



Benton House, Newcastle upon Tyne

Ecological Management Plan

Outcomes First Group Holdings Limited

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Drawing 1: Site Location

Drawing 2: Locations of Creation and Enhancement Strategies



1.0 Introduction

SLR Consulting Limited (SLR) was commissioned by Outcomes First Group Holdings Limited to produce an Ecological Management Plan (EMP) in respect of the establishment of a new Special Educational Needs (SEN) school, which would involve alterations to a listed building, at Benton House Conservative Club, Newcastle upon Tyne, herein referred to as the 'Site' (planning application number 24/00122/FUL).

The Site is within the administrative area of North Tyneside Council.

This EMP provides details of ecological creation, enhancement, management and monitoring measures. The Plan seeks to demonstrate that the proposed development would benefit biodiversity and in doing so specifically addresses the comments contained within an 'Invalidity Letter' received from North Tyneside Council in respect of the planning proposal. More specifically, the Council commented that there was a lack of detail in respect of ecology to use as a basis for ensuring compliance with the North Tyneside Local Plan Policy (Policy: DM5.5 Managing effects on Biodiversity and Geodiversity)¹.

The Council clarified that the proposals constitute a 'minor development' that does not require a full Biodiversity Net Gain (BNG) assessment, but it does state that the policy requires developments to show evidence that they have otherwise delivered a 'net gain' to biodiversity. Therefore, this document has been produced to ensure biodiversity enhancement compliance.

1.1 Ecological Context

The Site extends to c.0.5 hectares (ha) and is located c.4.5km north-east of the centre of Newcastle-upon-Tyne in an urban setting, within a mix of residential housing, educational and business buildings. It is bordered by Hoylake Avenue to the south and Front Street to the north. Drawing 1 shows the Sites location.

Two buildings are present on-site which comprise the listed Benton House and a small garage. The Site is predominantly a hardstanding car park and access road with two areas of modified grassland. There are also two smaller areas of shrub and a broad-leaved woodland to the south.

The Site is not formally designated as an ecological site and the closest such site is Benton Cemetery, which is a non-statutory Site of Local Conservation Interest (SLCI), located c.700 north-east of the Site.

1.2 Aims and Objectives

This EMP details habitat creation and ecological enhancement actions and an on-going management and monitoring regime for the Site. Habitat creation and enhancements are targeted for specific ecological receptors of note that have been identified for the Site, including, birds, bats, hedgehog and invertebrates.

This Strategy takes into consideration the North Tyneside Local Plan Policy¹ and planning policy objectives where applicable.

1.2.1 Site Assessments

A Preliminary Ecological Appraisal (PEA) was undertaken by SLR² in February 2024 including a biological data search via the Environmental Records Information Centre North-

¹ North Tyneside Council (2017). *North Tyneside Local Plan*. Chapter 8, pg, 122 – 126

² SLR (2024). Benton House, Newcastle upon Tyne, *Preliminary Ecological Appraisal*. Version no 1, SLR Ref: 422.064829.00001



East (ERIC North East). No further species surveys were recommended to inform the planning application; however, a list of potential habitat creation and ecological enhancement opportunities was provided which have been considered within this EMP.

1.2.2 Habitats and Flora

The PEA² mapped built up areas and gardens, modified grassland, other broadleaved woodland and two smaller areas of dense shrub.

Of these habitats broadleaved woodland is a Habitat of Principal Importance, as listed under Section 41 of the NERC Act (2006). Additionally, three habitats are noted within the Habitat Action Plans (HAP's) for Newcastle upon Tynes Local Biodiversity Action Plan (LBAP) including buildings and structures, native woodland and shrub, shrub and hedgerow.

No negative impacts are predicted in respect of the woodland and shrub habitats and Benton House itself will not be significantly altered.

The Site was considered to have negligible potential to support protected or priority plant species, or notable assemblages/plant communities.

Two non-native invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981, as amended, were recorded as being present within the Site during the survey including Rhododendron (*Rhododendron ponticum*) and a cotoneaster species, thought to be wall cotoneaster (*Cotoneaster cf. horizontalis*) (see drawing 2 for their locations). Therefore, avoidance strategies have been included within this EMP.

1.2.3 Protected and Priority Species

A number of bat records were returned from the data search from within 2km of the Site. The most abundant species recorded were pipistrelle species with the closest record being a common pipistrelle (*Pipistrellus pipistrellus*) c.180m away number of bat species have records within 2km of the Site including pipistrelles. Therefore, considerations for bats have been included in the EMP.

The desk study returned records of a number of notable bird species. Priority species or birds of conservation concern recorded within the nearby area that may be present at the Site include lesser redpoll (*Acanthis cabaret*), swifts (*Apus apus*), house sparrow (*Passer domesticus*), tree sparrow (*Passer montanus*), dunnoek (*Prunella modularis*), bullfinch (*Pyrrhula pyrrhula*), starling (*Sturnus vulgaris*), wren (*Troglodytes troglodytes*), song thrush (*Turdus philomelos*) and mistle thrush (*Turdus viscivorus*). Therefore, habitat and enhancements with regards to some of these species have been considered further within this EMP.

Records of hedgehog (*Erinaceus europaeus*) were returned within 2km of the Site which are a priority species and the shrub vegetation and log piles on Site provide suitable habitat for hedgehog. Therefore, hedgehogs have been taken into consideration in this EMP.

1.3 Purpose & Objectives

The purpose and objective of the EMP is to improve habitat diversity and increase the biodiversity value of the developed Site.

This will be achieved through the creation and management of shrub within the woodland understorey, together with habitat enhancements for the Site.

Sections 2.0, 3.0 and 4.0 of this EMP provide detailed designs to achieve stated objectives and the locations of proposed habitat creation and ecological enhancement measures are shown on Drawing 2.



2.0 Habitat Implementation

This section provides details to aid in the creation of shrub habitat and enhancements to improve the modified grassland. Shrub creation is considered suitable to increase the biodiversity value of the Site for birds, hedgehogs and invertebrates and enhancements to the modified grassland through seeding will increase the botanical species available for pollinators.

2.1 General Operations

2.1.1 Protection of Existing Vegetation

Areas of existing vegetation to be retained, e.g. broadleaved woodland on the southern edge of the Site, individual trees and shrub, will be protected throughout the proposed construction and planting works in accordance with an Arboricultural Impact Assessment (AIA) and Tree Protection Plans, so the necessary Root protection Areas (RPAs) and clearances are adhered to.

2.1.2 Ground Preparation and Vegetation Removal

All proposed planting/seeding areas shall be cleared of all unwanted rubbish, and any debris and unwanted vegetation/weeds removed prior to planting. The location of any existing services within the Site will also be established before clearance works and planting begins.

It is not anticipated that any vegetation removal will be required, however, if vegetation removal is required (either for development or habitat enhancement reasons), it should be cleared outside the bird nesting season (which runs from March to late August inclusive) and checked for the presence of breeding birds prior to work commencing. Where the former is not possible, a bird nesting survey should be carried out prior to the commencement of works by a suitably qualified ecologist.

2.1.3 Soil Resource

The substrate will be inspected and assessed for its suitability for landscaping prior to the commencement of implementation works.

It is not intended to import any topsoil to Site, nor to apply any compost or soil conditioners. However, all soil handling operations will follow the guidelines set out in BS:3882: Specification for topsoil and requirements for use to make the best use of the available soil resource and minimise compaction.

Where planting is required above existing underground structures, e.g. foundations etc. (exact location to be confirmed by contractor before work commences) and proposed services e.g. cables in ducting, the minimum required soil depth will be 750mm for shrub planting and 500mm for grass and ground cover plants. These profiles allow for a minimum of 300mm of topsoil.

Stones larger than 50mm as well as other debris will be removed. All soil will be graded to smooth flowing contours to achieve the specified finished levels.

All areas of shrub planting will be assessed for compaction prior to planting and if necessary or practical, de-compaction will be carried out to a depth of 300mm, with soils loosened, aerated and broken up, when ground conditions are reasonably dry.

2.1.4 Herbicide

A suitable non-residual herbicide may be used to clear existing weeds or unwanted vegetation in proposed planting areas where this cannot be achieved by cultivation alone. Herbicides are not to be applied within 10m of any watercourse or waterbody. If herbicides



are to be used prior to planting and seeding, then 2 weeks should be allowed before planting and seeding operations commence.

2.1.5 Watering

The need for watering will be assessed prior to the commencement of works. If considered necessary and practical, the full depth of soil will be watered during planting operations and all areas thoroughly watered immediately after operations, without damaging or displacing plants or seeds. It is anticipated that new planting may require watering, in exceptionally dry periods in the first three years where possible.

2.2 Proposed Shrub Planting

An area of shrub will be created as an understorey to the woodland located at the south of the Site as shown on Drawing 2 following the below strategy;

- Five native woody species will be planted including 35% hazel (*Corylus avellana*), 25% common dogwood (*Cornus sanguinea*), 10% midland hawthorn (*Crataegus laevigata*), 15% bird cherry (*Prunus padas*) and 15% guelder rose (*Viburnum opulus*);
- For best results all plants will be planted in the first available planting season (November – March) where possible;
- Plants will be sourced as locally as possible, and all effort will be made to source stock of native genetic origin. All plant handling and planting operations will comply with relevant clauses of CPSE ‘Handling and Establishing of Landscape Plants’ (obtainable from the Horticultural Trades Association);
- Planting stock would be typically introduced as seed-raised transplants, 1+1, 1/1 (2-year-old transplant, one year in seedbed, transplanted and grown for one year) that are 60 – 80 cm tall;
- All transplants (which will be bare root and supplied to Site in bags containing the whole root system, unless otherwise specified) will be notch planted, whilst all larger stock and container grown stock will be pit planted. Backfill will consist of previously excavated material and 3L of sanitized and stabilised, friable compost (non-peat compost) to PAS 100 (1:3 ratio) per transplant/tree if deemed necessary at the time of planting, conforming to an approved supplier specification. The completed planting pit will be either at ground level or slightly domed to prevent waterlogging; and
- All proposed shrub and hedgerow plants (transplants) will be individually protected by 0.6m high x 50mm diameter (or greater to suit the girth of the shrub/tree) high translucent plastic spiral guards supported by a single stout cane or, in the case of the bushier and larger stock, a 0.6m high x 150-180mm diameter (or greater to suit the girth of the shrub) shrub shelter and softwood timber stake driven into the ground to a minimum 300mm depth; and
- Any bare ground in the planted areas will be seeded with General-Purpose Meadow mix; such as Emorsgate EM1.

2.3 Modified Grassland Improvement

2.3.1 Proposed Species Rich Grassland – General Purpose Meadows (EM1)

Two areas of the Site consist of modified grassland which are species poor, the central grassland is c.0.146 ha and the smaller area to the northwest is c.0.051. It is proposed that native wildflower meadow/species rich grassland is sown within these areas. The grassland will support a mix of flowers and grasses including the vibrant colours of knapweed, ox-eye daisy, bird’s-foot trefoil and other pollinator-friendly wildflowers that are frequently visited by bees, butterflies and hoverflies, thus increasing biodiversity. The dried seed heads of the wildflowers will also provide an important seed resource for birds during the winter months.



The areas of grassland to be improved are shown on Drawing 2 and the following steps should be undertaken:

- A General-Purpose Meadow mix; such as Emorsgate EM1 or similar approved, would be sown at a rate of 4g/sqm (refer to Table 3-4 below and available from: <https://wildseed.co.uk/mixtures>);
- Note: If an autumn (September) seeding during Year 1 is not appropriate (i.e. due to unfavourable ground conditions) and instead a spring seeding is required, then Yellow Rattle will instead be sown separately during autumn/winter due to its requirement to experience periods of colder weather prior to germination;
- Fresh seed should be purchased for each growing season and should be blue label certified seed varieties complying with EC regulations for purity and germination. Seed should be of local provenance where possible;
- The required mix should be sown in the spring or early autumn onto bare ground after harrowing/raking the surface and should not be sown on compacted ground. Bulking up the seed with an inert carrier such as sand can make distribution easier. The seed must be surface sown and can be applied by machine or broadcast by hand;
- To get an even distribution, divide the seed into two or more parts and sow in overlapping sections; and
- After sowing, the surface should be lightly harrowed or raked to settle the seed in. Care must be taken not to bury the seed at depth. To give good soil/seed contact the ground may be firmed with a roller. In the event of poor establishment in year 1, then reseeding may be required following further investigation.



3.0 Habitat Management/ Aftercare

This section provides details for the aftercare of created shrub and improved grassland habitat and provides an overview of potential management activities for the first 5 years of vegetation establishment following implementation of the planted habitats.

The location of the scrub and grassland management areas are shown in Drawing 02.

The Applicant will be responsible for the administration of the strategies highlighted within this EMP; for all proposed soft landscape proposals, unless otherwise agreed. Specialist landscape and ecological consultants and contractors will be appointed as necessary by the Applicant to carry out works on Site.

All planted areas will be closely monitored throughout a 5-year aftercare period from the completion of any implementation works by a suitably competent professional, so that the most appropriate management regime can be defined for both the shrub and grassland habitat.

3.1 Annual Management Prescriptions

All areas of proposed and existing planting should take account of the below General Management Considerations (3.2). In addition to these tasks, the proposed vegetation types/habitats will require more specific management operations to ensure their longer-term establishment, as discussed in Section 3.3.

3.2 General Management Considerations

A visual inspection of all planting would be carried out on an annual basis to check for good strong foliage and growth. Where this is not obvious, soil samples may be taken to assess nutrient levels and determine specific fertiliser applications. Maintenance works shall be carried out in accordance with the following indicative programme.

December – March	No Visit
April – Mid June	1 Visit
Mid June – August	1 Visit
September – November	1 Visit

The number of visits each season would vary according to the stage of management and maintenance for the planting types.

Years 1 and 2	3 Visits
Year 3	2 Visits
Years 4 and 5	1 Visit

On each visit the requirement for the following would be assessed:

- In all planted / seeded areas, weed control, including ring weeding and/or hand pulling of seedlings, e.g. within spiral guards/tubes and monitoring for invasive non-native species should be carried out 2-3 times per year during the growing season. The frequency of visits will be decided on Site to keep the individual planting areas free of weeds. It remains the responsibility of the Contractor to adopt suitable methods for weed control based on legislation, training and accreditation;
- All works to be undertaken by a competent professional with the appropriate qualifications and certifications. It may also be necessary to cut back the areas between plants to 100mm above ground level, in order to keep the planted areas clear of weeds and long grass;



- A mulch or membrane may also be used to control weed growth. Top up mulch as required. Mulched areas around proposed trees and shrubs shall be maintained for the first 5 years to a minimum depth of 10cm;
- Under the provisions of the Weeds Act 1959, it is the responsibility of all occupiers of land - whether used for agriculture or not, to control injurious weeds, so that they do not spread. Noxious and/or non-native invasive species will be controlled, removed and disposed of in accordance with best practice and the appropriate guidelines;
- An assessment of watering need should be carried out during dry periods, with particular note paid to planting areas that could be more susceptible to dry conditions, e.g. new shrub planting within the first 3 years of establishment where possible;
- Replacement planting should be carried out between November and March inclusive, avoiding the winter frosts;
- Replacement seeding should be carried out in spring or autumn;
- The Contractor shall remove any dead, dying, or diseased plants, which are evident during any maintenance visit. All replacement planting shall be with like species. Plant failures shall be monitored, and alternative species may be agreed should any single species be subject to repeated or significant failures;
- All shelters, stakes and ties for new shrubs should be checked and replaced/adjusted/removed as required in spring /autumn. In year five, all planting would be checked for establishment, all guards/shelters, stakes, canes and ties that are no longer required would be removed and the general shape and requirements for formative pruning and singling out of leaders would be assessed;
- All management operations requiring vegetation removal, including pruning, should have regard to the bird nesting season (running from March to late August inclusive) and any potential disturbance to bird habitats should be avoided during this time and/or ecological supervision provided;
- Pruning may take place at certain times, as required, to remove dead or dying and diseased wood to promote healthy growth and natural shape. All pruning should be carried out in accordance with good horticultural practices;
- Cuttings from pruning would be utilised in habitat piles if appropriate or off-cuts would be chipped/shred and spread around the base of each plant provided that ground flora and associated habitats are not disturbed. Any surplus or unwanted cuttings would be removed off Site;
- Monitoring of grassland should be undertaken during the initial establishment period in order to ensure target results are achieved. Any observations noted should be taken into account in order to update prescribed longer-term management operations as appropriate, including any requirement for recultivation and seeding; and
- The Site will be cleared of litter and other debris through a regular programme of monitoring, collection and disposal, coinciding with visits to maintain grassed areas and planting. All litter and debris shall be removed off Site.

3.3 Specific Management Prescriptions

The following additional considerations are provided for specific planting areas/habitats and features (existing to be retained and proposed) for 0-5 years, to be reviewed and updated as planting matures.



3.3.1 Management of Proposed Shrub

In addition to annual tasks in relation to weed control, fertiliser application and watering, it may be necessary within the first 5 years to undertake clearance of vigorous species such as bramble whilst the shrub is developing, as well as formative pruning to allow shrubs to mature. It will also be necessary to manage the woodland seed mix surrounding the shrub to contribute to natural ecotones and habitat diversity.

Mulch should be topped up in these areas during years 1-3 to minimise competition from weeds and grasses. It may also be necessary to carry out selective thinning and coppicing of approximately 30% of shrubs in Year 5, leaving deadwood and brush piles in situ where possible.

All shrub planting is to be thinned on a three-year rotational cycle to promote new growth where necessary.

3.3.2 Management of Proposed Grassland

Where appropriate, in the first one to two years after seeding, all proposed grassland areas will be cut regularly to a height of c.50mm up to a maximum of 3 annual cuts (in Spring) to control weed growth, until no longer required to prevent undesirable weed growth. Arisings will be removed to prevent nutrient enrichment. A further cut and collect, in Late August/September may take place once wildflowers have set seed.

Invasive or exotic species should be removed annually in autumn or winter. Ideally, weeds will be removed by hand pulling and weed wiping/spot spraying should not be necessary. Use of pesticides will be avoided; however, spot treatment may be applied by a competent professional in accordance with all relevant legislation and guidance, where pernicious or invasive weeds occur.

Grasslands would be monitored by an ecologist to assess the success of establishment. Areas will be re-sown following implementation of any other remedial works, as necessary. It is expected that following establishment, species diversity will naturally increase with time. Thereafter grasslands will be cut in accordance with the prescriptions detailed below.

3.3.3 Proposed Wildflower Grassland – General Purpose Meadow (EM1)

Following management during establishment, wildflower grasslands should be cut once a year in late August to September (after flowering). These cuts should be completed once the sward has reached a height in excess of 150mm and cutting should be completed to a height of approximately 50 - 75mm. In areas immediately abutting hard surfacing/access areas, mowing/strimming will take place on a more regular basis, to a height of c. 50mm, as required.

Small patches of bare ground will also be permitted within drier areas. Whilst of negligible botanical interest, this habitat type provides important opportunities for solitary invertebrates.

To aid the retention of significant areas of longer vegetation, it is suggested that pockets of grassland (20%) may remain uncut in each year. These uncut areas will primarily be in the form of edge habitat adjacent to treelines as well as native shrub. Within these areas grasses will be subject to only irregular cuts, with cutting undertaken on a 2-to-3-year rotation such that shrub succession is kept in check and to provide further opportunities for faunal species. Arisings from the above management (excluding invasive/undesirable species) will be retained on Site for a period of 5 days to allow seed to set, following which material will be removed.

By undertaking the above prescribed cuts, the need for additional management to meadow grassland habitats in the form of weed removal or shrub clearance will be largely alleviated. Should additional management be required this should be in the form of either manual or



mechanical vegetation removal. Where this is not possible Glyphosate based herbicides may be applied to vegetation of concern, only where necessary.

3.4 Invasive Species Management

Rhododendron and a cotoneaster species (see drawing 2 for their locations) (considered likely to be wall cotoneaster) were recorded at the Site. Both species are listed on Schedule 9 of the Wildlife and Countryside Act making it an offence to plant or otherwise cause these species to grow in the wild.

For the duration of the development and management works all areas that include these species must be signposted and all personnel must be aware not to disturb these areas to avoid further spread of the species.

Avoidance rather than eradication is considered appropriate here as the Site is within a built environment and the species do offer some benefit to biodiversity (i.e. birds utilise cotoneaster berries and rhododendron provides places of shelter).



4.0 Ecological Enhancements

The implementation of all Site enhancements is the responsibility of Outcomes First Group Holdings Limited and details of enhancement will be provided to the appointed landscaping team. The enhancements should then be checked or supervised by an ecologist to ensure they are in keeping with this EMP.

4.1 Bat Boxes



Three bat boxes (Two Schwegler 2F and one Schwegler 1FF or similar general-purpose boxes; see Table 4-1) will be installed within the woodland section to the south of the Site.

The Schwegler 2F or equivalent acts as summer day roost boxes and are suitable for smaller crevice dwelling bats such as Pipistrelles and Myotis species and the Schwegler 1FF or equivalent acts as a summer day or maternity roost box which is suitable for crevice dwelling species such as Pipistrelles and Noctules (*Nyctalus noctule*).

Boxes will be placed along the outside southern perimeter trees (away from any external lighting), on either a south, south-east or south-west aspect of trees that receive 6-10 hours of sunlight in the summer. In addition, they will be placed at a height between 3-6 metres to prevent predation and human interference.

The specification of bat boxes are provided in Table 4-2 Bat Enhancement Specifications and the general location of proposed bat boxes is shown in Drawing 2.

Table 4-2 Bat Enhancement Specifications

Bat Boxes	Placement and Suitability
<p>Type: Schwegler 2F</p> 	<p>Two general purpose boxes to be placed along the edge of the woodland, on either a south, south-east or south-west aspect of trees and between 3-6 metres in height.</p> <p>For use as a summer day roost, suitable for smaller crevice dwelling bats such as Pipistrelles.</p>
<p>Type: Schwegler 1FF</p> 	<p>One box to be placed along the eastern perimeter of the woodland, on either a south, south-east or south-west aspect of a tree and between 3-6 metres in height.</p> <p>Schwegler 1FF acts as a summer day or maternity roost box which is suitable for crevice dwelling species such as Pipistrelles and Noctules.</p>



4.2 Bird Boxes


Boxes will be installed during the autumn (where possible) to provide both winter refuges and to give birds the opportunity to find them prior to the breeding season commencing.

Bird boxes that are suitable for varying priority species will be installed on suitable trees at the Site. Boxes should be situated on north and east aspects of the vegetation to avoid day-long direct sunlight and westerly winds. Suitable woodstone/woodcrete products are shown in

Table 4-3 **Bird Box Specifications** and the general location of bird boxes is shown in Drawing 2. These boxes will consist of three nest box types targeting different species as detailed in the following:

- Two Vivara Pro Seville 28mm or similar will be placed on trees across the Site between 1.5 and 3m in height; for use by species such as tree sparrows;
- Five 3S Schwegler Starling nest box or similar should be placed on trees within close proximity to one another (i.e. within the woodland) at least 3m in height;
- One Vivara Pro Barcelona WoodStone Open Nest Box or similar to be installed on established trees between 1.5 - 3m in height, to be partly obscured by vegetation such as ivy or other shrub species where possible for additional cover, for use by species such as wrens and song thrushes.

Table 4-3 Bird Box Specifications

Model	Suitability	Installation
Vivara Pro Seville woodstone nest box (28mm entrance) or similar 	Suitable for tree sparrows, blue tits, great tits, coal tits and pied flycatchers.	These nest boxes will be installed between 1.5-3m in height (or sited higher if the area has a particularly high cat population) on a north-east aspect of existing trees.
3S Schwegler Starling nest box (45mm entrance) or similar	Suitable for nesting starlings, pied flycatchers and nuthatches. In addition, it can provide overnight shelter for great spotted, middle spotted and lesser spotted woodpeckers.	The nest boxes will be installed at least 3m in height on a north-east aspect. Five boxes have been considered appropriate for this species as they nest in loose colonies. The boxes will be located close to one another on existing trees.



Model	Suitability	Installation
		
<p>Vivara Pro Barcelona WoodStone Open Nest Box or similar</p> 	<p>Suitable for wrens, song thrushes, robins, spotted flycatchers, pied and grey wagtails and blackbirds.</p>	<p>This nest box will be installed between 1.5m and 3m in height on a north, east or north-east aspect.</p> <p>Where possible open nest boxes should be sited on trees where undergrowth such as ivy and shrubs are present to provide additional cover.</p>

*It should be noted that although boxes have been chosen with target species in mind, they may be used by other species that utilise similar nesting dimensions and sites.

4.3 Hedgehog Shelters

A hedgehog shelter will be included to provide hedgehogs with increased opportunities for permanent shelter (including suitability for hibernacula habitat). This can be undertaken via the installation of premade hedgehog shelters. Premade hedgehog homes can be bought from a number of different distributors³. Alternatively, hedgehog shelters can be created following procedures given by The British Hedgehog Preservation Society (BHPS)⁴. See

³ See following website for hedgehog shelter purchase options: <https://www.arkwildlife.co.uk/category/wildlife-care/hedgehog-houses/>

⁴ See following website for a guide on how to create a hedgehog shelter: <https://www.britishhedgehogs.org.uk/hedgehog-homes/>




Table 4-4 Hedgehog Enhancement Specifications for examples of suitable hedgehog shelters.

One hedgehog shelter will be provided within currently established shrub in an area that is quiet, shaded, sheltered and dry. The shelter will then be moved to the planted shrub location once the shrub has established. The shelter will be placed with its entrance facing south, west or east, to avoid northern winter winds. Dry straw or leaves should be provided within the chamber to encourage use.

The use of this shelter will also be used in the event that a hedgehog is found whilst undertaking development works or deconstructing log piles. In the event that a hedgehog is found it should be immediately moved into the shelter.

Table 4-4 Hedgehog Enhancement Specifications

Hedgehogs	Placement and Suitability
Type: Shelter 	One hedgehog shelter should be provided within the woodland in an area that is quiet, shaded, sheltered and dry. The shelter should be placed with its entrance facing south, west or east. Dry straw or leaves should be provided within the chamber to encourage use. Suitable for year round shelter (including suitability for hibernacula habitat).

4.4 Dead Wood Piles

The provision of dead wood piles within the woodland could act as habitat for hedgehogs, and invertebrates (see

4.4.1 Insect Houses

Two 'insect houses' will be installed to target solitary bees and other solitary insects (chosen as they will encourage insect species which will not pose a threat to children with allergies given the development is for a school). The insect houses will be attached to a retained tree or to a purposefully installed insect hotel post. Whichever option is chosen the insect houses should be made immovable given the Site is open to members of the public.

They will be installed in a sunlit sheltered position on a southeast aspect at (see Drawing 2 for locations) at c.1 – 1.5m in height.

Insect hotels can be bought as products or made; examples of appropriate houses are provided in Table 4-5 Invertebrate Enhancement Specifications.

Table 4-5 Invertebrate Enhancement Specifications).

A minimum of a single dead wood pile will be created in areas of woodland near to the perimeter of the planted shrub habitat (see Drawing 2). Logs should be at least 100mm thick (4 ins) with the bark still attached and sourced from hard wood trees such as ash, oak and beech.

The dead wood piles should be c.1m² and a depression should be dug into the ground (c.5 cm in depth) with the first layer of logs laid within this (in direct contact with the ground). Logs should then be laid over the top of this to form a compact pile to maintain humidity. Gaps can be filled with dry leaves, twigs and wood chippings.



4.5 Specific Invertebrate Habitat

The woodland will include invertebrate habitat features, adding nesting and shelter opportunities to foraging resources.

4.5.1 Bee Post

A single 'bee post' will be installed. The bee post forms a unique pollinator habitat, which is of particular value for solitary bee species. It will be installed in sunny (unshaded) area on the southern grassland perimeter of the Site facing east (see Drawing 2 for its location). The entrance holes should be unobstructed.

Bee posts can be bought as products or made, examples of these are shown in Table 4-5 Invertebrate Enhancement Specifications.

4.5.2 Insect Houses




Two 'insect houses' will be installed to target solitary bees and other solitary insects (chosen as they will encourage insect species which will not pose a threat to children with allergies given the development is for a school). The insect houses will be attached to a retained tree or to a purposefully installed insect hotel post. Whichever option is chosen the insect houses should be made immovable given the Site is open to members of the public.

They will be installed in a sunlit sheltered position on a southeast aspect at (see Drawing 2 for locations) at c.1 – 1.5m in height.


Insect hotels can be bought as products or made; examples of appropriate houses are provided in Table 4-5 Invertebrate Enhancement Specifications.



Table 4-5 Invertebrate Enhancement Specifications

Invertebrates	Placement and Suitability
	<p>A single pile of dead wood is to be created in areas of woodland near to the perimeter of the planted shrub habitat.</p> <p>Suitable for invertebrates and hedgehogs.</p>
	<p>A single 'bee post' will be installed in a sunny (unshaded) area on the southern grassland perimeter of the Site facing east. The entrance holes should be unobstructed.</p> <p>Bee posts are suitable for solitary bees.</p>
<p>Schwegler clay and reed insect nest</p> 	<p>Two insect shelters will be attached to individual trees or to a purposefully installed insect hotel posts, located in a sunlit sheltered position on a southeast aspect at c.1 – 1.5m in height and away or hidden from possible disturbances.</p>
<p>Schwegler Insect House for Solitary Insects</p>	



Invertebrates	Placement and Suitability
	

4.6 Artificial Lighting Strategy

Lighting has the potential to impact the foraging, commuting and roosting behaviour of bats as well as impact a wide range of bird and invertebrate species. It is important that the use of lighting is carefully considered to ensure impacts on wildlife is minimised.

Currently the use of additional artificial lighting is not anticipated. However, if additional lighting or night working is required then the below strategy has been provided which will be adhered to.

Any additional lighting at the Site should follow the guidance note provided by the Institute of Lighting Professionals and the Bat Conservation Trust⁵. This guidance, when combined with the habitat enhancements described within this report, will encourage bats to access the Site for roosting, foraging and commuting. Any lighting changes at the Site should include the following luminaire specifications:

- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used;
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component;
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats
- Internal luminaires can be recessed (as opposed to using a pendant fitting) where installed in proximity to windows to reduce glare and light spill;
- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges;
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards;
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered;
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt and;
- Where appropriate, external security lighting should be set on motion sensors and

⁵ The Institute of Lighting Professionals and Bat Conservation Trust (2023). *Guidance Note GN08/23 Bats and Artificial Lighting at Night*. <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>



set to as short a possible a timer as the risk assessment will allow.

- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.



5.0 Indicative Management and Monitoring Programme

Table 5-1 Indicative Annual Maintenance & Management Schedule Years 1-5 on the following pages provides a list of key maintenance and monitoring operations for each of the existing and proposed vegetation/habitat types for Years 0-5 of plant establishment and illustrates the anticipated frequency that operations are required (to be read in conjunction with the general and specific maintenance considerations in Section 3.2 and 3.3). It also details enhancement monitoring procedures and timings.

It is recommended that a suitably landscape architect and suitably qualified ecologist undertakes the specified monitoring programme, providing recommendation where applicable.

All pruning works to shrub should be undertaken annually outside of the nesting bird period (March to August inclusive).

It should be noted that birds and bats are protected species, therefore, their boxes should only be monitored by an ecologist. Annual condition checks of bat and bird boxes may be undertaken by an ecologist and damaged boxes will be replaced as necessary from Year 1. Monitoring will typically involve one visit a year; outside of the nesting bird period and bat breeding season (September or October, during which the boxes shall be inspected and cleaned where required).

Created habitat piles/hibernacula should be monitored and replaced every five years, if required, as original woody material rots down. The size/shape of each wood/brush pile should not exceed 2m x 1.5m x 0.6m high, and piles should be tidy and secure.

Positioning of the ecological enhancements (Section 4.0) as shown in Drawing 2 are only indicative. Professional ecological judgement should be used when checking enhancement placement and where considered necessary enhancements may be moved to more appropriate areas of the Site.



Table 5-1 Indicative Annual Maintenance & Management Schedule Years 1-5

Task	Frequency of Annual Operations				
	Year 1	Year 2	Year 3	Year 4	Year 5
General Operations					
Visual inspection of vegetation and habitats by ecologist to inform any required remedial measures.	4 visits (March/ April, May/ June, September/ October and November/ December)	4 visits (March/ April, May/ June, September/ October and November/ December)	4 visits (March/ April, May/ June, September/ October and November/ December)	4 visits (March/ April, May/ June, September/ October and November/ December)	4 visits (March/ April, May/ June, September/ October and November/ December)
Complete record of previous year's operations and review EMP to advise on appropriateness of actions for the forthcoming year.	1 (Autumn/ Winter)	1 (Autumn/ Winter)	1 (Autumn/ Winter)	1 (Autumn/ Winter)	1 (Autumn/ Winter)
Checking of plant guards, stakes and ties and replace if necessary / remove where no longer required (typically Year 3 - 5).	1 visit (Winter)	1 visit (Winter)	1 visit (Winter)	1 visit (Winter)	1 visit (Winter)
Replacement planting avoiding winter frosts	1 visit (October-April)	1 visit (October-April)	1 visit (October-April)	1 visit (October-April)	1 visit (October-April)
Water establishing plants (transplants) during prolonged periods of hot, dry weather where possible	As required (Summer)	As required (Summer)	As required (Summer)		
Removal of invasive, non-native weed species within planted areas before they set seed (where applicable)	As required (October – April)	As required (October – April)	As required (October – April)	As required (October – April)	As required (October – April)



Task	Frequency of Annual Operations				
	Year 1	Year 2	Year 3	Year 4	Year 5
General Operations					
Removal of any litter/debris from Site	2 visits (as required throughout the year)	2 visits (as required throughout the year)	2 visits (as required throughout the year)	2 visits (as required throughout the year)	2 visits (as required throughout the year)
Proposed Shrub Planting					
Maintenance of a weed-free area around establishing shrubs by means of consolidation of the mulch layer. A suitable residual herbicide should only be used if deemed appropriate following Site inspection.	1 visit (Spring - Summer)	1 visit (Spring - Summer)	1 visit (Spring - Summer)	1 visit (Spring - Summer)	1 visit (Spring - Summer)
Shrub planting may be thinned on a three-year rotational cycle to promote new growth. The height of planting is to be reduced to between 1 and 3m to encourage natural transitional zones.	1 visit (as required during Winter)	1 visit (as required during Winter)	1 visit (as required during Winter)	1 visit (as required during Winter)	1 visit (as required during Winter)
Proposed Grasslands					

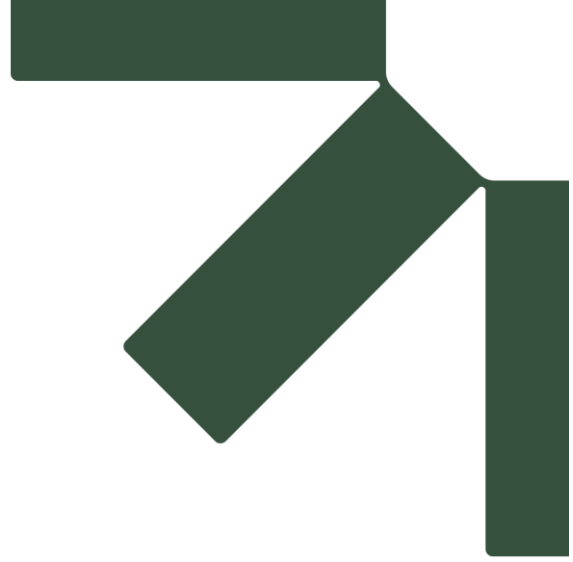


Task	Frequency of Annual Operations				
	Year 1	Year 2	Year 3	Year 4	Year 5
General Operations					
In the first one to two years after seeding, all proposed grassland areas will be cut regularly to a height of c.50mm up to a maximum of 3 annual cuts (in Spring), until no longer required to prevent undesirable annual weed growth. Arisings will be removed to prevent nutrient enrichment. A further cut and collect, in Late August/September may take place once wildflowers have set seed.	2-3 visits (April-September)	2-3 visits (April-September)			
Maintenance of the General-Purpose Meadow Areas (EM1) will generally be restricted to a late summer/autumn cut to a height of c.50 – 75mm to allow maximum wildlife benefits and seeding of meadow species. Edges abutting hard landscaping and to allow access will be cut more frequently to a height of c.30-50mm. Arisings will be placed on compost heaps or removed off Site.	1 visit (Late August/ September)	1 visit (Late August/ September)	1 visit (Late August/ September)	1 visit (Late August/ September)	1 visit (Late August/ September)
Re-cultivation and seeding where grassland has failed to establish.		1 visit (Spring – if required)	1 visit (Spring – if required)	1 visit (Spring – if required)	1 visit (Spring – if required)
Hand removal of weeds or application of spot treatment where deemed necessary	As required – April to September)	As required – April to September)	As required – April to September)	As required – April to September)	As required – April to September)
Ecological Enhancements					



Task	Frequency of Annual Operations				
	Year 1	Year 2	Year 3	Year 4	Year 5
General Operations					
Annual monitoring inspection and cleaning of bird and bat boxes by ecologist	1 visit (September/ October)	1 visit (September/ October)	1 visit (September/ October)	1 visit (September/ October)	1 visit (September/ October)
Annual condition check of damaged boxes to be replaced (where necessary) by ecologist	1 visit (September/ October)	1 visit (September/ October)	1 visit (September/ October)	1 visit (September/ October)	1 visit (September/ October)
Ecologist to move the hedgehog shelter to the planted shrub once shrub is suitably established		1 visit (as required – September/ October)	1 visit (as required – September/ October)	1 visit (as required – September/ October)	1 visit (as required – September/ October)
Ecologist to replace insect houses where required (if damaged or missing) or to relocate to a more suitable on-Site alternative (if applicable)		1 visit (as required – September/ October)	1 visit (as required – September/ October)	1 visit (as required – September/ October)	1 visit (as required – September/ October)
Created habitat piles/hibernacula will be monitored and replaced every five years, if required, as original woody material rots down. The size/shape of each wood/brush pile should not exceed 2m x 1.5m x 1m high, and piles should be tidy and secure.					1 visit (as required – September/ October)





Drawing 1 Site Location

426000

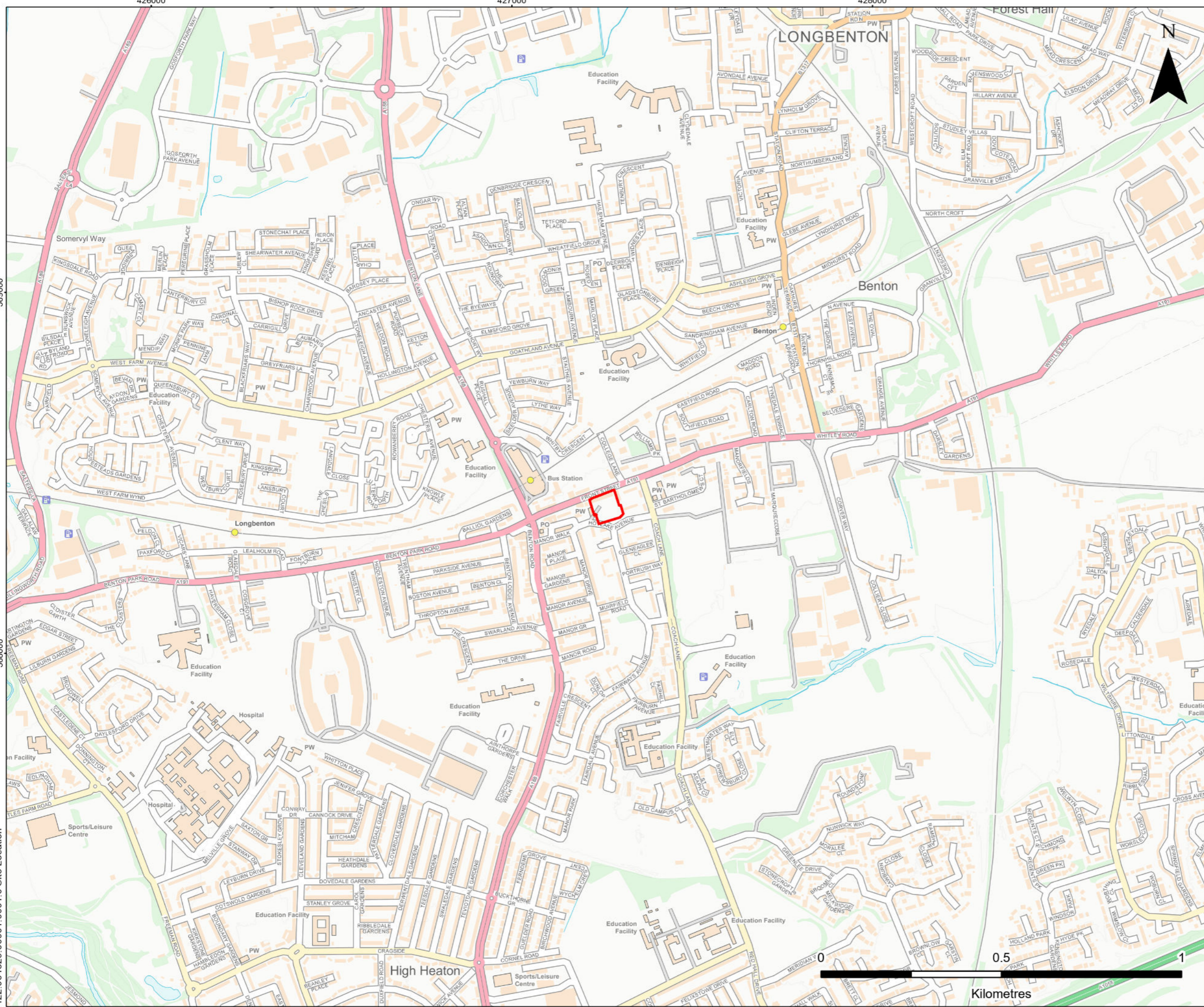
427000

428000


569000


568000


422.064829.00001.0 Site Location





LEGEND

 Site Boundary










FRONT STREET, BENTON, NEWCASTLE
PRELIMINARY ECOLOGICAL APPRAISAL
SITE LOCATION
DRAWING 1

Scale 1:10,000 @ A3 Date FEBRUARY 2024





Drawing 2 Locations of Creation and Enhancement Strategies

427200

427250

427300



LEGEND

- Site Boundary
- Habitat Enhancement Feature**
- Bat Box
- Bee Post
- Insect House
- Log Pile
- Vivara Pro Barcelona WoodStone Open Nest Box
- Vivara Pro Seville 28 mm Bird Box
- 3S Schwegler Starling Nest Box 45mm
- Invasive Species Avoidance Areas**
- Cotoneaster
- Rhododendron
- Habitat Enhancement Area**
- Grassland Enhancement and Management Area
- Shrub Planting and Management Area

568450

568400

422.064829.00001.0004.0 Habitat Creation and Enhancement Location



FRONT STREET, BENTON, NEWCASTLE
 ECOLOGICAL MANAGEMENT PLAN
**HABITAT CREATION AND
 ENHANCEMENT LOCATIONS**

DRAWING 2

Scale 1:500 @ A3 Date FEBRUARY 2024



