

Report Title	Biomass Boiler House/ Kilns/ Dry Pallet Store and Associated Infrastructure, at Jones & Sons Ltd, Off Oak Road, Wrexham Industrial Estate, Wrexham – Great Crested Newt Development Licence Application Annex K.5 – Ecological Management Plan
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Figure 1 –Development Site & Ecological Mitigation Area Boundaries

Figure 2 – Ecological Mitigation Area and Habitat Creation/ Enhancements

1 INTRODUCTION

1.1 Project Background

1.1.1 Marches Ecology was commissioned by James Jones & Sons Ltd to produce an Ecological Management Plan (EMP) for an Ecological Mitigation Area (EMA) associated with the following development: Biomass Boiler House/ Kilns/ Dry Pallet Store and associated infrastructure, at Jones & Sons Ltd, Off Oak Road, Wrexham Industrial Estate, Wrexham, LL13 9RG (NGR: 339373 349327). The EMP will be subject to review with the planning authority, Natural Resources Wales (NRW) and a third party (who will manage the EMA on behalf of James Jones & Sons Ltd).

1.1.2 Planning permission has been provided by Wrexham County Borough Council (WCBC) on 10th June 2022 (ref: ISY P/2021/0217). The decision included 2 no. ecology related conditions, Condition 4 of which is as follows:

'No development shall commence until a GCN Post Construction Monitoring Plan has been submitted to and approved in writing by the Local Planning Authority. The GCN Post Construction Monitoring Plan should build upon principles outlined in the Ecological Mitigation Method Statement¹ and include, but not necessarily be limited to the following:

- *Long-term management plan (minimum duration 15 years) for the dedicated amphibian conservation area. Details to include:*
 - o *defined aims and objectives;*
 - o *management and maintenance prescriptions;*
 - o *monitoring methodology, defined targets and reporting requirements;*
 - o *licensing requirements for*
 - o *management and maintenance works;*
 - o *current and any proposed changes to tenure include any associated restrictive covenants; and*
 - o *proposals to update the plan.*
- *Ecological Compliance Audit to evidence compliance of all ecological avoidance, mitigation and compensation works, either proposed or subject to the provisions or reserved matters conditions. The Audit shall identify Key Performance Indicators (KPIs) that are to be used for the purposes of assessing and evidencing compliant implementation of proposals.*

The Post Construction Monitoring Plan shall be carried out in accordance with the approved details.'

1.1.3 A Natural Resources Wales (NRW) Great Crested Newt licence (to include an amphibian translocation scheme) is required to lawfully undertake the development. This EMP will be included within the license application submission pack (as Annex K.5 of the Method Statement). It will also be submitted to WCBC to partly discharge Condition 4. A separate

¹ Marches Ecology (2022). *Proposed Development at James Jones & Sons Ltd, Off Oak Road, Wrexham Industrial Estate, Wrexham – Ecological Mitigation Method Statement*. Prepared on behalf of James Jones & Sons (Pallets and Packaging) Ltd.

Ecological Compliance Audit² (ECA) will also be submitted to WCBC to facilitate full discharge of Condition 4. In summary therefore both this EMP and the ECA are together deemed to fulfil the requirements of the 'GCN Post Construction Monitoring Plan' as detailed in Condition 4.

- 1.1.4 The EMP concerns an area identified as the 'Ecological Mitigation Area'. *Figure 1* shows the location of the EMA in relation to the development site and *Figure 2* indicates the boundary of the EMA and habitat creation/ enhancement measures in more detail. The EMP does not cover planting and aftercare associated with any proposed soft landscaping associated with the development outwith the EMA.
- 1.1.5 The EMA is largely to be provided to mitigate and compensate for any potential impacts on the Favourable Conservation Status of the local Great Crested Newt (*Triturus cristatus*) population/s as a result of the development. As such management of this area concentrates on this key species. However, provision is also made in this area to compensate for impacts on certain habitats and other species (in particular grassland, scrub, bats and birds); an enhancement with regards butterflies is also provided. The EMP identifies existing ecological features of interest within the EMA where known.
- 1.1.6 The current landowner will retain ownership of the EMA. A unilateral undertaking will be legally established. A specialist third party (currently understood to be Wilbanks Conservation Ltd (<https://www.wilbanksconservation.com/>)) will be contracted to undertake the management of this area on behalf of the landowner. The third party will have previous experience of managing such areas for the benefit of Great Crested Newts (and other ecological resources). Individuals within the managing organisation should retain an NRW Great Crested Newt 'disturbance' licence and be able to apply for a 'conservation' licence when required.

1.2 The Ecological Management Plan

- 1.2.1 This EMP sets out a ten-year management strategy for the EMA. Management prescriptions are provided for a ten-year period although it will be reviewed every five years and a new Action Plan compiled if required. The start date of this EMP has been assumed to be following completion of the mitigation programme (e.g. after translocation of amphibians from the development site and habitat creation works) and following all construction-related works. As per Condition 4 this will be then be reviewed after 10 years, and extended for a minimum 15 years. It is intended however that the EMA will be appropriately managed in perpetuity.

² Marches Ecology (2022a). *Biomass Boiler House/ Kilns/ Dry Pallet Store and Associated Infrastructure, at James Jones & Sons, Off Oak Road, Wrexham Industrial Estate, Wrexham – Great Crested Newt Development Licence Application, Method Statement. Section M, Ecological Compliance Audit Form*. Produced on behalf of James Jones & Sons (Pallets & Packaging) Ltd.

- 1.2.2 The EMP does not cover habitat creation as part of this mitigation scheme in detail. Habitat creation is covered separately in an Ecological Mitigation Method Statement³. The Action Plan includes management prescriptions for after-care of the newly created habitats.

1.3 Other Reports

- 1.3.1 An Ecological Appraisal (Marches Ecology 2021⁴) was produced to provide supporting information to the planning application. This report provides information on the ecological resources present at the both the proposed development site and EMA. These resources are evaluated, potential impacts of the proposal assessed and mitigation/ compensation measures proposed as necessary.
- 1.3.2 The Ecological Mitigation Method Statement (Marches Ecology 2022) was produced in order to prescribe and guide implementation of the mitigation measures.
- 1.3.3 Both of these documents provide valuable background information and should be referred to in conjunction with this EMP.

⁴ Marches Ecology (2021). *Proposed Development at James Jones & Sons, Off Oak Road, Wrexham Industrial Estate, Wrexham – Ecological Appraisal*. Produced on behalf of James Jones & Sons (Pallets & Packaging) Ltd.

2 ECOLOGICAL FEATURES

2.1 Retained Habitat within the EMA

2.1.1 This description is restricted to those habitat types that currently exist within the EMA and would be retained. Further information is provided in Marches Ecology (2021). The EMA would include the following habitat resources:

- Semi-improved neutral grassland (regularly mown);
- Narrow boundary zones of unimproved neutral grassland/ tall-herbs (unmanaged); and
- Occasional scattered shrubs adjacent to fenced boundaries.

Grassland & Shrubs

2.1.2 The EMA is dominated by regularly mown semi-improved neutral grassland, which is part of a larger 'field unit'. The sward was largely to 0.05 m in height during the Extended Phase 1 Habitat Survey, occasionally to 0.1-2 m. It is also grazed by Rabbits. The sward comprises a variety of grasses and rushes such as abundant *Holcus lanatus* (Yorkshire-fog), frequent *Agrostis capillaris* (Common Bent) and *Festuca rubra* (Red Fescue), occasional/ locally frequent *Juncus inflexus* (Hard Rush) and *Juncus articulatus* (Jointed Rush), and lesser amounts of *Schedonorus arundinacea* (Tall Fescue) and *Deschampsia cespitosa* (Tufted Hair-grass). *Carex nigra* (Common Sedge) is locally frequent. A range of tall-herbs (albeit basal rosettes only) and other forbs are scattered throughout, including frequent/ locally abundant *Ranunculus repens* (Creeping Buttercup) and *Trifolium repens* (White Clover), occasional *Centaurea nigra* (Common Knapweed), *Trifolium pratense* (Red Clover), *Plantago lanceolata* (Ribwort Plantain) and *Potentilla reptans* (Creeping Cinquefoil). Large areas appear species-poor being dominated by grasses, Creeping Buttercup and White Clover – it is arguable therefore whether the resource could be better described as poor semi-improved grassland. It is locally damp underfoot, especially in the south-east corner where rushes predominate.

2.1.3 Narrow unmanaged fringes to this grassland are located adjacent to fenced boundaries to the south and east. To the south this comprises unimproved neutral grassland/ tall-herbs, with shrubs present at various densities. The zone is largely between 4 and 6 m wide, this widening to approximately 8 m in the south-east corner. The grassland/ tall-herb resource is characterised by bulky grasses such as Tufted Hair-grass and Yorkshire-fog, with other grasses, along with sedges and rushes present including *Alopecurus pratensis* (Meadow Foxtail), *Dactylis glomerata* (Cock's-foot), *Cynosurus cristatus* (Crested Dog's-tail), Common Bent, *Elytrigia repens* (Common Couch), *Carex hirta* (Hairy Sedge), *Carex otrubae* (False-fox Sedge) and Hard Rush, with scattered tall-herbs and other forbs. It is frequently to 1 m tall and tussocky in structure. The associated shrub resource largely comprises occasional saplings of *Crataegus monogyna* (Hawthorn), *Prunus spinosa* (Blackthorn) and *Salix* sp. (Willow); there are occasional large Willow shrubs on/ either-side of the fence line and also stands of *Rubus fruticosus* agg. (Bramble).

- 2.1.4 The resource adjacent to the eastern boundary is similar, albeit narrower and less dense/ tall in structure, and with fewer tall-herbs; it may be slightly more species-rich. It is largely to 3 m wide. A few scattered plants of *Silene silaus* (Pepper-saxifrage) were recorded in this vegetation. This is noted as 'Locally Scarce' in Williams (2021).

2.2 Proposed Habitat within the EMA

- 2.2.1 It is proposed to create two new ponds, two hibernacula and a butterfly bank/ associated scrapes, and also plant two stands of native scrub. 2 no. pole mounted bat boxes are also to be provided. Further information is provided in Marches Ecology (2022).

Pond

- 2.2.2 Two new ponds will be created towards the southwest corner of the EMA. The minimum size of these ponds would be 100 m² each and be up to 2 m deep. An indicative design is provided in Marches Ecology (2022). A facility will be maintained on the James Jones Ltd site whereby the ponds can be 'topped-up' with suitable quality water as required.

Scrub

- 2.2.3 Two areas of scrub will be established (with locally native) species. An appropriate mix is as follows: Hawthorn, Blackthorn, *Rosa canina* agg. (Dog-rose), *Sambucus nigra* (Elder), *Salix caprea* (Goat Willow) and *Viburnum opulus* (Guelder-rose). The following approximate proportions would be appropriate respectively: 45%, 30%, 10%, 8%, 5% and 2%. Planting should reflect soil conditions, for example, Goat Willow will be planted in wetter areas. Shrubs of certified British origin and local provenance (Local Seed Zone 304⁵) should be used.

Hibernacula

- 2.2.4 Two hibernacula will be provided in the EMA. They will measure at least 2 m length x 1 m width x 1m height but may be significantly larger if required (for example to use pond excavation material).

Butterfly bank/ scrapes

- 2.2.5 A butterfly bank will be constructed, approximately 10 m long. It will be approximately south facing and not shaded, and approximately 'C-shaped' to allow for varied aspects. The creation will follow guidance in the Butterfly Bank Factsheet, by Butterfly Conservation⁶. This includes for using adjacent soil and inverting the soil structure to create the bank, which is partly covered in calcareous aggregate or rubble. Along with adjacent scrapes, a decision will be made as to whether seeding or plug-planting is undertaken or if bank/ scrapes can be left to naturally colonise.

⁵ Hubert, J. & Cundall, E. (2006). *Choosing Provenance in Broadleaved Trees*. Forestry Commission, Edinburgh.

⁶ <https://butterfly-conservation.org/sites/default/files/1.butterfly-bank-factsheet.pdf>

Bat boxes

- 2.2.6 2 no. 4 m high wooden poles with 1 no. 'single crevice box' and 1 no. 'small hollow box' fitted on each will be installed in the EMA. The bat-boxes do not require annual maintenance as such, beyond checking they are in-situ and fit for purpose. This will be completed as part of an annual check of the EMA. No annual monitoring of use is proposed.

2.3 Vision Statement

- 2.3.1 The aim of management of the EMA will be to provide high quality terrestrial and aquatic habitat for Great Crested Newts. The EMA provides linking habitat between other areas of potentially important terrestrial habitat. The habitat will be enhanced through the creation of two new ponds, provision of two hibernacula and varied/ positive management of the grassland. The retained areas of grassland will be partly left to develop a dense/ tussocky and partly mown on an annual basis (to encourage floristic diversity). Planted scrub will be largely managed through limited or non-intervention. Terrestrial habitat management will produce a mosaic of patches of scrub and grassland.
- 2.3.2 While Great Crested Newts are the primary feature of importance, several secondary features have been identified for which management prescriptions have been provided. The secondary features are as follows:
- Bats;
 - Birds;
 - (Semi-/) un-improved neutral grassland; and
 - Butterflies.

3 AIMS AND OBJECTIVES

3.1 Great Crested Newts

Management Aim 1

- 3.1.1 The presence of Great Crested Newts throughout most parts of Wrexham Industrial Estate and the surrounding area is well established. Wrexham (county borough) forms part of the northeast Wales stronghold for Great Crested Newts in the UK (e.g. Haysom *et al.* 2018). It is likely that individual populations (taken at a pond level) within this part of Wrexham Industrial Estate may be categorised as ‘small’ or ‘medium’⁷ in size, and that the conservation status of the meta-population in this area is ‘unfavourable’.
- 3.1.2 Great Crested Newts are the primary feature of importance of the EMA. The aim of management of the EMA will be to provide high quality aquatic and terrestrial habitat for Great Crested Newts throughout the year and a potential dispersal link. The habitat will also be enhanced through the provision of two hibernacula. The aim of long-term management of the EMA is to contribute to the recovery of the Favourable Conservation Status of the population/s in this part of Wrexham Industrial Estate.

Management Objective 1

- 3.1.3 In order to achieve Management Aim 1:
- The retained and created habitat resources within the EMA will be managed in accordance with the EMP and for the benefit of Great Crested Newts in the long-term.
 - Both of the new ponds will support at least a ‘small’ breeding population of Great Crested Newts.

3.2 Bats

Management Aim 2

- 3.2.1 Further to habitat creation works and in the medium-term (assuming appropriate management) the habitat within the EMA is deemed likely to provide a potential foraging/ commuting resource of moderate to high value. Species such as the Common Pipistrelle (*Pipistrellus pipistrellus*) are more tolerant of artificial lighting as well as apparently inhospitable landscape features, and is one of the most frequently encountered bats in urban areas. By installing bat-boxes it is hoped that this species will use the new roosting opportunities for this crevice-dwelling species, as well as bats which prefer a wider cavity and which may be present in the locality (such as Brown Long-eared (*Plecotus auritus*)).

⁷ A population can be classed as ‘small’ where a maximum count of between 1 and 10 is recorded, and medium 10 to 100: English Nature (2001). *Great Crested Newt Mitigation Guidelines – Version: August 2001*. English Nature, Peterborough.

Management Objective 2

- 3.2.2 In order to achieve Management Aim 2, 2 no. 4 m high wooden poles each with 1 no. 'single crevice box' and 1 no. 'small hollow box' will be installed⁸ in the EMA. It will be ensured that they are fit-for-purpose in the long-term through an annual check.

3.3 Birds**Management Aim 3**

- 3.3.1 Further to habitat creation works and in the medium-term (assuming appropriate management) the EMA is likely to be of value, particularly for species that nest in patches of scrub. Such nesting birds include some species of conservation interest (e.g. Dunnock). Management of the EMA will aim to ensure that the planted areas of scrub develop and are maintained for the benefit of nesting birds.

Management Objective 3

- 3.3.2 In order to achieve Management Aim 3., two areas of native scrub will be established within the EMA which will be retained and be subject to low intensity management (during the establishment phase only) for the benefit of nesting birds, Great Crested Newts and other wildlife.

3.4 (Semi-/) Un-improved Neutral Grassland**Management Aim 4**

- 3.4.1 The existing grassland within the EMA that will be retained is not considered to be of value beyond the site level (Marches Ecology 2021). The majority of the resource is currently frequently mown and largely species-poor and provides negligible potential value for Great Crested Newts. Fringes of unmanaged more-species-rich grassland are located adjacent to the southern and eastern edges; these provide a foraging habitat of high potential value for Great Crested Newts as well as being of value for a range of other wildlife; for example a Locally Scarce plant (Pepper-saxifrage) is present here in low numbers.
- 3.4.2 Marches Ecology (2022) proposes positive management of this resource (part being largely left to develop a tussocky structure and part being managed by an annual cut). This management should aim to develop a varied mosaic within the EMA and help to improve the botanical and general habitat value of the grassland.

Management Objective 4

- 3.4.3 In order to achieve Management Aim 4, the grassland within the EMA will be retained and partly be subject to low intensity management for the benefit of Great Crested Newts and other wildlife. The status-quo of Pepper-saxifrage will be achieved and or it will increase in abundance.

⁸ Supplier: <https://www.greenwoodsecohabitats.co.uk/shop>

3.5 Butterflies

Management Aim 5

- 3.5.1 The existing grassland is largely regularly mown and is of no particular potential value to butterflies. Marches Ecology (2022) includes for the creation of a butterfly bank/ associated scrapes within the EMA which will be suitable for a range of butterflies, including Dingy Skipper (*Erynnis tages*) and Grizzled Skipper (*Pyrgus malvae*). Both species are present on Wrexham Industrial Estate, although in low and depleting numbers, with the nearest known records to the EMA (Marches Ecology 2021) being from land to the south of Oak Road to the west of the EMA. The aim would be to create and maintain (with appropriate management) potential habitat that skippers (and other butterflies) could disperse to and or use as a 'stepping stone'. Although most Grizzled Skipper adults stay within the colony, dispersal distances of 1.5 km have been recorded, and it is likely that the butterfly can fly much further⁹.

Management Objective 5

- 3.5.2 In order to achieve Management Aim 5 the created butterfly bank/ scrapes within the EMA will be managed appropriately for the potential benefit of butterflies and other wildlife.

⁹ <https://butterfly-conservation.org/sites/default/files/habitat-grizzled-skipper.pdf>

4 ACTION PLAN

4.1 Introduction

- 4.1.1 The following tables describe the prescribed management projects required to achieve the management objectives. Management will be continuously reviewed and should changes be required to these prescriptions they will be discussed and agreed with the site owner, WCBC and NRW prior to implementation.
- 4.1.2 It should be noted that some management prescriptions (e.g. rotational pond clearance) may require a separate application for a 'conservation' licence. The managing organisation will be responsible for obtaining such licenses as they are required.

4.2 Management Prescription 1 - Ponds

MANAGEMENT OF PONDS
<u>Establishment Phase</u> There may be algal blooms in the first few years of the new ponds until submerged rooted plants are well established. If growth is excessive remove some but do not remove all filamentous algae as it is good cover for invertebrates. If required, early spring application of barley straw at 1 bale per hectare, assuming a 1 m depth can inhibit algal growth. It is not currently proposed to plant up the ponds with suitable aquatic/ emergent vegetation. It is deemed appropriate to allow vegetation to colonise naturally. This will be reviewed after two years and if necessary, at this time the pond will be planted. Artificial egg-laying strips (Black plastic bin-liners cut into strips approximately 1 cm wide) will be provided in the new ponds for the first two years. <u>Vegetation Management</u> Undertake periodic (possibly every two to four years) clearance of marginal vegetation in autumn/ winter by hand digging. Where possible clear the advancing front face of some beds of emergent plants, so maintaining stable conditions on the landward interface, and cut others in bands from water to land. To be effective emergent plants must be removed 'roots and all' otherwise rapid re-growth will occur. Digging out may be effective over small areas but for larger jobs careful use of an excavator may be required. The starting year and frequency of this management operation will be informed by the monitoring. Retain floating-leaved plants across at most half of the pond's surface. Removal should be undertaken in autumn/ winter if possible but may be required in summer when aquatic plants are most abundant. If removal is required in the summer it should be completed in late-summer, outside the newt breeding season. All vegetation material should be checked for newts and left near the pond for at least 24 hours before composting. Reduction of floating and submerged plants can be done using a long-handled rake. Some species can recover after a year or two and so this may be a bi-annual task. Removing plants during the newt egg-laying period (late March to end of June) must be avoided. <u>Water Levels</u> The water levels in each pond should be closely monitored in the first two years to confirm whether the pond design achieves the desired depth profile. If required some re-sculpting of the pond edges and depths could be carried out in the second year. It should be noted that, due to the location of the ponds, they will not be linked to existing/ new surface water drainage systems or similar. As such, a facility will be maintained on the

MANAGEMENT OF PONDS			
James Jones Ltd site whereby the ponds can be 'topped-up' with suitable quality water as required (for example if water levels drop during summer months/ periods of low rainfall) to ensure they provide a sufficient habitat for breeding Great Crested Newts. The water levels will be reviewed periodically by the management organisation and acted upon accordingly. <u>Dredging</u> Dredging should be avoided wherever possible. Only one-third of each pond should be dredged in any one year and no more than the equivalent of three to four JCB bucket sizes should be removed within any one year. Dredging should therefore be completed over a three-year period. Dredged spoil should be disposed of away from the ponds although it should be stored overnight adjacent to the pond to allow any animals to crawl back in. Dredging should be completed in autumn/ winter.			
Purpose	Where	Equipment	Responsibility
To provide potential breeding habitat for Great Crested Newts.	2 no. ponds in southeast corner of EMA.	Spade, Long-handled rake, wheel-barrow. Excavator. Water-bowser.	Ecologist/ managing organisation.
Timing	Programme		
<u>Vegetation Management</u> Late Oct. to Nov. for vegetation clearance. The start year for this management will depend on the establishment of vegetation within the pond but is unlikely to be required in the first few years. Spring treatment of algae, Years 1-3. Provision of egg-laying strips, Years 1-2. <u>Water Levels</u> Periodic review and 'topping-up' as required. <u>Dredging</u> Re-profiling may be required in Year 2 (Autumn/ Winter). Year 15 for dredging, or as required. 3 days over 3 years.	See Timing.		

4.3 Management Prescription 2 - Hibernacula

MAINTENANCE OF HIBERNACULA			
No particular management of the hibernacula is proposed within the first EMP period. The condition of these features will be reviewed as part of the monitoring. Should any remedial actions be identified then they will be added to the EMP as new prescriptions.			
Purpose	Where	Equipment	Responsibility
Two hibernacula are to be provided principally as compensation for the loss of any potential refugia/ hibernacula from the application site due to the proposed development.	Adjacent to new ponds in EMA.	None.	Ecologist/ managing organisation.
Timing	Programme		
See monitoring.	None.		

4.4 Management Prescription 3 - Bat-boxes

MAINTENANCE OF BAT-BOXES			
2 no. 4 m high wooden poles, each with 1 no. 'single crevice box' and 1 no. 'small hollow box' will be installed on the margins of the EMA. The bat-boxes will be installed in accordance with the guidance given in Marches Ecology (2022). These bat-boxes do not require annual maintenance as such, beyond checking they are in-situ and fit for purpose. This check will be completed as part of the annual monitoring of the EMA. No annual monitoring of use is proposed It is important to remember that once discovered, a bat roost is legally protected and must not be disturbed. If a bat roost is suspected to be present a suitably qualified bat consultant or the Clwyd Bat Group should be contacted and may need to undertake the annual maintenance operations detailed below. To discover whether a bat-box is being used they can be watched at dusk during the summer to see if any bats emerge or a search can be conducted beneath the box entrance for the characteristic crumbly bat droppings. Again, should it be necessary to inspect the bat-box an appropriately licensed individual may be required to undertake this work. Occasionally a bat-box may be used by nesting birds. If this is the case it should be cleaned outside the nesting season, e.g. October/ November. Should the boxes need to be re-attached or moved, any such work should be carried out when bats have left the bat-box to hibernate in winter (late autumn to early spring).			
Purpose	Where	Equipment	Responsibility
Bat-boxes will be attached to 2 no. wooden poles to be installed in the EMA. They will provide roosting opportunities on a site where they are currently limited.	EMA.	Nothing for visual check. Ladder and hammer/ nails if need to be re-attached/ moved.	Ecologist.
Timing	Programme		
See monitoring. If need to be re-attached or moved Oct/ Nov.	None.		

4.5 Management Prescription 4 - Scrub

MANAGEMENT OF SCRUB			
As detailed in Marches Ecology (2022), once the shrubs have been planted an area of at least 1 m² around them should be kept weed-free. This will be achieved either through the use of mulch mats or the appropriate application of glyphosate-based herbicides during the growing season (NB: the formulation must not contain the surfactant polyoxy-ethyleneamine (P.O.E.A) as this is highly toxic to amphibians). This maintenance operation should be undertaken once a year for the first 3 years. Any plants that die should be replaced in the next available planting season. Once the scrub resource is successfully established, no long-term management is likely to be required. No management of the developing scrub is proposed in this EMP period except with regards preventing its colonisation of areas of rough grassland. The potential spread of scrub into adjacent areas of grassland will be controlled through either annual cutting of the grassland (50%) or annual hand-control (cutting/ herbicide treatment) of scrub saplings in uncut grassland (50%), refer to Management Prescription 5 below. The requirement for any future management will be reviewed as part of the ongoing monitoring.			
Purpose	Where	Equipment	Responsibility
To develop/ retain areas of dense scrub for hibernating/ foraging newts and breeding birds.	EMA. 2 stands.	Herbicide.	Ecologist/ managing organisation.
Timing	Programme		
Establishment phase (Years 1-3): if weed control achieve by herbicide application, 1x in growing season. Any plants that die to be replaced in subsequent planting season (autumn/ winter). Otherwise, see grassland management.	Following establishment management of developing scrub unlikely to be required during this EMP period.		

4.6 Management Prescription 5 - Grassland

MANAGEMENT OF GRASSLAND
The grassland resource will be managed with two different regimes. Once the habitat creation works have been completed, the ecologist along with the managing organisation will mark out (for example, with timber posts)/ prepare a resultant annotated plan, to establish the two different areas which will ideally result in a mosaic of different grassland structures across the EMA. The two management regimes are as follows: 50% of the grassland (excluding that associated with the butterfly bank/ associated scrapes (refer to Management Prescription 6 below) will be cut once a year (in July/ August). The cutting blade should be set at a height of about 10 cm. The grass cuttings should be left in-situ and then raked off after 24 hours. All mowing will be completed in hot, dry conditions and not following overnight rain. Grass heaps can be created on the edge of the developing scrub. The heap should ideally be constructed over a base of criss-crossed coarse material such as branches or logs. Ideally the grass would be mixed with fine woody material.

MANAGEMENT OF GRASSLAND			
The requirement to change the cutting frequency (e.g. should more than one annual cut be required to maintain/ increase the interest of the grassland) should be subject to review and the management prescription changed at that time if required. The remaining 50% of the grassland (including a buffer to at least 1.5 – 2 m around each pond) will be retained uncut but subject to annual hand-control (cutting/ herbicide treatment) of scrub saplings. This task could be completed at the same time as the mowing. If herbicide is used it should be glyphosate-based, however note requirements in Management Prescription 4 above. <u>Litter</u> All litter should be removed from all areas of the EMA at least once a year. Should any newts be found during this clearance the item should be left in place. If it is thought that the item may provide a useful refuge it may be left.			
Purpose	Where	Equipment	Responsibility
The purpose of positive management of the retained grassland is to maintain its value for foraging/ dispersing Great Crested Newts and increase its value for other wildlife. The status-quo of Pepper-saxifrage will be achieved and or it will increase in abundance.	Grassland in EMA.	Chainsaw, bow-saws, loppers, bill-hooks, rakes, fork, wheel-barrows, gloves, mower/ trimmer. Herbicide. Bin-bags.	Ecologist/ managing organisation.
Timing	Programme		
July/ August annually. <u>Litter</u> July/ August annually.	Annual.		

4.7 Management Prescription 6 – Butterfly Bank/ Scrapes

MANAGEMENT OF BUTTERFLY BANK/ SCRAPES
A butterfly bank and associated scrapes are to be created in the EMA as per Marches Ecology (2022). This may be subject to seeding or plug-planting or be left to naturally colonise. During the establishment phase of the bank/ scrapes, vigorous weed growth will need to be prevented from becoming established, either by hand pulling or using the appropriate application of glyphosate-based herbicides during the growing season. If seeding/ plug planting this will be undertaken and maintained in the first few years in accordance with the supplier's specifications. Once established it may be necessary to cut the vegetation (half every other year) to maintain a species-rich resource and to discourage scrub. Management will focus on creating species-rich grassland with an abundance of spring nectar sources and suitable larval host-plants (mix dependant on if sowing/ plug planting was undertaken or if was to left to naturally colonise). Subsequent management will focus on long-term

MANAGEMENT OF BUTTERFLY BANK/ SCRAPES

maintenance of this grassland resource to include provision of different sward heights and patches of bare ground. This should be combined with grassland management for the wider EMA as detailed in Management Prescription 5 above; a strimmer should be utilised.

In the long-term maintenance/ re-creation of bare patches (both on the bank itself and adjacent scrapes) is also likely to be required. It is not perceived that this will be likely during this EMP period. However, any requirement to for this should be subject to review and the management prescription changed at that time if required. If required, this will be undertaken with hand-tools only (such as rakes, forks, spade).

Purpose	Where	Equipment	Responsibility
To provide a potential habitat for skippers and other butterflies.	Butterfly bank and adjacent scrapes.	Herbicide. Rakes, fork, spade, wheel-barrows, gloves, strimmer.	Ecologist/ managing organisation.
Timing	Programme		
Establishment phase: weed control; July/ August annually. Once established: cut 50% grassland rotationally every year. July/ August.	Annual.		

5 MONITORING

5.1 General

5.1.1 The text provided here is based on the proposal included in Marches Ecology (2022). The following monitoring is proposed:

- Great Crested Newt population monitoring.
- Site inspection.

5.1.2 The methodology for the Great Crested Newt monitoring will be discussed and agreed with Emma Broad in consultation with NRW. At present the following is suggested: Great Crested Newt population monitoring will consist of two visits per year (in mid-April to mid-May) in Years 2 and 5 (prior to review of the Management Plan), following the creation of the new ponds. Subsequent monitoring visits will be undertaken every three years. All Great Crested Newt surveys will be undertaken by a suitably experienced ecologist who retains an NRW 'disturbance' licence.

5.1.3 Surveys should not be undertaken if the air temperature is below 5°C and or the wind speed is greater than Beaufort Scale 3 and or there is heavy rain. Both of the survey visits should be undertaken between 10th April and 15th May.

5.1.4 It may be necessary to increase the number of survey visits should fish or any invasive non-native species be recorded at any time. Specific monitoring of such species may be required with the results used to inform any relevant management actions. Should any such species be detected it will be necessary to add appropriate management prescriptions to the Action Plan.

5.1.5 Each survey visit will involve a torch survey unless other techniques (e.g., bottle-trapping) are deemed necessary to obtain robust count data. Torch surveys are undertaken using a 1.5 million candlelight power clu-lite torch. It involves shining the torch into the pond at night when newts are most active and therefore more visible. During these survey visits the presence of Great Crested Newt eggs will be recorded at each pond. The results will be uploaded on to the Wales GCN Monitoring Database.

5.1.6 As stated in *Section 3* a target has been set for each of the new ponds to support a 'small' breeding population of Great Crested Newts. That is a maximum count of 1-10 individuals. Should this not be achieved it may be necessary to add remedial prescriptions to the Action Plan should such measures be identifiable.

5.1.7 One site inspection (of the EMA) will be undertaken by a suitably experienced ecologist in May-August annually in suitable weather conditions. The purpose of this inspection would be to review the success of management undertaken and subjectively assess the condition of the valued ecological resources, as such it should be undertaken once grassland cutting works have been completed. Any requirements for changes to the management regime or remedial measures would be identified. No particular monitoring of any new potential

(skipper) butterfly resource is suggested at the current time, although it may be deemed appropriate in time to complete an additional inspection in suitable weather conditions during the flight period in May. If Dingy or Grizzled Skippers are recorded in subsequent years a specific monitoring visit may be proposed.

- 5.1.8 A brief annual report covering the results of these surveys/ site inspection and management undertaken in that year will be prepared and submitted for review by the WCBC ecologist/ NRW in December of each year. This report will form the main component of the review process. The main purpose of this review will be to ensure that the EMA is being managed in accordance with the approved EMP and that the proposed habitat creation has been successful. Compilation of the report may require records to be maintained throughout the year. The EMP will be reviewed every five years or as deemed appropriate. The new EMP would be submitted to WCBC and NRW.

6 SUMMARY

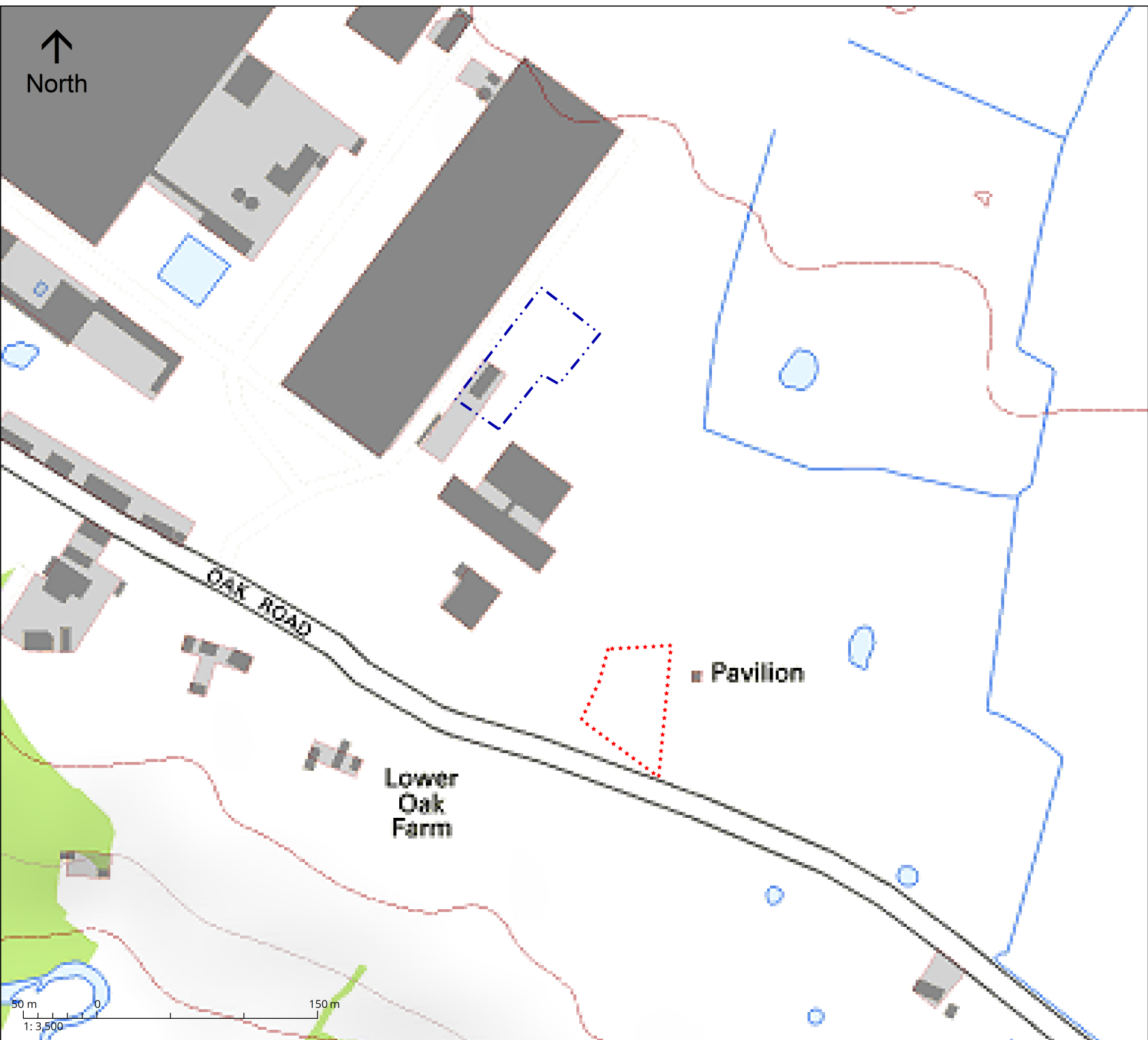
6.1.1 The table below provides a summary of the tasks to be completed as part of the EMP and the year (or years) that the task is to be completed. It details all management tasks required following creation of the new habitats. Year 1 is 2022/ 2023. The management year runs from November (2022) to October (2023) inclusive. The management year is currently divided into four: Winter (Nov-Feb), Spring (March-May), Summer (June-Aug) and Autumn (Sept-Oct).

Task					Year						Timing of management/ notes
	1	2	3	4	5	6	7	8	9	10	
Ponds											
Monitor water levels/ 'top-up' as required											Periodic monitoring of water levels throughout year (for example in Summer months/ after prolonged periods of low rainfall). Management organisation to 'top-up' as required.
Re-profiling banks if required											Year 2. Autumn/ Winter
Provide egg-laying strips											Years 1-2. Early Spring.
Algae treatment											Years 1-3. Spring.
Periodic clearance of marginal vegetation (by hand)											Possibly every 2—4 years <u>once established</u> . Autumn/ Winter. <u>Starting year and frequency TBC.</u>
Management of floating-leaved plants											Possibly every 2 years <u>once established</u> . Autumn/ Winter if possible, otherwise late Summer. <u>Starting year and frequency TBC.</u>
Hibernacula											
No annual tasks.											Site inspection to determine if any remedial works required.
Bat Boxes											
No annual tasks.											If site inspection deems they need to be re-attached or moved, late Autumn/ Winter.

Task					Year						Timing of management/ notes
	1	2	3	4	5	6	7	8	9	10	
Scrub											
Weed control in establishment phase											Years 1-3. If weed control by herbicide application, 1 x in growing season.
Replace losses											Years 1-5. Replace all dead plants in late Autumn/ Winter.
Grassland											
Cut 50% of resource once a year.											Annually in Summer (Jul-Aug)/ hot dry conditions. No lower than 10 cm high. Arisings to be removed.
Manage remaining 50% for scrub invasion only.											Different areas to be marked with wooden stakes/ annotated on a plan. Scrub control to use hand tools/ herbicide treatment only. To be completed at same time as mowing.
Butterfly bank/ scrapes											
Weed control in establishment phase											Years 1-2. Hand-pulling or using appropriate herbicide. Combine with grassland management.
Cut 50% of bank every year on a rotation											<u>Starting year and frequency TBC.</u> Combine with grassland management.
Maintenance/ re-creation of bare patches											<u>Starting year and frequency TBC.</u> Combine with grassland management.
Site Inspection											
Site inspection											Once cutting operations completed. Brief annual report.
Remove litter											Combine with grassland management.
Review											
Review EMP every 5 years											Minimum 15 year plan.

7 REFERENCES

- English Nature (2001). *Great Crested Newt Mitigation Guidelines – Version: August 2001*. English Nature, Peterborough.
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- Hubert, J. & Cundall, E. (2006). *Choosing Provenance in Broadleaved Trees*. Forestry Commission, Edinburgh.
- Marches Ecology (2021). *Proposed Development at James Jones & Sons, Off Oak Road, Wrexham Industrial Estate, Wrexham – Ecological Appraisal*. Produced on behalf of James Jones & Sons (Pallets & Packaging) Ltd.
- Marches Ecology (2022). *Proposed Development at James Jones & Sons, Off Oak Road, Wrexham Industrial Estate, Wrexham – Ecological Mitigation Method Statement*. Produced on behalf of James Jones & Sons (Pallets & Packaging) Ltd.
- Marches Ecology (2022a). *Biomass Boiler House/ Kilns/ Dry Pallet Store and Associated Infrastructure, at James Jones & Sons, Off Oak Road, Wrexham Industrial Estate, Wrexham – Great Crested Newt Development Licence Application, Method Statement. Section M, Ecological Compliance Audit Form*. Produced on behalf of James Jones & Sons (Pallets & Packaging) Ltd.
- Williams, D. (2021). *Denbighshire (VC50) Rare Plant Register*. Third Edition. BSBI & Cofnod.



- Proposed development site
- Ecological Mitigation Area boundary

Note - this is for illustrative purposes only.

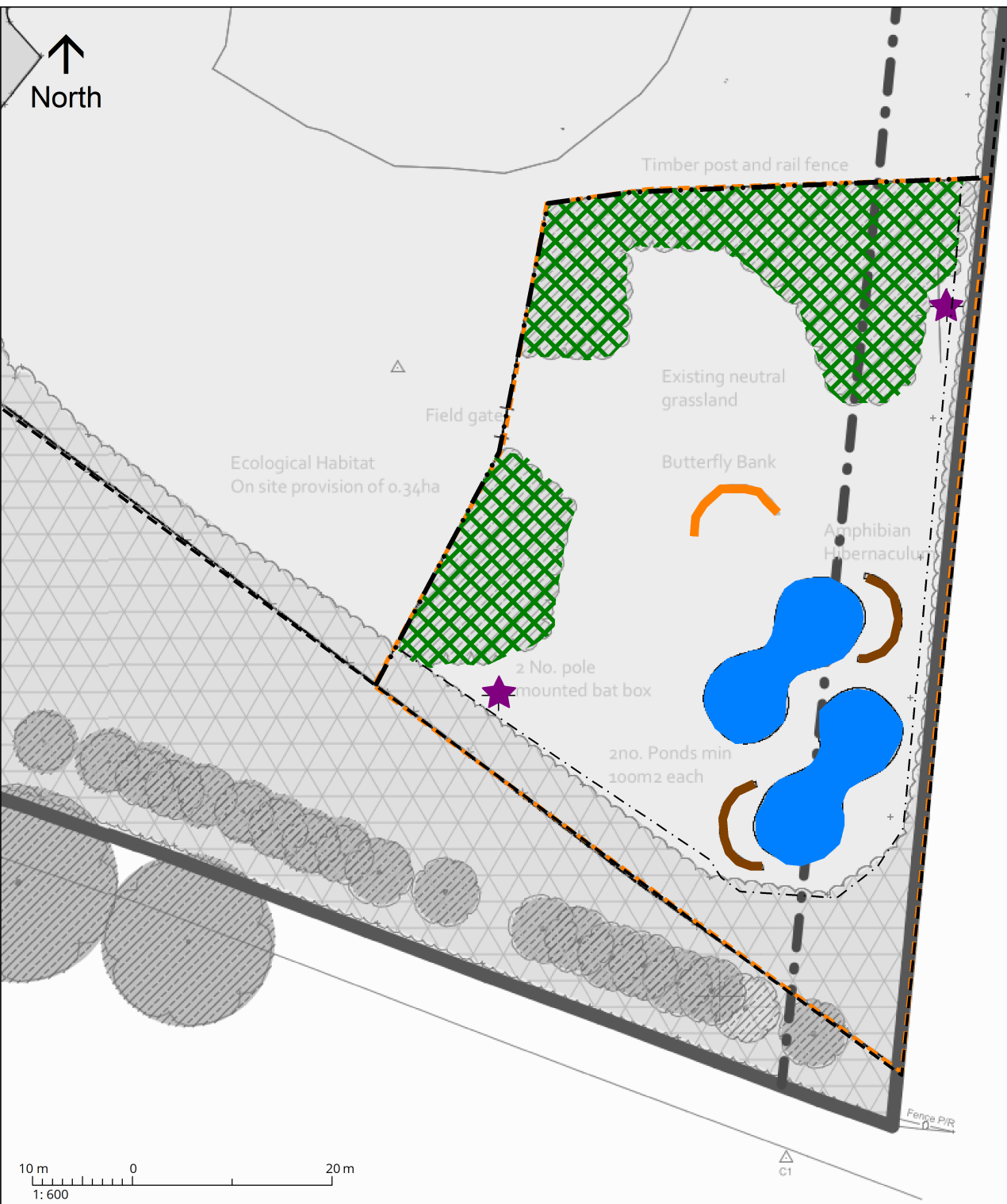
C442 Biomass Bolier House/ Kilns/ Dry Pallet Store and Associated Infrastructure, at James Jones & Sons Ltd, off Oak Road, Wrexham Industrial Estate, Wrexham - Great Crested Newt Development Licence Application, Method Statement; Annex K.5 - Ecological Management Plan

Figure 1 - Development Site & Ecological Mitigation Area Boundaries

Date: 04/02/2022



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- - - Ecological Mitigation Area (EMA) boundary
- X X X Proposed species-rich native scrub
Approx. 0.079 ha
- Proposed ponds (2 no.)
Minimum 100m2 each
- . . - Proposed timber post and rail fence
With field gate for future machine access as required.
- ★ Proposed pole-mounted bat box (2 no.)
- Proposed amphibian hibernacula (2 no.)
- Proposed butterfly bank
A small number of areas of scrapped/ bare ground to be created and maintained on/ in the immediate vicinity of the bank.
- - - Existing 'boundary' between mown and unmown grassland
50% of grassland resource to be managed by a single annual cut. Remainder to be subject to scrub control only.
- - - Existing boundary fencing
To be retained

Note - mapping is for illustrative purposes only. No measurements should be taken from this plan.

C442 Biomass Bolier House/ Kilns/ Dry Pallet Store and Associated Infrastructure, at James Jones & Sons Ltd, off Oak Road, Wrexham Industrial Estate, Wrexham - Great Crested Newt Development Licence Application, Method Statement; Annex K.5 - Ecological Management Plan

Figure 2 - Ecological Mitigation Area and Habitat Creation/ Enhancements

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