

Landscape, Ecological Mitigation, Enhancement and Management Plan

Survey site: Former Whitefield Library & Adult Learning Centre, Pinfold Lane, Whitefield, Manchester, M45 7NY

Client: Rebecca Marwood

Date: 16th July 2026

Project:

This report is prepared to inform a planning application with Bury Metropolitan Borough Council. The proposal is described as:

‘Change of use of former library (Use Class F1(d) to provide a health centre (Use Class E(e)), together with associated external alterations, car parking provision, landscaping, and engineering works.’

Planning Application Reference Number:

72986

Introduction

This Landscape, Ecological Mitigation and Enhancement Management Plan (LEMP) has been prepared for the above-named client to outline measures to be implemented during and post construction works at the above-named site.

The purpose of this plan is to ensure the protection and mitigation of ecological receptors, adhere to best practices and industry standards, and provide adequate supervision by licensed professionals. The EMEMP also outlines the management frameworks required for the planning and implementation of construction activities that comply with legislation and the environmental commitments.

The below table provides the wider ecological context of the site and details any associated planning conditions.

Site Context and Landscape History	
The survey site is centred on National Grid Reference SD 80461 05601 and has an area of approximately 0.27ha.	
The site primarily contains a large building and associated hardstanding, previously used as the Whitfield Library. The site is set centrally within Whitfield, with residential suburban habitat surrounding on all sides along with greenspace in the form of Whitfield golf course.	
The site contains no habitat which is listed as a habitat of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006). However, individual trees and lines of trees onsite are of good quality and likely provide connectivity to the wider landscape for a variety of species. Other habitats within the site are common and widespread and have low ecological value. No protected or notable plant species were recorded during the survey.	
Planning Conditions	
Condition	3 - No development shall commence unless and until a bat Method Statement is submitted to and approved in writing by the Local Planning Authority. Thereafter, the development shall be implemented in full accordance with the approved details and measures.
Condition	4 - No development shall commence unless and until a Landscape and Ecological Management Plan (LEMP) (or equivalent) has been submitted to approved in writing by the Local Planning Authority. The contents of the LEMP shall include information which demonstrates

	<i>the creation or management of habitats to secure a meaningful and measurable net gain for biodiversity, in line with the statutory Biodiversity Gain Condition.</i>
<i>Condition</i>	<i>6- No development shall commence unless and until a scheme for the integration of at least 2no. bat boxes and 2no. bird boxes onto the building or suitable trees, and hedgehog highways holes into any boundary fencing has been submitted to and approved in writing by the Local Planning Authority.</i>
<i>Condition</i>	<i>7 - Precautionary working measures methods for hedgehogs, reptiles and amphibians shall be implemented in full accordance with the approved details and measures set out on pages 10, 11 and 13 of the approved Preliminary Ecological Appraisal and Roost Assessment dated 07/07/2025.</i>

The below table describes the ecological baseline conditions on site.

Ecological Background Information
Detailed using desk study and site survey.
The site had a PEA undertaken by Arbtech Consulting Ltd on the 7th of July 2025. A BNG report followed on from this, as well as relevant arboreal surveys on the trees within the development site. Additionally, a Bat emergence and Re-entry report was also produced for the site in October 2025 by Arbtech Consulting Ltd. Habitats identified at the site include- • Sealed surfaces • Building • Introduced shrubs • Modified grassland • Urban trees Value for protected species on the site includes the following- • Birds- There is a moderate volume of nesting opportunities due to the amount of ornamental vegetation and urban trees around the site and adjacent to the site boundary. • Badgers- No evidence of badgers was found on site. Additionally, the site is unsuitable for badger sett excavation, and the site provides no foraging opportunities.

- **Bats**- The building on site was considered to be of low value for roosting bats with the onsite trees and ornamental vegetation providing foraging and commuting opportunities for bats. The BERS concluded there were no bats roosting in the building. However, as the survey was completed during the suboptimal season a method statement is to be used/ followed during development.
- **Reptiles**- The grassland and ornamental planting provide suitable foraging, commuting and refuge opportunities for reptiles. However, the site is surrounded by urban development and as such it is likely they are absent from site; they cannot be fully discounted due to the habitats present.
- **Amphibians**- The habitats on site are of limited to low value for amphibians and lack suitable features for shelter or hibernation. There are a couple of ponds identified within 500m. However, due to the surrounding urban infrastructure there is a high volume of barriers to dispersal for individual amphibians to reach the site. Great crested newts are expected absent from these areas. Common species may be present in low numbers.
- **Terrestrial mammals**- The habitats on the site and wider site are likely to support a couple terrestrial mammals, such as hedgehogs, foxes, rabbits and rodents.

The following tables detail the proposed mitigation, habitat creation and biodiversity enhancement measures for the development as well as management requirements to ensure the longevity of these measures. as detailed in the PEA and BNG. These include further details of the habitats on site and the impacts of the development upon them and will be read in conjunction with this document.

Scope

This LEMP outlines construction and ecological measures for the following works:

‘Change of use of former library (Use Class F1(d) to provide a health centre (Use Class E(e)), together with associated external alterations, car parking provision, landscaping, and engineering works’

Aims and Objectives

This report aims to identify key stakeholder requirements, ensure compliance by all stakeholders with all relevant legislation, to provide ecological and biodiversity enhancement measures for the site and include a management strategy in order to achieve long-term success and improvements.

Work Schedules and Ecological Presence

Landscape, Ecological enhancement and Management Plan

Work schedules will be developed to ensure activities with specific timing requirements are carried out in a manner that minimises harm to ecological receptors. These schedules will be provided to all relevant personnel and contractors involved in the project. The following measures will be implemented:

Ecological Clerk of Works

A qualified and suitably experienced ecologist may be present on-site during critical phases of construction activities, namely in relation to the building works subject to the requirements laid out in the bat mitigation plan (BMP). Their role will be to oversee and monitor compliance with the LEMP (and BMP), provide guidance, and take immediate action to prevent any harm to ecological receptors. Should protected species be identified during building works, activities will be halted whilst a suitably licensed ecologist and/or Natural England is contacted.

Persons Responsible and Lines of Communication

A Development Biodiversity Champion is selected for the construction phase of the development. The Biodiversity Champion will be someone with significant influence during construction, such as the contract, site or project manager. They are responsible for ensuring all actions outlined in the approved LEMP are implemented including the provision of a toolbox talk prior to works commencing. Any queries with regards to the mitigation prescriptions will be addressed to the project ecologist and communication will be retained between the Development Biodiversity Champion and project ecologist and/or a suitably qualified Ecological Clerk of Works (ECoW) throughout the construction phase of the development where necessary to ensure the mitigation is applied and impacts to adjacent ecological receptors are effectively minimised. The project ecologist's contact details are located on the title page of this report. It is recommended that the Biodiversity Champion informs the project ecologist and designated ECoW of the commencement of construction works and provides updates where necessary. The ECoW will provide ecological expertise and guidance throughout (where required).

The following key personnel are responsible for the management and implementation of works in accordance with the LEMP:

- Site manager - NHS property Services Ltd
- Main contractor- NHS property Services Ltd
- Site owners- NHS property Services Ltd

Table 2- Ecological mitigation measures

Ecological Mitigation Measures	This table includes any measure required to obtain or comply with planning permission or other consent and to comply with legislation.
Ecological Protection Areas and Buffer Zones	
Ecological protection areas and buffer zones within the project site. These areas will be demarcated using physical means of protection, such as exclusion fencing, to prevent unauthorised access and minimise disturbance to sensitive habitats.	
Tree Protection	
Tree root protection areas will be identified based on the existing tree inventory. A buffer from retained trees will be established and protected throughout the duration of construction activity in line with the sites Tree Protection Plan and the site access plan agreed with Client. No trenches or ground works will be completed within the specified buffer of any retained trees on site. Trees will be appropriately protected in accordance with BS 5837:2012 - “Trees in relation to design, demolition and construction – Recommendations”. As such, it is recommended that the trees are separated from construction works by protective fencing throughout the duration of the construction phase of the development. A fencing specification is included within Figure 1 below. Appropriate signage is to be included on the fencing in order to ensure that fences are not moved after establishing. As shown in Figure 2	

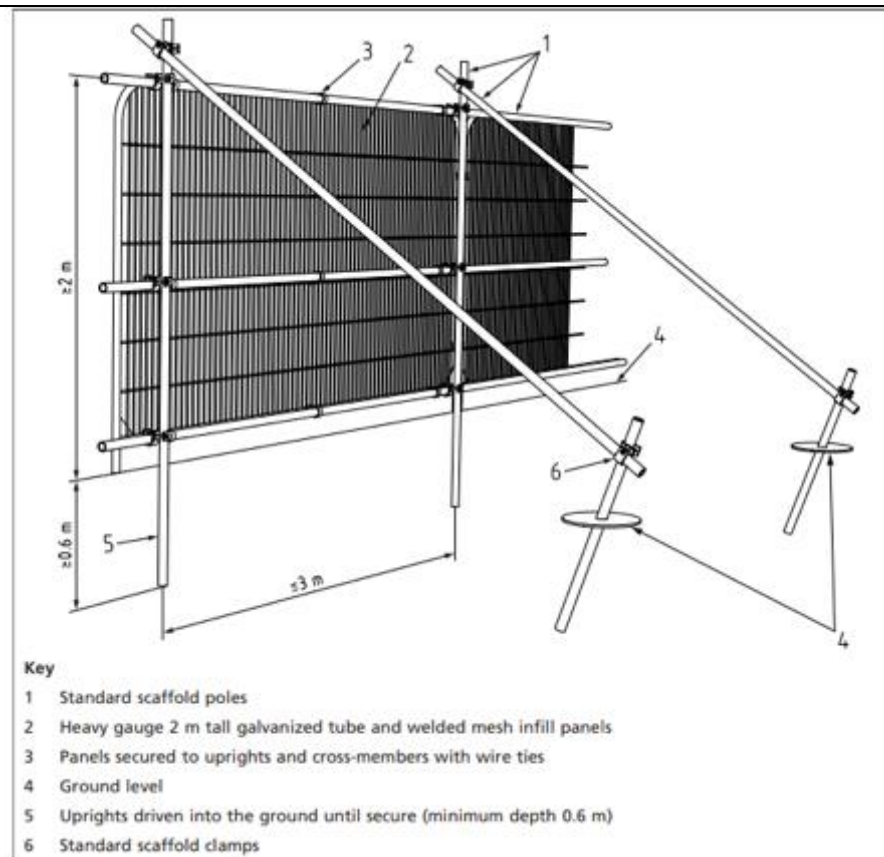


Figure 1: Default protective barrier specification (British Standards Institute 2012).



Figure 2 Appropriate signed to attached to root protection zone fencing- Source- www.Safetysignsandnotices.co.uk

Retained Turf and Soil Protection/Post construction Restoration	
Retained Soil and Turf Conservation.	Any areas of retained vegetation or bare soil accessed by vehicles and pedestrians is likely to become compacted by heavy machinery and repetitive footfall, which will negatively impact ecological functioning. • Clearance of turf and topsoil will be limited to the minimum required to facilitate the development. • Retained turf will be protected during construction to maintain its ecological function. • Post construction the entire soil profile must remain in a condition that promotes aeration, drainage and root growth.

<i>Compaction, Erosion and Retained Turf Damage Mitigation</i>	Retained soil and any retained turf will be protected from the impacts of compaction, erosion and other soil and turf damage by the following; • Protective boards lain around the construction zone will spread the weight and erosive impacts of plant, vehicles and feet. Plywood is a traditional option but rubber lawn mats may be a more practical and effective solution. These can also be used to create temporary “roads”. Clear protection mats are available to permit UV penetration and thus continued grass growth. • The work zone will be restricted to the minimum required for operatives to work safely and will be clearly signposted/fenced with access prohibited to contractors. • Contractors will be audited by the biodiversity champion on a weekly basis and on a daily basis by the team leader for compliance with environmental protection strategies and will be provided with toolbox talks at induction. Repeated compliance failures will lead to termination of contracts. Ensure any compensation or reparative measures for turf damage are included within contractors’ contracts. • When stripping, stockpiling or placing soil, do so in the driest condition possible and use tracked equipment where possible to reduce compaction. • Confine traffic movement to designated routes. • Keep soil storage periods as short as possible. • Clearly define stockpiles of different soil materials. • Heavy plant/skips etc will be stored on hard standing, e.g. part of the new carpark. Whilst this is under construction, protective boards will be used. • Works will not take place during or after prolonged periods of rain and will use dry periods. • Plan work to avoid unnecessary journeys on either foot or vehicle across the grassed areas. • Some residual compaction may occur despite protective efforts. As such, aerating the retained grassed areas in the work zone post development would be beneficial.
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Biosecurity and Invasive Species Management ¹	
<i>Invasive/non-native Species Mgt</i>	No invasive non-native species as listed under the Wildlife and Countryside Act (1981) or known otherwise to be problematic are present on site. However, there is a risk that invasive and non-native species could be introduced onto the site during construction via boots, vehicle wheels and imported materials. This risk will be managed via the implementation of appropriate biosecurity measures as listed below.
<i>Biosecurity</i>	A Biosecurity Declaration Form will be distributed via email to all contractors intending to send plant machinery to the development site. This instructs that power washing of all plant prior to entry on site to remove all traces of mud debris etc. The completed form must be returned to the site Biodiversity Champion prior to deliver/access. This form and a copy of the LEMP will be sent to all subcontractors that intend to bring machinery onto the site. Upon arrival to site the plant item is inspected at a designated quarantine area. This inspection ensures the delivered plant item has been thoroughly cleaned. Should the item of plant be deemed to be inadequately cleaned it will be refused entry. <i>Advice for Contractors on Site.</i> 1. Avoid taking any vehicles onto anywhere beyond those essential in completing works, keep to established tracks and park vehicles on established parking areas. 2. Arrive at the site with clean equipment, and vehicle, paying particular attention to wheels.

¹ <https://ccsbestpractice.org.uk/entries/biosecurity-preventing-the-introduction-of-invasive-species-to-site/>

[https://www.nonnativespecies.org/biosecurity/biosecurity-in-the-field/#:~:text=Basic%20biosecurity%20advice%20for%20site%20visits&text=If%20practical%20do%20not%20take,debris\)%20before%20leaving%20the%20site.](https://www.nonnativespecies.org/biosecurity/biosecurity-in-the-field/#:~:text=Basic%20biosecurity%20advice%20for%20site%20visits&text=If%20practical%20do%20not%20take,debris)%20before%20leaving%20the%20site.)

	3. Ensure equipment and footwear is clean (visually from soil and debris) before entering/leaving the site. 4. Ensure vehicle is kept clean - in particular, remove any accumulated mud before leaving the site. 5. Facilities will be provided on the site in the work zone surrounding the buildings to clean footwear/equipment. 6. Keep access to a minimum. 7. Where possible avoid areas of livestock or known disease. 8. Plan visits so that the highest risk site/area is visited last. Such robust biosecurity measures will prevent the leaving behind of a degraded environment and subsequent financial bills for the control of introduced invasive species, or any species that may alter communities within nearby designated sites.
Wildlife Protection – Precautionary Methods of Working-	
<i>Herpetofauna</i>	The habitat on site is of limited suitability for terrestrial GCN and there is multiple barriers to dispersal between the site and the two identified ponds with 250m, as such it is likely GCN are absent from site. However, it is likely a small number of common amphibians could be present at site. The site is in addition of a level of suitability for a small number of reptiles, with its provision of refuge, commuting and foraging provided by the site's grassland and shrubs. Whilst no reptiles or evidence were found during the site visit (Arbtech, 2025), there remains a low risk that a low number of reptiles could be present within the vicinity of the works.

	The proposed works are not anticipated to lead to any levels of habitat loss or fragmentation likely to affect local population status for either amphibians or reptiles, but individuals may be injured or killed during clearance and construction. Pre Development Vegetation Clearance Vegetation clearance works must take place outside of the typical hibernation period for reptiles and amphibians, which is typically between November and February. Reptiles and amphibians are mostly torpid during this timeframe and are thus most vulnerable to injury or death. Undertaking vegetation clearance works during their active period, typically between March and September, will allow individuals to disperse unperturbed to adjacent retained habitats. a) Before any development, the ground flora on the affected parts of the site will be strimmed down to 500mm, directed towards off site suitable habitat. Any reptiles that are found will be encouraged to move away of their own volition, or if in immediate danger or likely to find itself in danger, deposited in a bucket and placed by gloved hand outside of the development area in retained suitable habitat by a suitably experienced ecologist. b) Any spoil/log or rubble piles will be destructively searched for reptiles at the same time. c) Vegetation removal will be phased in two stages: with an initial cutting of all vegetation to approximately 200-300mm from ground level. d) This will be followed by a rest period of at least 24 hours. e) The second cut will be to ground level/ bare ground. Reptiles and amphibians are most likely to be present at or just below ground level; the phased technique allows any individuals present at this vegetation level to disperse. e) In addition to phasing, any cutting will
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be conducted systematically, towards areas of retained habitat to encourage any individual reptiles and amphibians to retreat to retained habitat unharmed and thus preventing individuals from becoming trapped in a central habitat island.

- f) The development zone will be managed thenceforth as bare ground or close mown vegetation.

A suitable systematic cutting technique is exemplified below in Figure 3.

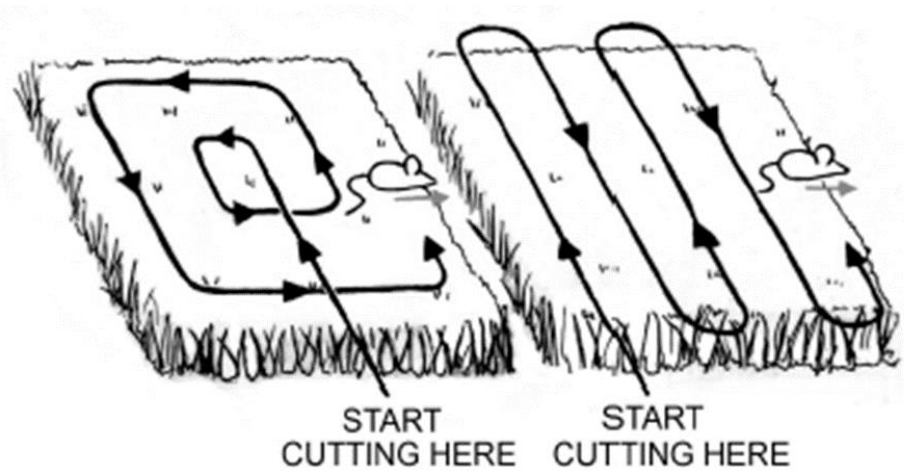


Figure 3: A schematic representation of vegetation cutting patterns as best to eliminate terrestrial opportunities for reptiles and amphibians within the construction zone.

Site Management During Construction

	• During the course of construction works a site wide check for reptiles and amphibians must be carried out by contractors at the commencement of each working day, with any found relocated to safety within a suitable area outside of the development works. Any materials will be stored on pallets away from tall vegetation or boundaries. • Rubble created during the development will be safely disposed of in a skip. If no skip is available the rubble will be stored off the ground (e.g. on pallets) until it can be removed from site, to prevent common reptiles and amphibians from using the rubble piles for hibernation or refugia. • All trenches will (where possible) be backfilled before nightfall, or a ramp will be left to allow amphibians to easily exit. Any trench that could not be closed the previous day must be checked for reptiles and amphibians at the beginning of the next working day; particularly where this is scheduled for infilling. • Any chemicals or pollutants used or created by the development will be stored and disposed of correctly according to COSHH regulations. • Where for any reason contractors are a non-compliant and rubble and other piled items are left on the floor overnight or for any period of time beyond that working day, they must be dismantled by hand. • Any reptiles or amphibians found must be encouraged to move away of their own volition, or if in immediate danger and unable to perambulate themselves, will be captured in gloved hand or by any other means avoiding injury and safely relocated to suitable cover within retained habitat. No amphibian will be handled via bare hand due to the risk they may absorb toxic compounds through their permeable skin. • If at any point GCN or reptiles are found during development, all works must cease until further advice has been obtained from a qualified ecologist and the relevant regulators.
<i>Birds</i>	As part of the proposed development, elements of vegetation, including urban trees, amenity grassland, and ornamental shrubs, will be removed, whilst a number of trees and other vegetation will be retained. If active nests are present within vegetation to be removed or within

	retained vegetation adjacent to the works, construction activities could result in the destruction of active nests and/or the disturbance of nesting birds. Tree felling, vegetation clearance, roofing works to the building buildings, topsoil stripping and other activities will be undertaken outside the core nesting period 1st March to 31st August. If this timeframe cannot be avoided, a nesting birds check of the vegetation (and any remaining or regrowth vegetation from earlier cuts) will be undertaken, by the project ecologist or ECoW, within 48 hours prior to the commencement of work. All active nests will need to be retained with a species-appropriate (generally 5m) buffer until the young have fledged (species specific but typically 4-6 weeks). A watching brief will be undertaken during clearance in case any nests were not evident during the first check. The buffer will need to be increased in the event of the presence of any Schedule 1 species as reckless disturbance as well of destruction of the nests of such species is an offence. Buffer zones regarding schedule 1 species are on a case by case, species by species basis and must be reflected accordingly.
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If schedule 1 species are identified nesting, these areas must be retained, and suitable fencing and signage installed to prevent encroachment into these areas. It is an offence to recklessly disturbed adult and independent young in proximity to their nests as well as the nests themselves. Examples of appropriate installed work signs are shown in **Figure 5**. Signs can also be installed in regard to non-schedule 1 species, installed in full view in areas where nesting birds have been identified on the pre-work checks.



Figure 5- Work signage regarding nesting birds on the site. Source- www.Britishsafety signs.co.uk

Bats

Bat emergence and re-entry surveys concluded there is a no risk to roosting bats and as such bat roosts are unlikely to be impacted by the development. However, the survey was completed during the suboptimal season as such a Bat method statement is required.

	Considering no bats or roosts were recorded during the emergence surveys consider there is low risk to bats. However, as it was completed during the suboptimal period the emergence survey may not have captured the true picture of bat activity at the site. To reduce the potential for disturbance impacts to bats during the proposed works, the following precautionary working methods will be required: <table border="1" data-bbox="448 456 2125 1441"> <tr> <th data-bbox="448 456 651 571">Mitigation/ Compensation/ Enhancement</th><th data-bbox="651 456 2125 571">Specification</th></tr> <tr> <td data-bbox="448 571 651 684">Further Survey Requirements</td><td data-bbox="651 571 2125 684">No further activity surveys are required in order to confirm the presence / absence of bats at the site. The below measures are considered proportionate to avoid any potential impacts to bats throughout the proposed development.</td></tr> <tr> <td data-bbox="448 684 651 798">Licence Requirements</td><td data-bbox="651 684 2125 798">A European Protected Species Licence (EPSL) is not considered to be required, the mitigation measures below are considered sufficient to avoid and reduce any likely impacts to bats as a result of the proposals.</td></tr> <tr> <td data-bbox="448 798 651 1441">Mitigation and Enhancement Requirements</td><td data-bbox="651 798 2125 1441"> The following mitigation and enhancement measures will be delivered as part of the Bat method statement. • The works will be timed to take place when bats are least likely to be present; November to April and avoid the peak bat activity period (May – September). As the building is unsuitable for hibernation due to unstable temperature and humidity regimes this means that the likelihood of disturbing a bat is extremely low. • The provision of a toolbox talk to contractors immediately prior to works, by a Level 2 bat licensed ecologist, to inform them of the potential for the site to support bats and how works should be undertaken in proximity to potential roosting features. The ecologist will inspect the building prior to the start of work to ensure there are no bats present that could be affected. This will involve an endoscope of the gaps in the soffits (B1 and B2) and internal inspection of the building(s). • Avoiding the use of unnecessary lighting, particularly at night, or implementing a low impact lighting strategy to avoid illumination of retained vegetation or newly created roost features (boxes) in accordance with current guidance pertaining to the impacts of lighting on bats (BCT & ILP 2023). • The installation of a two crevice bat boxes on mature trees within the site to provide additional roosting habitat for bats, post-development. </td></tr> </table>	Mitigation/ Compensation/ Enhancement	Specification	Further Survey Requirements	No further activity surveys are required in order to confirm the presence / absence of bats at the site. The below measures are considered proportionate to avoid any potential impacts to bats throughout the proposed development.	Licence Requirements	A European Protected Species Licence (EPSL) is not considered to be required, the mitigation measures below are considered sufficient to avoid and reduce any likely impacts to bats as a result of the proposals.	Mitigation and Enhancement Requirements	The following mitigation and enhancement measures will be delivered as part of the Bat method statement. • The works will be timed to take place when bats are least likely to be present; November to April and avoid the peak bat activity period (May – September). As the building is unsuitable for hibernation due to unstable temperature and humidity regimes this means that the likelihood of disturbing a bat is extremely low. • The provision of a toolbox talk to contractors immediately prior to works, by a Level 2 bat licensed ecologist, to inform them of the potential for the site to support bats and how works should be undertaken in proximity to potential roosting features. The ecologist will inspect the building prior to the start of work to ensure there are no bats present that could be affected. This will involve an endoscope of the gaps in the soffits (B1 and B2) and internal inspection of the building(s). • Avoiding the use of unnecessary lighting, particularly at night, or implementing a low impact lighting strategy to avoid illumination of retained vegetation or newly created roost features (boxes) in accordance with current guidance pertaining to the impacts of lighting on bats (BCT & ILP 2023). • The installation of a two crevice bat boxes on mature trees within the site to provide additional roosting habitat for bats, post-development.
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		Should a bat or evidence of roosting bats be encountered throughout the proposed development, works must stop and a Level 2 bat licensed ecologist contacted for advice on how to proceed.
	Bat box detail	In order to enhance the site for bats, two bat boxes will be surface mounted onto retained mature trees, as shown on the plan in Appendix 3. Details of the bat box to be installed is as follows: - The recommended bat box will be constructed of woodcrete / woodstone. Boxes of this construction are known to require minimal maintenance and have a lifespan of 25 years plus. - Vivara Pro Low Profile Woodstone Bat Boxes will be utilised (or similar alternative) (https://www.nhbs.com/low-profile-woodstone-bat-box). 2No. Single Crevice Bat Box will be installed (or similar specification), as shown in Figure 1. These bat box types are suitable to support a wide range of species including common pipistrelles in addition to noctules <i>Nyctalus noctula</i> and soprano pipistrelles <i>Pipistrellus pygmaeus</i>, which represent Species of Principal Importance as listed on Schedule 41 of the NERC Act (see Appendix 4).

	• The bat box will be positioned >3m above ground level on mature trees within the site, with a clear flight path to and from the entrance, away from artificial light. Given the site nature and habitats present immediately adjacent to the site, it is considered that at this height the box will receive adequate sun exposure. • The proposed bat box is designed to require no management or maintenance. Furthermore, preventing physical disturbance will increase the chances of occupation. However, it is recommended that the bat boxes are inspected annually outside the typical summer roosting period, which is between May and September inclusive. Bat boxes must be replaced like-for-like (insofar as is possible) if they are damaged, removed, or have fallen from their recommended location.  Figure 1: The crevice bat box (image credit: https://www.nhbs.com/low-profile-woodstone-bat-box)
	The bat method statement must be adhered to at all times during development. Additionally, bats may be disturbed during commuting and foraging activities. A lighting strategy is provided later within the report.

<i>Hedgehogs and other terrestrial mammals</i>	The following recommendations are given in order to mitigate against potential harm to hedgehogs and other mammalian fauna during the development works. • The work zone will be checked for wildlife prior to works commencing, with any fauna encouraged to move away via their own volition or transported by gloved hand to the reptile receptor area if this is not possible. This will only apply to smaller mammal species. Larger mammals such as badgers and foxes will not be transported by hand. • Works should be timed to avoid the hedgehog hibernation season (October to March), minimising the risk of disturbing hibernating individuals. • Any inadvertently injured wildlife will be taken to an appropriate local wildlife carer or vet. • Any trenches dug will ideally be backfilled before contractors leave. If this is not possible, they will be covered at night or have a rough sawn plank placed in them to act as a ramp for any wildlife which may fall in. They must be checked for wildlife before backfilling. • Security lighting must be directed away from undergrowth and vegetated site boundaries. • Any chemicals or pollutants used or created by the development will be stored and disposed of correctly according to COSHH regulations.
Lighting Strategy	
The habitats on site have some habitat value for commuting and foraging bats and other nocturnal wildlife within what is at present a moderately dark area. Additional lighting could impact behaviour of wildlife and adversely affect the integrity of commuting routes and foraging resources. Any proposed external lighting will be installed in accordance with current guidance issued by the Bat Conservation Trust and Institute of Lighting Professionals: Guidance Note 08/18: Bats and Artificial lighting in the UK (BCT & ILP 2018). The below strategy utilises light prescriptions detailed within this guidance to limit impacts of artificial lighting on bats and other light sensitive species using retained habitats on and directly adjacent to the site including hedgehogs.	

In particular, the lighting strategy seeks to influence the lighting design so that impacts can be avoided to key habitats of value including:

- Scattered trees.
- The species-specific habitat enhancements detailed below, predominantly the bird and bat boxes.
- Newly proposed landscaping.
- Retained habitats on and directly adjacent to the site.

The following lighting design prescriptions are considered suitable for the type and scale of the Development to minimise the impacts of artificial lighting on site or within the public realm on bats and other light sensitive species.

Lighting design prescriptions recommended for the Site comprise:

- Scattered trees and building elevation (s) where bird/bat boxes are proposed must not be illuminated to ensure the present dark zones are retained.
- Reducing the operating time of any installed public realm lighting and levels of illuminance provided via: Part-night operation. Turning off lights between certain hours, for example between midnight and 06:00.
- The use of motion sensors will be avoided to ensure no unnecessary light spill occurs during night-time hours. Where the use of motion sensors cannot be avoided, lights must be set to be turned on for no longer than 1 minute.
- Wall lights and security lights will be 'dimmable' and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on.
- Avoiding light spill via: The use of directional lighting by using luminaires with rear shields and an upwards lighting ratio of zero; and Consideration to the height and spacing between lighting columns where practicable. Examples include stud LED or footpath lighting. There will be no bare bulbs and no light pointing upwards. The spread of light will be kept in line with or below the horizontal. Use low-level lighting in conjunction with hoods, cowls, louvers and shields.
- Lights will be directional to ensure that light is directed to the intended areas only.

- Light type: Use of lamps that minimise UV emissions or use UV filters to reduce the attractiveness of the lamp to invertebrates. Use high-pressure sodium or LED lamps, ideally warm white as its function as an invertebrate attractant is relatively low.
- The use of landscaping as to block light spill where appropriate.
- Install lighting systems that deliver no greater than a 3lux average illuminance, with a maximum horizontal illuminance of 0.6 uniformity (subject to appropriate maintenance factors).
- Use narrow spectrum light sources to lower the range of species affected by lighting.
- Use light sources that emit minimal ultra-violet light.
- Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content, they will be of a warm colour temperature <2,700 kelvin.
- External lighting will be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats) and will be set to the shortest time duration to reduce the amount of time the lights are on.
- All lighting on the developed site will make use of the most up to date technology available.

Consideration will be taken for internal lighting as well as external light. Measures in order to reduce light spillage from internal lighting are displayed below in **Figure 7**.

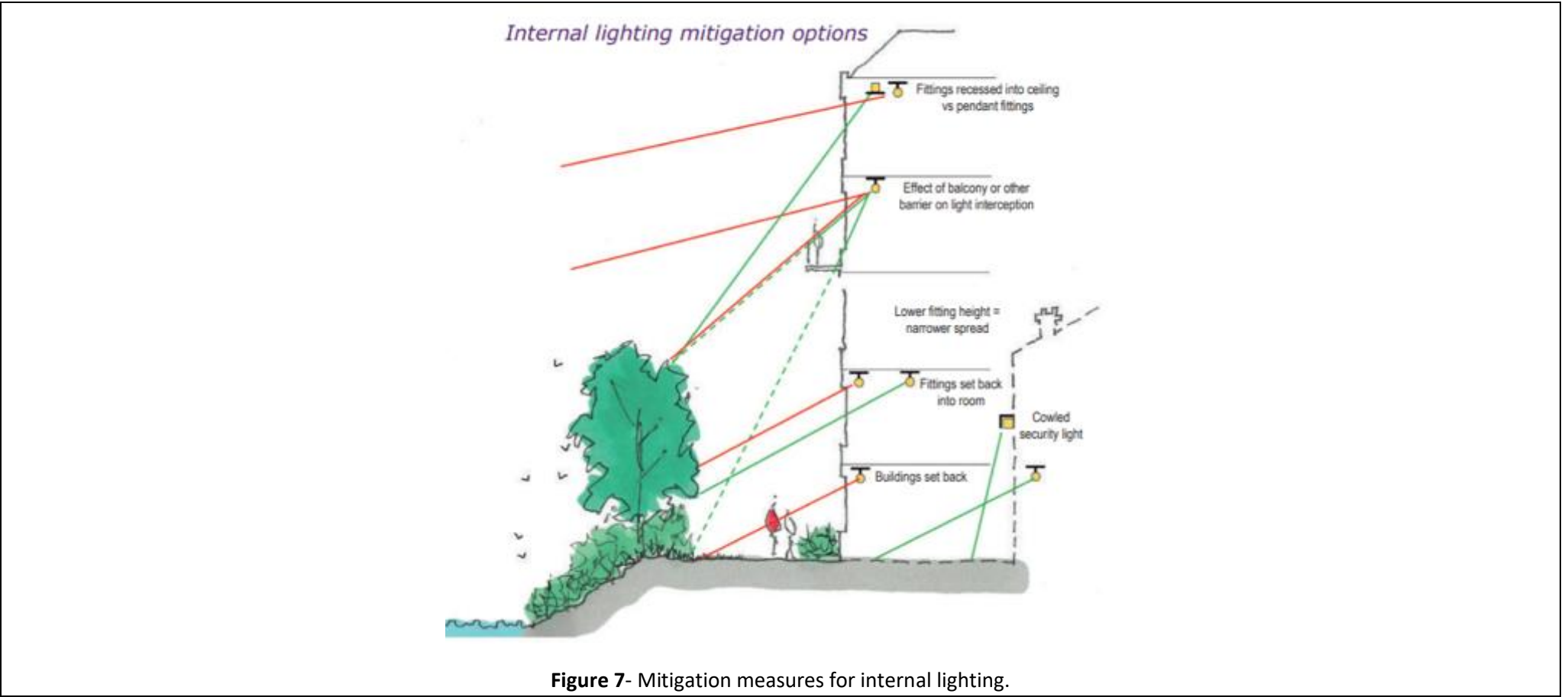


Figure 7- Mitigation measures for internal lighting.

2.0 Habitat Creation and Biodiversity Enhancement Measures

Table 3 details the habitat creation and biodiversity enhancement measures for the site. These are also illustrated in **Appendix 2 for habitat** and **3 for fauna species**.

Ecological/Biodiversity enhancement and management measures	This table includes any measure required to obtain or comply with planning permission, conditions, or other consent and to comply with legislation.
Works	Specification

Modified grassland: wildflower mix	Overview Areas of grassland including general amenity lawn and wildflower turf will be created within small sections of the site surrounding the building and carpark to the north and southern aspects of the site as shown on the proposed landscape plans (Appendix 1) and habitat creation plan (Appendix 2). Objectives • To create a successful grassland that will provide habitat for pollinating invertebrate species, that will in turn, provide foraging opportunities for protected and/ or notable species groups including amphibians, bats, birds, invertebrates and hedgehogs. • Employ techniques that use organic fertilizers and minimise the use of chemicals wherever possible. For modified grassland areas. Ground preparation The location of the proposed grassland creation is not currently covered by vegetation. For areas of ground currently covered by hardstanding, the hard surface will need to be broken up and removed leaving exposed bare earth suitable for seeding. Any other areas not covered by sealed surfaces should be subject to a soft of the current vegetation present and removed from the area to provide a bare soil substrate for sewing the seed mix. The bare soil will be subject to light rolling or trampling to provide a firm base for seeding. Seeding To be undertaken in the spring between April and May or in the Autumn between September and October. The following seed rates are recommended: 40kg/ha or 4g/m² Proposed seed mix: It is recommended to seed the grassland areas with Emorsgate EM2 General Purpose Meadow Mixture. This seed mix contains 5no. grass species and 15no. wildflower species. The mixture contains no dominant grass species. Due to this diversity and absence of dominant species, the number of grass and wildflower species present per m² is increased; it is therefore considered reasonable to assume a species diversity of 6-8 species per m². For exact specifications, please refer to: https://wildseed.co.uk/product/mixtures/complete-mixtures/general-purpose-meadow-mixtures/standard-general-purpose-meadow-mixture/
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Additionally, the areas proposed as wildflower turf will be planted with Wildflower Turf landscape 34 which comprises 80% native wildflowers and 20% native grasses. For exact specifications please refer to: <https://wildflowerexperts.com/products/wildflower-turf-landscape/>

Table 3.1 Modified Grassland Management Prescriptions General purpose meadow mixture

Management	When	Rationale
Cut monthly during the growing season	Between April and October	Cutting monthly will allow a neat a tidy appearance whilst allowing more species to effectively colonise.
Turn and dry the cut grass over 3-5 days before removing arisings off Site	Following cuts in May and September.	This allows any seeds present seeds to drop encouraging species diversity and invertebrates to relocate unharmed.
Do not apply chemical fertilisers	At all times.	The use of chemical fertilisers will encourage vigorous grasses and weeds to grow or cause large areas of bare ground due to inhospitable growing conditions,

Shrub Planting

Overview

Shrub planting and a combination of both native and ornamental shrubs are proposed across the site as ground planting and within raised planters; as shown on the proposed landscape plans and within the BNG proposal (see **Appendix 1 and 2**). This will focus primarily to include a range of native and ornamental species Pendulous sedge.

Ornamental species such as laurel, rhododendron and non-native cotoneasters listed on the schedule 9 invasive species list must be avoided.

Objectives

- To plant a range of shrubs that will provide pollinating, foraging, commuting, and refuge opportunities for protected and/ or notable

species groups including amphibians, bats, birds, hedgehogs, and reptiles.

▪ Ensure that good horticultural practice is employed to encourage the long-term health and vitality of all trees and shrubs.

▪ Ensure well-balanced crowns and/ or natural shape by preventing over-competition.

Creation Method

• Ground preparation and planting

Each shrub will be planted within a hole three times as wide of the supplied pot and of a similar depth. Root balls will be soaked thoroughly in water before planting and root balls will be loosened to expose restricted roots before planting. The planted shrubs will then be backfilled ensuring there are no air pockets around roots or any roots protruding out of the ground.

• Timing

It is best to prepare the land during the summer ready for planting between November and March. Planting trees and shrubs before the new year helps ensure better rooting and subsequent establishment including faster growth during the first growing season.

Recommended management prescriptions:

Table 3.2: New shrub planting.

Management	When	Rationale
At the end of each growing season all plant failures are to be 100% replaced	When required; checked annually in Autumn.	To maintain amenity and wildlife value.
If required, provision of stakes and guards. Guards to be left on for a minimum of 5 years	N/A	Protect from damage
Stakes will be checked and any broken or damaged stakes during this time would be removed (as	When required; checked annually in Autumn.	Maintain protection

	above) and replaced with ties re-fixed		
	Remove weeds	When required; checked twice annually in early spring and in Autumn.	Reduce competition for resources nutrients etc.by weeds
	Application of bark mulch at a depth of 50 mm	Immediately after planting and then when required; checked annually in Autumn.	Reduce competition for resources nutrients etc.by weeds
	Do not apply chemical fertilisers	At all times.	The use of chemical fertilisers will encourage vigorous grasses and weeds to grow
	Apply a light dressing of well-rotted manure	Annually in the winter	Note the overuse of manure fertilisers will encourage vigorous grasses and weeds to grow.
	Removal of spent flowers from perennial plants will be removed through 'deadheading'	Twice annually, late spring and in the Autumn.	Allows plants to place more energy into re-growth.
	Watering will be undertaken before and after planting out and as necessary for the continued thriving of all planting.	When required; provide more water during periods of draught and less water during times of prolonged rain.	Ensures plants do not dry out and subsequently fail.
	Check and replace any plant failures once a year	For the first 5 years	To ensure no gaps form.
Bat Boxes	Overview:		

A total of two bat boxes will be installed at the site, comprising external bat boxes onto retained mature trees. The building is not considered suitable for an integrated bat box as no demolition/rebuilding works are occurring **Appendix 2**. Details of the bat boxes recommended for the sites are as follows:

External bat boxes to be installed onto retained trees

- The recommended external bat boxes will be constructed of woodcrete/woodstone. Boxes of this construction are known to require minimal maintenance and have a lifespan of 25 years plus.
- 2 No. Vivara Pro Low Profile Woodstone Bat Boxes (or similar) (see **Figure 13**) will be installed onto retained mature trees within the site. This bat box type is suitable to support a range of species including noctules *Nyctalus noctula* and soprano pipistrelles *Pipistrellus pygmaeus*.
- The bat boxes will be positioned 3-5m above ground level facing west (on the retained trees) with a clear flight path to and from the entrance, away from artificial light and facing vegetated habitats.



	Figure 13 Vivara Pro Low Profile Woodstone Bat Box (image credit: https://www.nhbs.com/equipment?qtview=194583) Recommended management: The proposed bat boxes are designed to require no management or maintenance. Furthermore, preventing physical disturbance of bat boxes will increase the chances of occupation by roosting bats. However, it is recommended that the bat boxes are inspected annually for the first five years outside of the typical active season for bats (May to September inclusive) following installation. Bat boxes must be replaced if they are damaged, removed, or have fallen from their recommended location.
Bird Boxes	Two bird boxes are recommended to be installed on site, upon mature trees on the building or retained trees around the site. Bird box specification: • The recommended bird boxes will be constructed of woodcrete/ woodstone. Boxes of this construction are designed to require no maintenance and a lifespan of 25 years plus. • 1No. Woodstone Nest Boxes (or a similar alternative brand) with 28mm entrance holes are proposed on the trees, as shown in Figure 15. • Woodstone Nest Boxes will be positioned approximately 1.5-3m above ground level where they will be sheltered from prevailing wind, rain and strong sunlight. Box positions will not be facing south as a result. • Due to the height of the building and the surrounding of trees, swift boxes are not recommended for this site due to the high volume of obstacles which would deter swifts from this area. • These must be installed a minimum of 3m in height and have clear and direct open flight paths, unobstructed by trees, vegetation or other buildings. • 1No. Schwegler House Sparrow Nest Boxes (or similar) (see Figure 16) will be installed onto the façade of the building. This bird box type is designed to provide enhanced nesting opportunities for house sparrow <i>Passer domesticus</i>. House sparrows are priority species listed on Section 41 of the NERC Act. However alternative species like tits will also utilise these boxes if sparrows are not present. • The bird box will be positioned approximately 3m above ground level facing a northeast (on the tree) and facing east on the (building) where they will be sheltered from prevailing wind, rain and strong sunlight.



Figure 15(left) Woodstone Nest Box – source arkwildlife.co.uk



Figure 16 (Right) Schwegler sparrow terrace – source Wildcare.co.uk

Recommended Management:

The proposed bird boxes are designed to require no management or maintenance. Furthermore, preventing physical disturbance of bird boxes will increase the chances of occupation by nesting birds. However, it is recommended that the bird boxes are inspected annually for the first five years outside of the typical nesting bird season (March to September inclusive) following installation. External bird boxes must be replaced if they are damaged, removed, or have fallen from their recommended location. Internal bird boxes will not be blocked or removed.

Invertebrate house

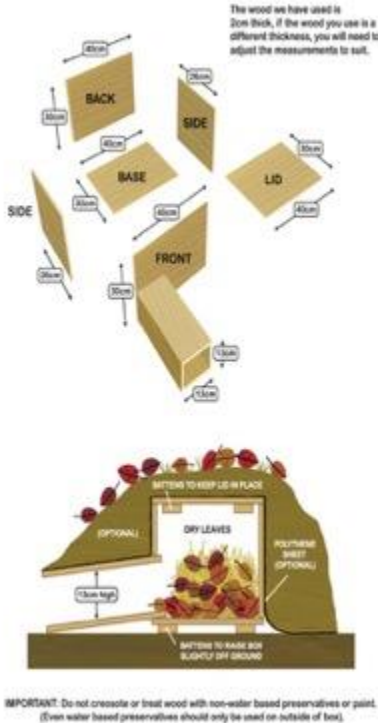
An insect box will be installed to the fence line (or be freestanding) on the southern elevation opposite the proposed wildflower turf planting. An insect box suitable for the site (or a similar alternative brand) can be found here: <https://www.nhbs.com/national-trust-apex-insect-house>



Figure 17: Insect box (image credit <https://www.nhbs.com/national-trust-apex-insect-house>)

- The proposed habitat removal to facilitate the development does not include habitats of elevated value to invertebrates. However, it is recommended that compensatory habitat enhancements are incorporated as part of the development to provide additional opportunities for common invertebrate species. There is excellent scope to enhance the site through the provision of features such as log piles and insect houses.
- Logs and deadwood from the site clearance will be retained and stacked within a quiet corner of the site underneath the trees.
- This will provide deadwood for invertebrate species, as well as provide secure areas for any reptiles or amphibians in the area. This will also continue to provide a food source for other fauna, such as hedgehogs.

The location of the log pile is noted on the map in Appendix 3.

Hedgehog House	A hedgehog house will be installed within a vegetated shaded area or within a shade area among the retained scattered trees on the northeast site boundary (Figure 28). A hedgehog house suitable for the site (or a similar alternative brand) can be found here: https://www.nhbs.com/hedgehog-house .This will be an area where it will not be regularly disturbed. Hedgehog houses can also be partially buried underneath turf to hide it greater. (Figure 19) to create a more permanent structure.  Figure 18: Hedgehog house (image credit www.nhbs.co.uk
	 Figure 19- Permanent buried hedgehog house- source www.Britishhedgehogs.org.uk Access points

	Access will be continued to be provided for hedgehogs on the site. This will include the installation of hedgehog access points within the fencing around the site. Gaps in the fencing will be a minimum 15 x 15cm. A hedgehog highway plaque will be installed over these gaps to indicate the reasoning and to prevent these being accidentally being fixed or blocked off, as demonstrated in figure 20. This will also include gaps between the closed board fencing between the gardens, which will provide safe movement across the site. Location of suitable gaps are noted in the map in appendix 3. This will also provide movement access for smaller fauna such as reptiles. Deadwood and brash areas created as part of the reptile mitigation plan would also benefit hedgehogs in providing hibernation opportunities. Figure 20- Hedgehog highway plaque- Source- www.Wildcare.co.uk
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Compliance and Reporting

- The LEMP requires stakeholders to comply fully with the pre-construction and construction-related elements of any mitigation strategies agreed with the Local Planning Authority and Natural England under any license requirements. Construction activities will therefore be conducted strictly in accordance with the approved CEMP. Regular inspections and monitoring will be undertaken to ensure compliance with the plan's requirements.
- Any deviations or incidents that may affect ecological receptors will be immediately reported to the designated ecologist / Natural England. Updates to the LEMP will be relayed to the Local Planning Authority.
- The LEMP will be periodically reviewed and updated as necessary throughout the construction phase to address changing site conditions and evolving ecological considerations.

Appendix 1: Site Landscape master plan





Landscape, Ecological enhancement and Management Plan

Appendix 2: Habitat on-site creation



Appendix 3: Species specific enhancements.



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