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Biodiversity Enhancement Strategy

Site Name

Naldretts Farm, Sayers

Issue Date

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Client

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Author

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About the Author

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About the Reviewer

This report has been reviewed by Owen Crawshaw, a Principal Ecologist with over ten years' experience. As a Full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) he is bound by CIEEM's code of professional conduct.



REPORT SUMMARY

1. The Ecology Co-operation was commissioned by Tim Rodway to produce a Biodiversity Enhancement Strategy with regards to the change in the use of the existing grazing land to a polo pitch with associated works including the formation of a new lagoon, landscaping, and vehicular access via Northend Lane, at Naldretts Farm, Pookbourne Lane, Sayers Common, Hassocks, West Sussex, BN6 9HD. This document outlines targeted enhancement measures, management objectives, responsibilities and maintenance schedules. It will be submitted to the Mid-Sussex District Council in order to discharge condition no. 3 of the approved planning application (ref: DM/18/1860).

2. Section 3 sets out the proposed habitat creation enhancement on site, including:

- woodland block planting mix;
- sustainable Drainage System (SuDS) pond, which will serve as an irrigation storage;
- vegetation planting associated with the SuDS Pond
- non-Intervention wildflower meadow; and
- Enhancement of retained hedgerows

And the following species-specific enhancement measures:

- installation of five bat boxes;
- installation of five traditional bird boxes;
- creation of amphibian & reptile log piles; and
- installation of two invertebrate boxes

3. Post construction management for proposed biodiversity enhancement features is detailed in full in section 4 and a works schedule is provided in section 5, outlining management responsibilities.

CONTENTS PAGE

1.	<i>INTRODUCTION.....</i>	<i>5</i>
1.1	Purpose of the Report	5
1.2	Background to the Proposed Development	6
1.3	Management Plan Strategic Vision.....	8
1.4	Responsibilities	8
2.	<i>LEGAL PROTECTION.....</i>	<i>8</i>
3.	<i>BIODIVERSITY ENHANCEMENT MEASURES</i>	<i>8</i>
3.1	Habitat Creation Enhancements.....	8
3.1.1	Woodland Block Planting Mix.....	10
3.1.2	(SuDS) pond creation	10
3.1.3	Vegetation associated to the (SuDS) pond	10
3.1.4	Non-Intervention Wildflower meadow	12
3.1.5	Retained Hedgerow Enhancement.....	12
3.2	Species Enhancements	12
3.2.1	Bats.....	12
3.2.2	Nesting Birds.....	14
3.2.3	Amphibians & Reptiles	15
3.2.4	Invertebrate boxes.....	16
4.	<i>POST CONSTRUCTION MANAGEMENT PLAN</i>	<i>17</i>
5.	<i>WORK SCHEDULE</i>	<i>20</i>
6.	<i>TIME FRAME & IMPLEMENTATION</i>	<i>18</i>
7.	<i>MONITORING AND REVIEW.....</i>	<i>18</i>
8.	<i>COMPETENCIES, STANDARD AND SPECIFICATIONS OF WORKS</i>	<i>18</i>
9.	<i>CONCLUSIONS.....</i>	<i>18</i>
	<i>APPENDIX 1 – Relevant Legislation and Planning Policies.....</i>	<i>19</i>
	<i>APPENDIX 2 - Reducing Impacts of Artificial Light</i>	<i>18</i>



1. INTRODUCTION

1.1 Purpose of the Report

The Ecology Co-operation was commissioned by Tim Rodway to produce a Biodiversity Enhancement Strategy (BES) for the proposed change in the use of the existing grazing land to a polo pitch with associated works including the formation of a new lagoon, landscaping, and vehicular access via Northend Lane, at Naldretts Farm, Pookbourne Lane, Sayers Common, Hassocks, West Sussex, BN6 9HD. This document outlines site-wide biodiversity enhancement measures, management objectives, responsibilities and maintenance schedules. It will be submitted to Mid-Sussex District Council in order to discharge condition no. 3 of the approved planning application (ref: DM/18/1860).

Condition 3 states:

*“3. Prior to the commencement of any development above ground/slab level a scheme a **Biodiversity Enhancement Layout**, providing the finalised details and locations of the enhancement measures contained within the Preliminary Ecological Appraisal Issue 2 (The Ecology Partnership, November 2023), shall be submitted to and approved in writing by the local planning authority. The enhancement measures shall be implemented in accordance with the approved details prior to occupation and all features shall be retained in that manner thereafter.*

*Reason: **To enhance protected and Priority Species** and allow the LPA to discharge its duties under the s40 of the NERC Act 2006 (as amended) and to accord with Policy DP38 of the District Plan.”*

Please note a Biodiversity Net Gain Assessment is not included within this report.

The prescribed enhancement measures described within this document will be issued to relevant works contractors to ensure that they are carried out in full.



1.2 Background to the Proposed Development

The site measures 5.86ha and is located at Naldretts Farm, Pookbourne Lane, Sayers Common, Hassocks, West Sussex, BN6 9HD. The central grid reference for the site is TQ27901928. The location of the site is shown in Figure 1.

The site is currently used for horse stabling and as a work yard. The buildings are open sided and surrounded by concrete hard standing. The fields are horse grazed, with areas of dense bramble scrub and ruderal vegetation in places. The site includes one intact hedgerow with trees, one defunct hedgerow and a stream which is bordered by dense vegetation. The surrounding landscape is rural, comprising fields, hedgerows and scattered residential housing. The site is surrounded by woodland and hedgerows.

The proposed development/project comprises the change in the use of the existing grazing land to a polo pitch with associated works including the formation of a new lagoon, landscaping, and vehicular access (see Figure 2a &b).

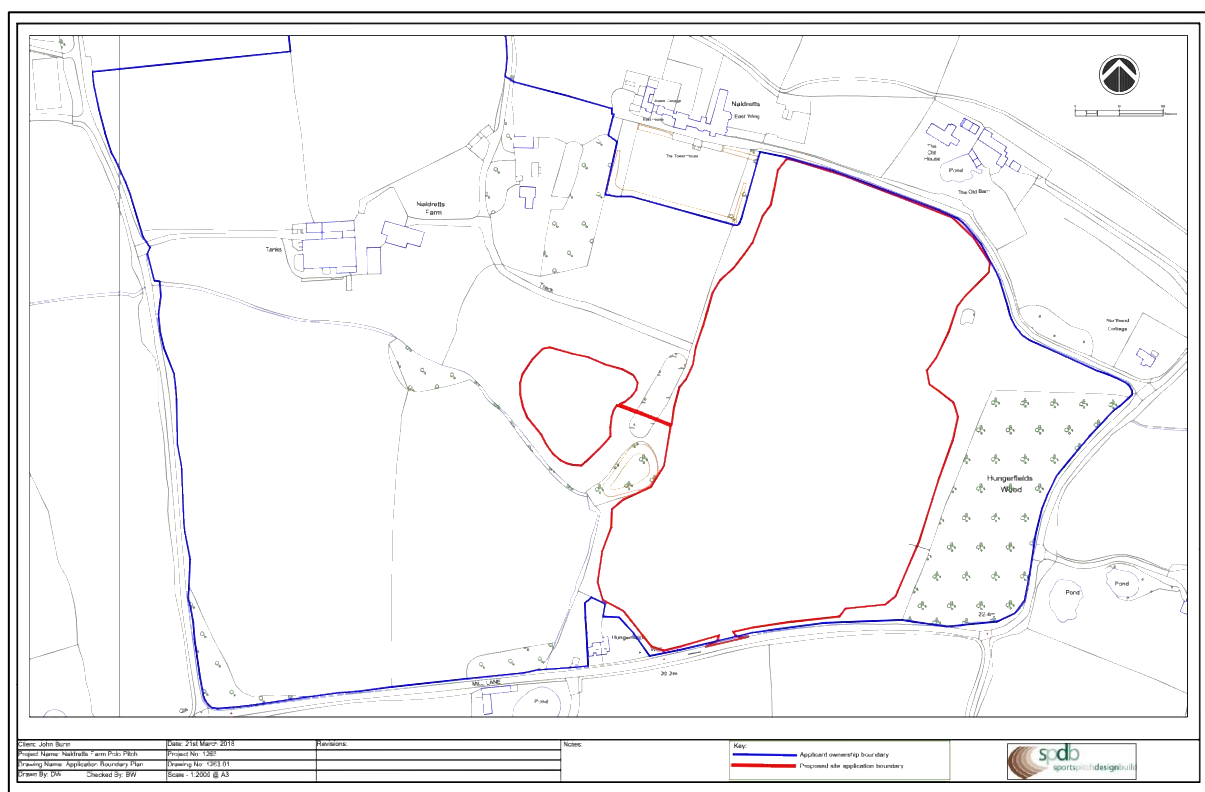


Figure 1. Application Boundary Plan Map, showing the location of the site. The proposed site application boundary is outlined in red, while the applicant ownership boundary is outlined in blue. Map courtesy of Sports Pitch Design Build (spdb), drawn by DW, drawing no: 1263.01, dated 21st March 2018.



Figure 2a. Site Plan. Drawing dated November 2020. Produced courtesy of Boher Architecture, drawn by CB, drawing number: 1340 P 000a.

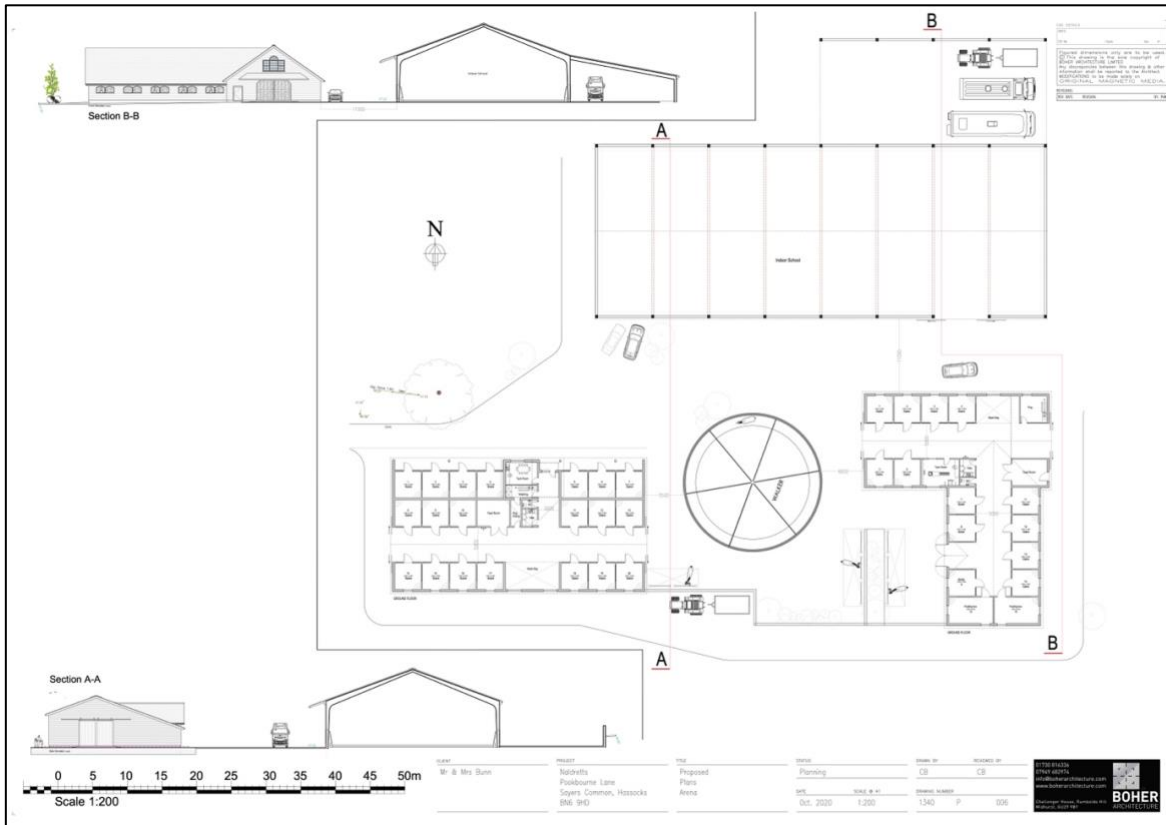


Figure 2b. Arena Proposed Plan. Drawing dated October 2020. Produced courtesy of Boher Architecture, drawn by CB, drawing number: 1340 P 006.



1.3 Management Plan Strategic Vision

The aims and objectives for the Protected and Priority Species elements of this development project are as follows: “provide the finalised details and locations of the enhancement measures contained within the Preliminary Ecological Appraisal Issue 2 (The Ecology Partnership, November 2023)¹”.

1.4 Responsibilities

The installation of the prescribed enhancement measures will be the responsibility of Rodway Planning Consultancy. A third party will be appointed by Tim Rodway to undertake the aftercare/management of the site.

2. LEGAL PROTECTION

Relevant legislation and national planning policies are detailed in Appendix 1 of this report.

3. BIODIVERSITY ENHANCEMENT MEASURES

Several enhancements can be made to the final development to help reduce potential ecological impacts, as well as to try and achieve biological net gain. Local planning policy encourages developments to contribute towards a net gain in green infrastructure and biodiversity, therefore some recommended ecological enhancements to be considered are included below.

3.1 Habitat Creation Enhancements

The proposals for Naldretts Farm, include significant habitat enhancements as part of the application, with the planting proposals illustrated in Figure 3. Notably, the landscape plan comprises the following habitat enhancements, which are further explained in detail in the Design & Access Statement²:

- woodland block planting mix,
- Sustainable Drainage System (SuDS) pond, which will serve as an irrigation storage,
- vegetation planting associated with the SuDS Pond,
- non-Intervention Wildflower meadow,
- enhancement of retained hedgerow.

While the majority of the site is required for the polo pitch (and therefore managed amenity grassland), there is an opportunity to create some additional habitat on the periphery of the site as well as strengthen some of the boundary vegetation and around the new pond feature.

The landscape plan shows where native tree and shrub planting as well as wildflower grassland is proposed along the boundary banks to the application site. This is designed to strengthen the existing boundary, improve the ecological connectivity on the site, increase habitat diversity and give provide additional screening and security.

¹ The Ecology Partnership (2023). *Preliminary Ecological Appraisal Land at Naldretts Farm Sayers Common*.

² Design & Access Statement. 136BD7B1ED874C4CB0409F909396383D.



Figure 3: Landscape Plan showing the planting proposals for Naldretts Farm. Map courtesy of Sports Pitch Design Build (spdb), drawn by DW, drawing no: 1263.06, dated 11th July 2017.



3.1.1 Woodland Block Planting Mix

The landscape plans (Figure 3) show a total of 750 trees planted within the woodland block planting mix. This mixture includes field maple, hazel, cherry and oak. One of these woodland planting blocks is adjacent to the ancient woodland, Hungerfields Woods, and would provide a significant new area (approximately 0.1ha) of woodland. A further woodland block is to be planted around Hungerfields Cottages which lies on Mill Lane. This additional woodland block is also approximately 0.1ha. These woodland blocks significantly increase tree cover within the red line boundary.

Table 1. Details of the woodland species planting, extracted from the Landscape Plan Notes.

WOODLAND BLOCK PLANTING MIX			
Number	Species	Specification	Density
75 No.	Acer campestre	BR : 3x : 1/3 brks : Transplant	2Ctr
75 No.	Betula pendula	BR : 3x : 1/3 brks : Transplant	2Ctr
75 No.	Carpinus betulus	BR : 3x : 1/3 brks : Transplant	2Ctr
150 No.	Corylus avellana	BR : 3x : 1/3 brks : Transplant	2Ctr
75 No.	Prunus avium	BR : 3x : 1/3 brks : Transplant	2Ctr
150 No.	Quercus robur	BR : 3x : 1/3 brks : Transplant	2Ctr
75 No.	Quercus rubra	BR : 3x : 1/3 brks : Transplant	2Ctr
75 No.	Ilex aquifolium	Leader with Laterals: C	2Ctr
Total : 750 No.			

3.1.2 (SuDS) pond

The creation of the SuDS Pond is further explained in detail in the Design & Access Statement².

3.1.3 Vegetation associated to the (SuDS) pond

WET GRASSLAND CREATION

Planting is proposed around the new water feature, and this will generate its own marginal and aquatic habitats over time. The SuDS Pond, created to the west of the site, is to be planted with species of value for wildlife.

Areas of wet grassland will be created around the SuDS Pond which will be created in the western area of the site, as per the proposals. This area will be sown with a wet grassland seed mix, whose species composition is detailed in Table 3 below. The species included must all be of native British origin (an example seed mixture is EM8 – ‘Meadow mixture for wetlands’, available from Emorsgate seeds – www.wildseed.co.uk). Seed will be sown between late August and the end of September during mild and wet weather or between mid-March to mid-May, when the ground has sufficient moisture and there is very little risk of frosts, to ensure the best conditions for seedling establishment.



Table 3. Composition of EM8 – Meadow mixture for wetlands' available from Emorsgate seeds (www.wildseed.co.uk).

Wildflowers		
%	Latin name	Common name
0.5	<i>Achillea millefolium</i>	Yarrow
1	<i>Betonica officinalis</i> - (<i>Stachys officinalis</i>)	Betony
3	<i>Centaurea nigra</i>	Common knapweed
0.4	<i>Filipendula ulmaria</i>	Meadowsweet
3	<i>Galium verum</i>	Lady's bedstraw
0.5	<i>Geranium pratense</i>	Meadow crane's-bill
0.5	<i>Leontodon hispidus</i>	Rough hawkbit
1.8	<i>Leucanthemum vulgare</i>	Oxeye daisy
0.2	<i>Lotus pedunculatus</i>	Greater birdsfoot trefoil
1	<i>Plantago lanceolata</i>	Ribwort plantain
0.5	<i>Primula veris</i>	Cowslip
0.4	<i>Prunella vulgaris</i>	Selfheal
0.8	<i>Ranunculus acris</i>	Meadow buttercup
0.8	<i>Rhinanthus minor</i>	Yellow rattle
1.4	<i>Rumex acetosa</i>	Common sorrel
0.1	<i>Sanguisorba officinalis</i>	Great burnet
0.3	<i>Silene silaus</i>	Pepper saxifrage
1.7	<i>Silene flos-cuculi</i> - (<i>Lychnis flos-cuculi</i>)	Ragged robin
0.3	<i>Succisa pratensis</i>	Devil's-bit scabious
0.6	<i>Taraxacum officinale</i>	Dandelion
0.8	<i>Vicia cracca</i>	Tufted vetch
Grasses		
0	<i>Agrostis capillaris</i>	Common bent
3	<i>Alopecurus pratensis</i>	Meadow foxtail
3	<i>Anthoxanthum odoratum</i>	Sweet vernal-grass
3	<i>Briza media</i>	Quaking grass
24	<i>Cynosurus cristatus</i>	Crested dogstail
2	<i>Deschampsia cespitosa</i>	Tufted hair-grass
32	<i>Festuca rubra</i>	Slender-creeping red-fescue
3	<i>Hordeum secalinum</i>	Meadow barley

AQUATIC VEGETATION CREATION

Only native species of aquatic plants should be introduced to the pond and must include a combination of marginal aquatic plants and oxygenating plants. The following species are recommended:

Emergent:

- Yellow iris *Iris pseudacorus*
- Meadowsweet *Filipendula ulmaria*
- Purple loosestrife *Lythrum salicaria*



- Rushes *Juncus* spp.
- Sedges *Carex* spp.
- Greater spearwort *Ranunculus lingua*
- Water mint *Mentha aquatica*
- Water forget-me-not *Myosotis scorpioides*

The plants listed above are available in early autumn and spring, dependent upon species, and should be planted as soon as possible following the ponds creation.

3.1.4 Non-Intervention Wildflower meadow

With the required configuration of the sports pitch and the creation of some gentle banking there is an opportunity to increase the amount of minimal intervention grassland on the site. In some of the unused open areas and on areas of proposed gentle banking, native wildflowers and grasses will be introduced. Wildflower areas around the new planted woodland, provides an ecotone between the woodland blocks and the polo pitch.

Limited Intervention Grassland Mix	
Supplier: Emsorgate or similar approved	
Sowing rate - 20g/m²	
Outside polo pitch	
Species	Percentage
Adinda (Strong Creeping Red Fescue)	35.0%
Bornito (Tall Fescue)	20.0%
Pintor (Hard Fescue)	20.0%
Olivia (Chewings Fescue)	20.0%
Highland (Brown Bent)	5.0%

3.1.5 Retained Hedgerow Enhancement

Retained hedgerows and scrub along the boundary within the site should be enhanced and bolster planted; this would provide a layering of different habitats that can be utilised by different species. Species that may be planted include blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna*, hazel *Corylus avellana*, holly *Ilex aquifolium*, elder *Sambucus nigra*, alder *Alnus glutinosa*, buckthorn *Rhamnus* sp., guelder rose *Viburnum opulus*, dog rose *Rosa canina*, and dogwood *Cornus sanguinea*.

3.2 Species Enhancements

3.2.1 Bats

To provide a net positive benefit for bats within the development, it is proposed that the incorporation of



new roosting features for bats should occur in selected locations across the site, close to existing flight-lines and habitat features of value to foraging and commuting bats.

Five bat boxes will be installed on suitable trees to create additional roosting provision in the locations indicated in Figure 5. Recommended boxes include:

- Vivara Pro WoodStone Bat Box – A general purpose bat box that supports a range of species (Figure 4). These can be hung on trees or buildings in a variety of heights and aspects in order to provide a variety of micro-climates.
- Large Multi Chamber WoodStone Bat Box – This is a multipurpose box designed for larger colonies and a range of bat species including pipistrelles, noctules and brown long-eared bats. These should be hung on buildings or trees around the site (Figure 4).



Figure 4. Vivara Pro WoodStone Bat Box (left) and Large Multi Chamber WoodStone Bat Box (right).

Furthermore, artificial light sources must be positioned facing away from flight lines and these features (Appendix 2).



Figure 5. Landscape Plan showing the locations where 5 bat boxes must be installed, indicated by a black star symbol.

3.2.2 Nesting Birds

Five traditional wooden bird boxes will be installed in the locations illustrated in Figure 6, in order to provide new nesting opportunities for birds. These will be hung on surrounding mature trees, which will be retained. The boxes will be installed on the northern aspect of the trunk at least 3m above ground level.

The wooden bird boxes will be emptied of nesting material in winter to prevent the build-up of parasites. These should not be disturbed during the nesting bird season (typically, 1st March to 31st August) or when occupied.



Figure 6. Landscape Plan showing the locations where 5 bird boxes must be installed, indicated by a light blue star symbol and image in the left upper corner of a recommended traditional wooden bird box which will be installed on trees across Naldretts Farm. Source: <https://www.nhbs.co.uk>.

3.2.3 Amphibians & Reptiles

It is recommended that log piles are created as refugia by amphibians as well as reptiles, small mammals and invertebrates (Figure 7). These can be located in a variety of locations, such as damp places with some situated in sunnier locations. They can be placed along the field boundaries of the site. These should be stacked and perhaps some leaf litter added. Planting around log piles with species such as honeysuckle *Lonicera periclymenum* or clematis *Clematis* sp. can also add value.



Figure 7. Examples of log piles that can be made on site.

3.2.4 Invertebrate boxes

Two invertebrate boxes (insect hotels) will be installed, one in the offsite ancient woodland east of the site and one near the SuDS pond eastern vegetation. One option is the Insect Tower, available via NHBS (www.nhbs.com) and illustrated below in Figure 8, along with the locations where the insect hotels will be installed. The different sections of the Insect Tower have been designed to provide a habitat for a variety of insect species. The nesting tubes are ideal for solitary bees to build their nests in, the vertical slots are designed to encourage butterflies, other refuge holes are perfect for ladybirds and lacewings and the pinecones offer an excellent habitat for a range of other species. Similarly, to the bat features, insect hotels are best situated facing away from prevailing winds and positioned in sunlight or light shade therefore, south facing aspects are preferable. The insect hotel should be installed approximately 1.5m off the ground and made secure. Similarly, felled trees could be used in a similar fashion to the insect hotel to promote invertebrate habitat. Deadwood can be left in place with logs stacked to provide suitable refugia. The proposed planting plan indicates the removal of a number of trees which therefore could be recycled into a feature for the site, reducing overall costs.



Figure 8. Landscape plan illustrating the location of the 2 invertebrate boxes symbolised by a red star, which are to be installed on site and indicated by a light blue arrow.

4. POST CONSTRUCTION MANAGEMENT PLAN

BAT BOX MANAGEMENT

The integral bat box roosting features in trees, will be largely maintenance-free, and apart from an annual check it must be ensured that they remain in position. Any damaged boxes are to be replaced like for like. However, an important component to these habitat features will be managing the expectations of residents and other users of the development site, including dealing with any concerns, questions, or unauthorized interference. It is recommended that prospective users of the new polo pitch are made aware of the legal protection afforded to bats and birds, and their obligations as owners.



BIRD BOX MANAGEMENT

Bird nesting boxes should be emptied of nesting material in winter to prevent the build-up of parasites.

WOODLAND MANAGEMENT

Year 1 Onwards

Tree guards, to protect the new saplings from rabbits and deer, to be inspected yearly for first five years and then removed if planting is well established. Tree guards will be removed and recycled once trees have matured.

To reduce competition for water and nutrients while the trees are establishing the immediate surroundings of individual trees should be kept clear of fast-growing weeds and vegetation and maintained for at least the first 3 years after planting. This can be achieved by careful use of an appropriate herbicide (making sure to avoid the trunk), by hoeing (taking care not to damage the roots), by using weed-suppressing membranes or mats, or by mulching.

Any sycamore saplings which may establish must all be removed by hand on a yearly basis.

WET GRASSLAND MANAGEMENT

Optimal Habitat

The habitat will contain ephemeral pools with aquatic/hydrophytic plants providing high-value habitat for a variety of terrestrial and aquatic invertebrates.

Year 1

Most sown meadow wildflower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. This annual weed growth is easily controlled by topping or mowing.

Mow newly sown meadows three to four times throughout the first year of establishment to a height of 40–60mm, removing cuttings if dense. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wildflowers.

Avoid cutting in the spring and early summer if the mixture has been sown with a nurse cover of cornfield annuals, or is autumn sown and contains yellow rattle. These sown annuals should be allowed to flower, then in mid-summer cut back and the cut vegetation removed. It is important to cut back cornfield annuals before they die back, set seed or collapse: this cut will reveal the developing meadow mixture and give it the space it needs to develop.

Carefully dig out or spot treat any residual perennial weeds such as docks.

Yearly Management

In the second and subsequent years EM8 sowings can be managed in a number of ways which, in



association with soil fertility, will determine the character of the grassland. The best results are usually obtained by traditional meadow management based around a main late summer hay cut in combination with autumn and possibly spring mowing or grazing.

Meadow grassland is not cut or grazed from spring through to late July/August to give the sown species an opportunity to flower. After flowering in July or August take a 'hay cut': cut back with a scythe, petrol trimmer or tractor mower to c 50mm. Leave the 'hay' to dry and shed seed for 1–7 days then remove to be appropriately composted. Mow or graze the re-growth through to late autumn/winter to c. 50mm and again in spring if needed.

Wetland habitats are characteristically quite variable in composition, reflecting local drainage and management. Conditions can vary, for instance, between the highs and lows in ridge and furrow grassland. Localised differences may require a targeted approach. For example, boggy areas which remain waterlogged for much of the year may be best sown with pond edge mixture EP1 (Emorsgate Seeds).

Removal of any litter which has accumulated within attenuation basins may be required between January and March depending on the quantity of leaf-litter present.

POND MANAGEMENT

Optimal Habitat

The pond should have good water quality with low nutrient levels which supports a variety of invertebrates. No fish will be introduced to the waterbodies. The pond must not support any invasive plant species such as Canadian pondweed *Elodea canadensis*, curly leaved waterweed *Potamogeton crispus*, water fern *Azolla filiculoides*, floating pennywort *Hydrocotyle ranunculoides* or parrots feather *Myriophyllum aquaticum*.

Year 1

The newly established pond will require careful monitoring in the first year after they have been established to check if the nutrient levels are too high. This is a common occurrence in new ponds due to the presence of exposed nutrients close to the pond bed. Should blanket weed establish this should be removed periodically to prevent it from choking the ponds and should be lifted out with a rake.

Year 2 Onwards

Every year after establishment, where necessary, up to 20% of the aquatic vegetation in the pond may need to be removed in order to maintain some open areas in the waterbody. The pond should ideally have at least 20% of its surface area free from aquatic vegetation.

The pond will also need to be monitored to check that no invasive pond plants become established and also that no fish are introduced.

In the autumn, 75% of dead, dying and decaying vegetation is to be removed to prevent the decay of these and the reduction in the water quality.

If any of the prescribed pond plants fail to establish, then new plants will also need to be introduced at the previously specified stocking rate.



5. WORK SCHEDULE

Table 3 below provides the timetable to aid correct timing of the annual management at the site.

Table 3. Annual Work schedule for the 5-year management period.

Action for green assets	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Inspection of bat and bird boxes									X	X	X	
Clearance of old bird nests from bird boxes									X			
Grassland cutting from Year 2			X					X	X			
Removal of 20% vegetation within ponds water body from Year 3								X				
Checking of tree stakes/guards						X						
Removal of dead and dying pond foliage									X	X		
Inspection for invasive species and/or sycamore saplings						X	X					



6. TIME FRAME & IMPLEMENTATION

Rodway Planning Consultancy Ltd will be responsible for the management actions of the retained and new biodiversity assets over the ten-year time period.

7. MONITORING AND REVIEW

Monitoring of the retained and new biodiversity assets should be undertaken to determine the success or failure of each compartment through a site visit by a suitably qualified ecologist, two years and five years post construction. In the event that plants or shrubs fail to establish, replanting will be prescribed. Furthermore, in the event that invasive species are identified within any of the compartments, suitable control methods would be outlined in detail.

A progress report of the monitoring should be sent to the Local Planning Authority, reporting on progress of the annual work programme (Table 3), and confirmation of required actions for the next 12-month period. If necessary, changes to management actions can be prescribed.

8. COMPETENCIES, STANDARD AND SPECIFICATIONS OF WORKS

The following competencies/standards/specifications should be adhered to:

- the installation of the bat boxes is to be undertaken or overseen by a suitably qualified ecologist;
- the installation of the traditional bird boxes on retained trees is to be undertaken or overseen by a suitably qualified ecologist;
- the installation of the hedgehog highways can be carried out by the work contractors.
- All tree works are to be undertaken by a suitably qualified horticulturalist.

A suitably qualified ecologist must undertake a site inspection of all compartments at two years and five years post-construction.

9. CONCLUSIONS

The report outlines targeted enhancement measures protected and Priority species, notably; for bats, birds, amphibians & reptiles and invertebrates, which will contribute to Mid-Sussex Local Council local plan policies³.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op.

³ Croydon Council (2024). *Croydon Local Plan 2011-2035 (adopted 2020)*. Available online at: https://www.croydon.gov.uk/sites/default/files/Planning/Regeneration/Croydon_Local_Plan_2018.pdf



APPENDIX 1 – Relevant Legislation and Planning Policies

Introduction

The following text is intended for general guidance only and does not constitute comprehensive professional legal advice. It provides a summary of the current legal protection afforded to wildlife in general and certain species. It includes current national planning policy relevant to nature conservation.

Natural Environment and Rural Communities (NERC) Act (2006)

The NERC Act (2006) created the statutory nature conservation body Natural England, and places a statutory duty on all public bodies, including planning authorities, under Section 40, to take, or promote the taking by others, steps to further the conservation of *habitats and species of principal importance for the conservation of biodiversity* in England (commonly referred to as the 'Biodiversity Duty'). This duty extends to all public bodies the biodiversity duty of Section 74 of the Countryside and Rights of Way (CROW) Act 2000, which placed a duty only on Government and Ministers. Section 41 of the NERC Act lists the habitats and species of principle importance. This includes a wide range of species from mosses, vascular plants, invertebrates through to mammals and birds. It originates from the priority species listed under the UK Biodiversity Action Plan (UK BAP) with some omissions and additions.

National Planning Policy Framework

The National Planning Policy Framework (NPPF 2021)⁴ sets out the Government's view on how planners should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments with regard to the operation of the planning system.

Paragraph 179b, which states that council policies should “*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*” The Office of the Deputy Prime Minister (ODPM) Circular 06/2005, 2005)⁵. In accordance with the NPPF, it is important that developments should contribute to and enhance the natural and local environment by:

- minimising impacts on existing biodiversity and habitats;
- providing net gains in biodiversity and habitats, wherever possible;
- establishing coherent ecological networks that are more resilient to current and future pressures.

UK Post-2010 Biodiversity Framework

The UK Biodiversity Action Plan (UK BAP), first published in 1994, was the UK's response to the commitments of the Rio Convention on Biological Diversity (1992) until 2010, when the UK BAP was replaced by the UK Post-2010 Biodiversity Framework. This framework covers the period 2011 to 2020 and forms the UK government's response to the new strategic plan of the United Nations Convention on Biodiversity (CBD) published in 2010. This promotes a focus on individual countries delivering target for protection for biodiversity through their own strategies.

The most recent biodiversity strategy for England, 'Biodiversity 2020: A strategy for England's wildlife and

⁴ HM Government (2021). National Planning Policy Framework. Department for Communities and Local Government. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

⁵ HM Government (2005) ODPM Circular 06/05 Government Circular: *Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf.



ecosystem services' was published by Defra (2011), and a progress update was provided in July 2013 (Defra 2013).

'Biodiversity 2020' builds on the Natural Environment White Paper for England – 'The Natural Choice', published on 7 June 2011, and sets out the strategic direction for biodiversity policy for the next decade.

Biodiversity 2020 deliberately avoids setting specific targets and actions for local areas and species because the Government believes that local people and organisations are best placed to decide how to implement the strategy in the most appropriate way for their local area or situation.

References

Natural Environment and Rural Communities (NERC) Act (2006). HMSO London. Available at: http://www.legislation.gov.uk/ukpga/2006/16/pdfs/ukpga_20060016_en.pdf

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APPENDIX 2 - Reducing Impacts of Artificial Light

Bright external lighting can have a detrimental impact upon foraging and commuting bat flight paths, but more importantly can also cause bats to remain in their roosts for longer. Artificial lighting can also cause significant impacts to other nocturnal species, most notably moths and other nocturnal insects. It can also result in disruption of the circadian rhythms of birds, reducing their fitness.

Guidelines issued by the Bat Conservation Trust⁶ should be referred to when designing the lighting scheme. Note that lighting designs in very sensitive areas should be created with consultation from an ecologist and using up-to-date bat activity data where possible. The guidance contains techniques that can be used on all sites, whether a small domestic project or larger mixed-use, commercial or infrastructure development. This includes the following measures:

Avoid lighting key habitats and features altogether

There is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety, such as some industrial sites with 24-hour operation; however, in the public realm, while lighting can increase the perception of safety and security, measurable benefits can be subjective. Consequently, lighting design should be flexible and be able to fully consider the presence of protected species.

Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations

Where bat habitats and features are considered to be of lower importance or sensitivity to illumination, the need to provide lighting may outweigh the needs of bats. Consequently, a balance between a reduced lighting level appropriate to the ecological importance of each feature and species, and the lighting objectives for that area will need to be achieved. The following are techniques which have been successfully used on projects and are often used in combination for best results:

- dark buffers, illuminance limits and zonation;
- sensitive site configuration, whereby the location, orientation and height of newly built structures and hard standing can have a considerable impact on light spill;
- consideration of the design of the light and fittings, whereby the spread of light is minimised ensuring that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Consideration should be given to the height of lighting columns. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light-spill or require more columns. Column height should be carefully considered to balance task and mitigation measures. Consider no lighting solutions where possible such as white lining, good signage, and LED cat's eyes. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times;
- screening, whereby light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding;
- glazing treatments, whereby glazing should be restricted or redesigned wherever the ecologist and lighting professional determine there is a likely significant effect upon key bat habitat and

⁶ Bat Conservation Trust and Institute for Lighting Professionals (2018) Guidance note 8. Bats and Artificial Lighting. <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>



features;

- creation of alternative valuable bat habitat on site, whereby additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost to the development;
- dimming and part-night lighting. Depending on the pattern of bat activity across the key features identified on site it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

Demonstrate compliance with illuminance limits and buffers

- *Design and pre-planning phase*; it may be necessary to demonstrate that the proposed lighting will comply with any agreed light-limitation or screening measures set as a result of your ecologist's recommendations and evaluation. This is especially likely to be requested if planning permission is required.
- *Baseline and post-completion light monitoring surveys*; baseline, pre-development lighting surveys may be useful where existing on or off-site lighting is suspected to be acting on key habitats and features and so may prevent the agreed or modelled illuminance limits being achieved.
- *Post-construction/operational phase compliance-checking*; as a condition of planning, post-completion lighting surveys by a suitably qualified person should be undertaken and a report produced for the local planning authority to confirm compliance. Any form of non-compliance must be clearly reported, and remedial measures outlined. Ongoing monitoring may be necessary, especially for systems with automated lighting/dimming or physical screening solutions.

Lighting Fixture Specifications

The Bat Conservation Trust recommends the following specifications for lighting on developments to prevent disturbance:

- lighting spectra: peak wavelength >550nm
- colour temperature: <2700k (warm)
- reduction in light intensity
- minimal uv emitted
- upward light ratio of 0% and good optical control.

Further reading:

Buglife (2011) A review of the impact of artificial light on invertebrates.

Royal Commission on Environmental Pollution (2009) Artificial light in the environment. HMSO, London.
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CPRE (2014) Shedding Light: A survey of local authority approaches to lighting in England. Available at: <http://www.cpre.org.uk/resources/countryside/dark-skies/item/3608-shedding-light>



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Institution of Lighting Professionals (2021) Guidance Notes for the Reduction of Obtrusive Light GN01:2011. Available at: <https://www.theilp.org.uk/resources/free-resources/>

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