

United Environmental Services Ltd

1 Booths Park,
Chelford Road,
Knutsford,
Cheshire
WA16 8QZ

www.ues.org.uk

enquiries@ues.org.uk

01565 757788



AMPHIBIAN CONSERVATION PLAN (ACP) & LANDSCAPE ECOLOGICAL MANAGEMENT PLAN (LEMP)

At

Dragon Packaging

47- 48 Clywedog Road North
Wrexham Industrial Estate
Wrexham
LL13 9XN

NGR: SJ 37236 49681

Prepared for:	Emily Armstrong, FI Real Estate Management Ltd.
Written by:	Daniel Smith, UES Ecologist
Approved by:	Tom Kenwright, UES Senior Ecologist

Tom Kenwright

Date: 23rd May 2023
UES reference: UES03538/02



CONTENTS

1	INTRODUCTION	3
1.1	Author and qualifications.....	3
1.2	Objectives and scope.....	3
1.3	Structure of the report	4
2	BASELINE ECOLOGICAL INFORMATION	5
2.1	Habitats	5
2.2	Amphibians	5
2.3	Badgers	6
2.4	Bats	7
2.5	Breeding birds.....	7
2.6	Hedgehogs	8
2.7	Reptiles.....	8
2.8	Invasive species	8
2.9	Trees	8
3	AMPHIBIAN CONSERVATION PLAN	10
3.1	Construction.....	10
3.2	Operational	11
3.3	Habitat creation.....	11
4	LANDSCAPING AND HABITAT MANAGEMENT	12
4.1	Trees	12
4.2	Hedgerows and scrub planting.....	12
4.3	Wildflower grassland.....	14
4.4	Sustainable drainage system (SuDS) basins	15
4.5	Other habitats	15
5	MANAGEMENT RESPONSIBILITIES	18
5.1	Initial habitat creation responsibility.....	18
5.2	Ongoing habitat management responsibility.....	18
5.3	Monitoring and remedial measures responsibility.....	18
6	MANAGEMENT SCHEDULE	19
7	CONCLUSION.....	21
	APPENDICES.....	22
	Appendix 1 – Landscape proposals.....	22

1 INTRODUCTION

1.1 Author and qualifications

This report is compiled and written by Daniel Smith BSc ACIEEM, Ecologist for United Environmental Services Ltd (UES). Daniel holds a level 3 Botanical Society for Britain and Ireland (BSBI) field identification skills certificate (FISC) and is licenced by Natural Resources Wales (NRW) to and survey and handle great crested newts (GCN) *Triturus cristatus* under licence number S091929/1.

This report has been verified by Tom Kenwright BSc MSc ACIEEM, UES Senior Ecologist. Tom holds a level 5 FISC and is licenced by NRW to survey and handle GCNs under licence number S092335/1.

1.2 Objectives and scope

UES undertook a Preliminary Ecological Appraisal (PEA) of the proposed development site at Dragon Packaging, 47 – 48 Clywedog Road North in November 2021 (see report reference UES03538/01) and an updated PEA in February 2023 (see report reference UES03538/03). The PEA found that there will be few impacts on ecological receptors, and those that remain could be suitably mitigated for by implementing Reasonable Avoidance Measures (RAMs).

Following submission of the planning application and consultation with statutory consultees, NRW raised concerns regarding specific amphibian mitigation and conservation; on the 2nd February 2023, they advised that a specific Amphibian Conservation Plan (ACP) should be implemented to protect amphibians (including GCN) through the development (see extract below):

“Condition 1 - No development shall commence until an Amphibian Conservation Plan has been submitted to and approved in writing by the Local Planning Authority. The Conservation Plan shall include, but not necessarily be limited to:

- (i) "Build upon the principles outlined in the ecological report (Clark, E. (2021). Preliminary Ecological Appraisal: Dragon Packaging, 47- 48 Clywedog Road North Wrexham Industrial Estate, Wrexham LL13 9XN. United Environmental Services Ltd. (Unpublished Report No UES03537/01)).*
- (ii) Submission of details and associated plans concerning GCN avoidance and mitigation measures including, but not limited to: amphibian fence design, specifications and proposed locations; consideration of access issues across fence lines); fence monitoring and maintenance requirements; and supervised removal of barrier fences. Submission to include proposed timescales and reporting requirements.*
- (iii) Submission of further details concerning the provision of an amphibian conservation area. Details to include plans, extent, habitat creation and enhancement proposals (ideally including pond construction) access, together with current and any proposed changes to tenure;*
- (iv) Submission of a site management plan for the ecology area. Details to include*
 - Defined aims and objectives;*
 - Habitat management prescriptions for aquatic and terrestrial habitats;*
 - Detail of the skills and competencies required by those undertaking the works, surveillance or activities including whether they require European Protected Species licenses for the activities proposed;*

- *Provision for periodic review mechanism for the Environment Management Plan; and*
 - *Current and proposed changes to tenure of the ecology area (freehold tenure of the defined ecology area to be approved by the discharging Authority in consultation with Natural Resources Wales) to ensure appropriate control over the land is established and the effective targeted delivery of long-term actions;*
 - *Monitoring and surveillance (25 years).*
- (v) *Submission of measures designed to prevent the accidental capture/killing of newts (amphibians) during the operational phase of the proposal. This is essentially the installation and maintenance of an amphibian friendly surface water management system that does not include gully pots (or other similar features).*
- (vi) *Ecological Compliance Audit, including key performance indicators.*
- (vii) *Persons responsible for implementing the works.*
- (viii) *Submission of a biosecurity risk assessment.*

The Amphibian Conservation Plan shall be carried out in accordance with the approved details.”

Further comments on the planning application were received by Emma Broad, the Ecology and Biodiversity Officer at Wrexham Council on the 17th February 2023. Emma’s comments read as follows:

‘Welsh Government Planning Policy Wales and subsequent letter to LPAs requires development to provide a net benefit for biodiversity (NBB) i.e. a better outcome than if the site was left undeveloped. Failing to provide such a benefit is a valid reason for refusal.

Wrexham Industrial Estate is considered to be one of the key sites in Wales for great crested newt. GCN and their eggs have previously been recorded from the ditch to the rear of the site on a neighbouring development. Connectivity between breeding sites is important for the long-term survival of the species.

The proposal fails to adequately compensate for the loss of habitat and connectivity resulting from this enlarged footprint. A scheme with equivalent area within a long-term management regime is required. Therefore resulting in a better outcome than if the site were not developed.’

In response to the comments from both consultees, the applicant commissioned UES to produce an APC and Landscape Ecological Management Plan (LEMP), which includes mitigation, compensation and enhancement measures for GCN, as well as other species potentially present on site, to provide an overall net benefit for biodiversity.

1.3 Structure of the report

This report sets out the baseline ecological information before detailing how the objectives of this APC and LEMP will be achieved during and after the development.

It should be read in conjunction with Appendices 1 - 2, as well as the preliminary ecological appraisal reports produced by UES (December 2021 - reference UES03538/01; April 2023 – reference UES03538/03).

2 BASELINE ECOLOGICAL INFORMATION

2.1 Habitats

A PEA was undertaken by UES of the proposed development site in November 2021 and a further updated PEA was undertaken in February 2023. The following principal habitat types were characterised on site:

- A2.1 Dense scrub
- A3.1 Broadleaved scattered trees
- A3.2 Coniferous scattered trees
- B2.2 Semi-improved grassland
- J1.2 Amenity grassland
- J1.3 Ephemeral / short perennial
- J1.4 Introduced shrub
- J2.6 Dry ditch
- J3.6 Buildings
- J5 Hardstanding

Further information on the characteristics of these habitats is available in the updated PEA report (reference UES03538/03). The results of the ecological survey highlighted the following ecological receptors as potential constraints on site:

- Amphibians
- Badgers
- Bats
- Breeding birds
- Hedgehogs
- Reptiles
- Invasive species
- Trees

2.2 Amphibians

Numerous records of GCNs were returned from within 2km of the proposed development site, the closest of which is from a ditch located approximately 105m west of the site (considered to be Waterbody 3 as detailed below). There are an additional two mapped ponds / waterbodies within 250m of the proposed development site:

Waterbody 1 (SJ 37294955) is located approximately 30m south-east of the site and was surveyed by UES in 2021. A small population of GCNs was identified in this waterbody during the 2021 survey. This pond is isolated from the proposed development site by Clywedog Road South, which will likely act as a barrier to amphibian movement in some capacity.

Waterbody 2 (SJ 37094964) is a pond located within a domestic-fowl enclosure approximately 90m south-west of the site. The pond is connected to the site by a strip of scrub and trees.

Waterbody 3 (SJ 37034958) is a ditch located approximately 140m south-west of the site, and there are local records of a breeding population of GCNs within this waterbody that were recorded in 2019. The pond is connected to the site by a strip of scrub and trees.

The areas of dense scrub and introduced shrub on site provide some foraging and sheltered commuting opportunities for GCNs and other amphibians. However, the majority of the site comprises areas of buildings and hardstanding, which offer no opportunities for amphibians, or intensively mown amenity grassland and trees which offer limited opportunities. The site provides no suitable breeding opportunities for GCNs or any other amphibians.

The following rapid risk assessment tool has been developed by Natural England in order to establish whether it is necessary to apply for a licence. It assumes that all ponds are suitable GCN breeding ponds, which in some cases will not be the case. The rapid risk assessment is a general tool and does not take into account the suitability of the habitats on site. No Natural Resources Wales equivalent is available; however, the same principles apply for the licencing process.

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.5
Land 100-250m from any breeding pond(s)	1 - 5 ha lost or damaged	0.4
Land >250m from any breeding pond(s)	1 - 5 ha lost or damaged	0.04
Individual great crested newts	No effect	0
Maximum:		0.5
Rapid risk assessment result:		AMBER: OFFENCE LIKELY

"Amber: offence likely" indicates that the development activities are of such a type, scale and location that an offence is likely. In this case, the best option is to redesign the development (location, layout, methods, duration or timing; see **Non-licensed avoidance measures tool**) so that the effects are minimised. You can do this and then re-run the risk assessment to test whether the result changes, or preferably run your own detailed site-specific assessment. Bear in mind that this generic risk assessment will over- or under-estimate some risks because it cannot take into account site-specific details, as mentioned in caveats above. In particular, the exact location of the development in relation to resting places, dispersal areas and barriers should be critically examined. Once you have amended the scheme you will need to decide if a licence is required; this should be done if on balance you believe an offence is reasonably likely.

The rapid risk assessment fails to take into account obstacles to GCN movement and Waterbody 1 is isolated from the site by Clywedog Road South, which likely acts as a barrier to amphibian movement in some capacity. Additionally, the proposed working area is almost entirely limited to the areas of hardstanding, building and intensively mown amenity grassland. These habitats are of very limited ecologically value and provide very low-quality foraging and sheltered commuting opportunities for GCNs. As such, it is considered unlikely that the proposed development will have any significant impact on GCNs.

2.3 Badgers

Numerous records of badgers *Meles meles* were returned from within 2km of the proposed development site, including records of active setts, field signs and badger sightings. No holes or excavations consistent with badger were found during the walkover survey, and it is considered that there are no badger setts on or within the immediate vicinity of the proposed development site. No other evidence or field signs of badger activity such as footprints or hairs



were found on site during the walkover survey. Although no definitive evidence of badger activity was identified during the survey, a mammal run was identified within the dense scrub along the northern boundary of the site.

The dense scrub located along the north and north-western boundary of the site is suitable for use by badgers it provides sheltered foraging, commuting and sett building opportunities. The areas of grassland on site provide some additional foraging opportunities, however this is limited as these areas are exposed and subject to regular disturbance. Large areas of higher quality badger habitat are present within the surrounding landscape, including areas of broadleaved woodland. Therefore, it is considered that if badgers are using the site, it is only on a transitory basis for occasional foraging or commuting.

2.4 Bats

There is a large commercial building on site that is constructed from corrugated galvanised metal with a brick façade on the north-eastern aspect. Several potential roosting features (PRFs) that are suitable for use by roosting bats were identified on the brick façade, including a gap underneath the metal sheets at the eaves of the building and a gap behind the lead flashing above the open porch. Therefore, the building has been assessed as having moderate potential to support roosting bats. Despite this, only the brick façade has PRFs, and all other sections of the building have been assessed as having negligible potential to support roosting bats due to a lack of PRFs.

As part of the walkover survey, all scattered trees on site were all subject to a full ground level tree assessment of their potential to support roosting bats. No PRFs were identified, and all trees surveyed have been assessed as having negligible potential to support roosting bats. However, the trees within the dense scrub and introduced shrub were not assessed for their potential to support roosting bats, as they are to be retained as part of the proposals.

The areas of dense scrub, introduced shrub and scattered trees, particularly within the north and north-western sections of the site, provide relatively small areas of moderate quality foraging and commuting opportunities for bats. The other habitats on site, including amenity grassland and hardstanding, provide negligible to low quality foraging and commuting opportunities for bats.

The immediate surrounding area contains industrial buildings, hardstanding and well-lit roads to the north and east of the site. However, there are small sections of woodland within the industrial park and the quality of habitats for bats improves to the west of the site, with hedgerow-lined agricultural fields. Furthermore, Redwither Brook is located approximately 200m north-west of the site and provides higher quality foraging and commuting opportunities for bats.

2.5 Breeding birds

Although a targeted bird survey was not conducted during the site walkover, the following bird species were recorded using the site: goldfinch *Carduelis carduelis*, dunnoek *Prunella modularis*, blue tit *Cyanistes caeruleus*, robin *Erithacus rubecula* and wren *Troglodytes troglodytes*.

The areas of dense scrub, introduced shrub and the trees on site will support a variety of nesting bird species in the spring and summer. A number of bird's nests were identified within



these habitats during the survey and several birdboxes were identified on the brick façade on the north-eastern aspect of the building.

2.6 Hedgehogs

Numerous records of hedgehog *Erinaceus europaeus* were returned from within 2km of the proposed development site, with the closest record approximately 480m east from 2012. The dense scrub, semi-improved grassland, amenity grassland and introduced shrub on site provide suitable foraging and commuting opportunities for hedgehogs.

2.7 Reptiles

The habitats within the survey boundary are broadly suitable for common reptile species. The areas of scrub, trees, and dry ditch, particularly within the northern section of the site will provide sheltered basking, foraging and commuting opportunities for reptiles. However, the site is fragmented. Habitats which will be directly impacted by the proposed development include intensively mown amenity grassland, scattered trees, buildings and hardstanding, which are of low or negligible quality.

Local records show that reptiles are present within 2km of the site, including an individual adder (historic record) and slow worm approximately 1km east of the site. Additional records include a grass snake approximately 794m north-west of the site in 2018 and a common lizard approximately 1.2km north-east of the site in 2020.

Furthermore, the site is relatively isolated from other areas of suitable reptile habitat by areas of hardstanding and buildings; the habitats within the immediate vicinity of the site are considered to be of low quality for reptiles. Therefore, it is considered unlikely that the site is used by reptiles.

2.8 Invasive species

Himalayan cotoneaster *Cotoneaster simonsii* and wall cotoneaster *Cotoneaster horizontalis* were identified within the introduced shrub in the northern section of the site. A single stand of Himalayan cotoneaster was also identified at the edge of the amenity grassland on the south-eastern boundary of the site.

2.9 Trees

There are a number of semi-mature and mature trees on site.

Within the northern and western sections of the site, there is one Norway maple *Acer platanoides*, five silver birch *Betula pendula*, one crab apple *Malus sylvestris*, thirteen crack willow *Salix fragilis*, one weeping willow *Salix babylonica*, one hawthorn *Crataegus sp.*, five whitebeam *Sorbus aria*, one pear *Pyrus communis*, one apple *Malus sp.*, three pedunculate oak *Quercus robur*, three ash *Fraxinus excelsior* and three field maple *Acer campestre*.

Within the southern and eastern sections of the site, there are two crack willow, two ash, four silver birch, two apple, one pedunculate oak and one Norway maple trees. The south-western section of the site contains two trees, an elder *Sambucus nigra* and a goat willow *Salix caprea*.



There are several mature coniferous trees on site, including four black pine *Pinus nigra* in the northern section of the site.

3 AMPHIBIAN CONSERVATION PLAN

The mitigation measures included within this section are considered to reduce the risk of harm to protected species to negligible levels. Taken together, the mitigation measures form an Amphibian Conservation Plan which is designed to enable construction and operational activities to proceed whilst safeguarding a protected species. Mitigation measures have been designed with specific reference to the great crested newt mitigation guidelines (2001). As the area of the development site which is being impacted is broadly unsuitable to supporting GCNs due to the majority of the site being composed of buildings, hardstanding and mown amenity grassland, it is highly unlikely GCN will be present at the time of development works. Therefore, it is considered that one-way fencing will not be necessary.

3.1 Construction

The following RAMs should be implemented on site during the construction phase of the development to reduce the risk of harm to amphibians to negligible levels:

- **Should any suspected GCNs be encountered at any point during the development, works on site are to stop immediately and ecological advice is to be sought. UES can be contacted directly on 01565 757788.**
- Prior to any vehicle or plant access, or the commencement of any works on the site, a toolbox talk will be given to all staff and contractors. The talk will include species identification, ecology, legal protection of UK amphibians and what to do if a GCN or any other amphibian is observed during the works.
- Any areas of grassland within the working area will continue to be maintained through mowing to have a sward height of below 5cm. This will be maintained throughout the entire construction phase to reduce the suitability of the working area for amphibians to the lowest possible level.
- Any potential refugia that is temporarily created on site as part of the works will be removed by hand and subject to a check for sheltered amphibians prior to removal. If any potential refugia are too heavy and required mechanical removal, they will be lifted vertically opposed to being dragged horizontally, to reduce the risk of harm to any amphibians sheltering beneath. Potential refugia can include piles of rubble, brash, logs, bricks and other building materials and waste materials such as plastic or metal sheeting and fencing panels.
- During the construction phase, no excavations are to be left open overnight. If this is not feasible, a plank should be left within the excavation at a 45° angle as a precaution to allow amphibians (or any other trapped wildlife) to escape. Any open excavations should be checked for trapped amphibians (and any other wildlife) in the morning prior to the start of works on site.
- Any open excavations will be checked for trapped amphibians (and any other wildlife) prior to infilling.
- Where possible, materials will be stored on pallets off the ground in order to reduce the risk of amphibians sheltering underneath them.



- If any amphibians, excluding GCNs, are found within the construction area during the works, they will be moved to a suitable area of cover around the edge of the site.

3.2 Operational

Any gully pots installed on site and will either be set back, covered with a mesh to prevent amphibians from falling within or will be fitted with a means of escape such as an amphibian ladder.

The above measures will also ensure the protection of all common amphibian species using the site.

3.3 Habitat creation

Given the small size of the site, the scale of the development and the proportion of the site that already comprises developed land, it is not considered necessary to provide a specific conservation area. Instead, the layout and landscaping scheme for the site have been designed to maximise habitat provision across the site, particularly targeting the boundaries of the site, to ensure the retention of existing habitats where possible and to maintain and enhance connectivity across the site.

The landscaping scheme for the site has been designed to incorporate the retention and creation of terrestrial foraging and sheltered commuting habitat in the form of retained scrub and introduced shrub, wildflower grassland creation / enhancement (three different communities to maximise botanical diversity), native species scrub planting and native species-rich hedgerow planting. In addition, two log-piles and a purpose built hibernacula will be created to provide an enhancement in the availability of sheltering and hibernating opportunities. Full details of these habitats including their ongoing management is detailed below in the Landscape and management plan below.

4 LANDSCAPING AND HABITAT MANAGEMENT

Each habitat on site will require a certain level of establishment, maintenance and monitoring to ensure that they are providing the ecosystem function required of them. This section details the habitats being retained or created, and specific management measures for each habitat. The landscaping proposals at Appendix 1 of this report provide a visual representation of the habitats which will require management.

4.1 Trees

The landscaping proposals for the site include heavy standard tree planting within the eastern and southern sections of the site. Proposed trees are all native species that will provide an ecosystem service to other wildlife. The current proposed landscape plan includes the planting a mixture of the following:

- Crab apple *Malus sylvestris*
- Field maple *Acer campestre*
- Silver birch *Betula pendula*

The newly planted and retained trees on site will provide nesting habitat for birds, and once fully mature may develop fissures and crevices which could be used by roosting bats. Furthermore, they will provide a food source for bats and birds in the form of fruit, seeds and invertebrates attracted to the trees.

The planting and initial establishment of the proposed trees should be as detailed within the Schedule, Specification and Implementation Plan that has been prepared for the site by Mdlandscape (drawing reference 24/L/400, 03/05/2023).

Once established, newly planted trees and the existing retained trees on site will then require little management in the future, unless specifically addressing problems or damage to individual specimens. Branches should be removed only when they pose a risk to the health and safety of people or a property. All pruning should be undertaken outside of the breeding bird season and should be avoided from March to August inclusive. If any specialist works are required, an approved arboriculturist should be appointed.

4.2 Hedgerows and scrub planting

There are currently no hedgerows present on site. A new species rich hedgerow will be planted along the eastern and southern edges of the proposed / extended building.

A mix of the following seven native woody species will be planted within the hedgerow:

- Guelder rose *Viburnum opulus*
- Hazel *Corylus avellana*
- Hawthorn *Crataegus monogyna*
- Holly *Ilex aquifolium*
- Field maple *Acer campestre*
- Dog rose *Rosa canina*
- Elder *Sambucus nigra*



The mix of species has been chosen to maximise the biodiversity value of the hedge by increasing structural diversity and increasing the range of foraging opportunities for a variety of taxa. The variety of native species proposed will ensure foraging opportunities are provided for a wide variety of invertebrates (larval stages, nectar feeders and pollinators) birds and small mammals (from the fruit and nut bearing species) and for bats, birds and other mammals from the invertebrates that will be attracted to the hedge.

In addition to providing foraging opportunities, the hedgerow will provide nesting opportunities for birds and its location has specifically been chosen to increase connectivity across the site, specifically for GCNs, however this will also benefit other wildlife such as bats and other mammals. The planting of the hedgerow will act as an ecological enhancement for GCNs and other amphibians due to the current lack of vegetative features or sheltered commuting routes for travelling east to west across the site. The hedgerow will specifically connect the southern section of the site (and any offsite habitats to the east such as the offsite pond on the other side of Clywedog Road South) with the areas of dense scrub at the north-western site boundary and wider areas of suitable habitat that lie further afield.

The planting and initial establishment of the proposed hedgerow should be undertaken as detailed within the Schedule, Specification and Implementation Plan that has been prepared for the site by Mdlandscape (drawing reference 24/L/400, 03/05/2023).

Hedgerows will be maintained to encourage thickening growth and to reach the desired height of 3m gradually, by increasing the cutting height of the hedge by small amounts each year. Incremental height increase is the key to the hedge management cycle, sympathetically allowing a hedgerow to progress slowly through its natural growth cycle without putting it under damaging stress. It also promotes a dense healthy hedgerow. Using this approach, a hedgerow may take many tens of years to complete a full cycle of growth, and at all times during this remain dense, healthy and functional. The hedgerow will be maintained in accordance with the Hedgeline - Hedgerow Management Cycle, stages 1-10, with the aim to keep the hedgerow healthy at all times by allowing it to cycle between points 3 and 8. Side trimming of hedgerows in an 'A' profile to promote healthy hedgerow base should be undertaken in January or February. Hedgerows will be cut along one side annually, alternating between the two sides of the hedgerow each year, so that each side of the hedgerow being cut every two years. All hedgerow cuttings to be collected and removed.

In addition to the hedge and tree planting, the landscaping scheme incorporates the planting of scrub planting and scrub and tree underplanting. These areas of planting will include the following species:

- Common dogwood *Cornus sanguinea*
- Crab apple *Malus sylvestris*
- Dog rose *Rosa canina*
- Elder *Sambucus nigra*
- European gorse *Ulex europaeus*
- Field maple *Acer campestre*
- Guelder rose *Viburnum opulus*
- Hawthorn *Crataegus monogyna*
- Hazel *Corylus avellana*
- Holly *Ilex aquifolium*
- Silver birch *Betula pendula*
- Wayfaring tree *Viburnum lantana*

As with the proposed hedgerows, the mix of species has been chosen to maximise the biodiversity value of the hedge by increasing structural diversity and increasing the range of nesting, sheltering and foraging opportunities for a variety of taxa.

The planting and initial establishment of these areas should be as detailed within the Schedule, Specification and Implementation Plan that has been prepared for the site by Mdlandscape (drawing reference 24/L/400, 03/05/2023).

Once established, areas of planted scrub will require little management in the future, unless specifically addressing problems or damage to individual specimens. Branches should be removed only when they pose a risk to the health and safety of people or a property. All pruning should be undertaken outside of the breeding bird season and should be avoided from March to August inclusive. If any specialist works are required, an approved arboriculturist should be appointed.

4.3 Wildflower grassland

Small areas of existing amenity grassland will be maintained on site, however the majority of retained areas will be enhanced. This enhancement will be achieved through the implementation of a less intensive management regime. To increase botanical diversity, the existing grassland areas will be enhanced through the sowing of yellow rattle *Rhinanthus minor*. Yellow rattle is a hemi-parasite of grass species, reducing their vigour and as a result creates more space and reduces competition for wildflowers.

Yellow rattle introduction will take place in March, immediately prior to which, the grass will be cut as low as possible (at least 25mm) and arisings removed. Following cutting, the area will be scarified with a power rake or chain harrow to degrade the existing sward and remove thatch, with all arisings removed. Yellow rattle will then be sown over the scarified area at 2g/m².

The landscaping proposals have been designed to also incorporate the provision of wildflower scrapes that will be sown with Emorsgate EM1 standard general purpose meadow mixture to provide areas of high species richness from the outset.

The initial sowing and ground works should be carried out by a suitably experienced contractor and may take place in spring (March to April) or autumn (September to October). The sowing and associated ground preparation works will be undertaken as detailed within the Schedule, Specification and Implementation Plan that has been prepared for the site by Mdlandscape (drawing reference 24/L/400, 03/05/2023).

Most of the sown meadow species are perennial and are slow to establish. A flush of annual weeds, arising from the soil seed bank is anticipated soon after sowing. These weeds can look unsightly, but they will offer shelter to the sown seedlings and provide habitat and will die off by the end of the growing season. Annual weeds should not be cut until early August, arisings removed and composted. This will reveal the young meadow, which can then be kept short by grazing or mowing through to the end of March of the following year. Dig out any residual perennial weeds such as docks.

For both the sown wildflower scrapes and the areas of retained grassland that are to be enhanced with yellow rattle, the ongoing management regime will be to take a 'hay cut': cut in August using a scythe, petrol trimmer or tractor mower to around 50mm. Following cutting, the arisings will be left in place to dry and shed seed for 1-7 days before being removed from site. If deemed necessary for aesthetic reasons, these areas of grassland can then be subject to regular mowing until the end of February.

In addition to the above, the base of the newly created hedgerow will be sown with Emorsgate Hedgerow Mixture EH1 at a rate of 4g/m². This mix has been chosen as it contains wildflowers and grass species that are tolerant of semi-shade and is suitable for sowing beneath newly planted or established hedges and on woodland edges, rides and glades.

To maximise structural and botanical diversity, The area sown with EH1 will be subject to zoned management with the areas within 1.5m of the outermost edge of the hedgerow and within left uncut in most years. To control scrub and bramble development, these areas will be cutting every 2-3 years between October and February.

Areas that lie more than 1.5m from outermost edge of the hedgerow will be managed as grassland habitat and will be subject to the same cutting regime as the aforementioned wildflower scrapes and retained areas of grassland that are being enhanced with yellow rattle sowing.

The wildflower grasslands created on site will provide pollen and nectar resources for an array of invertebrates, which will present potential foraging opportunities for GCNs and other amphibians, reptiles, birds, bats and other mammals. Hedgerow base vegetation that is not mown or grazed each year will become rough and “tussocky” in character. This will form a useful refuge and sheltered commuting opportunities for species using the hedgerow.

4.4 Sustainable drainage system (SuDS) basins

The development proposals incorporate the creation of two small rain garden / shallow scrapes to attenuate surface water. These features are expected to be dry for most of the year, however they may hold ephemeral standing water in the winter or immediately following periods of heavy rainfall. It is expected that these features will predominantly contain the same vegetative community as the grassland within which they are located. As such they will be subject to the same management regime as the surrounding grassland, as detailed above in section 4.3. Given the likely waterlogged conditions for short periods of time, these areas may become colonised by and support additional species that are more tolerant of impeded drainage, e.g. rushes *Juncus spp.*, further increasing the botanical diversity of the site.

4.5 Other habitats

4.5.1 Amenity grassland

The small areas of amenity grassland that are being created / retained on site can be established and managed by the occupants according to its own management programme. This habitat type is of limited value to wildlife and will be managed for aesthetical rather than ecological purposes.

4.5.2 Bat boxes

To provide an ecological enhancement for the site, a suite of bat boxes will be provided as part of the development.

Two Schwegler 2F general purpose bat boxes will be installed onto suitably mature trees on site. This durable bat box is ideal for smaller UK bat species and will provide enhanced roosting opportunities on the site. The bat boxes should be fitted at a height of between three

and six metres, on a southerly aspect, with no clutter around the entrance by surrounding branches. Proposed bird box locations are shown on the landscape plan at Appendix 1.

The use of similar alternative models is acceptable if required (e.g. if suggested models are out of stock), although 'Woodcrete' construction will be prioritised due to the increased product longevity and will be used where possible. The use of alternative boxes should be discussed with UES prior to purchase and installation, to ensure they are suitable and that they will provide roosting opportunities for the target species.

Any external lighting installed must be directed away from the bat boxes in order to minimise disturbance and increase the likelihood of occupancy. If this is not possible, UES should be contacted to discuss alternative locations for bat boxes due to be impacted by external lighting.

Once bats have inhabited a bat box, they may only be disturbed by a licenced bat ecologist.

4.5.3 Bird boxes

The retained and newly planted areas of dense scrub, trees and hedgerow will provide potential nesting opportunities for birds, particularly when the trees reach a maturity where fissures and cavities develop. To provide an additional and immediate ecological enhancement, a suite of bird boxes will be affixed to retained trees on site.

Four Schwegler 1B bird nest boxes (2x 26mm and 2x 32mm entrance holes) will be installed onto suitable trees on site. These bird boxes are durable and can attract a wide range of species. They should be sited with the advice of a suitably experienced ecologist but should be positioned at a minimum height of two metres. Unless there are trees which shade the box during the day, the boxes should be oriented between north and east, thus avoiding strong sunlight and the wettest winds. Proposed bird box locations are shown on the landscape plan at Appendix 1.

The use of similar alternative models is acceptable if required (e.g. if suggested models are out of stock), although 'Woodcrete' construction will be prioritised due to the increased product longevity and will be used where possible. The use of alternative boxes should be discussed with UES prior to purchase and installation, to ensure they are suitable and that they will provide nesting opportunities for the target species.

4.5.4 Log piles

As an additional ecological enhancement, two log piles will be created within the northern section of the site adjacent to / within the retained area of trees and scrub. Proposed log pile locations are shown on the landscape plan at Appendix 1.

The log piles will be created using wood and brash from the trees and scrub that are felled on site. These log piles will include a mix of different size logs to provide structural diversity and micro niches that favour different groups of species e.g. larger cavities for hedgehogs and smaller cavities for invertebrates. These log piles have the potential to provide sheltering, foraging and hibernating opportunities for GCNs and other amphibians, reptiles, small mammals and invertebrates.

4.5.5 Hibernacula

As an additional ecological enhancement, one amphibian / reptile hibernacula will be created on site and will be located within the northern section of the site adjacent to the retained area of trees and scrub. The proposed hibernacula location is shown on the landscape plan at Appendix 1.

The hibernacula will be created by excavating a pit in the ground (500mm depth, 2000mm length, and 1000mm width). Ideally, the pit will then be filled using materials already present on site, including hay, brash, cut timber / logs and brick / rock hard-core, or the materials can be sourced from elsewhere if necessary. The pit will be piled up to a height of approximately 1000mm above ground level. The hibernacula will then be loosely capped with topsoil ensuring that access is still available through to the lower layers at the margins. This will provide GCNs and other amphibians with a sheltered place to rest and a place to overwinter. The hibernacula will also potentially provide sheltering and hibernating opportunities for reptiles, small mammals and invertebrates. The following diagram provides a visual representation of the hibernacula, with the only additional requirement to the diagram being that a pit is first excavated.

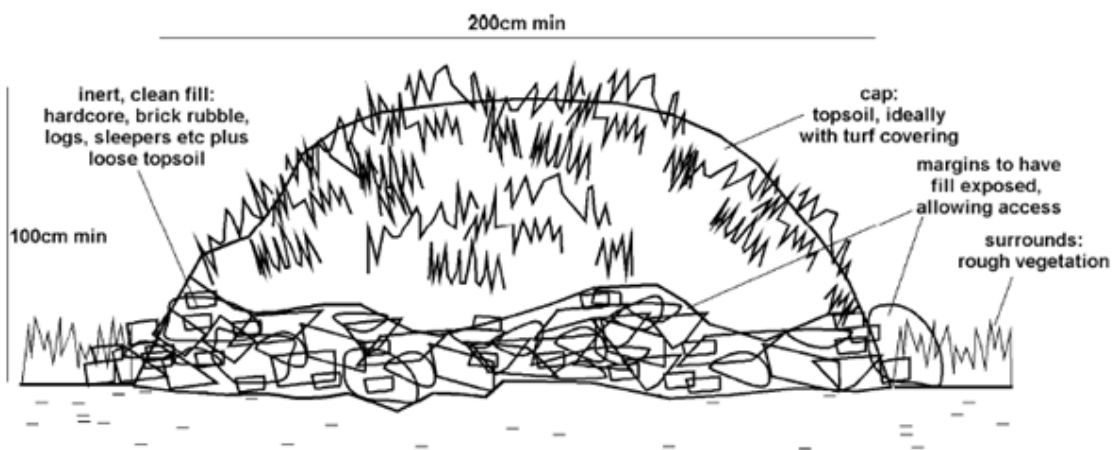


Figure 1 – Hibernacula design.

5 MANAGEMENT RESPONSIBILITIES

5.1 Initial habitat creation responsibility

The responsibility for ensuring that the initial habitat creation works lies with the developer and the contractors appointed to carry out those works at the time of the development. They will be responsible for ensuring that the habitat creation works are carried out in accordance with this LEMP and the Schedule, Specification and Implementation Plan that has been prepared for the site by Mdlandscape (drawing reference 24/L/400, 03/05/2023).

5.2 Ongoing habitat management responsibility

Subsequent management of the habitats on site will be the responsibility of the owners / appointed management company of the site. They must ensure that the ongoing measures detailed within this LEMP are implemented.

Given that an EPSL isn't considered necessary for the main development works, it is considered that a licence is not necessary to cover the ongoing management works, which are being undertaken solely to maintain and maximise ecological value, which will benefit GCNs, but also because they will be limited to routine mowing / trimming of vegetation, which have very limited potential to adversely impact GCNs, even if present on site at the time of the works.

5.3 Monitoring and remedial measures responsibility

The owners / management company of the site will also be responsible for monitoring the establishment of habitats as well as monitoring them for any changes affecting their quality or function.

As part of an ecological compliance audit, the site will be subject to an annual inspection by a suitability qualified ecologist. This visit must take place during the growing season (May to August inclusive). During or immediately following the visit, the ecologist will provide a short summary report and will liaise with the appointed contact from the management company to inform of any issues or deviations from the approved management plan. Following this, remedial works may be necessary to restore the habitats to a satisfactory standard. Necessary changes to the management plan may be identified by the ecologist.

6 MANAGEMENT SCHEDULE

The below table summarises the management requirements and responsibilities detailed in the previous sections. This table should be read in conjunction with the previous sections, which include more detail which should not be overlooked.

Table 1 – Management schedule

ACTIVITY	DESCRIPTION	TIMINGS
<i>Initial works – carried out by appointed contractors</i>		
Removal and eradication of invasive species	Eradication of wall cotoneaster and Himalayan cotoneaster as detailed within the Pea report prepared for the site (see report reference UES03538/03)	Prior to commencement of works within the infected areas.
Initial arboricultural works, tree felling and removal of scrub and introduced scrub		September to February. If not possible, then a bird nest scoping survey should be carried out immediately prior to the works.
Tree planting	Including use of stakes, spirals or guards and treatment of vegetation at base of trees.	During the development, although planting between October and April is preferred.
Hedgerow and scrub planting	Including treatment of vegetation at base of the hedgerow plants.	During the development, although planting between October and April is preferred.
Sowing of yellow rattle	Preparatory ground works and sowing of yellow rattle seeds within areas of retained grassland that are to be enhanced.	March
Sowing of EM1 wildflower seed mix	Including preparatory ground works.	March-April or September-October.
Sowing of EH1 wildflower seed mix	Including preparatory ground works.	After planting of hedgerow, March-April or September-October.
Installation of bird and bat boxes	As detailed in section 4.5.2 and 4.5.3.	Prior to the completion of works and operational phase of development.
Creation of an amphibian and reptile hibernacula and two log piles.	As detailed in section 4.5.4 and 4.5.5.	As soon as sufficient material is available during the development and prior to the completion of works



		and operational phase of development.
<i>Ongoing management – carried out by the site's owners / management company</i>		
Arboricultural works / tree and scrub pruning	To address specific health and safety risks.	September to February. If not possible, then a bird nest scoping survey should be carried out immediately prior to the works.
Mowing of amenity grassland	In accordance with the site's management programme.	No time restrictions.
Trimming of hedgerows	To establish dense, bushy growth. Pruning should aim to achieve a height of around 3m and will involve an annual rotational cut, so that each side is cut on alternate year	January – February.
Hay cut of yellow rattle enhanced grassland and EM1 sown wildflower scrapes.	Removal of litter or debris from mowing area and checking for sheltering wildlife underneath. Arisings are to be removed following each cut. See section 4.3 for full details.	Hay cut in August annually. Can be subject to ongoing cutting from September to late February as required.
Cutting of EH1 sown grassland at the base of hedgerow	Removal of litter or debris from mowing area and checking for sheltering wildlife underneath. Arisings are to be removed following each cut. See section 4.3 for full details.	Cutting in August every 2-3 years.
Inspection by ecologist.	To assess the establishment and condition of habitats, and to determine whether any remedial actions are required to restore habitats.	May to August annually.



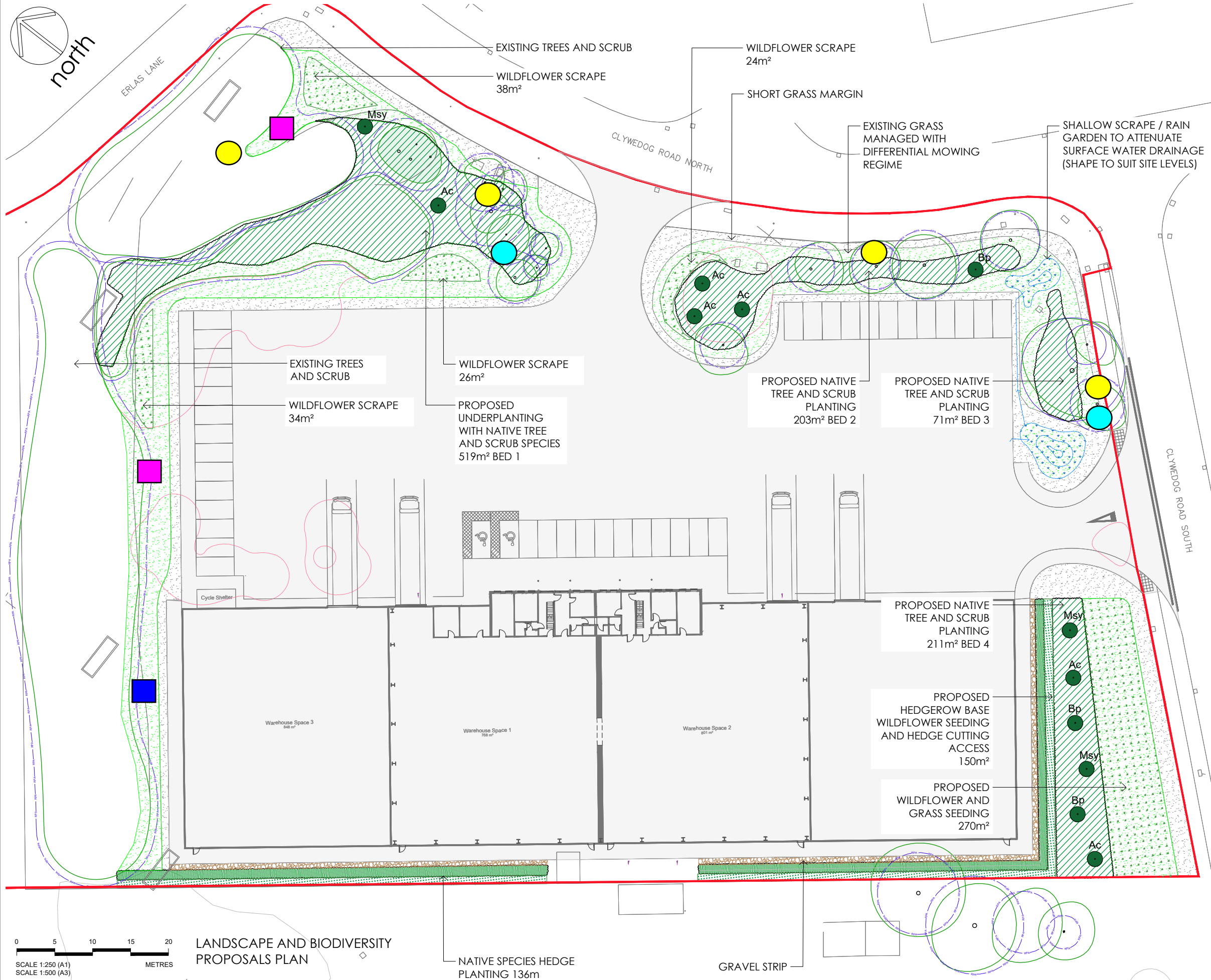
7 CONCLUSION

Once implemented, the landscaping and ecological measures will provide a biologically diverse landscape. The bottom-up approach to improving the biodiversity on site will ensure that the habitats on site can support a range of invertebrate species and provide other food sources, which will then in turn benefit fauna further up the food chain. Particular focus has been placed on creating habitats that will benefit GCNs, including increasing connectivity across the site.



APPENDICES

Appendix 1 – Landscape proposals



- Notes
1. Dimensions are given in metres and millimetres as stated on the drawing.
 2. Centre of site is located at approximately grid reference SJ 3726 4970.
 3. Drawing must be reproduced in colour.



- Legend
- SITE BOUNDARY
 - PROPOSED HARD STANDING AND NEW DEVELOPMENT AREA
 - EXISTING TREES TO BE RETAINED
 - EXISTING TREES TO BE REMOVED
 - ANTICIPATED ROOT PROTECTION AREA OF RETAINED TREES
 - PROPOSED TREE PLANTING 12-14cm GIRTH HEAVY STANDARD TREES
 - PROPOSED NATIVE SPECIES TREE AND SCRUB PLANTING
 - PROPOSED NATIVE SPECIES HEDGE PLANTING
 - PROPOSED HEDGEROW BASE WILDFLOWER AREA
 - AREAS TO BE MAINTAINED AS SHORT GRASS
 - AREAS OF GRASS TO BE ALLOWED TO GROW LONG AND MANAGED WITH A DIFFERENTIAL MOWING REGIME
 - PROPOSED WILDFLOWER SCRAPES
 - PROPOSED SHALLOW SCRAPES / RAIN GARDENS FOR DRAINAGE ATTENUATION
 - PROPOSED GRAVEL BETWEEN BUILDING FOOTPATH AND HEDGE
 - Schwegler 2F general purpose bat box
 - Schwegler 1B bird box
 - Log pile
 - Hibernacula



Project	DRAGON PACKAGING WREXHAM INDUSTRIAL ESTATE	Dwg No 224/L/100	Scale 1:250 @ A3 / 1:500 @ A1	Date 02/05/2023	Revision	Date	Details	Drawn	Checked	Reviewed	
					P01.1	02/05/2023	FOR CO-ORDINATION	MD	XX	XX	
Title	LANDSCAPE AND BIODIVERSITY PROPOSALS PLAN										

mdlandscape
6 Kinderton Close | High Legh | Knutsford
Cheshire | WA16 6LZ | 07710 498231

©The Copyright of this drawing belongs to mdlandscape. This drawing is issued by mdlandscape subject to the condition that it is not copied either in whole or in part, or disclosed to third parties unless prior written authorisation is given by mdlandscape. Do not scale from this drawing - refer to noted dimensions on drawing - all dimensions to be confirmed on site prior to execution of the works. All dimensions are shown in metres and millimetres unless otherwise stated. Where Ordnance Survey data is used the relevant licence is stated on the drawing.