**A Green Infrastructure Statement**
**and Biodiversity Enhancement Plan**

**on behalf of**
**Raynes Scaffolding & Groundworks**

**For**
**The Norton Tavern**
**High Street**
**Penydarren**
**Merthyr Tydfil**
**CF47 9HG**


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## Project Overview

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|---|---|
| Client | Raynes Scaffolding & Groundworks |
| Site / Job | The Norton Tavern, High Street, Penydarren, Merthyr Tydfil, CF47 9HG |
| Report Type | A Green Infrastructure Statement and biodiversity Enhancement Plan |
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| Status | Date | Author(s) | Reviewed by |
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The assessments made assume that the site(s) and facilities will continue to be used for their current purpose without significant change. The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested. Information obtained from third parties has not been independently verified by Little Wing Ecology (CYF).

## Copyright and Intellectual Property

## 1. Introduction

This Green Infrastructure Statement supports a planning application for new residential development with associated vehicle access and parking at The Norton Tavern, a traditionally built Victorian former public house and beer garden located in Merthyr Tydfil. The site's centre has a National Grid Reference (NGR) of SO 05944 07396 and lies at an altitude of approximately 257m Above Ordnance Datum (AOD). The site occupies an irregular plot measuring approximately 38m by 24m at its widest point.

This revised statement has been prepared in response to comments from the planning ecologist regarding baseline habitat assessment, the feasibility of proposed planting, and mitigation for the partial demolition of The Norton building. In accordance with planning policy requirements, where pre-development baseline evidence is unavailable, habitat status must be presumed to have been of good quality prior to any site works. This statement therefore adopts a precautionary baseline assuming the application area supported amenity grassland with a wooded boundary containing notable standard trees, with scrub encroachment from the margins following closure of the public house. The statement demonstrates how the proposed green infrastructure measures will achieve biodiversity net gain from this higher baseline.

The statement demonstrates compliance with Planning Policy Wales (Edition 12, 2024) Chapter 6, the Environment (Wales) Act 2016 Section 6 Biodiversity Duty, and the Well-being of Future Generations (Wales) Act 2015. Green infrastructure enhancements are integrated following the stepwise approach (avoid, minimise, mitigate, compensate) and deliver biodiversity net gain aligned with the DECCA Framework (Diversity, Extent, Condition, Connectivity, Adaptability).

In accordance with guidance on bat-sensitive lighting, a sensitive lighting scheme will be implemented following advice detailed in 'Bats and Artificial Lighting in the UK: Technical Guidance Note 08/23' (2023).

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## 2. Site Context and Baseline

### 2.1 Location and Setting

The site is situated within an urban setting in Merthyr Tydfil, accessed via the main service road (High Street). Habitats in the immediate vicinity of the building are mixed. The northern boundary of the site connects directly to a treeline, providing direct connectivity to larger green spaces including amenity grassland and woodland to the north.

The eastern boundary sits approximately 15m from Whitey Park, a large urban park containing grasslands, woodlands, and ponds, which provides connectivity south to the Nant Morlais and River Tâf. Although separated from the site by a busy highway, Whitey Park offers continuous habitat connected to the wider landscape that could be used by bats for flight paths along lines of trees and scrub. The River Tâf provides high-quality riparian habitat and excellent connectivity north and south.

No part of the site is within a statutory site of nature conservation interest. There are 18 statutory sites within 1km including Cwm Taf Fechan Woodlands SSSI (approximately 2.2km), Cwm Glo a Glyndyrys SSSI (2.3km), and Nant Glais Caves SSSI (3.3km). These collectively represent a mixture of high-quality potential foraging sites and potential hibernation sites for bats. Connectivity to these sites is low.

### 2.2 Precautionary Baseline Assessment

No photographic record of the site is available to provide evidence for the habitat prior to site clearance. Available evidence is restricted to the Preliminary Ecological Appraisal (PEA) which was completed following site clearance,

and dialogue with the client. In accordance with planning policy, where a site has been modified prior to a planning application and baseline evidence is unavailable, habitat status must be presumed to have been of good quality.

The site previously functioned as a beer garden supporting the former public house. Based on this use, it is reasonable to presume that the site supported amenity grassland with a treelined boundary. Notable standard trees were present along the north-eastern and north-western boundaries. Following closure of the public house, it is reasonable to presume that a scrubby component encroached the amenity grassland from the margins prior to site clearance. The Norton Tavern building, as a traditionally built Victorian structure, had potential to support roosting bats. Partial demolition of the building took place prior to completion of a bat survey. In the absence of survey evidence, a precautionary approach is adopted assuming the building had potential to support roosting bats.

**Presumed baseline habitat:**

| Parameter | Detail |
|---|---|
| Habitat type | Amenity grassland with wooded boundary and scrub encroachment |
| Standard trees | A small number of notable specimens present along north-eastern and north-western boundaries |
| Scrub | Encroachment from margins following closure of public house |
| Building | The Norton Tavern – Victorian building with potential bat roosting habitat |
| Area | Approximately 0.09 ha (912 m²) |
| Presumed condition | Good (in absence of evidence to the contrary) |
| Presumed baseline ecological value | Moderate |

Amenity grasslands, whilst typically characterised by lower plant diversity than semi-natural grasslands, provide foraging habitat for invertebrates and birds. The wooded boundary with standard trees would have provided nesting habitat for birds, foraging and commuting habitat for bats, and structural connectivity to the adjacent woodland to the north. Dense scrub, likely dominated by bramble following cessation of management, provides valuable habitat for a diverse range of wildlife, offering shelter, nesting sites, and food sources for birds such as song thrushes and blackbirds, mammals like hedgehogs and small rodents, and numerous invertebrates including butterflies, bees, and spiders.

**Presumed habitat loss:** Adopting the precautionary baseline, the development is presumed to have resulted in the loss of amenity grassland of good condition, wooded boundary with a small number of standard trees along north-eastern and north-western boundaries, scrub habitat providing shelter, foraging, and nesting opportunities, and potential bat roosting habitat within the partially demolished section of The Norton Tavern. This represents a significant presumed biodiversity loss requiring substantial compensation measures to achieve net gain.

**Ground condition:** It has been noted that the soil and ground around the site is in poor condition with mixed materials present as a result of site clearance works. To ensure the proposed green infrastructure enhancements can be successfully established, suitable topsoil will be imported to all planting areas. This will provide an appropriate growing medium for the native hedgerow, standard trees, and species-rich grassland seed mixes. The specification for imported topsoil will comply with BS 3882:2015 (Specification for topsoil) to ensure it is fit for purpose and free from contaminants, invasive species, and excessive stone content.

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## 3. Green Infrastructure Strategy and Enhancement Measures

The green infrastructure strategy enhances ecological connectivity between the development and surrounding higher-quality habitats, particularly Whitey Park and the adjacent treeline to the north. Given the presumed loss of amenity grassland, wooded boundary with standard trees, scrub habitat, and potential bat roosting habitat, the strategy delivers substantial biodiversity compensation to achieve net gain through four principal interventions:

### 3.1 Native Hedgerow Creation

A native, species-rich hedgerow will be established along the rear and front boundaries of the site in a double-row configuration to make a more significant contribution to biodiversity net gain. The hedgerow will include a species-rich herbaceous under-canopy seed mix.

**Planting width and feasibility:** The width available for hedgerow planting varies between 500mm and 1000mm around the site boundaries. A double-row hedgerow configuration is achievable within these dimensions. Minimum planting width of 500mm accommodates a staggered double row at 250mm spacing between rows. Where width increases to 1000mm, a more robust double-row configuration with wider spacing can be achieved. Bare-root whips of 60-80cm height at planting will establish successfully within these constraints.

**Specification:**

- Double-row planting: 60-80cm bare-root whips at 300mm spacing within rows, 250mm between rows (6 plants per linear metre)
- Species mix: Hawthorn (Crataegus monogyna) 50%, Blackthorn (Prunus spinosa) 25%, Field Maple (Acer campestre) 15%, with the remaining percentage comprising Dog Rose (Rosa canina), Buckthorn (Rhamnus cathartica), Holly (Ilex aquifolium), Wild Privet (Ligustrum vulgare), Dogwood (Cornus sanguinea), Elder (Sambucus nigra), Hazel (Corylus avellana), and Honeysuckle (Lonicera sp.)
- Under-canopy seed mix: Shade-tolerant herbaceous species sown at the base of hedgerows to increase botanical diversity and provide ground-level foraging resources
- Planting into imported topsoil complying with BS 3882:2015

**Ecological function:**

- Structural connectivity linking the site to adjacent treeline and the wider landscape
- Replacement of wooded boundary habitat lost during site clearance
- Nesting habitat for priority bird species (song thrush, blackbird, dunnock)
- Bat commuting corridors and hedgehog movement routes
- Year-round foraging resources: spring blossom for pollinators, autumn berries for birds and mammals, invertebrate communities supporting insectivorous species

### 3.2 Native Tree Planting and Species-Rich Grassland Creation

Five standard specimens of smaller-growing native tree species will be planted within two green spaces to replace the notable standard trees lost from the north-eastern and north-western boundaries. The selection of smaller-growing species addresses concerns regarding overshadowing of the proposed dwellings whilst delivering appropriate replacement planting.

**Tree specification and spacing:** Three standard trees will be located within the green space near the eastern corner of the site. Two standard trees will be located within the new green space at the southern corner. The selection of smaller-growing native species ensures sufficient space for growth without causing overshadowing issues.

**Species selection:**

- Downy Birch (Betula pubescens): Ultimate height 10-15m, narrow crown, pioneer species supporting diverse invertebrate communities
- Rowan (Sorbus aucuparia): Ultimate height 8-12m, compact crown, provides autumn berries for birds and spring blossom for pollinators
- Hazel (Corylus avellana): Ultimate height 4-6m (as standard tree), multi-stemmed or single-stemmed form, provides catkins for early pollinators and nuts for mammals

**Planting specification:**

- Standard trees (8-10cm girth at 1m height)
- Planting into imported topsoil complying with BS 3882:2015
- Tree stakes and guards for establishment protection
- Minimum 2m spacing from buildings and boundaries

**Species-rich grassland:** All green spaces within the development will be seeded with species-rich grass seed mixes to provide enhanced botanical diversity compared to the presumed baseline of amenity grassland. Species-rich flowering lawn mix over all residential green spaces containing slow-growing grasses with a selection of wildflowers that respond well to regular short mowing. Under-canopy seed mix at the base of hedgerows containing shade-tolerant herbaceous species. Planting of species that attract night-flying insects including Evening Primrose (Oenothera biennis), Goldenrod (Solidago virgaurea), Honeysuckle (Lonicera periclymenum), and Fleabane (Pulicaria dysenterica) within appropriate locations. Seeding into imported topsoil complying with BS 3882:2015.

**Ecological function:**

- Replacement of standard trees lost during site clearance at a ratio exceeding 3-to-1
- Habitat provision for invertebrates, birds, and mammals
- Contribution to landscape-scale tree connectivity
- Foraging habitat for pollinators including bees and butterflies
- Food source for foraging bats through attraction of night-flying insects
- Increased botanical diversity compared to baseline amenity grassland

**3.3 Compensatory Roosting and Nesting Features**

To mitigate the potential loss of bat roosting habitat within the section of the original building which was demolished prior to a full bat survey, a purpose-built bat loft will be constructed within the development. This represents a significant enhancement providing high-quality roosting habitat suitable for species recorded locally including greater horseshoe bat, lesser horseshoe bat, and brown long-eared bat.

**Purpose-built bat loft specification:**

- Location: North-east gable of the new building
- Dimensions: Three metres from the gable into the structure, utilising the full width of the available ceiling
- Access: Letterbox opening on the gable measuring 500mm wide by 200mm high
- Internal baffle: Turnstile baffle located behind entrance to reduce light levels and draft
- Internal surfaces: Roughened or lined with suitable material (such as rough-sawn timber or Rhinolite render) to provide grip for roosting bats
- Design compliance: Constructed following Bat Conservation Trust guidelines for bat roost design
- Target species: Greater horseshoe bat (Rhinolophus ferrumequinum), lesser horseshoe bat (Rhinolophus hipposideros), brown long-eared bat (Plecotus auritus)

**Bat boxes (2 integrated units):**

- Type: Eco Bat Box (or equivalent)
- Location: Southern gable of the proposed new unit
- Purpose: Additional roosting opportunities supplementing the bat loft, providing alternative roost options for crevice-dwelling species such as common pipistrelle and soprano pipistrelle

**Bird boxes (2 terrace units):**

- Type: 1SP Schwegler Sparrow Terrace (or equivalent)
- Location: Northern gable of proposed new unit
- Purpose: Nesting opportunities for house sparrows and other cavity-nesting species, compensating for loss of nesting opportunities in scrub and wooded boundary

**Hedgehog access (2 holes, 13cm × 13cm):**

- Type: Eco Hedgehog Hole Plate
- Location: Base of north-eastern boundary
- Purpose: Maintain connectivity through the site and mitigate against habitat fragmentation locally for this priority species

**3.4 Bat-Sensitive Lighting Scheme**

Due to the relatively dark space offered by adjacent habitat (Whitey Park), proximity to woodland, and the provision of the bat loft, a bat-sensitive lighting scheme is essential. This is particularly important given the recording of light-sensitive species such as lesser and greater horseshoe bats locally, which are target species for the bat loft. The scheme follows advice detailed in 'Bats and Artificial Lighting in the UK: Technical Guidance Note 08/23' (2023).

**Lighting specification:**

- Light fixtures, filaments, light spill, and artificial light directed away from bat roost entrances including the bat loft access and integrated bat boxes
- Luminaires LED only, with warm white spectrum (ideally less than 2700 Kelvins), reducing blue light component and increasing red light component
- Luminaires featuring peak wavelengths no higher than 550nm to avoid the light component most disturbing to bats
- Heights of fixtures carefully considered to minimise light spill; only luminaires with upward light ratio of 0% and good optical control used
- Luminaires always mounted on the horizontal with no upward tilt
- External security lighting set on motion sensors and short (15 second) timers
- Accessories such as baffles, hoods, or louvres used as necessary, directed away from natural features including hedgerows and the bat loft entrance

**Ecological function:**

- Protection of commuting and foraging corridors for bats using Whitey Park and adjacent woodland
- Maintenance of dark corridor connectivity to the wider landscape
- Protection of the bat loft entrance from artificial light to ensure functionality for light-sensitive horseshoe bat species
- Avoidance of impacts on nocturnal and crepuscular invertebrates

## 4. Policy Compliance

### 4.1 Stepwise Approach

**Avoid:** Where possible, existing features have been retained. The retained section of The Norton Tavern has been incorporated into the development rather than demolished. The layout has been designed to maximise green infrastructure provision within the constraints of the site.

**Minimise:** To prevent adverse impact upon potential roosting, commuting, and foraging habitats for bats adjacent to the site (post-development), specifically on the adjacent tree-line feature, Whitey Park, and the proposed bat loft, a bat-sensitive lighting scheme has been incorporated into the plans. The lighting plan is functional and directional only, kept to a minimum, servicing public areas as required for safety and security.

**Mitigate:** Habitat creation works have been designed into the site layout to mitigate for the loss of notable features. These measures include double-row native hedgerow to replace the wooded boundary lost during site clearance, five standard native trees to replace trees lost from north-eastern and north-western boundaries at a ratio exceeding 3-to-1, species-rich grassland to replace amenity grassland, purpose-built bat loft to mitigate loss of potential bat roosting habitat in the demolished section of The Norton Tavern, and importation of suitable topsoil to ensure planting can establish successfully.

**Compensate:** On-site compensation for ecological impacts is delivered by way of purpose-built bat loft providing high-quality roosting habitat for horseshoe bats and brown long-eared bats, integrated bat boxes providing additional roosting opportunities, sparrow terrace bird boxes providing nesting opportunities, double-row native species-rich hedgerow, five standard native trees (Downy Birch, Rowan, Hazel), species-rich grassland seed mixes, under-canopy seed mix beneath hedgerows, hedgehog access points, and bat-sensitive lighting scheme.

### 4.2 DECCA Framework and Biodiversity Net Gain

**Diversity:** Double-row native mixed-species hedgerow with under-canopy planting, species-rich grassland seed mixes, five native tree specimens of three species, purpose-built bat loft, integrated bat boxes, bird boxes, and hedgehog access create environmental conditions and ecological niches exceeding those present in the presumed baseline.

**Extent:** Ecological extent of valuable habitat increased through creation of double-row native hedgerow around site boundaries, species-rich grassland in two green spaces, and five standard native trees. The purpose-built bat loft provides a significant extent of high-quality roosting habitat.

**Condition:** Ecological condition addressed through importation of topsoil complying with BS 3882:2015 to ensure successful establishment of planting, creation of high-quality habitats designed to appropriate specifications, native hedgerow managed to maintain structure and flowering/fruiting, species-rich grassland providing enhanced botanical diversity compared to former amenity grassland, and bat loft constructed to Bat Conservation Trust guidelines with appropriate internal surfaces and access.

**Connectivity:** Double-row native hedgerow links the site to adjacent woodland and the wider landscape. Bat-sensitive lighting preserves dark corridors connecting to Whitey Park and the River Tâf corridor. The bat loft provides a roosting node within the local bat population's commuting network. Hedgehog access points maintain connectivity through the site for this priority species.

**Adaptability:** Native trees and hedgerow planting improve ecosystem resilience through carbon sequestration, temperature moderation (shading), surface water management (vegetation cover providing surface water interception),

and creation of greater variations in ground cover and vegetation structure capable of offering niche habitats to a wide range of flora and fauna. The bat loft provides permanent roosting habitat integrated into the building fabric.

**Biodiversity Net Gain:**

- Presumed baseline: Amenity grassland with wooded boundary containing standard trees, scrub encroachment, potential bat roost in building; good condition (value: Moderate)
- Post-development: Double-row native species-rich hedgerow with under-canopy planting, five native tree specimens, species-rich grassland, purpose-built bat loft, integrated bat boxes, bird boxes, hedgehog connectivity, bat-sensitive lighting (value: Moderate to High, diversified across multiple habitat types with significant enhancement for bats)
- Net gain: Creation of double-row native hedgerow, tree planting exceeding 3-to-1 replacement ratio, species-rich grassland, purpose-built bat loft suitable for horseshoe bats and brown long-eared bats, additional roosting and nesting structures, and maintenance of dark corridors delivers demonstrable improvement in biodiversity capacity, achieving net gain per Planning Policy Wales requirements

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## 5. Management and Maintenance

### 5.1 Responsibilities and Duration

The owners of The Norton will implement all enhancement measures and maintain features for the long-term (at least 25 years). Failed or damaged features will be promptly replaced.

### 5.2 Management Prescriptions

**Hedgerows:**

- Years 1-3: No trimming. Regular watering during dry periods in first season. Weed control as required. Replace failed plants (November-March). Target greater than 90% survival.
- Year 4 onwards: Trim on two- to three-year rotation (September-February) maintaining 2-3m height, allowing flowering/fruiting. Never trim March-August (breeding season).
- Infill gaps (November-March) maintaining continuous linear habitat.
- Under-canopy: Allow herbaceous layer to establish; manage by cutting one-third annually in rotation (September) if required to prevent scrub dominance.

**Native trees:**

- Establishment and ongoing maintenance following Woodland Trust guidance.
- Formative pruning as required to develop healthy crown structure.
- Maintain tree stakes and guards for minimum three years or until established.
- Replace any failed specimens within the first five years.
- Monitor for signs of disease.

**Species-rich grassland:**

- Flowering lawn areas maintained through regular short mowing to encourage wildflower establishment.
- No use of herbicides or fertilisers.
- Allow flowering before each cut where practicable.
- Remove arisings to prevent nutrient enrichment.

**Bat loft:**

- Annual visual inspection of exterior (September-October) to check access point remains unobstructed and in good condition.
- No internal access or disturbance at any time unless under licence from Natural Resources Wales.
- Maintain bat-sensitive lighting in vicinity of access point.
- Internal inspection by licensed bat ecologist every five years to assess use and condition.
- Report any confirmed bat use to the Local Environmental Records Centre.

**Bat boxes:**

- Annual visual inspection (September-October). Check integrity; replace if damaged. No routine cleaning. Avoid disturbance March-October.

**Bird boxes:**

- Annual inspection and cleaning (September-February). Check integrity; repair/replace if damaged. No inspection/maintenance March-August (breeding season).

**Hedgehog access:**

- Quarterly inspection. Keep clear of obstructions.

**5.3 Contingency and Monitoring**

**Contingency:** Bat loft access repaired immediately if damaged. Bat/bird boxes replaced if damaged or unused after five years. Hedgerow replanted if mortality exceeds 10% (November-March). Failed trees replaced within planting season. Hedgehog access recreated if obstructed. If imported topsoil fails to support plant establishment, additional soil improvement measures will be implemented.

**Monitoring:** Post-implementation monitoring of bat loft by licensed bat ecologist at years 1, 3, and 5, then every five years thereafter. Landowner maintains photographic records documenting establishment, wildlife use, feature condition, and maintenance activities. Results of bat loft monitoring reported to Local Planning Authority and Local Environmental Records Centre.

**Success criteria:** Hedgerow achieves greater than 90% survival and develops dense structure with annual flowering/fruiting. Native trees establish successfully with healthy growth. Species-rich grassland establishes with visible wildflower presence. Bat loft remains structurally sound with unobstructed access; evidence of bat use within five years considered successful. Bat/bird boxes remain structurally sound and accessible. Hedgehog access remains unobstructed.

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**6. Multi-functional Benefits**

Green infrastructure delivers benefits beyond biodiversity:

**Environmental:** Carbon sequestration in trees and hedgerows, temperature moderation through shading, surface water management through continued vegetation cover providing surface water interception, improved air quality, urban cooling effect.

**Landscape:** Visual enhancement of the development through native planting, integration with surrounding urban greenspace character, seasonal interest (spring blossom, autumn berries and foliage), screening of built development.

**Ecological connectivity:** Links to adjacent woodland and Whitey Park, contribution to wider habitat network including River Tâf corridor, stepping-stone habitat within urban matrix, bat roost node within local population network.

**Social and Economic:** Wildlife observation opportunities for residents, contribution to health and wellbeing through access to green space, demonstration of biodiversity-friendly urban development, educational value of bat loft and wildlife features, potential property value enhancement.

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**7. Conclusion**

This development integrates residential development within a constrained urban site whilst delivering significant biodiversity enhancement. In the absence of photographic evidence of the site prior to clearance, and in accordance with planning policy requirements, a precautionary baseline has been adopted assuming the site supported amenity grassland with a wooded boundary containing notable standard trees, scrub encroachment from the margins, and potential bat roosting habitat within The Norton Tavern building. This represents a presumed loss of moderate ecological value requiring substantial compensation.

To compensate for this presumed loss and achieve biodiversity net gain, a comprehensive suite of enhancement measures has been developed: double-row native species-rich hedgerow with under-canopy seed mix along rear and front boundaries, with planting widths of 500mm to 1000mm; five standard native trees (Downy Birch, Rowan, Hazel) in two green spaces, providing smaller-growing species appropriate to the available space without causing overshadowing; species-rich flowering lawn mix over all residential green spaces; purpose-built bat loft in the north-east gable measuring 3m depth with full ceiling width, letterbox access (500mm x 200mm), and turnstile baffle, constructed to Bat Conservation Trust guidelines and suitable for greater horseshoe bat, lesser horseshoe bat, and brown long-eared bat; integrated bat boxes on the southern gable; sparrow terrace bird boxes on the northern gable; hedgehog access points; and bat-sensitive lighting scheme following Technical Guidance Note 08/23.

To address concerns regarding ground condition following site clearance, suitable topsoil complying with BS 3882:2015 will be imported to all planting areas to ensure successful establishment of the proposed green infrastructure.

The site has good connectivity east to Whitey Park and north to adjacent woodland. The bat-sensitive lighting scheme ensures the site does not impact on the valuable dark corridor provided by Whitey Park, protecting commuting and foraging opportunities for bats including light-sensitive species. The purpose-built bat loft provides significant compensatory roosting habitat for species recorded locally, directly mitigating the potential loss of roosting habitat in the demolished section of The Norton Tavern.

The comprehensive enhancement suite, combined with long-term management commitment of at least 25 years and monitoring of the bat loft, demonstrates full compliance with Planning Policy Wales (Edition 12), the Environment (Wales) Act 2016, and the Well-being of Future Generations (Wales) Act 2015. The development delivers measurable biodiversity net gain through creation of double-row native hedgerow, species-rich grassland, native tree planting exceeding 3-to-1 replacement, purpose-built bat loft, artificial roosting and nesting features, and maintenance of ecological connectivity. This fulfils policy requirements for environmental enhancement whilst contributing positively to local ecological network resilience.

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*Statement prepared in accordance with Planning Policy Wales (Edition 12, 2024), the Environment (Wales) Act 2016, Technical Advice Note (TAN) 5: Nature Conservation and Planning, Bats and Artificial Lighting in the UK: Technical Guidance Note 08/23 (2023), and Bat Conservation Trust guidelines for bat roost design.*

Appendix A: Bat Friendly Lighting Scheme

To prevent any adverse impact upon the potential roosting, commuting and foraging habitats for bats adjacent to the Site (post development), specifically on the nearby mature trees, a lighting plan is required. Lighting for the site must be functional and directional only and kept to a minimum, servicing the public areas of the proposed development (as required for safety and security). It must be achieved using baffles and screens if necessary, to ensure no light spill on any retained or planted vegetation (including off-site vegetation - e.g., if there is potential to impact animals using the nearby habitat features).

- A sensitive lighting scheme is recommended and must be created. The sensitive lighting scheme must follow advice detailed in 'Bats and Artificial Lighting in the UK: Technical Guidance Note 08/23' (2023) and comprise of:
- Light fixtures, filaments, light spill and artificial light must be directed away from bat roost entrances, both existing and those to be created as part of the mitigation.
- Luminaries are to be LED only, due to their sharp cut-off, lower intensity, good colour rendition and dimming capability. Luminaires must have a warm white spectrum (ideally <2700 Kelvins), reducing the blue light component and increasing the red-light component.
- Luminaries must feature peak wavelengths of 550nm to avoid the component of light most disturbing to bats.
- Heights of fixtures must be carefully considered to minimise light spill. Only luminaries with an upward light ratio of 0% and with good optical control must be used.
- Luminaries must always be mounted on the horizontal, i.e., no upward tilt.
- Any external security lighting must be set on motion sensors and short (15 second) timers.
- As a last resort, accessories such as baffles, hoods or louvres must also be used, and directed away from any natural features and must not encroach outside the Site boundaries, particularly the surrounding trees, hedgerows, and other vegetation in the landscape.

A copy of 'Bats and Artificial Lighting in the UK: Technical Guidance Note 08/23' (2023) can be found here:

https://www.bats.org.uk/news/2023/08/bats-and-artificial-lighting-at-night-ilp-guidance-note-update-released

## Appendix B: Biodiversity Enhancement Features

| Category | Product / Feature / Information | Availability |
|---|---|---|
| Bats | Integrated Eco Bat Box | https://www.nestbox.co.uk/products/integrated-eco-bat-box |
| Bats | Beaumaris Bat Box | https://www.wildcare.co.uk/beaumaris-bat-box.html?gad_source=1&gclid=CjwKCAjw65-zBhBkEiwAjrqRMLWbfTavFlgGTv2ry0OGQEWnqN0eVseleG460NUFfHmj6NAF2TcGZhoCsKEQAvD_BwE |
| Bats | Bat Access Tiles: Slate | https://beddoesproducts.com/ |
| Bats | Bat Access Tiles: Terracotta | https://spicertiles.co.uk/product/bat-access-tiles/ |
| Bats | F2 Schwegler Bat Box | https://www.wildcare.co.uk/bat-box-45.html |
| Bats | 2FN Schwegler Bat Box | https://www.wildcare.co.uk/bat-box-55.html |
| Bats | Eco Rocket Bat Box (Pole mounted) | https://www.nestbox.co.uk/products/eco-rocket-bat-box |
| Bats | Eco Kent Bat Box | https://www.nhbs.com/eco-kent-bat-box |
| Birds | 1SP Schwegler Sparrow Terrace | https://www.nhbs.com/1sp-schwegler-sparrow-terrace |
| Birds | No10 Schwegler Swallow Nest | https://www.nhbs.com/no-10-schwegler-swallow-nest?bkfno=174809&ca_id=1495&adlocale=uk&gad_source=1&gclid=Cj0KCQjw8MG1BhCoARIsAHxSiQn8rz11Yabuq80zjBuXHmQn9XgWOqdwqh6TCQceJk6cZwCXJiN-ezAaAnb9EALw_wcB |
| Birds | Schwegler 2m nest box 32mm red | https://www.wildcare.co.uk/schwegler-2m-nest-box-32mm-red.html |
| Birds | Vivara Pro Seville 32mm WoodStone Nest Box | https://www.nhbs.com/vivara-pro-seville-32mm-woodstone-nest-box?bkfno=234956&ca_id=1495&adlocale=uk&gad_source=1&gclid=CjwKCAjw1emzBhB8EiwAHwZZxQ3ycKKX1WfX_vPwy4H0tmx0d8U47PSFg_oRKWOuj01vGrNPv2budhoC43AQAvD_BwE |
| Birds | B1 Schwegler Nest Box | www.nhbs.com |
| Birds | 2H Schwegler Open-fronted Boxes | https://www.wildcare.co.uk/wildlife-nest-boxes/bat-boxes/open-front-bird-box.html?gad_source=1&gclid=Cj0KCQiAvP-6BhDyARIsAJ3uv7aypY-bcsAx5YH2rJcAclpCz_NWr9076Gf_H17_TIvvuoRxUQ51BEwaAkWaEALw_wcB |
| Birds | Bilbao Nest Box | www.wildcare.co.uk |
| Botany: Seeds | Species-rich Neutral Grassland (Lawn) | https://www.cumbriawildflowers.co.uk/habitats/neutralhaymeadowmix |
| Botany: Seeds | Native Woodland Under-canopy Mix: Wildflowers and Native Woodland Under-canopy Mix: Grasses | https://www.pitchcare.com/products/shade-hedgerow-woodland-wildflower?gad_source=1&gclid=CjwKCAiA3JCvBhA8EiwA4kujZoajG-WP6tDAjs71P4QXzKHYHzOnsDjaD0cfR0j9fwOW1kwRX0LdLxoCqp8QAvD_BwE |
| Botany: Seeds | Seed Mix: Pond Edge | https://britishpondplants.co.uk/products/pond-edge-seed-mix#:~:text=Pond%20Edge%20Seed%20Mix&text=The%20first%20consists%20of%2030,the%20wildflowers%20at%20only%201g. |
| Botany: Saplings | Traditional hedgerow mix | https://hedgelink.org.uk/hedgerows/hedgerow-biodiversity/ |
| Botany: Trees | Standard Downy Birch Tree | https://www.tree-shop.co.uk/product/downy-birch-betula-pubescens/ |
| Botany: Trees | Standard Rowan | https://www.ashridgetrees.co.uk/p/garden-trees/sorbus/aucuparia-mountain-ash-rowan |
| Botany: Trees | Standard Hazel | https://shop.woodlandtrust.org.uk/hazel |
| Botany: Trees | Standard Sessile Oak | https://www.ashridgetrees.co.uk/p/garden-trees/oak-quercus/petraea-sessile?utm_campaign=20731047289&utm_medium=cpc&utm_source=google&utm_content=&utm_term=&utm_marketing_tactic=20731047289&utm_creative_format=&utm_source_platform=g_x&gad_source=1&gclid=CjwKCAiA8Lu9BhA8EiwAag16bwJycGfDm5rQgcfIzRTVAgPmF9yIL1Ywpn0ZDmt8OCfXJV0frx8qoBoCX18QAvD_BwE |
| Ponds | Froglife: Just Add Water: How to Build a Wildlife Pond | https://www.froglife.org/wp-content/uploads/2013/07/JAW2014-for-printing-HLF1.pdf |
| Invertebrates | RSPB: Wildlife Friendly Compost Heap | https://www.rspb.org.uk/get-involved/activities/nature-on-your-doorstep/garden-activities/how-to-start-composting/?channel=paidsearch&gclid=Cj0KCQjwwISlBhD6ARIsAESAmp6-9xxJryl2FHYIveETaKoRcR-IAXSZkFv6N749eOOIwGZ4ix6F7-caAjckEALw_wcB&gclsrc=aw.ds |
| Invertebrates | Bee Bricks | https://www.wildcare.co.uk/wildlife-nest-boxes/insect-habitat/solitary-insects/greenblue-bee-brick.html?gad_source=1&gclid=CjwKCAjw1emzBhB8EiwAHwZZxQhTPLq1vLIUmTcv0q5w_jD941qKkCx5NsnIh4NVwijJe7wxAnkazhoCggUQAvD_BwE |
| Invertebrates | Schwegler Clay and Reed Insect Nest | www.nhbs.com |
| Habitat management | Plantlife: Managing a Small Meadow for Wildlife | https://meadows.plantlife.org.uk/3-maintaining-meadows/managing-meadows-of-all-sizes-with-mowing/ |
| Habitat management | Woodland Trust: How to Plant a Tree | https://www.woodlandtrust.org.uk/plant-trees/advice/how-to-plant/ |
| Hedgehogs | Vivara Pro WoodStone Hedgehog House | https://www.wildcare.co.uk/wildlife-nest-boxes/other-mammal-nest-boxes/hedgehogs/woodstone-hedgehog-house-10506.html?gad_source=1&gclid=CjwKCAiA9bq6BhAKEiwAH6bqoG61jaD7qZxLkHiCns8zdzc5xCwnaFe-yOFvsp_pt2WZqavkUqzfthoCJdMQAvD_BwE |
| Hedgehogs | Eco Hedgehog Hole Plate | https://www.nestbox.co.uk/products/eco-hedgehog-hole-plate?_pos=2&_sid=cfc475fd2&_ss=r |
| Amphibians | An Amphibian Hibernacula: English Nature: Great Crested Newt Mitigation Guidelines. | https://www.froglife.org/ |