



Habitat Management and Maintenance Plan

Wrexham Solar Park, Land off Tetrapak Road,
Wrexham, LL13 0UW

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Quality Assurance

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1 Introduction and Background

1.1 Introduction

- 1.1.1 This Habitat Management and Maintenance Plan has been produced to provide a methodology which will be followed to ensure the long-term management and maintenance of great crested newt habitats (existing and newly created) at Wrexham Solar Park.

1.2 Background

- 1.2.1 Planning permission (ref: P/2015/0463) was granted for installation of a solar park on the site in 2015 and a Natural Resources Wales (NRW) great crested newt mitigation licence was granted to permit the works (69975:OTH:EPS:2016). The requirement for the habitat management and mitigation strategy is secured by planning condition 9:

The development shall be carried out in strict accordance with the habitat mitigation, improvement, management and monitoring measures as detailed in the following approved documents: a) Habitat Management Plan compiled by Sarah Board BSc (Hons) of the Magnificent Science Company dated 10th – 14th October 2015. b) Method Statement for Great Crested Newt, Bats, European Badger and European Otter compiled by Sarah Board BSc (Hons) of the Magnificent Science Company dated 10th – 14th October 2015.

- 1.2.2 The solar park was subsequently installed without following the granted licence and implementing the habitat management and maintenance plan.
- 1.2.3 The completed solar park site has now been purchased by Wrexham Solar Park Ltd. and a new great crested newt licence is being applied for to provide retrospective compensation for great crested newts.
- 1.2.4 This Habitat Management and Maintenance Plan and the NRW licence method statement (Smart Ecology Ltd., 2019) will be provided to Wrexham County Borough Council as part of a Section 73 application to amend the conditions.

1.3 Existing Site Context

- 1.3.1 The site is approximately 11.5 ha and is located to the south-east of Wrexham Industrial Estate, approximately 2.5 km south-east of the outskirts of Wrexham.
- 1.3.2 The site comprises a solar PV array with poor semi-improved grassland beneath. The grassland is currently grazed by sheep. Although the poor semi-improved grassland only offers sub-optimal terrestrial habitat for great crested newts there are several tussocky areas which provide some potential foraging habitat.
- 1.3.3 There are several scattered broadleaved trees across the site and several derelict brick buildings in the eastern area of the site which were historically part of a munitions works from World War II. The roots of broadleaved trees and the derelict buildings provide opportunities for refuge and hibernation. There are several old mammal holes and stone piles with areas of tall ruderal on site which provide potential for refuge and hibernation for great crested newts.



Additionally, there are three hibernacula on site which were created in within the last three years (exact date unknown) and provide potential for refuge and hibernation.

- 1.3.4 A pond is located in the east of the site, which his was created in within the last three years (exact date unknown). The pond is rectangular in shape and approximately 12 x 8 m in size. It is located in a depression within the poor semi-improved grassland and surrounded by grass dominated banks.

1.4 On-site Great Crested Newt Habitats

- 1.4.1 Refer to the “Scope of Works for the Revised Newt Mitigation Scheme” document (Corylus Planning & Environmental Ltd., 2019) for full details of proposed new compensation habitats.
- 1.4.2 The compensation proposals comprise creation of the following habitats on the site to provide enhanced breeding, foraging, and refuge habitats for great crested newts:
- Creation of two new wildlife ponds surrounded by rough grassland. The ponds and surrounding rough grassland will be delimited by stock proof fencing.
 - Creation of a corridor of rough grassland along the southern site boundary.
 - Scrub planting on bunds.
 - Understorey shrub planting along the southern site boundary.
- 1.4.3 It is understood that these compensation measures will be in place by the end of November 2019.
- 1.4.4 The following existing habitats on the site with suitability for great crested newt will be retained:
- One pond.
 - Three hibernacula.
 - Hedgerows.



2 Aims and Objectives

2.1.1 The aims of this Habitat Management and Maintenance Plan are:

- To ensure successful establishment of aquatic and terrestrial great crested newt habitat.
- To manage these habitats so that they provide habitat of value to great crested newts.
- To secure long-term maintenance of these aquatic and terrestrial habitats.

2.1.2 These aims will be achieved by:

- Ensuring that ponds are managed and maintained so that they provide good quality foraging and breeding habitat for great crested newts.
- Maintaining hibernacula in a good state of repair so that they continue to provide refuge and hibernation habitat for great crested newts and creating new hibernaculum to replace any defunct hibernaculum if necessary.
- Maintaining and managing rough grassland to provide good quality foraging and dispersal habitat for great crested newts.
- Ensuring that fencing around ponds and refugia is maintained as stock proof to protect great crested newt habitat from damage and disturbance.
- Maintaining and managing scrub and shrub habitat to provide good quality foraging and dispersal habitat for great crested newts.



3 Habitat Management & Maintenance

3.1 Habitat to be Managed & Maintained

3.1.1 The management measures detailed in this Habitat Management and Maintenance Plan will be implemented to ensure maintenance of the following habitats:

- Three ponds.
- Rough grassland areas around ponds.
- Rough grassland along the southern site boundary.
- Three hibernacula.
- Scrub planting on bunds.
- Understorey shrub planting along the southern site boundary.

3.2 Responsibilities

3.2.1 The site will be managed in accordance with this Habitat Management and Maintenance Plan for its lifetime (i.e. until 2055). Wrexham Solar Park Ltd. will be responsible for the inspection, management and maintenance costs and arranging the required management and maintenance activities.

3.2.2 As part of the NRW licence the named ecologist or accredited agent will monitor development of the new habitats and implementation of the maintenance and management regime annually for the first six years after completion and then once every three years. Reports of the implementation will be submitted to NRW and any other relevant parties. The costs of monitoring will be the responsibility of Wrexham Solar Park Ltd

3.2.3 Wrexham Solar Park Ltd. will commission a new long-term management plan for the management and maintenance of great crested newt habitats in 2055, the year before the solar park will finish operations, or before if the solar park ceases to operate earlier. The agreed new management and maintenance plan will be submitted to NRW at this time.

3.3 Management & Maintenance Operations

3.3.1 The site will be inspected by the named ecologist or accredited agent once annually between April and September for the first six years after completion and then once every three years to ensure that habitats are being managed appropriately. Additionally, fencing around ponds will be inspected monthly by the client, and plant guards around new shrub and scrub planting will be checked monthly by the client until they are no longer required.

3.3.2 This will ensure that habitats remain suitable for use by great crested newts. The requirement for any remedial action will be reported to the Wrexham Solar Park Ltd. by the ecologist, and the Wrexham Solar Park Ltd. will be responsible for commissioning contractors to carry out the necessary remedial works.



Ponds

Aims

3.3.3 The aim for the management of ponds is to:

- Maintain good quality aquatic habitat for great crested newts in the long-term, with suitability for foraging and breeding.

Objectives

- Ensure the successful establishment of pond habitats.
- Ensure that the ponds are managed and maintained to provide aquatic suitable habitat for foraging and breeding by great crested newts in the long term.

Management & Maintenance Methodology

3.3.4 Ponds will be inspected by the named ecologist or accredited agent. The ecologist will provide feedback to the client on any necessary remedial works. The ecologist or accredited agent will check:

- Coverage of vegetation on the surface of ponds.
- Water levels to identify if pond linings have failed or desilting or remedial works are required.
- Evidence of high nutrient levels (e.g. increased algal growth, discolouration).
- Evidence of fish.
- Presence of litter.

Vegetation Coverage

Objective:

3.3.5 Ponds will be managed so that they are well vegetated with native species, but with open areas where male newts can display. Ponds will therefore be managed so that approximately 70 - 80% of the surface area is vegetated.

Management:

3.3.6 Where it is identified that marginal and emergent planting has not established and coverage of the surface of ponds is below 70 - 80% of the surface area, the ecologist or accredited agent will report to the client that new planting must be undertaken. Any new planting will utilise the following species:

- *Butinus umbellatus* (Flowering Rush)
- *Caltha palustris* (Marsh Marigold)
- *Carex acutiformis* (Lesser Pond Sedge)
- *Filipendula ulmaria* (Meadowsweet)
- *Iris pseudacorus* (Yellow Flag)
- *Myosotis scorpioides* (Water Forget-me-not)



- *Sagittaria saggitifolia* (Arrowhead)
- *Schoenoplectus lacustris* (Common Club Rush)
- *Sparganium erectum* (Branched Bur-Reed)
- *Veronica beccabunga* (Brooklime)

- 3.3.7 Where it is identified that vegetation cover within ponds exceeds approximately 70 - 80% of the surface the ecologist or accredited agent will report to the client that action is needed to reduce vegetation coverage.
- 3.3.8 The client will be responsible for commissioning contractors to remove excess vegetation. Vegetation removal will be carried out by cutting or pulling vegetation by hand only. If common reed and/or reedmace (bulrush) species become dominant, these will be preferentially targeted during vegetation removal. Vegetation removal will be carried out between October and January inclusive as this is when great crested newts are most likely to be absent from ponds, and so minimises the risk of causing harm or disturbance.
- 3.3.9 Any invasive species (e.g. Himalayan balsam) will be cut or pulled from the ponds.
- 3.3.10 Cut and pulled vegetation will be left on protective membrane by the edge of ponds for 48 hours before being removed from the site.

Water Levels

Objective:

- 3.3.11 Ponds will be managed so that they retain sufficient water, thereby continuing to function as suitable great crested newt habitat.

Management:

- 3.3.12 The named ecologist or accredited agent will check water levels in the ponds during monitoring inspections. If water levels fall below half a metre at the deepest point in two consecutive years, then the ecologist or accredited agent will report to the client that pond lining repairs or desilting must be carried out. The client will be responsible for commissioning contractors to carry out the desilting works.
- 3.3.13 If monitoring of the ponds for great crested newts (see Section 4) has shown that great crested newts are absent from the pond lining repairs and desilting can be undertaken at any time of the year. Desilting will be undertaken using a long-armed mini excavator. Ground protection will be utilised to reduce damage to marginal habitats. The top third of a metre of silt will be temporarily placed around the margins of the excavated pond, onto protective membrane. After a period of 48hrs, the protective membrane will be removed, and any arising removed.
- 3.3.14 If monitoring of the ponds for great crested newts (see Section 4) has shown that great crested newts are present in the pond, then lining repairs and desilting will be undertaken between October and January inclusive to minimise the risk of causing harm or disturbance to great crested newts. The same methodology for desilting as described above will be followed.



Water Quality

Objective:

- 3.3.15 Maintain good water quality in ponds so that the ponds continue to provide suitable habitat for great crested newts.

Management:

- 3.3.16 Water quality will be visually checked by the named ecologist or accredited agent during the monitoring inspections for any signs of nutrient enrichment (e.g. excessive algal growth and discolouration). If evidence of eutrophication is noted, the named ecologist or accredited agent will report to the client that remedial action must be implemented to reduce nutrient levels in the water, and provide advice on the necessary and appropriate measures required. The client will be responsible for commissioning contractors to carry out any necessary remedial works.
- 3.3.17 No fertilisers or pesticides will be used within the rough grassland around the ponds or in grazed grassland in proximity to the ponds.

Fish

Objective:

- 3.3.18 Avoid or control the presence of fish in ponds, as fish can predate great crested newt eggs, larvae, and plants used for egg laying, thereby negatively impacting the value of ponds as breeding habitat.

Management:

- 3.3.19 The named ecologist or accredited agent will check for signs of fish in ponds during the monitoring inspections.
- 3.3.20 Fish will not be introduced into ponds, and any fish identified during pond checks or works will be removed. If large numbers of predatory fish are noted, then the ecologist will provide advice to the client on whether remedial action such as pond draining is required to eliminate the fish. A licence will be sought if necessary.

Litter

Objective:

- 3.3.21 Ensure that ponds are free from litter.

Management:

- 3.3.22 The named ecologist or accredited agent will check for litter in ponds during the monitoring inspections.
- 3.3.23 Any litter present will be removed from the site between October and January inclusive when there is no risk that litter could be used for great crested newt egg laying.



Rough Grassland

Aims

3.3.24 The aim for the management of the grassland habitat around the ponds and along the southern site boundary is to:

- Maintain good quality terrestrial habitat for great crested newts in the long-term, providing opportunities for foraging, dispersal, and refuge.

Objectives

- Manage rough grassland habitat to maintain a species rich and structurally diverse habitat to benefit great crested newts by providing habitat for prey species and providing enhanced cover and shelter opportunities.
- Ensure the long-term maintenance of rough grassland habitat by preventing colonisation by scrub and trees.

Management & Maintenance Methodology

3.3.25 Rough grassland around ponds and along the southern site boundary will be cut once every three years.

3.3.26 Cutting will be carried out in September as this will permit plants to set seed and allow less competitive species to establish in the spring, thereby helping to maintain a diverse sward.

3.3.27 To minimise the potential for harming great crested newts the following careful working methods will be implemented when the grassland is cut:

- Where practicable, cutting will be carried out during warm/hot (above 18°C) and dry weather to minimise the likelihood that great crested newts would be present and active within the grassland.
- Cutting will be carried out using brush cutters to a minimum height of 150 mm i.e. the grassland will not be cut any lower than 150 mm in order to protect from harm any great crested newts that may be present.

3.3.28 Cut grass will be removed from the site to avoid nutrient enrichment, thereby encouraging the development of a diverse sward.

3.3.29 No fertilisers will be applied to the grassland. This will help to ensure that a diverse sward is maintained.

3.3.30 No pesticides or herbicides will be applied to the grassland. Any noxious weeds will be controlled by hand pulling only.

3.3.31 Grassland within 0.5 m around the hibernacula will not be cut, to avoid potentially damaging the hibernacula and harming great crested newts.



Hibernacula

Aims

3.3.32 The aim for the management of hibernacula on the site is to:

- Provide long-term refuge and hibernation habitat for great crested newts.

Objective

- Ensure the maintenance of hibernacula so that they continue to provide suitable refuge and hibernation habitat for great crested newts in the long-term.

Management & Maintenance Methodology

- 3.3.33 Hibernacula will be checked during monitoring inspections by the named ecologist or accredited agent to ensure they are in a good condition and still fit for purpose. If any repairs or replacement of hibernacula are required then the ecologist will report this to the client. The client will be responsible for commissioning contractors to carry out repairs/construct new hibernacula.
- 3.3.34 If the named ecologist or accredited agent identifies that repairs are necessary, these will be carried out between March and May inclusive. If extensive repairs are required which could potentially harm great crested newts then these works will be supervised by the named ecologist or accredited agent. Whether ecological supervision is required would be decided by the named ecologist or accredited agent.
- 3.3.35 Access points into the hibernacula will be maintained free of blockages.
- 3.3.36 Grassland within 0.5 m around the hibernacula will not be cut, to avoid potentially damaging the hibernacula and harming great crested newts.
- 3.3.37 If the structure of a hibernaculum degrades to the extent that it is no longer functional then a replacement hibernaculum will be created close to the existing hibernaculum. The existing hibernaculum would be left in-situ.

Scrub & Understorey Shrub Planting

Aims

- 3.3.38 The aim for the management of the scrub habitat planted on bunds and shrubs planted within the understory of the southern boundary hedgerow is to:
- Maintain good quality terrestrial habitat for great crested newts in the long-term, with suitability for foraging, dispersal, and refuge.

Objectives

- Ensure the successful establishment of planted scrub and shrub habitat.
- Manage scrub and shrub habitat to maintain a species-rich and structurally diverse habitat to benefit great crested newts by providing habitat comprising a range of scrub and shrub species for prey species and providing enhanced cover and shelter.



Management & Maintenance Methodology

- 3.3.39 Scrub and shrub planting will be checked by the named ecologist or accredited agent during monitoring inspections to check that shrub and scrub has successfully established and is being managed in accordance with the measures set out in the plan.
- 3.3.40 Additionally, shrub and scrub will be inspected every six months by the client to check for any mulching, watering, weeding, and plant protection requirements for the first five years or until the scrub/shrubs are established and these measures are no longer necessary.

Establishment

- 3.3.41 New scrub and shrub planting will be managed to ensure successful establishment. Management will include the following:
- **Mulching** - mulch will be applied to the base of plants once or twice a year (as required) to minimise weeds and retain soil moisture.
 - **Watering** - planting will be watered during dry periods as required to maintain soil moisture.
 - **Weeding** - the base of the vegetation will be weeded by hand or strimmed as required to reduce competition.
 - **Plant protection** - guards and canes will be inspected every six months by the client to ensure that guards aren't too tight and identify if any guards need replacement. Any remedial work carried out will be reported back to the named ecologist or accredited agent. Plant protection will also be inspected by the named ecologist or accredited agent during monitoring inspections and the need for remedial work reported to the client. Protection will be removed once the plants are sufficiently established (to be advised by the ecologist).
- 3.3.42 This management will be undertaken for the first five years, or until the ecologist or accredited agent is satisfied that the vegetation has successfully established.
- 3.3.43 Once the vegetation has started to establish it will be lightly trimmed between December and February until sufficiently established.
- 3.3.44 Any cut material will be used to create habitat piles within the areas of shrub and scrub.

Remediation

- 3.3.45 New planting will be monitored by the ecologist or accredited agent to ensure it successfully establishes, and any requirements for remediation works will be identified and feedback provided to the client. The client will be responsible for commissioning any required remedial works. In addition, the client will be responsible for ensuring that plant protection guards are regularly checked, and replaced by the client where necessary.
- 3.3.46 If any new planting fails replacement planting will be undertaken between October to March inclusive using the same native species.
- 3.3.47 If monitoring shows that planting is being significantly affected by any mammal browsing, then new protection measures will be advised by the monitoring ecologist.



Fencing

Aims

3.3.48 The aim for the maintenance of fencing around ponds is to:

- Ensure that ponds and rough grassland around ponds are protected from damage and disturbance from livestock.

Objective

- Ensure that fencing remains stock proof.

Management & Maintenance Methodology

3.3.49 Fencing will be inspected monthly by the client to ensure that it is stock proof. Any remedial work carried out will be reported back to the named ecologist or accredited agent.

3.3.50 Fencing will also be inspected by the named ecologist or accredited agent during monitoring inspections to check that it is stock proof and any damage will be reported to the client, who will be responsible for commissioning contractors to mend the fencing..



4 Monitoring and Review

4.1 Monitoring

- 4.1.1 A monitoring report will be provided by the ecologist or accredited agent to the client annually for the first six years of monitoring and every three years thereafter which will provide the results of the monitoring inspections and recommendations for any remedial works required.
- 4.1.2 With respect to monitoring habitat creation, great crested newt surveys of the ponds will be undertaken to inform future management policies. This will comprise two torch surveys annually for the first three years and then every two years thereafter between mid-March and June to monitor the great crested newt population.

4.2 Review

- 4.2.1 The Management and Maintenance Plan will be reviewed after each monitoring inspection has been carried out by the named ecologist or accredited agent. Therefore, review of the plan will be carried out annually by Wrexham Solar Park Ltd. for the first six years and then once every three years to ensure that the plan is meeting the management aims and objectives.



5 Maintenance Schedule

Activity	Years Required	Month of Activity											
		J	F	M	A	M	J	J	A	S	O	N	D
Great crested newt torch surveys undertaken between mid-March and June by a suitably qualified and licensed ecologist.	Annually for the first three years and then every two years thereafter												
Inspection by named ecologist or accredited agent between April and September.	Once annually for first six years, then once every three years thereafter.												
Ponds													
Planting of additional pond vegetation by client, as required.	As required.												
Pulling/cutting of excess pond vegetation by client, as required.	As required.												
Pond lining repairs and silt removal by client, as necessary <u>if ecology surveys determine that great crested newts are absent.</u>	As required.												
Pond lining repairs and silt removal by client, as necessary <u>if ecology surveys determine that great crested newts are present.</u>	As required.												
Water quality remediation by client, as necessary. Remediation method to be advised by ecologist.	As required. Month(s) when activity must be carried out dependent on remediation method required (to be advised by ecologist).												
Fish removal by client, as necessary. Removal method to be advised by ecologist.	As required. Month(s) when activity must be carried out dependent on removal method required (to be advised by ecologist).												



Activity	Years Required	Month of Activity											
		J	F	M	A	M	J	J	A	S	O	N	D
Litter removal by client, as necessary.	As required.												
Rough Grassland													
Cutting of rough grassland by client.	Once every three years.												
Hibernacula													
Repairs and/or replacement of hibernacula by client as required.	As required.												
Scrub and Understorey Shrub Planting													
Mulching of planting.	Two times a year for the first five years as required or until it is no longer necessary												
Watering of planting.	As required for the first five years or until it is no longer necessary												
Weeding of planting.	As required for the first five years or until it is no longer necessary												
Repair/replace plant protection.	As required for the first five years or until it is no longer necessary												
Remedial scrub/shrub planting by client, as required.	As required.												



Activity	Years Required	Month of Activity											
		J	F	M	A	M	J	J	A	S	O	N	D
Fencing													
Inspections by the client to check that fencing is stock proof.	Monthly in all years.												
Repairs to fencing.	As required.												



6 References

Corylus Planning & Environmental Ltd. (2019). *Scope of Works for the Revised Newt Mitigation Scheme, For the PV Array, on Land off Tetrapak Rd, off Bedwell Road, Wrexham, LL13 0UT.* Corylus Planning and Environmental Ltd, Yanworth.

Smart Ecology Ltd, (2019). *EPS Development Licence Great Crested Newt Method Statement – Wrexham Solar Park, Land off Tetrapak Road, Wrexham, LL13 0UW.* Smart Ecology, Berkeley.

