



Ecological Mitigation, Enhancement and Management Plan

Great Brighams Mead, Vastern Road, Reading, Berkshire, RG1 8DJ

Kings Oak Miami LLP

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Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.

The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.

(BS 42020, 2013)

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1.0 Introduction

Arbtech Consulting Limited was instructed by Kings Oak Miami LLP to produce an Ecological Mitigation, Enhancement and Management Plan for Great Brighams Mead, Vastern Road, Reading, Berkshire, RG1 8DJ (hereafter referred to as “the site”).

The plan was required to inform a planning application for ‘Construction of a two-storey roof (third and fourth floor) extension to accommodate 100 aparthotel rooms (Use Class C1) with associated parking, cycle stores and bin stores’ (hereafter referred to as “the proposed development”).

A plan showing the proposed development is provided in Appendix 1.

The aim of this plan is to outline mitigation measures required to minimise impacts on biodiversity as well as to outline habitat creation and enhancement opportunities and long-term management which will ensure that a net gain in biodiversity is achieved and maintained on the site, in accordance with the National Planning Policy Framework (NPPF).

This plan has been informed by a Preliminary Ecological Appraisal and Roost Assessment in June 2023 and Bat Emergence Surveys in August/ September 2023 which was completed by Arbtech Consulting Ltd.

2.0 Site Context and Survey Information

2.1 Site Location and Landscape Context

The site is located at National Grid Reference SU 71370 74217 and has an area of approximately 1ha comprising buildings, hard standing, broadleaf trees and shrubs. It is surrounded by residential and commercial areas and associated infrastructure, with the river Thames located approximately 50m north of the site. A site location plan is provided in Appendix 2.

2.2 Ecological Information

Table 1 summarises the survey findings for the site and outlines any potential impacts as a result of the proposed development along with recommendations and biodiversity enhancement opportunities, as detailed in Preliminary Ecological Appraisal and Roost Assessment and Bat Emergence Surveys (Arbtech, 2023).

Table 1: Summary of baseline survey information, potential impacts, recommendations and biodiversity enhancement opportunities for the site (Preliminary Ecological Appraisal and Roost Assessment and Bat Emergence Surveys, Arbtech, 2023)

Ref	Summary of Survey Findings	Foreseen Impacts	Recommendations	Biodiversity Enhancements
Habitats and flora	There are no notable habitats within the site but priority habitats are present within 1 km of the site, the closest being deciduous woodland located ~520 m from the site.	No impacts to any notable habitats are anticipated due to the small scale and distance of the proposed development from such habitats as well as the urban location of the site with surrounding physical barriers.	None.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development: • Native tree, hedgerow and shrub planting. • Creation of wildflower grassland. • A green roof on new buildings. • Green walls.
Roosting bats (B1)	The following bat roosts with a peak count of 14 common pipistrelles were identified at the site: 1. One maternity roost of common pipistrelles across the southwest roof (including the roof tiles and lead flashing around the base of the clock tower). 2. One day roost of common pipistrelles at the top of the clock tower.	The proposed development will result in the demolition of the roof of B1. This will result in destruction of any bat roosts present and could cause disturbance, death or injury to bats.	An EPSL application to Natural England will be required to legally permit the proposed works. The EPSL application requires that surveys have been undertaken within the most recent active bat season (optimal May to August, suboptimal September). Planning permission must have been granted and all relevant wildlife-related conditions have been discharged prior to submission, where possible to do so. The survey effort should include at least one survey between May and	The installation of two bat boxes (in addition to the two receptor bat boxes required for the licence) on buildings or trees will provide additional roosting habitat for bats. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light. The bat boxes will be a specification suitable for buildings or trees such as • Beaumaris Woodstone Bat Box – (buildings) • Habibat Bat Access Slate (buildings) • General Purpose Bat Box (trees)

	3. One day roost of common pipistrelles in a join in the concrete base of the southeast turret. 4. One day roost of common pipistrelles in a join in the concrete at soffit level on the southwest elevation of B1.		June when the detection rate of bat roosts is highest.	Small Bat Crevice Bat Box - Bark Boxes (trees) or a similar alternative brand.
Foraging and commuting bats	The vegetation along the site boundary could be used by commuting bats and link with nearby roosts and the River Thames.	If the plans involve the removal of boundary vegetation such as trees and hedgerows, bat commuting routes could be impacted.	Further bat surveys have been recommended (see above recommendation). Depending on the findings of the further bat surveys, mitigation measures may need to be implemented to protect bat commuting routes.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for foraging bats: Planting of native tree, shrub and hedgerows to increase foraging opportunities.
Birds	The trees and hedgerows on site provide suitable habitat for nesting urban bird species such as pigeon and house sparrow. In addition, birds may forage on site. Although no nests were present in the buildings at the time of the survey, birds may begin nesting within buildings on site.	Birds may be impacted if the proposed development results in the loss of trees and hedgerows or if development works occur in close proximity to the boundary habitats. The loss of such habitats is likely to be inconsequential to local bird populations owing to their low value and the presence of more extensive habitat locally. However, the proposed development could result in the destruction or the disturbance and subsequent abandonment of active bird nests.	Works should be undertaken outside the period 1st March to 31st August. If this timeframe cannot be avoided, a close inspection of the building and vegetation should be undertaken immediately, by qualified ecologist, prior to the commencement of work. All active nests will need to be retained until the young have fledged.	The installation of a minimum of four bird boxes on retained buildings will provide additional nesting habitat for birds e.g. Schwegler No 17 Swift Nest Box or a similar alternative brand. Swift boxes should be positioned at the eaves of a building and can be incorporated into the fabric of the building during construction.
Invertebrates	The trees, shrubs and hedgerows on site are likely to support widespread species of invertebrates, including some pollinating species such as bees and butterflies.	No impacts are anticipated on notable species or populations of invertebrates as a result of the proposed development.	None.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for invertebrates: - Native tree, hedgerow and shrub planting. - Creation of wildflower grassland. - A green roof on new buildings. - Retention of deadwood on the site.

3.0 Ecological Mitigation, Enhancement and Enhancement Measures

3.1 Informative

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.

3.2 Persons Responsible and Lines of Communication

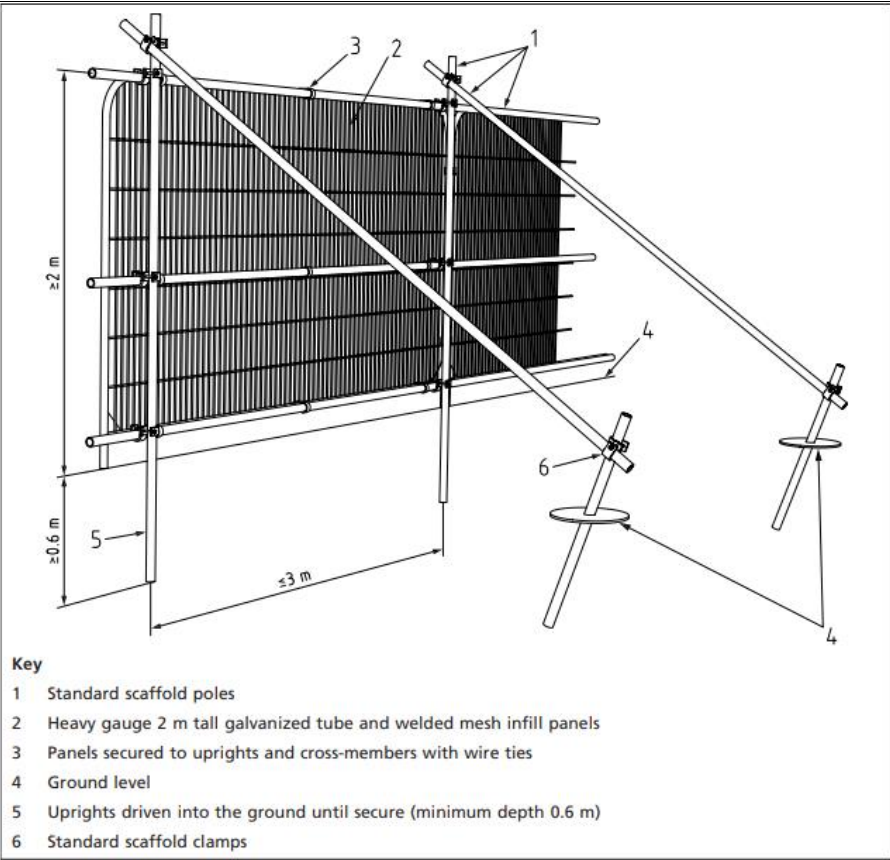
It is recommended that a Development Biodiversity Champion is selected for the construction phase of the development. The Biodiversity Champion should be someone with significant influence during construction, such as the contract or project manager. The Development Biodiversity Champion is responsible for ensuring all actions outlined in this EMEMP are implemented including the provision of a toolbox talk prior to works commencing. Any queries with regards to the mitigation prescriptions should be addressed to the project ecologist and communication should be retained between the Development Biodiversity Champion and project ecologist 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 or ECoW of the commencement of construction works and provides updates where necessary.

3.3 Mitigation Measures

Table 2 details the ecological mitigation measures to be implemented at the site.

Table 2: Mitigation Measures

Works	Specification
Tree Protection	A minimum 5m buffer from retained trees will be established and protected throughout the duration of construction activity. No trenches or ground works will be completed within 5m of any 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.

	 Key 1 Standard scaffold poles 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels 3 Panels secured to uprights and cross-members with wire ties 4 Ground level 5 Uprights driven into the ground until secure (minimum depth 0.6 m) 6 Standard scaffold clamps Figure 1: Default protective barrier specification (British Standards Institute 2012).
Pollution Prevention	To limit impacts of pollution resulting from the construction phase of the development, construction works must be completed in accordance with current statutory guidelines relating to pollution prevention (Environmental Agency 2016). Furthermore, although withdrawn in 2015, pollution prevention guidelines detailed within guidance document: <i>PPG6: Working at Construction and Demolition Sites</i> (Environment Agency 2010) remain applicable to the site. Considering both the relevant statutory requirements and best practice measures detailed within guidance document PPG6, the below mitigation prescriptions are considered suitable to mitigate impacts of pollution during the construction phase of the development. The allocated Biodiversity Champion will be responsible for ensuring the below mitigation recommendations are undertaken successfully during the works. <i>Site drainage:</i>

It is recommended that the Biodiversity Champion ensures that:

- Pollution risks are identified pre-construction.
- Pollutants are prevented from entering drains where possible.
- If any pollutant enters a drain, immediately stop the pollution with a physical block, stop the activity causing the pollution, then notify the Environment Agency for surface water drains or the local sewerage provider for foul water drains. If there's a spill, accident, or emergency, try and prevent pollutants entering the drains.
- Report all pollution incidents to site management and the Environment Agency.
- Inspect drains and protection measures frequently and maintain them during the construction activity. Well maintained drains will also reduce risks of flooding and subsequent surface water run-off.
- As a last resort, should any pollutants be required to enter the drainage system on site, permission from Environment Agency or the local sewerage provider must be sought before discharging anything other than clean uncontaminated surface water to a drain and other surface waters or groundwater. Apply for permission early, as authorisation can take up to four months.

Airborne particle suppression:

It is recommended that the Biodiversity Champion ensures that:

- Effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.
- Carry out regular site inspections to monitor compliance.
- Ensure all vehicles switch off engines when stationary.
- Avoid the use of petrol- or diesel-powered generators and use mains electricity or battery power where possible.
- Only use cutting, grinding, or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
- Ensure an adequate water supply on the site for effective dust/ particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.

- Use enclosed shuts and conveyors and covered skips.

Materials storage and water run-off:

It is recommended that the Biodiversity Champion ensures that:

- No stockpiles are created on exposed ground areas and ensure that all materials and chemicals are stored securely and safely on site in accordance with current Control of Substances Hazardous to Health (COSHH) regulations (HSE 2002).
- Contaminated materials, chemicals, and other hazardous substances must be stored on an impermeable surface, in a bunded area, within any area of the site.
- All chemicals and hazardous substances are stored away from areas where there is heightened risk of damage from impact or collision such as site traffic.
- All chemicals and hazardous substances are labelled, containers are sealed when not in use and inspected regularly and fit for purpose.
- Any damaged or old containers are replaced in line with the duty of care requirements. Note such containers may be considered hazardous waste.
- Staff are trained in use of spill kits and emergency procedures.
- Ensure there is a designated 'responsible person' on site at all times.
- Lock storage facilities when not in use.

Implementation of the Waste Hierarchy:

The Biodiversity Champion must ensure that all construction activity is completed in accordance with the Waste Hierarchy (Defra 2011) in an attempt to reduce the amount of waster produced during the construction phase of the development. As such, the construction phase must be completed in accordance with the below core principles:

In the first instance:

- Re-use products and materials where possible.
- Recycle and compost material resources where possible.
- Attempt to recover energy from waste.

Where none of the above options offer an appropriate solution, waste disposal is the final option:

- Only transfer controlled waste to an “authorised person” (Waste Collection Authority, the holder of an Environmental Permit, Registered Water Carrier or Waste Disposal Authority).
- Ensure that non-hazardous waste is transferred under a Waste Transfer Note which must be retained for two years.
- Hazardous waste is moved under a waste consignment note that provides a clear description of the waste material. The consignment note must be retained for three years.
- The waste is the responsibility of the company until it has been fully recovered or finally disposed of.

Noise:

The Biodiversity Champion must ensure that noise levels are kept to a minimum in accordance with best practice as defined in the Control of Pollution Act 1974 to avoid unacceptable levels of noise and vibrations. Further guidance can be found in British Standard 5228-1:2009. Such measures applicable to the proposed development primarily include agreed working hours limiting night work, using the quietest equipment and plant available, shutting down equipment when not in use, and completing deliveries during working hours only. Most notably, prescriptions as to limit noise of plant machinery as detailed within **Table B.1** within the code of practice for noise control (British Standards Institution, 2014) is likely to have the most significant impact during construction activity. Table B.1 is shown below.

Table B.1 Methods of reducing noise levels from construction plant

Plant	Noise reduction of plant			Alternative plant
	Source of noise	Possible remedies (to be discussed with machine manufacturers)	A-weighted sound reduction dB	
Hammer drive piling equipment	Pneumatic/diesel hammer or steam winch vibrator driver	Enclose hammer head and top of pile in acoustic screen	5 to 10	Bored piling Vibratory system
	Sheet pile	Acoustically dampen sheet steel piles to reduce levels of resonant vibration		Drop hammer completely enclosed in box with opening at top for crane access
	Impact on pile	Use resilient pad (dolly) between pile and hammer head. Packing needs to be kept in good condition		Steel jacket completely enclosing drop hammer with dolly and polystyrene chips fed to impact surface to dissipate energy
	Cranes cables, pile guides and attachments	Careful alignment of pile and rig		Pressed-in piling which generates its driving force from the frictional restraint of other piles
	Power units or base machine	Fix more efficient sound reduction equipment or exhaust. Acoustically dampen panels and covers. When intended by the manufacturer, engine panels need to be kept closed. Use acoustic screens when possible		
Earth-moving plant: • bulldozer • compactor • crane • dump truck • dumper • excavator • grader • loader • scraper	Engine	Fit more efficient exhaust sound reduction equipment Manufacturers' enclosure panels need to be kept closed	5 to 10	Alternative super silenced plant might be available. Consult manufacturers for details

Table B.1 Methods of reducing noise levels from construction plant (continued)

Plant	Noise reduction of plant			Alternative plant
	Source of noise	Possible remedies (to be discussed with machine manufacturers)	A-weighted sound reduction dB	
Compressors and generators	Engine Compressor or generator body shell	Fit more efficient sound reduction equipment	Up to 10	Super silenced plant is available. Consult manufacturers for details Electric-powered compressors are available as opposed to diesel or petrol Sound-reduced compressor or generator can be used to supply several pieces of plant. Use centralized generator system
		Acoustically dampen metal casing Manufacturers' enclosure panels need to be kept closed		
	Total machine	Erect acoustic screen between compressor or generator and noise-sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured	Up to 10	
		Enclose compressor or generator in ventilated acoustic enclosure	Up to 20	
Pneumatic concrete breaker, rock drills and tools	Tool	Fit suitably designed muffler or sound reduction equipment to reduce noise without impairing machine efficiency	Up to 15	Hydraulic and electric tools are available For large areas of concrete, machine designed to break concrete in bending can be used Thermic lance
		Ensure all leaks in air line are sealed		
	Bit	Use dampened bit to eliminate ringing		
	Total machine	Erect acoustic screen between compressor or generator and noise-sensitive area. When possible, line of sight between top of machine and reception point needs to be obscured	Up to 10	
Enclose breaker or rock drill in portable or fixed acoustic enclosure with suitable ventilation		Up to 20		
Rotary drills, diamond drilling and boring	Drive motor and bit	Use machine inside acoustic shed with adequate ventilation	Up to 15	Thermic lance

Table B.1 Methods of reducing noise levels from construction plant				
Plant	Noise reduction of plant			Alternative plant
	Source of noise	Possible remedies (to be discussed with machine manufacturers)	A-weighted sound reduction dB	
Hammer drive piling equipment	Pneumatic/diesel hammer or steam winch vibrator driver	Enclose hammer head and top of pile in acoustic screen	5 to 10	Bored piling Vibratory system
	Sheet pile	Acoustically dampen sheet steel piles to reduce levels of resonant vibration		Drop hammer completely enclosed in box with opening at top for crane access
	Impact on pile	Use resilient pad (dolly) between pile and hammer head. Packing needs to be kept in good condition		Steel jacket completely enclosing drop hammer with dolly and polystyrene chips fed to impact surface to dissipate energy
	Cranes cables, pile guides and attachments	Careful alignment of pile and rig		Pressed-in piling which generates its driving force from the frictional restraint of other piles
	Power units or base machine	Fix more efficient sound reduction equipment or exhaust. Acoustically dampen panels and covers. When intended by the manufacturer, engine panels need to be kept closed. Use acoustic screens when possible		
Earth-moving plant: • bulldozer • compactor • crane • dump truck • dumper • excavator • grader • loader • scraper	Engine	Fit more efficient exhaust sound reduction equipment Manufacturers' enclosure panels need to be kept closed	5 to 10	Alternative super silenced plant might be available. Consult manufacturers for details
Excavations	Any excavations will be covered overnight, or a ramp will be installed to enable any trapped animals to escape.			
Lighting	A low impact lighting strategy will be adopted for the site during and post-development, which will include the following measures: • 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 should be of a warm / neutral colour temperature <4,200 kelvin. • Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal.			

	- Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only. - 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. - 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. All lighting on the developed site will make use of the most up to date technology available.
Birds	Vegetation clearance should be undertaken outside the core nesting period 1st March to 31st August. If this timeframe cannot be avoided, a close inspection of the vegetation should 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 buffer until the young have fledged (species specific but typically 4-6 weeks).

3.4 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 3.

Table 3: Habitat Creation and Biodiversity Enhancement Measures

Works	Specification
Persons Responsible	The Biodiversity Champion will be responsible for the provision of the new landscaping and species-specific enhancements. The occupier of the proposed development (i.e. the landowner or managing agent) will be responsible for the management of these features post development.
Management Term	The management prescriptions outlined within this table must be implemented over a period of at least 30 years.
Tree and Shrub Planting	Overview: Multiple areas of proposed landscaping will be created through new planting including: - The planting of seven trees and both native and non-native shrubs around the main building, as shown in Appendix 1 and 3. Objectives: - To plant native trees and shrubs that will provide pollinating, foraging, and refuge opportunities for protected and/ or notable species groups including bats, birds, and invertebrates. - Ensure that good horticultural practice is employed to encourage 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 tree and shrub should be planted within a hole three times as wide of the supplied pot and of a similar depth. Root balls should be soaked thoroughly in water before planting and root balls should be loosened to expose restricted roots before planting. The planted trees and shrubs should 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.

Management Prescriptions:

Table 3.3: New tree and 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 should be checked and any broken or damaged stakes during this time would be removed (as above) and replaced with ties re-fixed	When required; checked annually in Autumn.	Maintain protection
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	Immediately after planting	Reduce competition for

	a depth of 50 mm	and then when required; checked annually in Autumn.	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 should be removed through 'deadheading'	Twice annually, late spring and in the Autumn.	Allows plants to place more energy into re-growth.
	Watering should 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	One bat box is recommended to be installed on the roof and one bat box will be installed externally on the building. Additionally, three bat boxes will be erected on the trees along the western and southern boundaries of the site. Bat boxes specification: - The recommended bat boxes will be constructed of woodcrete/ woodstone. Boxes of this construction are designed to require no maintenance and have a lifespan of 25 years plus. 3x General Purpose Bat Boxes (or similar alternative brand) are recommended on the trees, as shown in Figure 1. 8x Habibat Bat Access Slate (or similar alternative brand) is recommended on the roof of the building, towards the southern elevation, as shown in Figure 2. 1x Beaumaris Woodstone Bat Box (or similar alternative brand) is recommended externally on the building, as shown in Figure 3.		

- Bat boxes should be positioned 3-5m above ground level facing in a south, southeast, or southwest aspect with a clear flight path to and from the entrance, away from artificial light.



Figure 1: General Purpose Bat Box (image credit <https://www.nhbs.com/convex-wood-concrete-bat-box>)

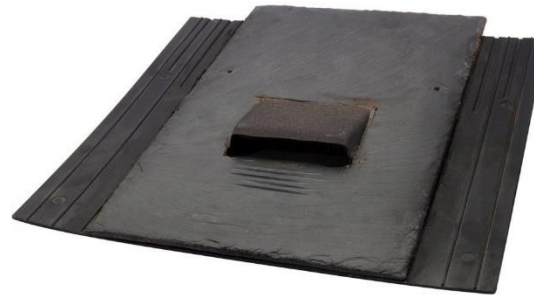


Figure 2: Bat Access tile (image credit <https://www.nhbs.com/bat-access-tile-set>)



Figure 3: Beaumaris Woodstone Bat Box (image credit <https://www.nhbs.com/Beaumaris-Woodstone-Bat-Box>)

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

Three bird boxes are recommended to be installed on site, within the retained tree line along the southern and western boundary.

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.
- 3x Woodstone Nest Boxes (or a similar alternative brand) with 28mm entrance holes are proposed on the trees, as shown in **Figure 4**.
- Woodstone Nest Boxes should be positioned approximately 3m above ground level where they will be sheltered from prevailing wind, rain and strong sunlight.



Figure 4: Woodstone Nest Box (image credit arkwildlife.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. Bird boxes must be replaced if they are damaged, removed, or have fallen from their recommended location.

Hedgehog House	A hedgehog was seen onsite during the BERS surveys. Therefore, a hedgehog house will be installed adjacent to the retained tree line on the western site boundary (Figure 5). A hedgehog house suitable for the site (or a similar alternative brand) can be found here: https://www.nhbs.com/hedgehog-house
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Figure 5: Hedgehog house (image credit <https://www.nhbs.com/hedgehog-house>)

Terrestrial mammals rely on connectivity of sites to find foraging habitats and commuting routes. Garden fences and walls can block these off and degrade chances of survival.

- Therefore, dedicated holes in the boundaries around the site will be created and maintained to allow free access for a range of taxa into and out of the site.
- Whilst undertaking this, the neighbouring properties should be asked to see if more fence holes could be created in their third-party land, to help link the site to other populations in the landscape.

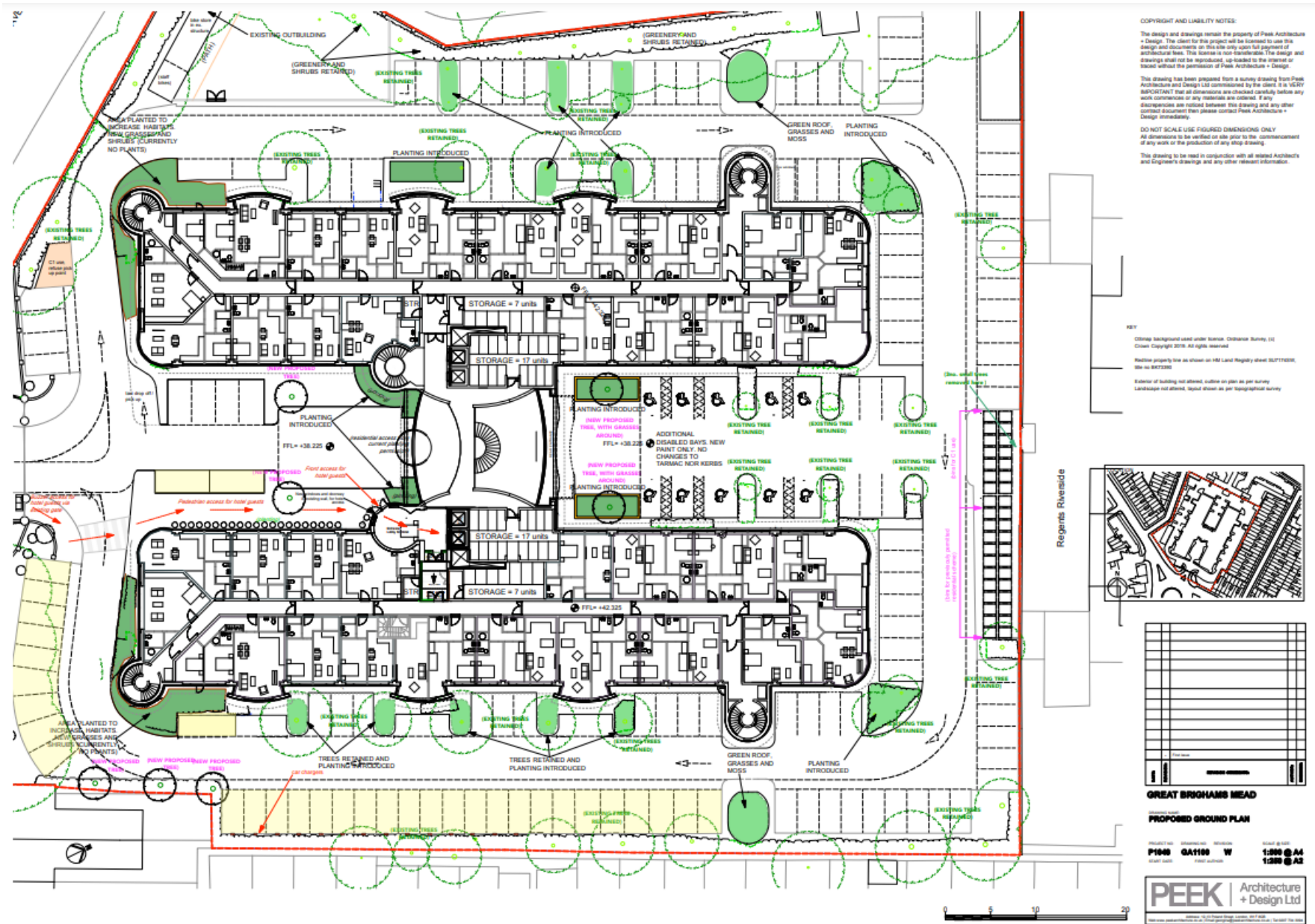
3.5 Management Requirements

Table 4 details the ecological management requirements for the site.

Table 4: Management Requirements

Activity	Year 1	Every Year for 30 Years
New tree planting	☐ Replace any tree failures with planting of the same species to prevent gaps from developing. ☐ Top of the mulch where necessary and water monthly or when dry.	☐ Any plants that die in the first 5 years will need to be replaced to prevent gaps developing.
Bat, bird and insect boxes and hedgehog houses	☐ Install the site's provision of habitat boxes for bats, birds, invertebrates and hedgehogs.	☐ Check annually and replace any boxes that are broken or fall down e.g. during storms.
Lighting	☐ The location and suitability of the external lighting will be checked by a bat licensed ecologist upon completion of the development. Recommendations for improvements will be made where applicable.	☐ Check lighting annually to maintain approved lighting levels across the developed site. No changes will be made until advice has been sought from a bat licensed ecologist.

Appendix 1: Proposed Development Plan



Appendix 2: Site Location Plan



Appendix 3: Habitat Creation and Enhancement Plan

