Biodiversity Enhancement Management Plan

Bence Farm, Darton

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Contents

1. Summary 3
2. Introduction 4
3. 2022 Baseline 4
4. Responsibilities 5
5. Precautionary Working Practices During Site Clearance 5
6. Features to be Retained, Created, Enhanced and Managed 6
7. Management, Maintenance and Monitoring Work Schedule 12
8. Habitat Enhancements for Wildlife 14
9. Lighting Plan 15
10. Statement of Work Complete 16
11. References 16
Appendix 1. Landscape Masterplan 17

1. Summary

1.1.1 This Biodiversity Enhancement Management Plan (BEMP) was commissioned by the planning consultant Alistair Flatman, on behalf of the client on 2nd May 2023.

1.1.2 The BEMP is intended to address Condition 11 of an outline planning permission (Ref.: 2021/1571) relating to the demolition of existing stables buildings and construction of three dwellings at Bence Farm, Darton.

1.1.3 This document details precautionary working practices to be adopted during site clearance in order to safeguard amphibians, birds and the health of the hedge and trees on the southwest boundary (which are to be retained).

1.1.4 The habitats that will be retained, enhanced or newly created are described in this document, along with the aims and objectives of habitat management. The locations of habitats retained or created on the site are shown in the Landscape Masterplan, included in Appendix 1. Recommendations relating to the initial establishment and management of newly planted vegetation are provided in the Landscape Masterplan which should be read alongside the text in the BEMP. The BEMP details long-term management methods. The remedial measures to be applied, together with triggers initiating their requirement, have also been specified.

1.1.5 Alongside the retained hedgerow and trees, new hedgerow will be planted, with new mixed scrub planted and areas of meadow grassland seeded below newly planted trees.

1.1.6 Each dwelling will have an integrated bat and bird box, with hedgehog holes to be created, according to the specifications prescribed, within boundary and internal fencing. External lighting restrictions have been agreed with the client and presented in this document.

1.1.7 The landowner Mr David Barlow of Barlow Properties Ltd will be ultimately responsible for the delivery of the measures identified in this document unless the responsibility is formally handed over to a management service.

1.1.8 The BEMP prescribes monitoring visits by a consultant ecologist in Years 1, 3, 7, 14, 21 & 28 of the scheme.

1.1.9 Any required deviations or alterations from this BEMP and the Landscape Masterplan, will be reported by the ecologist following the Year 1 inspection and submitted by the client to the Local Planning Authority for sign off.

2. Introduction

2.1.1 This Biodiversity Enhancement Management Plan (BEMP) was commissioned by the planning consultant Alistair Flatman, on behalf of the client on 2nd May 2023.

2.1.2 The BEMP is intended to address Condition 11 of an outline planning permission (Ref.: 2021/1571) relating to the demolition of existing stables buildings and construction of three dwellings at Bence Farm, Darton (O.S. Grid. Ref.: SE 31260 09390). Condition 11 states:

> *The Reserved Matters application shall be accompanied by a Landscape scheme and Biodiversity Enhancement Management Plan (BEMP) detailing the long-term management of the ecological mitigation in accordance with the Preliminary Ecological Appraisal (Middleton Bell) and the accompanying Small Sites Metric (Rev 1) for approval by the Local Planning Authority. The development shall be implemented in accordance with the approved details.*

2.1.3 The BEMP is informed by ecological survey work undertaken in 2022 and reported in the associated Preliminary Ecological Appraisal (MBE, 2022).

2.1.4 The BEMP will provide the details required to implement and manage the ecology-led elements of the landscape proposals. It will include the rationale behind the aims of the proposals and information on their long-term (30 year) management.

2.1.5 This document has been prepared by Middleton Bell Ecology Ltd with input from the landscape consultant.

3. 2022 Baseline

3.1.1 The site comprised an active livery stables including three large buildings, two used as stables and one for storage, together with a shipping container. The buildings were largely surrounded by artificial unvegetated surface. Hardstanding covered the area between the two stable blocks and modified grassland is present in two areas on the periphery of the site. An outgrown former hedgerow, including two semi-mature sycamore *Acer pseduoplatanus* trees, bordered Barnsley Road on the southwest boundary of the site. A large manure heap formed the northwest boundary.

3.1.2 A ditch was present outside the site but immediately adjacent to the northeast boundary, with pasture fields beyond. To the southeast was a menage, with residential housing beyond Barnsley Road on the southwest boundary. A further paddock was present beyond the manure heap on the northwest boundary.

3.1.3 The habitats present within the site were not considered to be of greater than site level importance to nature conservation. The site was not considered to be of more than site level importance to any species group.

4. Responsibilities

4.1.1 The landowner Mr David Barlow of Barlow Properties Ltd will be ultimately responsible for the delivery of the measures identified in this document unless the responsibility is formally handed over to a management service.

4.1.2 It is envisaged that the installation and management of the habitats present will be undertaken by a landscape management contractor employed by the client.

4.1.3 It is envisaged that the monitoring and identification of any remedial measures will be undertaken by an ecological consultant, to be employed by the client.

5. Precautionary Working Practices During Site Clearance

5.1 Amphibians

5.1.1 Common toad *Bufo bufo* are known from the ditch adjacent to the northwest boundary. The site may be used by feeding toads, whilst stored materials on the site have potential to be used as resting places. Prior to site clearance a toolbox talk on amphibians should be delivered to site workers. Stored materials present to the northeast of the existing buildings (Plate 1) should then be hand searched by the ecologist, with any amphibians captured and moved to terrestrial habitats beside the ditch (off-site).

Plate 1. Stored materials on site including logs, pallets and tiles



5.2 Birds

5.2.1 Swallows *Hirundo rustica* are known to nest in site buildings. Other species of bird may also nest in these structures, as well as nesting in the scrub along the northeast site boundary.

5.2.2 Buildings should be demolished outside the main bird nesting season (March-September). If this is not possible then works should be preceded by a nesting bird check undertaken by an ecologist.

5.3 Trees and Hedgerow

5.3.1 British Standard 5837 (2012): Trees in relation to design, demolition and construction, should be followed. The southwest boundary hedge and trees should be fenced off using Heras fencing prior to works commencing. The location of this hedgerow and the two trees is shown in Appendix 1. This fencing should be positioned beyond the edge of the canopies of the two sycamore trees.

6. Features to be Retained, Created, Enhanced and Managed

6.1.1 The habitats that will be retained, enhanced or newly created are described below, along with the aims and objectives of habitat management. The locations of habitats retained or created on the site are shown in the Landscape Masterplan included in Appendix 1.

6.1.2 Recommendations relating to the initial establishment and management of newly planted vegetation are provided in the Landscape Masterplan. These measures will not be repeated in this document, rather the BEMP and Landscape Masterplan should be read together.

6.1.3 This BEMP details long-term management methods. The remedial measures to be applied, together with triggers initiating their requirement, have also been specified.

6.2 Hedgerow

<u>Retained, enhanced, and newly created habitat</u>

6.2.1 A 4m wide x 6m high outgrown hedge is present along the southwest site boundary beside Barnsley Road (Plate 2) This feature includes two semi-mature sycamore trees at the northwest end, with a gap in the former hedge between these trees. Component species include frequent hawthorn *Crataegus monogyna*, elder *Sambucus nigra*, dog rose *Rosa canina*, bramble *Rubus fruticosus* agg. and the two sycamore trees. This hedgerow is largely intact with dense growth across its height. This hedge also helps screen the site from the road. As detailed in the 'Mixed scrub' section of this document the base of this hedge will be gap planted and its width increased by new native shrub planting.

Plate 2. Existing outgrown hedgerow and trees beside Barnsley Road, on southwest site boundary, to be retained



6.2.2 In addition to retention of the hedgerow bordering Barnsley Road, a new 41 m length of hedgerow will be planted along the southeast site boundary (Appendix 1), between an access track to the paddock and the site's boundary. This new length of hedgerow is to be planted as a double staggered row comprising a mix of six native woody species and honeysuckle *Lonicera periclymenum*.

Habitat management aims and objectives

Existing hedge (southwest boundary)

6.2.3 Retention of the southwest boundary hedgerow maintains an element of habitat connectivity along Barnsley Road, as well as screening the site. The aim for this hedgerow is to maintain the following:

- Dense bushy growth at its base
- A height of at least 2 m but no more than 6 m high
- At least 4 m wide
- Have no gaps along its length
- Supports no invasive non-native species

Newly planted hedge (southeast boundary)

6.2.4 For the new hedgerow, to be planted along the southeast boundary, the aims for management are to ensure the hedgerow:

- Is at least 1.5 m wide
- Is at least 1.5 m tall
- Has dense bushy growth at its base
- Has no gaps along its length
- Support no invasive non-native species

Management prescriptions

Existing hedge (southwest boundary)

6.2.5 This hedge should be trimmed once per year, in order to ensure its height is maintained, to encourage dense bushy growth and to ensure that it doesn't encroach onto the footpath. It is not proposed to lay this hedge due to its function in screening the development from the road. Hedges should be trimmed in January or February to allow the berry crop to be harvested by wintering birds.

Newly planted hedge (southeast boundary)

6.2.6 The new hedgerow is to be established in accordance with prescriptions detailed in the Landscape Masterplan. During Year 1 the hedge should be watered once per week during dry periods and mulch at the base of the hedge should be maintained in order to prevent weed establishment. At the end of Year 1 all dead or failing plants should be replaced.

6.2.7 This hedge should be trimmed every other year in January or February. In Year 7 this hedge should be laid. Thereafter the programme of trimming every other year should continue until the Hedge is laid again in Years 14, 21 & 28.

Remedial measures

6.2.8 The hedgerow plants should be inspected in late summer (August – September) during Years 1 and 2 by the landscape management contractor. Any dead plants should be replaced the subsequent winter.

6.2.9 The southeast hedge should be laid if it becomes too large, or too gappy either within its length or at the base.

6.2.10 The success of the management and the need for remedial measures, and the need for hedge laying or re-laying should be determined by the ecologist during inspections in Years 1, 3, 7, 14, 21, and 28.

6.2.11 If non-native invasive plant species are identified within the hedgerows on site, they should be removed. The method for removal will be species specific with additional species-specific control measures likely to be required. At present invasive non-native species can usually be treated or buried on site, in accordance with Regulatory Position Statement 178 (https://www.gov.uk/government/publications/treatment-and-disposal-of-invasive-non-native-plants-rps-178/treatment-and-disposal-of-invasive-non-native-plants-rps-178), or removed from site by a licensed waste disposal contractor. The contractor should be notified if they are transporting a species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

6.3 Trees

Retained, enhanced, and newly created habitat

6.3.1 Two semi-mature sycamore trees, present bordering Barnsley Rd at the southwest site boundary (Plate 1) will be retained.

6.3.2 A total of 28 new trees will be included within the managed habitats within the site (Appendix 1). Of these trees, 23 will be located outside residential gardens. The new trees will comprise a total of seven native tree species and three fruit tree species.

Habitat management aims and objectives

6.3.3 The aim is for newly planted trees to achieve a moderate condition within the 30-year timeframe of this LEMP. In order to achieve a moderate condition, the trees should:

- Show little or no impact of vandalism or herbicide use;
- No evidence of regular pruning; and
- More than 20% of the tree canopy should oversail vegetation (rather than hard standing)

Management prescriptions

6.3.4 Planting prescriptions for new trees are detailed on the Landscape Masterplan (Appendix 1).

6.3.5 During Year 1 the trees should be watered once per week during dry periods and mulch at the base of the trees should be maintained in order to prevent weed establishment. At the end of Year 1 all dead or failing plants should be replaced.

6.3.6 After Year 1 the trees are not anticipated to require any regular maintenance within the subsequent 30 years.

Remedial measures

6.3.7 During the first autumn the trees will be inspected by the landscape management contractor. Any failed trees will be replaced that winter.

6.3.8 The trees should be inspected by the ecologist in Years 1, 3, 7, 14, 21, and 28. If vandalism, herbicide use, or pruning is affecting the tree and it can't be controlled, additional tree planting will be undertaken by the landscape management team.

6.4 Meadow areas

Retained, enhanced, and newly created habitat

6.4.1 No grassland is being retained on site with all grassland areas newly created. Meadow grassland is to be established bordering the paddock access track at the southeast end of the site and also between the hedgerow, scrub and dwelling, bordering the site's southwest boundary.

Habitat management aims and objectives

6.4.2 The meadow grassland will be managed to bring it into moderate condition.

6.4.3 This will require:

- The development of grassland with a species composition targeted at the UK Habitat Classification grassland habitat type. In this case the aim is to create a grassland which imitated traditional lowland meadow
- Management of grassland to ensure no more than 5% bare ground
- Management of grassland to ensure an absence of non-native invasive species
- Management of grassland to ensure a high number of species per meter square (more than 9)

Management prescriptions

6.4.4 Prescriptions for the seeding of new meadow are detailed in the Landscape Masterplan (Appendix 1), with the seed supplier and mix specified (Habitat Aid Basic Wildflower Meadow Seed Mix). It should be noted that meadow grassland is not to be sown on topsoil as per other plantings. Instead subsoil to BS 8601:2013 or an un-improved soil with a lower nutrient level should be used to establish the tilth to be seeded. The meadow areas should be watered once per week during dry weather in Year 1

6.4.5 The area of meadow grassland should be mown twice a year. The first cut to be completed in March - April, with the second cut undertaken in late July - August.

6.4.6 Undesirable weeds should be spot sprayed or hand-pulled by the landscape management contractor. As a minimum this should be completed during May in Years 1, 2, 3, and 5, with additional management undertaken as required. Once the meadow grassland has established, invasion by undesirable species (i.e. nettle *Urtica dioica* and broad leaved dock *Rumex obtusifolius*) will be less likely.

6.4.7 The arisings from all mowing will be collected and either disposed of or composted in a set location within the scrub along the southwest site boundary. The arisings from the late August cut will be left in situ for 5 to 7 days before being collected to allow seeds to fall. The reason for removing all arisings from the mown area is to prevent the buildup of fertility in these areas.

Remedial measures

6.4.8 The grassland should be inspected by the ecologist in Years 1, 3, 7, 14, 21, and 28. The ecologist will consider the following specific concerns during the inspections and take the prescribed action:

- If non-native invasive plant species, undesirable weeds or scrub are identified within the sward, then they should be notified to the client and landscape management contractor and removed by the landscape management contractor. The method for removal of undesirable plants will be species specific with additional control measures likely to be required. Invasive, non-native species should be treated as described in Section 6.2.11 of the Hedgerow Section
- If evidence of a poorly timed mowing regime is recorded, then the management contractor will be contacted to discuss the timing of cuts detailed in the BEMP
- If problems arise from use of the area by the public (fly tipping, littering, dog fouling etc.) then the ecologist will notify the client and landscape management contractor. Consideration will be given to restricting or altering access via the use of fencing, changes to hedgerows, amending the location of mown paths, or cessation of mowing paths through these areas

6.5 Mixed scrub

Retained, enhanced, and newly created habitat

6.5.1 Two new areas of scrub planting will be undertaken. A wavy edged area of scrub will be planted along the edge of the existing southwest boundary hedgerow with additional specimens used to gap plant the area beneath the sycamore trees in the northern corner of the site. This area of scrub will thicken the hedgerow and create a more complex ecotone along the boundary.

6.5.2 A new 2 m wide belt of native scrub will also be established between new garden fencing at the northeast end of new residential gardens and the offsite ditch. The purpose of this scrub, beyond its intrinsic appeal, is to help prevent the tipping of garden waste, or garden encroachment towards the ditch. The new species-rich mixed scrub is to comprise a mix of seven native woody species and honeysuckle.

Habitat management aims and objectives

6.5.3 The mixed scrub will be managed to bring it into moderate condition.

6.5.4 This will require:

- A mixture of at least three woody species; with no one species comprising more than 75% of the cover
- An absence of non-native invasive species
- An edge bounded by tall herbs/grassland

Management prescriptions

6.5.5 New mixed scrub should be established in accordance with the Landscape Masterplan (Appendix 1). During Year 1 the hedge should be watered once per week during dry periods and mulch at the base of the hedge should be maintained in order to prevent weed establishment. At the end of Year 1 all dead or failing plants should be replaced.

6.5.6 The mixed scrub will be inspected by the landscape management contractor in the first autumn. Any failed plants will be replaced during the winter of Year 1 - 2.

6.5.7 New mixed scrub should be trimmed once every other year to encourage dense bushy growth. Scrub present bordering the hedge on the southwest boundary should be trimmed to create a sloped edge, angled upwards towards the top of the hedge, effectively thickening the hedge base.

6.5.8 All removed scrub should be disposed of off-site.

6.5.9 The mixed scrub will be inspected by the ecologist n Years 1, 3, 7, 14, 21, and 28.

Remedial measures

6.5.10 If non-native invasive species are recorded within the scrub by the ecologist during the inspections the entire extent of the invasive plants should be removed at the first opportunity by mechanical or chemical control by the landscape management contractor or a specialist invasive species removal firm if required.

6.5.11 The method for removal of non-native plants will be species specific and should be dealt with as identified in the Section 6.2.11 of Hedgerow Section.

6.5.12 If more than 10 % of the area of scrub (total) requires clearance in order to remove non-native invasive species, supplemental planting will be undertaken by the landscape management contractor during the following winter.

7. Management, Maintenance and Monitoring Work Schedule

7.1.1 The years during which regular maintenance and management work is required on site are indicated by asterisks in Table 2 below.

7.1.2 Years when monitoring visits should be undertaken by a suitably qualified ecologist are highlighted in green. Following monitoring the management prescriptions in this BEMP should be reviewed and updated to achieve the stated aims. Additional monitoring and revision of the management prescriptions in this BEMP should be made as required.

Table 2. Timing of works

Habitat	Regular management and maintenance	Year																													Notes
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Hedgerows	Establishment	*																														Plant new hedge between November and March avoiding very cold or wet weather. Failed plants should be replaced in first winter.
	Watered (during dry weather) and mulch maintenance	*																														Watered every week during spring and summer. Additional watering should be applied in long periods of hot and/or dry weather. Mulch at the base of hedge to be maintained/added to, in order to prevent weed encroachment.
	Hedge laying	*						*							*							*							*			Southeast boundary hedge only should be laid
	Hedge trimming	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	The Barnsley Rd (southwest boundary) hedge should be trimmed every year in January or February. The southeast boundary hedge should be trimmed every other year
Trees	Establishment	*																														Plant between November and March avoiding very cold or wet weather. Failed plants should be replaced in first winter.
	Watered (during dry weather) and mulch maintenance	*																														Watered every week during spring and summer. Additional watering should be applied in long periods of hot and/or dry weather. Mulch at the base of hedge to be maintained/added to, in order to prevent weed encroachment.
Mixed scrub	Establishment	*																														Plant between November and March avoiding very cold or wet weather. Failed plants should be replaced in first winter.
	Watered (during dry weather) and mulch maintenance	*																														Watered every week during spring and summer. Additional watering should be applied in long periods of hot and/or dry weather. Mulch at the base of scrub to be maintained/added to, in order to prevent weed encroachment.
	Scrub trimming								*							*							*						*		New mixed scrub should be trimmed once every other year to encourage dense bushy growth. Scrub present bordering the hedge on the southwest boundary should be trimmed to create a sloped edge, angled upwards towards the top of the hedge, effectively thickening the hedge base.

Habitat	Regular management and maintenance	Year																														Notes
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Meadow grassland	Establish new grassland areas	*																														Prepare and sow seed mixture in autumn or spring into sub-soil, avoiding forecast heavy rain. Undertake first cut of newly sown areas once the grassland is sufficiently well established (likely to be late summer). Apply a second application of seed mix in the autumn.
	Watered during dry weather	*																														The meadow areas should be watered once per week during dry weather in Year 1
	Mow areas of long grassland twice a year	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1st cut in March-April, Second cut in late July/August. Collect arisings immediately after April cut, collect arisings 5 to 7 days after July/August cut. All arisings to be moved offsite or to compost area.

8. Habitat Enhancements for Wildlife

8.1 Bats

8.1.1 A single integrated bat box, such as the Vivara Pro Build-in WoodStone Bat Box (Plates 3 & 4) will be installed in each new dwelling. Locations selected for each box are shown on the Landscape Masterplan. These boxes are to be installed either close to the gable apex or at the wall top.

Plates 3 & 4. Vivara Pro Build-in WoodStone Bat Box





8.2 Birds

8.2.1 A single new integrated swift *Apus apus* box, such as the Manthorpe Swift Brick (Plates 5 & 6) will be installed in each new dwelling. Locations selected for each box are shown on the Landscape Masterplan. Studies have shown that swift boxes are used by a varied range of nesting birds that utilise buildings; consequently, these boxes will also provide potential nesting space for house sparrow *Passer domesticus* and starlings *Sturnus vulgaris*. These boxes are to be installed at wall top height in unobstructed locations (i.e. no extensions below).

Plates 5 & 6. Manthorpe Swift Brick





8.3 Hedgehogs

8.3.1 Hedgehog holes (13 cm x 13 cm) are to be cut into the base of internal and boundary fences in the locations shown on the Landscape Masterplan. In order to show new homeowners the purpose of fence holes, signs should be affixed over the hole on both sides of the fence (i.e. Eco Hedgehog Hole Fence Plate)

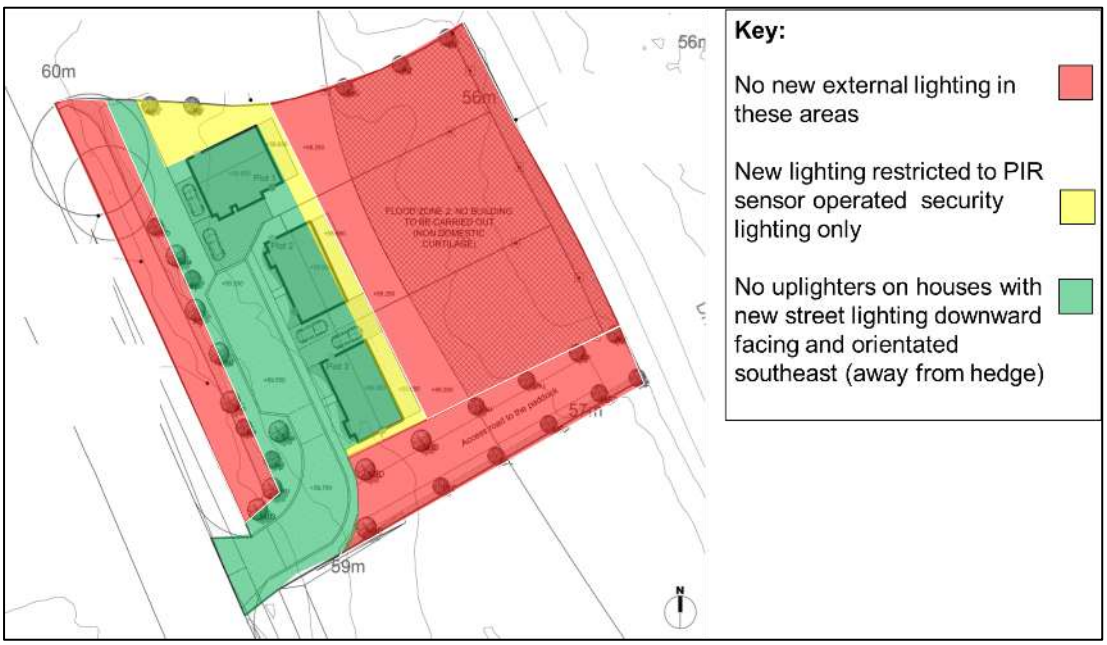
9. Lighting Plan

9.1.1 The client has agreed to a number of restrictions in order to prevent light spill across semi-natural habitat around the site periphery and also off-site locations. Lighting restrictions are shown in Figure 1, with new switch, time and/or light-sensor operated lighting limited to the site access and southwest part of the site, an area already subject to light spill from street lighting on Barnsley Road.

9.1.2 Across the entire site any required street lighting will have a warm white colour (temperature of <2700 Kelvin). The lights will have an upwards light ratio of 0%, to be mounted on the horizontal (with no upwards tilt) and to have good optical control. Programmable street lighting should be used, the lighting should be switched off, or reduced to 50 % brightness, between midnight and 04:00.

9.1.3 The lighting restrictions identified below are designed to retain the suitability of the habitat along the northeast and southwest boundary for foraging by nocturnal wildlife and also to retain darker areas of habitat across the site which would allow nocturnal wildlife to cross the site.

Figure 1. Lighting zones



10. Statement of Work Complete

10.1.1 On completion of the installation of lighting and the proposed planting and landscaping work (in Year 1) a statement detailing the planting undertaken and any required deviations or alterations from this BEMP and the Landscape Masterplan (Appendix 1) will be reported by the ecologist following the Year 1 inspection and submitted by the client to the Local Planning Authority for sign off.

11. References

MBE (2022) MBE ECO 2022 07 Land off Barnsley Road, Darton – Preliminary Ecological Appraisal. Middleton Bell Ecology, Darton.

Appendix 1. Landscape Masterplan



LANDSCAPE KEY

SOFT LANDSCAPE
(Planting: refer to planting schedule & Specification for planting details)

- Existing trees and mixed scrub vegetation to be retained. Refer to ecology habitat survey for further reference.
- **Proposed Heavy Standard Trees** Girth 12-14cm Height 350-425cm
- **Proposed Selected Standard Trees** Girth 10-12cm Height 300-350cm
- Proposed Native Planting Mix
- Proposed mixed species native hedge
- Proposed front garden planting
- Proposed front garden lawn to be turfed
- Proposed rear garden lawn to be seeded
- Proposed meadow seeding
- Proposed native bulb mix

HARD LANDSCAPE & BOUNDARIES

- Proposed access road
- Proposed permeable parking bays
- Proposed permeable paving to rear garden patios
- Proposed access track to paddock
- Proposed pedestrian footpath
- Proposed plot boundary treatments
- Flood zone 2: No build zone

HABITAT FEATURES
All habitat features are to be in accordance with ecologists specification. See Preliminary Ecological Appraisal by Middleton Bell for further detail.

- Proposed integrated swift bricks — Integrated swift brick to be fitted on the northwest elevation of each new dwelling, to go at wall top height in an unobstructed location (i.e. no extensions below).
- Proposed bat boxes — Integrated bat box to be fitted in each new dwelling. Boxes to be fitted in the southeast elevation of two of the new dwellings and the southwest elevation of the other dwelling.
- H — Proposed hedgehog holes — 13 cm x 13 cm hedgehog holes cut into the base of plot boundary fences with one per length of fence. In order to show new homeowners the purpose of fence holes, signs should be affixed over the hole on both sides of the fence (i.e. Eco Hedgehog Hole Fence Plate).

SOFTWORKS SPECIFICATION NOTES

The contractor is responsible to ensure that no products or practices are to be used that do not comply with relevant British Standards, Codes of Practice and Construction Regulations. Contractor to be fully satisfied with locations and off sets of services prior to excavations.

Site clearance generally: Where necessary remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil. Remove stones exceeding 75 mm. Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.

Retain and protect trees and vegetation in accordance with BS 5837 where necessary. Grub up any large roots and dispose of without undue disturbance of soil and adjacent areas. In order to comply with UK legislation in regard to the Wildlife and Countryside Act 1981 (as amended), any tree or vegetation removal and/or management must take place outside of the bird nesting season (March to September inclusive). Where this cannot be achieved, nesting bird checks must be undertaken by a suitably qualified ecologist within 24 hours of the works.

Works within the root protection area (RPA):There shall be no areas of storage, trafficking of machinery, cultivation, ripping or mechanical rotivation, or importing of top soil, within the root protection area (RPA) of the existing trees to be retained. Where paths and hard surfacing is proposed within the retained tree RPA's, a No Dig methodology is to be adopted. Underground reinforcement, such as Cell Web (or similar approved) to be utilised in these locations. No trenches shall be dug within the RPA of the existing trees. New hedging plants within the RPA of the existing trees shall be notch planted. All of the above must be in accordance with BS 5837.

SOIL
Site preparation: Where required all existing topsoil and subsoil shall be stripped and stored separately on site. Heaps must not exceed 3m in height and should be used within 12 months in accordance with BS 4425 (Code of practice for general landscape operations).

Soil Sampling - Existing topsoil and inert sub soils, shall be analysed in accordance with BS 3882 to determine available nutrients, texture, organic matter content and pH. Where require, existing soils are to be improved in accordance with BS 3882:2015
Cultivation - Flail existing ruderal vegetation to ground level and remove arisings prior to cultivation. All areas to receive final layers of topsoil are to be de-compacted prior to spreading. Earth works vehicles to be small scale and tracked (loose-tipping) to minimise compaction, however chosen method for decompaction will be site specific dependant on size and soil conditions. Additional care must be taken as to not damage soil structure. All objects and stones over 75mm brought to the surface during decompaction are to be removed from the prepared surface layer. If existing subsoil horizon is found to consist of heavy clay, all proposed seeded areas to be fine ripped to 200mm depth at 300mm centres to increase drainage. Areas to be seeded to be chain harrowed to a fine tilth and lightly rolled to provide firm seed bed. Remove all stones over 30mm dia in any direction. Imported soil material: Import as necessary to make up any deficiency of topsoil and/or subsoil existing on site to complete the work and mitigate deficiencies. All imported material must conform with industry standards BS 8601 (Subsoil), BS 3882 Topsoil) and CLEA limits on heavy metals. Topsoil to be General purpose, 10mm screened and locally sourced (unless otherwise stated)

Soil build up: Existing topsoil and subsoil to be retained and reused on site within the landscape scheme where possible. Prior to spreading all topsoil to be screened to remove large stones and other deleterious materials, such as plant roots, leaves and clay. Topsoil to be loose-tipped and spread over de-compacted subsoil/receiving area. The total minimum rooting depth for planting, after settlement, should be: Grass 450mm; Planted areas 600mm; Trees 900mm. Topsoil depths for these areas should not normally exceed 300mm with the following minimum depths for each area: Grass 150mm; Planted areas 300mm; Trees 300mm. Meadow & wildflower seeding to be sown directly onto prepared subsoil.

Finished level of topsoil after settlement: Above adjoining paving or kerbs: 25 mm; Below dpc of adjoining buildings: Not less than 150 mm; Shrub areas: Higher than adjoining grass areas by 50 mm; Within root spread of existing trees: Unchanged; Adjoining soil areas: Marry in; Thickness of turf or mulch: Included.)

ADDITIVES
Compost to tree/shrub pits: To be as per BS PAS 100: well rotted sterilised spent mushroom compost max. pH 6.7 or Target Treestart compost. The contractor shall provide a Certificate of Analysis to show that the material being supplied complies with the above criteria. Incorporate spent mushroom compost or equivalent approved peat free compost into tree and planting pits at a rate of 3 parts topsoil to 1 part compost, thoroughly mixed together.

Fertiliser to ornamental shrub beds - Apply slow release fertiliser, Scotts 'Enmag' 4.19.10 NPK or equivalent approved at a rate of 50 gms/sq. metre over topsoil surface and fork into top 225mm spit.

PLANTING
Generally: Minimise trafficking of graded slopes. All plants to be preferably planted between Nov. - March. Nursery stock trees and shrubs to be in accordance with BS 3936 and BS 8545, to be supplied and planted in accordance with British Standards and the Horticultural Association's Plant Handling Guide. Container grown shrubs to be thoroughly watered before planting; trees and bare root shrubs watered after planting.

Times of year for planting: Deciduous Trees, hedges and shrubs: Late October to late March. Evergreen hedges and shrubs: September/ October or April/ May. Container grown plants: At any time if ground and weather conditions are favourable. Watering and weed control to be provided as necessary.

Shrub/Hedge planting pits: Timing: Excavate 1-2 days (maximum) before planting. Pit sizes: Wide enough to accommodate roots/toughs when fully spread and 75 mm deeper than root system. Pit bottom improvement Break up to a depth of 150 mm, incorporating 25g of slow-release fertiliser per planting pit. Where existing planting and roots are present plants are to be notch planted to minimise disruption/root damage. Backfilling material: Reuse excavated material. Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil. Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.

Tree pit sizes: Standard trees excavate a tree pit 1.2m x 1.2m x 900mm. Break up sides and bottom of pits to a depth of 100mm to ensure free drainage.Tree pit treatment: Soil ameliorant worked into pit bottoms. Pit sides to be scarified and backfilling material to be in accordance with topsoil and subsoil specification. Drainage Layer: Provide 200mm layer washed, clean gravel to base of pits to aid drainage (tree pit to be actively drained if poor draining soil or clay discovered by contractor).

Tree Accessories: Typically trees in soft landscape to be staked unless stated otherwise by the Landscape Architect. Underground guying is recommended for semi mature trees or trees within hard landscape and in public areas. Trees to be staked using 1m long x 75mm dia. round timber stakes (size of stakes to be adjusted to suit size of tree). Cross member to be installed 75mm x 25mm (larger trees will need large cross members). Locate proprietary Hessian ties on cross member to secure tree and prevent rubbing. Short stakes (<1.0m high) with biodegradable Hessian ties are recommended to encourage wind tolerance and prevent rubbing. Tree pit accessories by Green Tech or similar: Underground guying and perforated plastic irrigation/ ventilation pipe to landscape architects approval.

Root Barriers: To be used wherever the installed rootball will be within 2m of a building foundation or within proximity to underground utilities (distance at which root barrier is required is as per utility providers standards and should be confirmed prior to installation). Root barrier by Green Tech or similar to be installed vertically in accordance with supplier recommendations.

Protective fencing/guards: Newly planted areas or individual plants are to include rabbit/deer proof fencing. Either perimeter mesh fencing or individual biodegradable plastic free spiral guards/shelters/tubes are to be installed around all planting where required. Where areas are fenced, mesh to be 1m min above ground and buried 300mm below ground.

Mulching: Approved medium course chipped tree bark composted for at least 4 weeks. Particle size 25-75mm dia, max. 20% fines, pests and disease free and free of Methyl Bromide contamination. Clear any weeds, ensure soil is thoroughly moistened prior to applying mulch. All planting areas inc. trees, hedges and planting beds should receive an even 75mm depth of bark mulch, adjoining edge of mulch to be 15mm min. below adjacent hardstanding to avoid spillage. 50mm depth of mulch is only suitable for higher quality ornamental bark (<5% fines, 5-35mm size etc.), All bark should be FSC certified. Option to use biodegradable mulch mats to control moisture, soil temperature, erosion and weeds. All trees within grass are to have a 1.5m diameter mulch circle.

Seeding and making good existing grass areas: Steep embankments to be hydroseeded where required. After cultivating, grading and fertilizing prepare seed bed to fine, firm tilth with good crumb structure (Depth: 25 mm). Rake to a true, even surface, friable and lightly firmed but not over compacted. Remove surface stones/earth clods. Extend cultivation into existing adjacent amenity grassed areas sufficient to ensure full marrying in of levels where required. Evenly distribute seeds at an application rate of 35g/m² or as per supplier recommendations. Establish good seed contact with the root zone to promote healthy, consistent growth. Lightly harrow or rake to cover seed. Thoroughly water completed seeding until germination as necessary to keep the surface damp and soil most but not water logged.

Cutting In: Where cutting planting beds into existing grassed areas, the surrounding grass shall be protected and made good as necessary. These areas to be made good by preparing and re-seeding area. Seed mixes: John Chambers Lawn/Meadow seed or similar approved.

Turf Preparation - Lay turf with minimum possible delay after lifting. If delay occurs, lay turf out on topsoil and keep moist. Do not lift turf in frosty weather or if ground waterlogged. Arrange phased delivery timescales to avoid need for excessive stacking. Stacking height 1m (max). Do not use dried out or deteriorated turf. After cultivating, grading and fertilizing prepare seed bed to fine, firm tilth with good crumb structure (Depth: 25 mm). Rake to a true, even surface, friable and lightly firmed but not over compacted. Remove surface stones/earth clods. Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

Turf Implementation - Turf to be laid in Spring and summer within 18 hours of delivery; and Autumn and winter within 24 hours of delivery. Do not lay turf when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry. Planks to be laid on previously laid turf. Do not walk on prepared bed or newly laid turf. Turf laid along contours with staggered, close butted joints. Do not stretch turf. At the edges, whole turfs to overlap line, trimmed to a true line. Remove high spots and fill hollows with fine soil to adjust levels Lightly and evenly firm as laying proceeds to ensure full contact with substrate. Do not use rollers. Dress turf with Sharp sand at a rate of 2kg/m2 and brushed in to completely fill joints. Thoroughly water completed turf immediately after laying. Check that water has penetrated into the soil below. Use hardy low maintenance amenity turf suitable for use in shade (To BS 3969).

Seed Preparation and Implementation for Wildflower Areas: No addition of nutrient to soil required. Method to suit soil type, proposed usage, location and weather conditions during and after sowing. A friable firm seed bed required, weed free, alleviation of compaction to a depth of 100-200mm, sowed on a firm and fine tilth. Seed bed preparation to be conducted in dry conditions, close to the time of sowing Remove surface stones/earth clods. Marry in with adjacent levels where required. Evenly distribute seeds at the manufacturers recommended application rate. Establish good seed contact with the root zone to promote healthy, consistent growth. Lightly harrow or rake to cover seed. Thoroughly water completed seeding.

MAINTENANCE
1 year Defects Liability Period applies. All dead or failing plants to be replaced the following growing season. Maintain a weedfree bare earth area 600mm dia minimum around individual trees and shrubs. Herbicide shall only be used where necessary and if use is required it should be a non-residual translocated herbicide and spot applied/applied with spray guard. Application and use to be in accordance with EA guidance. Prior to spraying ensure all spirals are tight to ground level and leaves within spray range are fully enclosed. Arisings: Remove. Trim all edges. Weed control: Substantially free of broad leaved weeds. Method: Application of a suitable selective herbicide. Remove any stones 25 mm in any dimension brought to the surface. Watering: To ensure establishment.

NOTE: Works to be carried out in accordance with the most up to date and current British Standards referenced within this specification.

PLANTING SCHEDULES

Tree Planting:

TREES					
Total	Species	Height	Girth	Size	Spec.
2	Acer campestre (Ac)	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
1	Acer campestre (Ac)	350-425cm	12-14cm	HS	RB, clear stem 175-200mm
2	Alnus glutinosa (Ag)	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
1	Alnus glutinosa (Ag)	350-425cm	12-14cm	HS	RB, clear stem 175-200mm
3	Betula pendula (Bp)	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
4	Malus 'John Downie' (MJD)	350-425cm	12-14cm	HS	RB, clear stem 175-200mm
2	Malus domestica 'Ribston Pippin' (MRP)	250-450 cm	MM106	S	Root Stock: MM106
3	Prunus padus (Pp)	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
2	Pyrus communis 'Conference'	300-350cm		S	Root Stock: Quince A
1	Quercus robur (Qr)	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
3	Sorbus aucuparia (Sau)	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
4	Sorbus aucuparia (Sau)	350-425cm	12-14cm	HS	RB, clear stem 175-200mm

Note: All tree pits to be mulched as per specification.

NOTE:
All planting to be sourced from a local supplier. Nursery stock trees, shrubs, planting and seed mixes are to be in accordance with BS 3936 and BS 8545, to be supplied and planted in accordance with British Standards and the Horticultural Association's Plant Handling Guide. Container grown shrubs to be thoroughly watered before planting; trees and bare root shrubs watered after planting. All species to be native and native grown where specified.

Mixed Native Scrub Planting:

Total Area: 124m²

NATIVE SHRUB MIX				
% of Mix	Species	Age	Size in cm	Spec.
10	Corylus avellana	1/2	60-80cm	BR
45	Crataegus monogyana	1u1	50-60cm	BR
5	Ilex aquifolium		50-60cm	3L
5	Lonicera periclymenum		50-60cm	3L
10	Prunus spinosa	1/0	30-40cm	BR
5	Rosa canina	1/0	30-40cm	BR
10	Sambucus nigra	1/1	60-80cm	BR
10	Viburnum opulus	1/2	80-100cm	BR

To be planted at 1m centres in groups of 3-17nr of a single species. Larger growing species to be planted to the centre of the areas and smaller growing species to be planted to the external edges. Biodegradable plastic free spiral guards to be provided to each plant, where required. All planting pits to be mulched as per specification.

Hedge Planting:

Total Length: 40lm

MIXED NATIVE HEDGEROW				
% of mix	Name	Size	Root	Spec.
5	Acer Campestre	40-60cm	BR	Hedge to be planted as a double staggered row @ 5 plants p/lm with 450mm spacings
10	Corylus avellana	60-80cm	BR	
45	Crataegus monogyana	40-60cm	BR	
5	Lonicera periclymenum	50-60cm	2L	
10	Malus sylvestris	40-60cm	BR	
20	Prunus spinosa	60-80cm	BR	
5	Viburnum lantana	60-80cm	BR	

Biodegradable plastic free spiral guards to be provided to each plant, where required. All trenches to be mulched as per specification.

Ornamental Planting:

Total Area: 15m²

SHRUBS & HERBACEAOUS				
Name	Pot Size	Size in cm	Spec.	Density p/m²
Ajuga reptans 'Burgundy Glow'	1.5-2L		C	5/m²
Artemisia 'Canescens'	1.5-2L		C	5/m²
Calamagrotstis 'Karl Forester'	3L	40-50	C	4/m²
Choisya ternata 'Sun Dance'	3L	30-40	C	3/m²
Cornus alba 'Aurea'	2L	50-60	C	3/m²
Cornus alba 'Sibirica'	2L	50-60	C	3/m²
Carex testacea	2L		C	5/m²
Euonymous fortunei 'Silver Queen'	3L	30-40	C	4/m²
Hebe pinguifolia 'Sutherlandii'	3L	30-40	C	4/m²
Hosta 'Francee' (fortune)	3L		C	5/m²
Lavandula hidcote	3L	30-40	C	5/m²
Liriope muscari	2L		C	6/m²
Lonicera 'May Green'	3L	30-40	C	4/m²
Sarcococca confusa	3L	20-30	C	5/m²
Skimmia 'Kew Green;	3L	40-60	C	4/m²
Stipa tenuissima	2L		C	7/m²
Spirea japonica 'Gold Flame'	3L	40-60	C	3/m²
Viburnum opulus 'Roseum'	3L	40-60	C	3/m²

Schedule provides an indicative but not exhaustive list. Species to be selected based on suitability for location. Biodegradable plastic free spiral guards to be provided where required. All planting areas to be mulched as per specification.

Meadow Seed Mixes:

Total area: 330m²

MEADOW SEED MIX
Habitat Aid Basic 80% Wildflower 20% Grass Seed Mix
Sowing rate @ 4g/m²
20% Wildflowers (by weight)
2.0 Yarrow Achillea millefolium
2.0 Common Knapweed Centaurea nigra
1.0 Daucus Carota Wild carrot
1.0 Hedge Bedstraw Galium mollugo
1.0 Ladies Bedstraw Galium verum
1.0 Oxeye Daisy Leucanthemum vulgare
1.0 Birdsfoot Trefoil Lotus corniculatus
3.0 Ribwort Plantain Plantago lanceolata
2.0 Selfheal Prunella vulgaris
2.0 Meadow Buttercup Ranunculus acris
1.0 Common Sorrel Rumex acetosa
3.0 Red Campion Silene dioica
80% Grasses
10.0 Common Bent Agrostis capillaris
5.0 Smaller Cat's-tail Phleum bertolini
25.0 Creeping Red Fescue Festuca rubra
25.0 Crested dogstail Cynosurus cristatus
15.0 Smooth-stalked meadow grass Poa pratensis

To be sown as per suppliers recommendations at 4 - g/m2. Not to be sown in topsoil as per other plantings, to be sown on subsoil to BS 8601:2013 or an un-improved soil with a lower nutrient level. Once established meadow areas are to be subject to to a reduce mowing regime. A narrow mown margin to path and highway edges to be incorporated where required.

Project: Bence farm Stables, Barnsley Road		**Client:** Britology						
Title: Outline Landscape Masterplan		**Drawn:** LW	**Chk'd:** LW	**App'd** SH				
Drawing Number: PWP 774 001	**Revision:** 00	**Drawing Scale:** 1:200 @ A1						
			00 **Rev**	25/05/23 **Date**	For Coordination **Detail**	LW **Made**	LW **Chk'd**	SH **App'd**

Notes:
1. Not for construction all dimensions to be confirmed on site
2. Based on Layout Drawing 0280_DART_RM Information by eleven52architects
3. Refer to architects/engineers drawing for hard landscape, boundary treatments, site levels, drainage, retaining walls.
4. Build ups/footings to engineers specification.
5. Contractor to be fully satisfied with locations of services prior to excavations.
6. All existing trees to be protected to BS 5837.
7. Crown copyright and database rights 2021. Ordnance Survey 100053143

NOTES:
Trees & Services
- Where paths and hard surfacing is proposed within close proximity to trees all construction is to be in accordance with BS 5837: 2012
- Root barriers / root protection measures are to be incorporated where required in accordance with guidelines where existing and proposed trees and vegetation are within 2m of proposed building or trees are in close proximity to services (details to be agreed).
- Tree and shrub planting proposed within drainage easements to be approved by local water authority. Planting to incorporate root protection measures around services or planting pits to ensure the sewer system is resistant to tree root ingress in accordance with the current Code for Design.
- Contractor shall comply with NJUG publication, volume 4 'Guidelines For The Planning, Installation And Maintenance Of Utility Services In Proximity To Trees' together with BS 5837:2012 Trees in Relation to Construction. Where conflict arises refer to the British Standard.

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