Gwynedd, LL57 4FG Company Registered No: 06716319

WWW.CAULMERT.COM

CAD FILE REF: \\caulmert.local\cmcore\Files\CAD\Cad Projects\2320 Borrass Hall\Working Drawings\Preliminary Drawings\2320.PLG.03 A.dwg

FIGURE 2

ENHANCEMENT & MANAGEMENT MEASURES

KEY

- NEW POND
- H NEW HIBERNACULA
- ▨ ROUGH GRASSLAND
- EXISTING HEDGEROWS
- SOLAR SITE FENCELINE
- /// AREA OF UNGRAZED LAND

